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University of Nebraska-Lincoln

Lisa Bauer

University of Nebraska-Lincoln

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EXTENSION AND EDUCATION MATERIALS FOR
SUSTAINABLE AGRICULTURE
VOLUME 10

Small Farming Systems for the Midwest

and

Reintegrating Agriculture and Community
in the Midwest

A Proceedings of a two-part seminar series held fall 1998 and spring 1999,
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Department of Agricultural Economics
Department of Agronomy
U.S. Department of Agriculture
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Small Farming Systems for the Midwest and Reintegrating Agriculture and Community in the Midwest

Editors' Introduction

Americans... must learn to let go of farming and ranching. In the short run, this means eliminating the subsidies that delay the inevitable development of the nation out of agriculture and into more-profitable industries. In the long run, this means becoming citizens of the world, dependent on others for food commodities while Americans produce the marvels and the know-how for the future.

—Steven Blank (1999)

The statistics certainly show a powerful trend towards, if not the disappearance of agriculture in the United States, then at least a radical transformation of the system:

- Since 1950, the number of farms has decreased by 64% (to less than 2 million), average farm size has increased 127% (to 491 acres), and farm population has declined to less than 2% of the U.S. total. The largest 9% of U.S. farms control two-thirds of the land in farms and almost 50% of the cropland. Ninety percent of U.S. agricultural output is produced by only 522,000 farms (U.S. Bureau of the Census 1992, 1994).
- In 1997, U.S. agricultural exports totaled \$57 billion, but agricultural imports equaled \$36 billion. In 1996, 34% of fresh fruits consumed in the U.S. were imported as were 13% of fresh vegetables, 59% of fish and shellfish, and 8% of beef (U.S. Bureau of the Census 1998).
- The farm share of the agricultural economic pie has declined from 21% in 1910 to less than 5% today, while the input and marketing sectors control the rest. If current trends continue, farm share will fall to zero by the year 2020 (Smith 1992).
- At least 25% of U.S. agricultural production is under contract. In sectors such as poultry, virtually 100% of production is under contract or directly owned by corporations (Krebs 1992).
- The top 10 agrochemical corporations control 85% of the agrochemical market worldwide. The top five vegetable seed companies control 75% of the global market. Four corporations

control 69% of the U.S. seed corn market. Four companies account for 79% of U.S. beef packing. The proposed merger of Cargill and Continental Grain Co. would allow Cargill to control 45% of the global grain trade. Six multi-national corporations account for half of all U.S. retail food sales (Heffernan 1999, RAFI 1999).

We are rapidly moving toward a global food system where mega-farms supply raw materials for processing by a handful of transnational corporations, corporate influence equals or exceeds that of national governments, and consumers have virtually no control or even knowledge of where and how their food is grown. Many economists view the industrialization and globalization of agriculture as not only inevitable but good. Efficiencies of scale contribute to a cheap and plentiful supply of food for U.S. consumers. Times are good.

Unfortunately, there is a dark side to these trends—problems that the economists seem to overlook. Let's start with Dr. Blank's vision of a United States that purchases all its food from other countries. The U.S. merchandise trade deficit reached \$191 billion in 1997, and would have been greater except for a trade surplus in agricultural products of \$21 billion. The U.S.—the world's largest debtor nation—cannot afford to import its food. And if it could, would dependence on Brazil, Mexico, Thailand and other countries be conducive to national food security? The United States has used food embargoes as policy tools, and there is no reason to think that other countries would not do the same.

U.S. purchases of food from third world countries threatens the food security of the poorest segment of world population. Worldwide there are 828 million chronically undernourished people (FAO 1998). Too poor to purchase food from the global system, these people are at the same time victims of a global system that co-opts local farmland for production of export crops rather than local food. Even though some displaced farmers may find employment on plantations or in the industrial sector, the need to purchase food—often imported and high-priced—can actually be associated with declining nutritional status in the third world (Wimberley 1991).

In the United States, poor people, particularly the inner city poor who live in areas without supermarkets, are also not well served by the global food system. Poor and affluent alike in the United States purchase food that has traveled on average 1300 miles from field to table, and has required the expenditure of 10 calories of energy for every one calorie of food consumed (Olson and Olson 1999). When the cheap oil is exhausted, this food system will face major difficulties.

Farmland and farmers suffer in a global food system because transnational corporations have no interest in the well-being of any particular piece of land or individual farmer. The priority of food giant ConAgra is explicitly stated at the beginning of their 1998 Annual Report: "ConAgra, Inc. is a diversified international food company. We operate across the food chain in 35 countries around the world. Our mission is to increase stockholders' wealth." Their priority is stockholder wealth, not biological wealth or community health or the economic well-being of farmers. Production is shifted as needed to maximize profits, and the short-term perspective of the quarterly report is antithetical to the longterm perspective required for a sustainable agriculture.

Communities and rural landscapes suffer in the global economy. The biological and social implications of the restructuring of agriculture from many small farms to fewer, larger farms with lower crop diversity have been described for rural Minnesota by a state task force (University of Minnesota Extension 1998). "Our current agricultural cropping systems have less biological diversity than at any time in history," the task force report says. "The cause is continued simplification of farming leading to production of a few crops over large acreages. It is increasingly clear that simplified farming is causing a crisis in rural Minnesota. This crisis is felt in rural communities that have lost population, businesses, churches, schools and social institutions as smaller diversified farms have been replaced by larger operations focused on a single commodity. Production of single, low value commodities does not add substantially to the economic base of the community and creates a high level of biological and environmental risk for farmers and society."

Many farmers and rural communities are not willing to be quietly subsumed or consumed by the global economy. They resent the arrogance of many economists who, fat and well-paid with tax dollars, proclaim that there are too many farmers (imagine if someone suggested that there are too many economists!). Many urban dwellers are not willing to accept the transformation of the urban edge rural landscapes into yet more sprawl, strip development, and mile after mile of cul-de-sacs fronted by garage doors or acreages dominated by starter castles. They are not willing to concede that tasteless produce, bred for shipping qualities, or highly processed convenience foods are their only food options. And they are not willing to entrust their food security to a handful of CEOs whose bottom line is corporate and personal profit.

Opposition to a system, however, is not enough. Viable alternatives need to be offered, and toward this end the University of Nebraska-Lincoln offered two seminar series that explored alternatives to the global-industrial food system in the Midwest. The series were designed to showcase farmers and other participants in the food system who are successfully pursuing local, equitable, and sustainable strategies. The credibility of these alternatives comes from their successful implementation in the real world. They are not simply some academic theory—they work.

In the fall of 1998, the series titled "Small Farming Systems for the Midwest" examined alternative farming systems that are able to remain economically viable without becoming very large. The speakers described and evaluated whole systems rather than specific practices. Farmers from five states described successful systems including market gardens, agroforestry, innovative livestock production, organic rowcrops and even a winery, perhaps the ultimate on-farm value-added enterprise.

The spring 1999 series, "Reintegrating Agriculture and Community in the Midwest," explored approaches to providing a more supportive environment for small farms through the relocation of agriculture and the development of stronger ties between agriculture and the community. A successful local food system has to be a partnership between urban and rural, producer and consumer. Community Supported Agriculture, farmers' markets, urban

gardens, and other mechanisms for developing partnerships are described by those who have worked with them.

This proceedings contains papers representing each of the twenty seminars. In some cases the paper was written specifically for this volume. For others, we reprinted published works by or about the speaker and their topic. We have also included two papers by authors who were not presenters in the series, but who provide excellent introductions to the fall and spring series.

Videotapes of the presentations are available (except Bartlett and Duffy) for rental or purchase from IANR Communications and Information Technology, Electronic Media, ACB 207, University of Nebraska, Lincoln, NE 68583-0918, 402-472-3035.

The seminar series was sponsored by the UNL Institute of Agriculture and Natural Resources (Center for Sustainable Agricultural Systems, Food Processing Center, Center for Rural Community Revitalization and Development, Departments of Nutritional Science and Dietetics, Agricultural Economics, and Agronomy); USDA (North Central Region Sustainable Agriculture Research and Education program, National Agroforestry Center, Natural Resources Conservation Service); and the Nebraska Sustainable Agriculture Society.

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Richard Olson, CSAS
Lisa Bauer, NCR-SARE

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Editors

Richard Olson
Center for Sustainable Agricultural Systems
University of Nebraska-Lincoln
225 Keim Hall
Lincoln NE 68583-0949
Phone: 402-472-2056
Fax: 402-472-4104
Email: csas003@unlvm.unl.edu

Lisa Bauer
NCR SARE
13A Activities Building
University of Nebraska
Lincoln, NE 68583-0840
Phone: 402-472-0265
Fax: 402-472-0280
Email: lmbauer@unlnotes.unl.edu

SEMINAR

SERIES

FALL 1998



SMALL FARMING SYSTEMS FOR THE MIDWEST

WAKING UP TO PROMISING POSSIBILITIES

- SEPT 15** **A TIME TO ACT FOR FAMILY-SIZED FARMS**
CHUCK HASSEBROOK, MEMBER, USDA COMMISSION ON SMALL FARMS,
DIRECTOR, CENTER FOR RURAL AFFAIRS, WALTHILL, NEB.
- SEPT 22** **SUCCESSFUL SYSTEMS FOR MARKET GARDENING**
LYNN BYCZYNSKI, MARKET GARDENER, PUBLISHER, *GROWING FOR MARKET*,
LAWRENCE, KAN.
- SEPT 29** **HOGS, HOOP HOUSES, AND HOLISTIC MANAGEMENT:
A DIVERSIFIED CROP/LIVESTOCK FARM**
TOM FRANTZEN, FARMER, MEMBER, PRACTICAL FARMERS OF IOWA,
NEW HAMPTON, IOWA
- OCT 6** **TREES AND HERBS: A MULTI-STORIED AGRICULTURAL SYSTEM
FOR SOUTHEASTERN IOWA**
TOM WAHL AND KATHY DICE, RED FERN FARM, WAPELLO, IOWA
- OCT 13** **INNOVATION GUIDED BY CULTURE: AMISH FARMS IN OHIO**
DEBORAH STINNER, OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER,
WOOSTER, OHIO
- OCT 20** **ADDING VALUE: PASTURED POULTRY, DIRECT MARKETING,
AGRITOURISM AND OTHER STRATEGIES**
MURIEL BARRETT, FARMER/RANCHER, MEMBER, NEBRASKA SUSTAINABLE
AGRICULTURE SOCIETY, SUTHERLAND, NEB.
- OCT 27** **INTEGRATING MANAGEMENT-INTENSIVE GRAZING
WITH CROP PRODUCTION**
TOM LARSON, FARMER, MEMBER, NEBRASKA SUSTAINABLE AGRICULTURE SOCIETY,
ST. EDWARD, NEB.
- NOV 3** **A DIVERSIFIED ORGANIC CROP/LIVESTOCK SYSTEM**
DAVE WELSCH, WEST BLUE FARM, MILFORD, NEB.
- NOV 10** **MAKING A SMALL FARM WORK:
LESSONS FROM A VINEYARD AND WINERY**
LARRY MAWBY, L. MAWBY VINEYARDS, SUTTONS BAY, MICH.
- NOV 17** **THE ECONOMICS OF SMALL FARMS**
MICHAEL DUFFY, DEPARTMENT OF AGRICULTURAL ECONOMICS,
IOWA STATE UNIVERSITY, AMES, IOWA

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SERIES SEMINAR



REINTEGRATING AGRICULTURE AND COMMUNITY IN THE MIDWEST

WAKING UP TO PROMISING POSSIBILITIES

SPRING 1999

- JAN 12** **LOCALIZING THE FOOD SYSTEM: MYTHS AND REALITIES**
JACK KLOPPENBURG, UNIVERSITY OF WISCONSIN
- JAN 19** **URBAN GARDENING**
KATE BROWN, OMAHA CITY SPROUTS
- JAN 26** **FROM HOBBY TO HOPE:
LINCOLN'S HAYMARKET FARMERS' MARKET**
BILLENE NEMEC, LINCOLN FARMERS' MARKET
- FEB 2** **COMMUNITY STRATEGIES FOR PRESERVING
FARMS AND FARMLAND**
MICHAEL PRESSMAN, 1,000 FRIENDS OF MINNESOTA
- FEB 9** **COMMUNITY SUPPORTED AGRICULTURE**
MOLLY BARTLETT, SILVER CREEK FARM (OHIO)
- FEB 16** **A TALE OF TWO CHICKENS:
ECONOMIC RESULTS OF OUR FOOD CHOICES**
KAMYAR ENSHAYAN, UNIVERSITY OF NORTHERN IOWA
- FEB 23** **PRODUCER COOPERATIVES**
DIANA ENDICOTT, RAINBOW ORGANIC FARMS (KANSAS)
- MAR 2** **RESOURCES AND REGULATIONS FOR LOCAL FOOD SYSTEMS**
NEIL HAMILTON, DRAKE UNIVERSITY LAW SCHOOL (IOWA)
- MAR 9** **DEVELOPING AN INFRASTRUCTURE
FOR LOCAL PROCESSING OF AGRICULTURAL PRODUCTS**
JILL GIFFORD AND STEVE WANG, UNL FOOD PROCESSING CENTER
- MAR 23** **GROWING THE THREE SISTERS:
COMMUNITY ORGANIZING AND LOCAL FOOD SYSTEMS**
ROBERT KARP, FIELD TO FAMILY PROJECT (IOWA)

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Small Farms are "Real" Farms

John Ikerd
University of Missouri

John Ikerd is Extension Professor and Co-coordinator, Sustainable Agricultural Systems Program at the University of Missouri-Columbia. Although he is an agricultural economist, he has been somewhat of an iconoclast, challenging the traditional economic paradigms and searching for ways to put people, not corporations or "the market," first. His writings are insightful and provocative, and if you aren't familiar with them, you are encouraged to peruse his most recent papers at <http://www.ssu.missouri.edu/Faculty/JIkerd/papers/default.htm>.

In his efforts to foster the development of a sustainable agriculture, John has emphasized the importance and viability of small farms. In doing so, he has had to grapple with the definition of a "small farm." His answer to the question "What is a small farm?" provides an excellent introduction to the papers in the first half of this Proceedings — Small Farming Systems for the Midwest.

What is a small farm? When we talk about small farms, do we mean small in acreage, small in production or value of sales, small in income, or what? There isn't any one universally accepted definition of a small farm. So we have to begin any discussion of small farms by defining what we mean by a "small farm."

In the process of defining small farms, we need to consider how important farms of various sizes are in terms of acreage, value of production, and numbers of people who rely on farms for incomes. We who work with families on small farms are concerned primarily with what we can do to help families on small farm lead successful, productive lives rather than how many acres they farm or how much they produce. And extension work with families on small farms is mostly one-on-one work with individual families. But, if we have a better understanding of small farmers as a group, we may be better able to explain why we believe that working with families on small farms is important and why small farms deserve far more attention than they are given in most public research and education programs.

First, let's consider farm size in terms of numbers of acres. The 1992 U.S.D.A. Census of Agriculture is the last comprehensive assessment of Missouri's farms and farmers. That Census indicated that more than one-fourth of Missouri's farms were less than 70 acres in size. A 70-acre cow-calf or row crop farm would be considered small. However, 70 acres of blueberries would be considered a large blueberry farm. Because there are lots more cows and corn than blueberries, most 70-acre Missouri farms would be considered small. If farms up to 140 acres

were considered small, that would include nearly one-half of Missouri farms. More than two-thirds are less than 260 acres in size, and 85 percent are smaller than 500-acre farms.

However, most would probably agree that acreage is not a very good indicator of farm size in any terms other than occupying space that cannot be used for other purposes. For example, a 500-acre farm in row crop production may not be big enough to support a family. On the other hand, a 5-acre market garden may be large enough to provide a good living for a family. The question of how many acres it takes to provide a good living all depends on what the farm is used for and how effectively it is used.

Next, let's consider farm size in terms of value of production – market value of farm products sold. More than half of Missouri farms reported total sales of less than \$10,000 in 1992, and more than two-thirds reported sales of less than \$20,000. Most would agree that farms of this size are small farms. Total farm acreage may be up in the 200-acre range on some of these farms, but the farming operation still isn't producing much if they are selling less than \$100-worth of product per acre.

More than 80 percent of Missouri's farms sold less than \$50,000 in total value of products in 1992. Farms of this size are small enough to be considered as "non-commercial" by U.S.D.A. Certainly in traditional crop and livestock enterprises, such farms would not seem to be economically viable and thus not true commercial ventures. But, 80 percent of Missouri farms fall into this category. Does this mean that 80 percent of Missouri's farmers are hobby farmers, rural residents, or something other than real farmers?

If \$100,000 in annual sales is considered to be a small farm, nearly 90 percent of Missouri farmers are small farmers. Is a farm with total sales of \$100,000 large enough to provide a decent living for a family? The answer depends on how, and how well, the farm is used. Four hundred acres of 100-bu./per acre corn at \$2.50 per bushel will generate total sales of \$100,000. However, at a return over direct costs of \$50 per acre, only \$20,000 in total, will be generated to cover debt payments, taxes, depreciation and other fixed cost. This may leave far less than \$20,000 as a return to labor, management, and the family's equity in the farm – the return that family living expenses will have to come from. On the other hand, a market garden or U-pick operation may yield a return over direct costs equal to 50 percent, or even 75 percent, of total market value of sales. Thus, a \$100,000 market garden might generate \$50,000 to \$75,000, with less land and less capital costs than a row crop farm. So a \$100,000 market garden may generate a very good family income.

So what is a small farm? There is no good answer to the question. However, let's proceed using the U.S.D.A definitions that "small farms" are farms with less than \$100,000 in value of annual production and "non-commercial" farms sell less than \$50,000 per year. Thus, 90 percent of Missouri's farms are "small" farms and 80 percent are classified as "non-commercial" farms. So there are a lot of small farms in Missouri – one of the highest number of any state. For the U.S. in total, 75 percent of all farms are considered to be "small" and 70 percent are classified as

"non-commercial." But, are small farms really important? There may be a lot of them, but they are not all that big, and even those with moderate acreage don't grow all that much.

If we are concerned primarily with production, we may be able to pretty much write off small farms, or at least justify not crediting them with much importance. Small farms account for just over 25 percent of total value of U.S. farm production, even though they accounted for over 75 percent of U.S. farms. Only about half of that amount, 13 percent of total sales, were accounted for by the 70 percent of farms called "non-commercial."

Small farms are more important in terms of land and farm assets. Farms with less than \$100,000 in sales controlled 40 percent of all farmland and more than 50 percent of all farm assets – money invested in farming. Thus, small farms are more important in terms of land ownership and total value of assets, than in terms of value of production, but are still less important in land and assets than in terms of total farm numbers.

From an overall financial stability position, small farms are about as financially secure as are large farms. The small farms have less farm income, which makes them vulnerable from a standpoint of financial liquidity or ability to meet cash flow requirements. However, small farms have only 43 percent of all farm debt while holding 53 percent of all assets, leaving them less vulnerable from the standpoint of financial solvency or risk of bankruptcy.

Overall, are small farms really very important? Are small farms real farms? We would probably have to conclude that they are not all that important, that they may not be real farms, if we were concerned primarily with production and profits. But, what if we are concerned about people – specifically the people who farm? If more people depend on small farms for a living, shouldn't that be given more weight than production and profits in determining the importance of small farms? Many might agree, but the typical response is that small farmers really don't depend on small farms, farms are just the places where they live, or they depend on off-farm jobs, or they are retired. So, let's take a look at the "conventional wisdom" that families on small farms really don't rely on farming.

First the farm census takers asked farmers to specify their principal occupation. Principal occupation was defined as the job at which they spend over one-half of their working hours. Only one-half of all farmers in the U.S. considered farming to be their principal occupation. Obviously, a larger proportion of small farmers than large have a principal occupation other than farming – spending more than half of their working hours off the farm. But, there are also a lot more small farmers than there are larger farmers. So about 80 percent of all farmers who called themselves farmers – rather than something else – were "small farmers" – they operated farms with less than \$100,000 in total sales. But, even that number has been discounted by many because it included farmers who are "retired" as well as active farmers. In other words, a farmer might be retired and still spend more than half of his or her working hours farming.

The 1993 U.S.D.A. Farm Cost and Return Survey included a critically important question, for the first time in its 15 year history. This national survey asked farmers to classify their principal occupation as farmer, hired farm manager, other occupation, or retired – using the same definition for farmer as described above. They also asked for the same farm size information as in the 1992 Census of Agriculture. The results indicated, as expected that nearly all of the retired farmers were in the "small farm" category. Retired farmers made up about 17 percent of all farmers, but of course were a much larger percentage of all "small" farms. However, even after taking out all of the retired farmers from the small farm category, more than one-half of all U.S. farmers who consider farming to be their principal occupation operated small farms.

Are farmers who spend more than half of their working hours farming, who are not retired, "real farmers?" If so, real, small farmers made up 54 percent of all farmers responding to the Farm Cost and Return Survey. Thus, over half of all real farmers may be small farmers. In fact, 47 percent of the real farmers responding to the survey were operating "non-commercial" farms. A person doesn't spend over half of their "working" hours on a hobby farm. A person doesn't spend over half of their working hours on a sideline or supplemental activity. If nearly half of the active farmers in the U.S. spend more than half of their working hours on "non-commercial" farms, perhaps U.S.D.A. needs to rethink the name for this category.

Survey data including the retirement occupation category was not readily available for Missouri. However, about 62% percent of Missouri's "real farmers" may be "small farmers," if we assume the same percentage of retired farmers by size category for Missouri as for the nation. Regardless of the specific percentage, the percentage of "real, small" farmers in Missouri would be expected to be larger due to the greater proportion of small farmers in Missouri. In fact, in Missouri, well over half – an estimated 57 percent – of all "real" farmers may be classified as "non-commercial."

The conclusion – most real farmers are small farmers. Small farmers produce a much smaller proportion of total production than do large farmers. Large farms are important in terms of providing for the food and fiber needs of society. But, farm families are a part of society also. Consumers, on the average spend about 10 cents of each dollar for food, and the farmer only gets one penny of that dime. The rest goes for marketing, transportation, processing, packaging, etc. and for farm inputs. We need to weigh the well-being of the smaller number of people who rely on farming for a large part of their livelihood against the small percentage of their income that a far larger number of consumers spend for food and fiber. Certainly we cannot ignore the responsibility to provide for the food and fiber needs of people, but neither can we ignore the needs of the majority of those who rely on farming for a living.

Small farms provide less income for families than do large farms. However, for many on small farms, the farm is more than a place to earn money. It is a place to live – a house and space to move about – much of which is provided by the "farm." The farm provides fresh produce, meat, other foodstuffs, clean water, fresh air, outdoor recreation, and a host of other things of great value that come at reduced cost or no cash cost from a farm. A person in the city, or on a

strictly commercial farm, might use a significant part of their income to "buy" the good things of life that come with a small, family farm – many of which are free.

Small farmers do rely more on non-farm income than do large farmers. But, even "large" farmers report that more than 45 percent of their income comes from non-farm sources. There are relatively few households, on farms or in cities, that rely on only one source of income, farming or otherwise, for their livelihood these days. In addition, the reliance on farms of small farmers who are real farmers – after we take out retired farmers and those with other occupations – may not be much less than for large farmers. That question can't be answered from available survey data. Even if small farmers get a greater proportion of their income from non-farm sources, does that mean that they need what they earn from their farms any less than to the large farmers? Which one would qualify for food stamps quicker if their farm income started to fall? The bottom line: most people who really depend on farming for an important part of their livelihood quite likely are on small farms.

Finally, how can we best help families on small farms achieve and sustain successful, productive lives? First, we must recognize that small farms must be different from large farms if they are to provide for the needs of the family. They must generate more dollar sales and more net income per acre of land and per dollar invested. Small farms, by any common sense definition, have less land and less capital, so they have to earn more per acre of land and dollar invested to have a comparable return. This means they have to earn more from their labor, and particularly more from their management ability than do large farms.

To earn a higher return to management, small farms must be more management intensive. Small farm systems must be more diverse and thus more complex, they must be planned and designed to fit the specific soils, climate, and geographic location. They must fit the unique production abilities of the farmer and meet the specific needs of available markets. But, complexity can lead to disaster as well as success. So, strategies must be developed to simplify the complexity – to make complex systems more easily managed.

This can be accomplished by dealing with general principles rather than trying to manage every detail of the system. For example, farms with healthy soils have fewer specific fertility and pest management problems. Small farms can focus on building healthy soils – a general principle – rather than being an expert in nutrient and pest management practices for every crop they raise. Another example, farmers can build relationships with specific customers to whom they market a wide variety of products directly. By focusing on relationships and meeting the needs of specific customers, farmers need not learn the "ins and outs" of marketing every product they grow. Holistic management, sustainable agriculture, and integrated farming systems are all approaches that rely on principles rather than specific practices to manage complex systems.

Most successful small farms will need to be "family" farms. There are as many different ways to define family farms as there are for small farms. But, a true family farm is one where the family and the farm are inseparable. For these families, farming may be considered as a way of

life, a critical part of life, or life itself. A family farm is not a business or job that can be separated from the life of the family – the family without the farm would be fundamentally different.

Successful small, family farms must value and use "all" resources of the family. Kids can make important and valuable contributions to the economic and social quality of family life on farms – if the farm is designed to make kids useful rather than vulnerable. Kids that are productive – who contribute to the success of the farm – would seem more likely to grow up with self-esteem and self-confidence. "Women's work" likewise needs to be valued, regardless of whether it is done by a male or female member of the family. Raising children is not a routine task that can easily be farmed out to someone else. With the farm value of food an average of 20 percent of each dollar spent for food at retail, home food preparation can contribute significantly to a family's total real income – particularly for low-income families who spend a large share of income for food.

Everything produced on the farm that can be used on the farm reduces the need for non-farm income. Many spouses seek off-farm employment more because they want to "do something of value" to earn additional income. In fact, the net increase in household income may be very small after paying for child care and everything else that must be bought after the spouse with primary family responsibilities enters the job market. If "non-market" family work was truly valued, family farms might be far less dependent on non-farm income.

Finally, successful small farms will be those that recognize, rely on, respect, and reward people. Most real farms are small farms – in Missouri and in the U.S. What makes them real farms is what they do for people. Small farms may be small in terms of production, but they are big in terms of people.

Further Information

John Ikerd
College of Agriculture, Food and Natural Resources
200 Mumford Hall
University of Missouri-Columbia
Columbia, MO 65211
573-882-4635
IkerdJ@missouri.edu
<http://www.ssu.missouri.edu/Faculty/JIkerd/default.htm>

A Time to Act for Family-Sized Farms

Chuck Hassebrook
Center for Rural Affairs

U.S. agriculture is undergoing major structural changes. Since 1950, the number of farms has decreased by 64% (to less than 2 million), average farm size has increased 127% (to 491 acres), and farm population has declined to less than 2% of the U.S. total. The largest 9% of U.S. farms control two-thirds of the land in farms and almost 50% of cropland. Ninety percent of U.S. agricultural output is produced by only 522,000 farms.

From the classic California research of Walter Goldschmidt in the 1940s to a 1998 report by the University of Minnesota Extension, a variety of studies have shown negative effects from the loss of farms and increase in farm size on the economic and social well-being of rural communities. In 1998, the USDA National Commission on Small Farms reiterated the benefits of small farms, particularly to local economies, and recommended policy changes to strengthen their position in U.S. agriculture. Among the recommendations is the development of new farming systems that emphasize low-capital investment, optimal use of skilled labor and management potential of beginning farmers, and high-value crop and livestock production and marketing methods. Development of direct links between farmers and consumers can help to re-localize agriculture, strengthen local economies, and increase local food security.

Chuck Hassebrook is Program Director of the Center for Rural Affairs of Walthill Nebraska, a member of the University of Nebraska Board of Regents and a member of the USDA National Commission on Small Farms. The following remarks by Mr. Hassebrook originally appeared in The Farm Journal, March, 1998.

It is a time act. If there is to be a future for moderate size family farms, this generation must take a stand against the policy biases that undermine them. So concluded the report of Secretary of Agriculture Dan Glickman's National Commission on Small Farms, appropriately titled "A Time To Act". The Commission found cause for hope. It concluded that family farm decline is driven by policy biases and choices — decisions made by people that can be reversed by people.

It is not the result of inexorable forces of nature nor economies of size. Iowa State University Economist Mike Duffy demonstrated that Iowa crop farms reach full economies of size at 600 acres. Nor does the solution depend on convincing the 98 percent of the population that does not farm to pay higher taxes for more spending on agriculture. Rather, the solution lies in all of agriculture confronting the policy biases, unfair marketing practices and research choices that are driving concentration and closing farm opportunity.

It will require family farmers and ranchers who care to work within government, farm and commodity groups and their communities to level the playing field and open opportunity to beginning farmers. It will require large farmers and ranchers to place as much priority on the well being of their communities as on their individual economic interests, as they exercise influence within farm and commodity groups and government.

As one successful farmer told me, my farm can survive economically into the next generation but without neighbors and a community, my sons won't want to farm. His problem must be solved by agriculture — farmers and ranchers together with the agribusinesses, commodity and farm groups, land grant colleges, USDA and farm state members of congress that have shaped the policies setting the course of agriculture. Only they, not the general public, can reverse it.

We must start with the policies that shape technology, markets and capital flows. Agricultural research has over emphasized expensive technologies for corporations to sell to farmers, driving the "spend more to get bigger" approach to farm survival. As a result, the share of the food dollar received by input corporations has grown while the share retained by farmers has steadily shrunk. Consequently, many farms have had to get bigger just to maintain a constant income.

The Commission recommends greater research emphasis on developing knowledge and production systems that enable moderate size farmers to use their management and skills to reduce the need for purchased inputs and capital, while maintaining or enhancing the value of their production. Research is needed on efficient low cost technologies such as hoop house for hogs, that enable farmers to send less of their hog check to their lenders and keep more in their pockets. We must develop new knowledge that helps farm families earn better incomes on modest scale operations.

Markets too are biased toward bigness. The economic power of large operations enables them to receive more for hogs and cattle than moderate size farms, irrespective of quality. Unfair trade practices such as that should be controlled by the Grain Inspection, Packers and Stockyards Administration. But the agency has been lax in enforcement. When it has acted, courts have been soft. The Commission called on Packers and Stockyards to take more aggressive action against discriminatory pricing and for legislation clearly establishing its legal authority.

The Commission called on USDA to reorient its marketing programs to support modest size farms in developing new higher value markets. Markets are becoming segmented. Consumers are willing to pay premiums for the special products they want. In many cases, family farmers are uniquely position to respond. Over half of consumers say they would pay some premium for food produced in an environmentally sound manner. Imagine the response if consumers were offered quality pork that they knew was produced on an environmentally responsible family farm.

The Commission called for greater assistance to beginning farmers through more effective credit programs; educational programs on business planning and low debt options for getting

starting; and support for state, local and private initiatives. We cannot look to government for the whole solution. We must challenge ourselves and our neighbors to work with beginning farmers through share leases of land, facilities and breeding herds; equipment sharing and other "win-win" arrangements.

The Commission made over 130 other recommendations. There is much that can be done. What has been lacking is political will and commitment. The stakes are high. As found a University of California researcher, "As farm size and absentee ownership increase, social conditions in the local community deteriorate. . . . Communities that are surrounded by farms that are larger than can be operated by a family unit have a bi-modal income distribution, with a few wealthy elites, a majority of poor laborers, and virtually no middle class."

The opportunity for those who work the land and raise the livestock to own and control their operations has brought meaning to life and work for generations, from those who left the feudal estates of Europe and broke the prairie sod, to freed slaves to the present generation. The question before us today is whether future generations will enjoy that same opportunity. Or, will they be blocked by a system in which land and opportunity are limited to a small elite, much like our ancestors faced generations ago?

Ours is the generation that must decide. It is a time to act.

Following are highlights of the National Commission on Small Farms recommendations:

Recognize the Importance and Cultivate the Strengths of Small Farms

- **USDA should design and implement a small farm research initiative aimed at developing the knowledge, technologies and production systems by which small farmers can use their management and skills to reduce the need for capital and purchased inputs, and thereby capture a larger share of the food dollar. A broad range of USDA research programs including the Fund for Rural America and the Agricultural Research Service should direct more of their efforts to addressing the research needs of small and beginning farmers.**
- **USDA should recommit itself as the "lender of last resort" by focusing greater attention on serving the credit needs of small, minority and beginning farmers and reversing the shift to guaranteed loans.**

Promote, Develop and Enforce Fair, Competitive and Open Markets for Small Farms

- **The Secretary of Agriculture should seek legislation clarifying the authority of the Grain Inspection, Packers and Stockyards Administration (GIPSA) to prohibit discriminatory**

pricing by packers. Small farmers often receive less for their livestock than large producers, irrespective of quality or cost of procurement. Until such legislation is passed, GIPSA should vigorously argue against discriminatory pricing in the courts. In addition, the Secretary should enhance competition in the cash market by prohibiting packers from holding "captive supplies", through feeding their own livestock or acquiring livestock through forward contracts based on formula prices. Packers should be required to publicly report all prices paid for livestock.

- Congress should amend the Agricultural Fair Practices Act to require processors to negotiate with associations of growers who produce poultry and livestock for them under contract.
- USDA Rural Business Cooperative Service should give priority in providing credit and technical assistance to the development of farmer-owned, value-added cooperative and farm-based businesses where profits flow to and within the community; where wage laborers are paid a living wage; where the efforts result in more local and regional competition in the cash market; where environmental stewardship is rewarded through the market; and where small farmers are rewarded for producing high value products.

Establish Future Generations of Small Farmers

- USDA should launch an interagency Beginning Farmer Initiative to research, develop and disseminate farm management models that emphasize low-capital investment, optimal use of skilled labor and management, and high-value crop and livestock production and marketing. The Fund for Rural America should support the establishment of beginning farmer centers.
- Congress should improve access to capital for beginning farmers by authorizing USDA guarantees on loans made by state bond finance programs (for example, the Nebraska Investment Finance Authority and the Iowa Agricultural Development Authority).
- USDA should seek legislation creating a Beginning Farmer Matching Grant program to supply modest equity capital for entry farmers in lieu of operating loans.

Emphasize Sustainable Agriculture as a Profitable, Ecological and Socially Sound Strategy for Small Farms

- USDA should more actively disseminate the new farming strategies emerging from ten years of research by the Sustainable Agriculture Research and Education (SARE) program.
- The USDA risk management agency should develop an affordable Whole Farm Revenue Insurance pilot project for diversified small farms using sustainable farming practices.

- The Secretary of Agriculture should exercise restraint in granting exceptions to the cap on the size of operations eligible for Environmental Quality Incentives Program grants for manure storage structures. The cap is currently set at 1,000 animal units which equates to a one time capacity of 1,000 full grown cattle or about 2,500 feeder pigs.

Dedicate Budget Resources to Strengthening the Competitive Position of Small Farms

- Increase appropriations for the Sustainable Agriculture Research and Education Program to \$40 million.
- Increase funding for Direct Farm Ownership Loans and Direct Farm Operating Loans to their maximum authorized levels of \$85 million and \$500 million respectively. Increase funding for the Outreach and Technical Assistance Program for Socially Disadvantaged and Minority Farmers to \$10 million.

Provide Just and Humane Working Conditions for All People Engaged in Production Agriculture

- Establish an interdepartmental task force to address farm worker concerns.
- The Commission observed that small farm operators cannot pay themselves a middle class income for their own labor and compete, if large farms are allowed to minimize costs by paying farm workers less than a living wage. Ultimately, small farmers will earn fair incomes only if the workers on large farms are paid fair incomes.

Further Information

Chuck Hassebrook
Center for Rural Affairs
P.O. Box 406
Walthill NE 68067
402-846-5428
info@cfra.org
www.cfra.org

For a copy of the report "A Time to Act," write the National Commission on Small Farms, P.O. Box 2890, Washington, DC 20013 or call (202) 720-0122 or download the report from USDA's website at <http://www.ree.usda.gov/agsys/smallfarm/ncosf.htm>.

The Time to Act! Campaign: http://www.cfra.org/tta/tta_home_page.htm

Successful Systems for Market Gardening

Lynn Byczynski
Growing for Market

Lynn Byczynski is a market gardener in Lawrence, Kansas, and publisher of Growing for Market, a national newsletter for small-scale farmers who direct market produce and flowers. She and her husband and two children live on a 20-acre farm of which 8 acres are productive bottomland. They use organic production methods and are working toward certification. Farm income comes from three components: flower sales to florists (20% of total farm revenue), vegetables to restaurants (20%), and vegetables sold through a subscription program (60%). Subscription sales are made through the Rolling Prairie Farmers Alliance, a group of eight growers serving 350 customers.

Lynn's article discusses the financial opportunities for the diversified market garden, based on her own experience and on eight years of interviewing and writing about other market gardeners. The model that has been most financially successful includes these components: organic production, diverse crops spanning a long season, selling at retail prices, marketing into cities, Community Supported Agriculture or subscription programs, and communications aimed at educating consumers. Market gardening is financially viable as a family's sole livelihood when all of these components are in place. But market gardening also can be profitable for many other people who don't have the perfect situation, including those who want to get started in farming without a lot of capital, and established farmers who want to supplement their incomes or provide on-farm jobs for a spouse or child.

In the midst of all the doom and gloom about farming this year, with prices plummeting and yields poor, market gardeners have, as a whole, held steady. Market gardening is a reliable business compared to any other type of farming I know. It's also one of the few types of farming that is open to newcomers with little capital.

What exactly is a market gardener? My definition: a market-gardener is a small-scale, diversified farmer who direct markets produce and flowers. Market gardens, by this definition, can range in size from less than an acre to 50 acres. My readers include a Tennessee farmer who grows 70 100-square foot beds of produce for a 30-member subscription program, and a farmer with 45 acres of vegetables who sells at 22 farmers markets each week in Washington, D.C.. Market gardeners sell as close to retail as possible, at farmers markets, through Community Supported Agriculture or subscription programs, at on-farm stands, and to local restaurants and florists.

How many of us are there? Nobody knows because market gardening is not an officially recognized job category. But I think there are 60,000 to 75,000 market gardening farms in the United States. I've come up with that estimate by extrapolating from two sources: First, the Census of Agriculture counts about 95,000 vegetable, fruit, and nut growers, some of which are the big grower-shippers in California and other states. Second, U.S.D.A. reports that there are about 2,500 farmers markets in the United States, and nearly every market gardener spends some time at one of those during his or her career. Farmers markets range in size from the huge, thriving markets with 200-some vendors like the one in Madison, Wisconsin, to the 10-vendor markets in every Vermont town. I'd guess the average size to be 30 vendors.

And then there are the legions of wannabes — people who are sick of their careers, their bosses, their lives, and who dream of independence and making a living from the land. There are people close to retirement who know they don't have enough saved to live comfortably. There are mothers who want to be home for their children, but who need to contribute to the family income. There are people who grew up on farms, and who miss farming, but who would never have the money necessary to get into conventional farming.

I talk to people every week who desperately want to get out of what they're doing and into work that makes them feel fulfilled. Two people in particular stand out in my mind. The first is a surgical nurse who got three needle sticks in the past year, and now has to be tested for AIDS every three months for the next five years. She started growing flowers. The second is a legal secretary whose boss was so verbally abusive to her that she would come home every night and go to her garden to cry. One evening, she started picking produce and flowers and took them to the farmers market the next morning. She made \$60, and that was all the encouragement she needed. She quit her job that very Monday.

The original market gardening wannabe was Thomas Jefferson, who wrote to a friend in 1811, "I have often thought that if heaven had given me choice of my position and calling, it would have been on a rich spot of earth, well watered, with a market nearby, for the productions of the garden."

All through the 19th century, market gardening was an esteemed occupation. Five- to 10-acre produce farms were sprinkled in and around every city, and market gardening was a fairly typical way for an immigrant to pull himself up by his bootstraps and achieve financial success in this big new country.

One such immigrant was Peter Henderson, who became one of the most famous horticulturists of his time. He was a market gardener, commercial florist, and seed merchant. In 1867, he published his book "Gardening for Profit" which is even today considered a valuable guide to the production of cold-frame vegetables. Unfortunately, by the turn of the century, market gardeners began to fall upon hard times as the railroads started bringing in out-of-season produce, first from the southern states and eventually from across the United States. By the middle of the 20th century, the notions of "local" and "seasonal" had become endangered. And

so it remained until 15 or 20 years ago, when a few back-to-the-landers started market gardening, and farmers markets started cropping up in towns throughout the country, and consumers began to flock to them in search of the flavors they remembered from their parents' and grandparents' gardens. This became the market gardening renaissance that is fully upon us now. At last count, \$1.1 billion worth of produce was sold at farmers markets in this country.

Now, the big question in everyone's mind is "Great, but can you really make a living at it?"

The short answer is that plenty of people do. Let me summarize what I consider the common ingredients of successful market gardens:

1. Diverse crops spanning the entire season. We're not talking about the guy with 50 acres of cantaloupes who sells them all at once to a wholesaler or grocery chain; we're talking about people with 40 or 50 vegetable crops who are producing and marketing from the first day till the last day of the frost-free season, and often both earlier and later than that with the help of season extension. I can't emphasize the importance of this diversity enough. Good market gardeners succession plant virtually all season long, and they plant so many different things that only the most prolonged spell of bad weather will seriously cut into income. We have managed to keep our gross revenue steady for the past three years, despite widely varying weather conditions; we've had flowers go from 20 percent of our revenue to 50 percent of our revenue one year. We might lose our early lettuce to a hail storm, but recover and then come with a big fall crop of lettuce.

2. Hospitable growing conditions. The most successful market gardeners I know are growing in areas that already grow a lot of fresh produce — California, New Jersey, New York State, Michigan, Minnesota. In eastern Nebraska and Kansas, there is also a good history of horticultural production, even though it's been decades since fruits and vegetables have been grown commercially, and we have more problems than growers farther east or on the West Coast. However, as you go west into Kansas and Nebraska, into the Dakotas, parts of the Northwest and parts of the Southwest, conditions are not hospitable to vegetable and fruit production. My husband grew up on a wheat farm in the Nebraska Panhandle, and he can't imagine trying to do there what he does here. There's too much wind, hail, heat and not enough rain. There are pockets of verdant farmland in all those places where it is possible to grow vegetables, but you can't do this just anywhere.

3. Selling at retail prices. The whole point of market gardening, that is, marketing as well as gardening, is to claim the full retail price for our products. On such a small production scale, there is no other way to even come close to making a living. Farmers need to be tough about this. They need to work together to dispel the notion that local means cheaper. Farmers markets should not be a place where consumers can get prices lower than the supermarket. They should be a place where people shop for freshness and high quality, and to support local agriculture. One farmer friend jokes that you've got to have a lot of gall to get the prices you need. I say you've got to have a lot of self respect. Market gardeners are providing a valuable service to their

communities, and they shouldn't be ashamed to charge full price for their product. I know one fellow who sets his prices high and whenever anyone complains, he gently answers, "This is what I need to get if I'm going to make my living farming." Suddenly, people aren't comparing his lettuce with the lettuce at the Price Chopper. They're seeing him as a person with a family, members of their community, who do something they appreciate. Which brings me to...

4. Educating the consumer. One of the biggest jobs for the market gardener is being able to articulate a reason consumers should buy their produce that goes beyond price. Surveys tell us that there are a lot of eco-shoppers out there, and that every eco-shopper has a different issue that is dear to their heart. The savvy market gardener offers many reasons for buying local including freshness, organic production, farmland preservation, and phytochemicals in fresh produce that fight cancer. Market gardeners also have to teach people how to enjoy the produce they buy, by handing out recipe sheets or organizing cooking demonstrations at the farmers market. Community Supported Agriculture farmers need to inspire a feeling of being part of something larger than themselves — one farmer compares membership in a CSA to belonging to a church — both are places where people with similar interests and ideas can get together and support one another.

5. Organic production. Consumers willing to spend more for food tend to be concerned about food safety, and they believe that organic food is safer. Therefore, the organic producer or someone who can apply some other type of eco-label to his or her produce will have an edge with that type of consumer. It's not necessarily that you can get a premium for organic produce — those days are fading fast, in view of the industrialization of the organic produce industry. But if the consumer has a choice between two good-looking tomatoes, at nearly the same price, and one is certified organic, the organic one will win.

6. Proximity to a city. About five percent of the produce sold in this country goes directly from the farmer to the consumer. That leaves a lot of opportunity for growth. Cities are where the people are, so that's where market gardeners have the best chances of increasing their market share. These don't need to be big cities, although the marketing opportunities are certainly larger in places where there are upscale restaurants and florists, and a large number of well-educated consumers. Many smaller cities have thriving farmers markets and on-farm stands. And many growers in rural areas just bite the bullet and drive a couple of hours to get to the bigger markets. It's worth it to them.

7. Community Supported Agriculture. Some of the most successful farmers are CSA farmers. There is no uncertainty to their market. In a true CSA, the farmer gets the money whether the crops succeed or not. Even in a subscription, or pay as you go CSA, everything is sold before it leaves the farm. Planning production is much simpler when you have a target for each crop. Harvest labor isn't wasted picking for farmers market, only to have it go to waste when a thunderstorm moves through. Price fluctuations on the wholesale market have no effect on the farmer's income.

I know I paint a lovely picture of market gardening and I want you to know that it really is a wonderful job, challenging and fulfilling. But it is not for everybody. Most people — including many farmers — wouldn't or couldn't do the physical work required on such a labor intensive farm. Days are long and bodies are used hard. Stress can get high during the frenzy of peak season. And nobody's getting rich at it.

Whether they are making a decent living is a subjective issue. I've been to some places where the farmers lived in what some people would consider substandard houses but had brand-new packing sheds and the latest spaders and cultivators from Italy. I know many farmers who don't have health insurance. But then, I know people in other walks of life who live in run-down houses and drive \$40,000 cars. I have long ago learned that people have wildly varying ideas about how to spend their money, and I've learned that if a market gardener thinks they're making a living, that's good enough for me.

However, for the purposes of discussion, I do think that a good measure of this "livelihood" business is the average U.S. household income, which is now about \$43,000 per year. I think it's also extremely important that you bear in mind the fact that only 15 percent of the 2 million farm families left in this country make their living entirely from the farm. If we are going to consider market gardening as an alternative to conventional farming, let's make the comparison fair. Table 1 presents economic summaries for several real-life market gardens.

As a rule, I don't believe that market gardeners are making enough money for the amount of work, education and skill that they bring to bear on this business. But that's the fault of the food system in this country. I think prices are completely out of whack, and the prices for fresh produce are at least 25 percent too low. To me, having toiled for 10 years growing vegetables, it's incomprehensible that people will pay 89 cents for a bottle of pop at a convenience store but will turn their back on a \$2 head of lettuce that will make salads for a week. But that's another story.

Let me say one more thing about market gardening: It's a way to get into farming without a lot of capital. Kansas State University last year did a study showing that a farm family with two parents and three children would need \$35,000 to \$36,000 per year to meet family living needs. To earn that much — last year, before prices took a dive — the family would need at least 400 head of cattle and 1,500 acres of crop land. How much would it cost to start a farm like that? The land alone would be half a million dollars, much less the equipment needed to farm it. Tables 2 and 3 describe the capital costs and operating costs associated with a small market garden.

Table 1. Economic descriptions of selected market garden farms.

Farm	Size (A)	Description	Gross income	Expenses	Net income	Net/gross
A	3	Markets: Lawrence KS and Kansas City MO. Farmers: married couple, both work part-time on farm Income is 60% CSA, 20% florists, 20% restaurants.	\$30,000	\$14,000	\$16,000	.53
B	7	Markets: Minneapolis-St. Paul. Farmers: married couple, one full-time on farm, one part-time. Income 100% CSA.	\$73,000	\$33,000	\$40,000	.54
C	13	Markets: Minneapolis-St. Paul Farmers: married couple and unrelated partner Income 60% CSA, 40% restaurants and whole-food stores	\$214,000	\$142,308	\$71,692	.33
D	34	Markets: Amherst, MA Farmers: Two unrelated people, both full-time on farm Income 100% CSA	\$165,000	\$89,000 (includ. health insur., taxes, retirement)	\$76,254	.46
E	45	Markets: Washington, D.C. Farmers: Married couple, both full-time on farm Income 100% farmers markets	\$176,252	\$124,445	\$51,807	.29

Table 2. Capital costs for a 3-acre market garden.

Capital item	Cost
used tractor	\$2,500 to \$6,000
walk-behind tiller	\$2,500 to \$3,000
cooler	\$1,000 to \$5,000
small greenhouse (plus flats, etc)	\$1,000 to \$6,000
wheel hoe with attachments	\$350
garden cart	\$250
earthway seeder	\$100
hand tools (rakes, clippers, shovels, etc)	\$100
hoses and wands	\$100
Total	\$8,100 to \$20,000

Table 3. Income projection for a 3-acre organic market garden in the Midwest.

Gross revenue: \$30,000 to \$48,000 (\$10,000 to \$16,000 per acre)

Expenses: \$6,500

Labor: \$7,000 to \$14,000

Potential farmer income before taxes: \$16,500 to \$27,500

*Does not include depreciation or medical insurance, self-employment tax, or retirement.

Annual operating expenses for a 3-acre market garden

Item	Cost (\$)
seeds	1,000
greenhouse supplies	700
fuel	500
row covers, trellis	300
drip tape/sprinklers	500
cover crop seeds	150
compost or fertilizer	500
repairs	500
fuel	500
pest control	200
packaging	500
market display (table, umbrella, etc)	350
miscellaneous	800
Total	6,500

Labor costs (hired help, not including owners) estimated as \$7,000 for one person based on a 40-hour week, 26-week season, at \$6/hour plus employer's 7.5% taxes.

Further Information

Lynn Byczynski
PO Box 3747
Lawrence KS 66046
785-748-0605

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Hogs, Hoop Houses, and Holistic Management: A Diversified Crop/Livestock Farm

Tom Frantzen
New Hampton, Iowa

Tom Frantzen has farmed full-time since 1974 during which time farrow-to-finish hog production has been the central economic component of his farm. In the past four years, he has changed many of the practices used in raising pigs. Today, market hogs are produced in a fashion that is compatible with his personal values, meets the ecological needs of his land, and treats his livestock in a humane fashion. The 340-acre diversified family farm is a biological system centered on 60-plus stock cows, 100 brood sows, and cash grains. Key features of this system include a five-year crop rotation, new deep-bedded farrow-to-finish hoop facilities, and a pasture farrowing setting using agroforestry practices.

Tom is one of many Iowa farmers who are exploring alternatives to large-scale confinement hog production. The following article, written by Lisa Bauer and reprinted from the North Central Region SARE Field Notes No. 2, describes Tom's approach to raising hogs along with the approaches of two other Iowa farmers. Alternative hog production systems such as hoop houses, deep-bedded systems, and pastured hogs offer many benefits.

Years ago, pigs foraged in pastures, spending days digging dirt and nesting with family units. Farmers used animal husbandry skills to finish hogs to healthy market size. Today, most swine are raised in confinement buildings — in small pens with concrete slatted floors — operated primarily by corporations. According to the Center for Rural Affairs, between 1982 and 1996, the U.S. gained 10 percent more hogs, but lost 67 percent of its pork producers. In North Carolina hog numbers increased by 433 percent between those same years while hog producers declined by 77 percent. Hog production has shifted from operations with less than 1,000 head to those with 2,000 or more.

To many innovative producers and researchers, the change in the swine industry, coupled with depressed prices, is a challenge to raise pigs in a different manner — mixing the best of yesterday's hog production with high-tech management to maximize profit. Iowa State University (ISU) animal scientist Mark Honeyman has been investigating low-cost, management-intensive hog production systems, such as hoop structures, Swedish-style deep-bedded systems, outdoor hogs, and combinations of the three. Results of his and other research have the potential to put the individual pork producer back into a sustainable hog production system.

Hogs in Hoops

Iowa producer Steve Weis had misgivings about investing in a hog confinement building when he needed a new finishing facility. So he built three hoop shelters for less than the price of one confinement facility. “The biggest advantage of hoops is price. That jumps right out at you,” Weis said.

Originally developed in Canada, hoop shelters are arched metal frames covered with a UV-resistant, polyethylene tarp. Wood sidewalls are 4 to 6 feet high. When used to house swine, hoops have earthen floors — deep-bedded and cleaned after a group of pigs is marketed — except for a feeding and watering area on a concrete slab. Ends of the hoops are left open for natural ventilation and adjusted for winter weather. The building is typically 30 feet wide by 72 feet long with a maximum capacity of 180 to 200 hogs.

The popularity of these Quonset-shaped buildings is rising, with more than 1,000 hoop structures recently built in Iowa, and many others popping up in dry, windy climates. Weis purchased his hoop structure, easily assembled by his family members, for about \$11,000, or \$65 per head (compared with up to \$200 per head for confinement facilities). Overall production costs in hoop houses have been reduced by approximately \$4 per hog, according to the Appropriate Technology Transfer for Rural Areas (ATTRA). “Versatility is another major advantage,” Weis said. “You are not locked into raising hogs in this building. You can use it for machinery or hay storage, or other livestock.” Weis finishes hogs in his hoop buildings, but has plans for farrowing and growing pigs in a system where hogs stay in hoops from weaning through marketing.

Other advantages farmers have found with hoops include: lower pig stress, worker comfort, easily achieved all in/all out management, less odor, and healthier pigs. Weis added, “It looks like health will be much better in my hoops. And stress is obviously lower. The first thing hogs do when they get in that hoop is just run and chew on the bedding. You see the same need in confinement buildings, but they can’t run and have nothing to chew on but tails.”

Weis said that he worms his pigs, and parasites must be carefully monitored due to the dirt flooring in hoops. “The biggest challenge for me has been finding a source of bedding that’s plentiful and as cheap as possible,” said Weis, who received a 1996 SARE producer grant to investigate a hoop system. “You need material close to your farm, and it’s very important to get it baled.” Most producers report using nearly 200 pounds of bedding per pig marketed. Weis has used corn stalks, millet, soybean straw and even paper to bed his swine.

Deep bedding not only provides an attractive environment for hogs, but also a source of heat in the winter — bedding temperature in hoops is at least 80° F and air temperatures are 5° to 10° F warmer than outside temperatures. More labor may be needed to manage bedding, but Weis said his manure management takes no more time than in a confinement facility, even with a 2 to 3 foot bedding pack in the winter months. “You have a lot more alternatives with composted

bedding than with liquid manure. You can spread the compost, and the odor is not nearly as bad,” Weis said.

In feeding his hoop hogs, Weis found that his Average Daily Gain (ADG) is comparable to confinement production; however, feed efficiency (FE) of hoop-raised swine has been poorer. ISU reported up to 10 percent lower FE in cold seasons. But Weis said that back fat and yield of his hoop hogs were the same as confinement hogs with higher feed intake. “Hoop owners do things differently. There’s no right way to do it, and innovation is key,” Weis said. For example, he has placed laying hens around his hoop structure for fly control. Mark Honeyman, who received a 1995 SARE grant to investigate alternative hog production, added, “We’ve only known about hoops for five years, so studies are still being done. But I am fascinated with these tents that came out of Canada and blew apart our paradigm of confinement swine production.”

A System from Sweden

In an old, remodeled hog building, piglets chase each other through mounds of straw. Some opt for a nap in a soft nest while their mothers calmly sleep and feed in-between communally nursing their litters. This is the serene scene at an ISU farm demonstrating Swedish-style swine production. In the 1980s, Swedish farmers developed a deep-bedded swine nursing and weaning system to comply with restrictive animal welfare laws and a ban on subtherapeutic antibiotics. Called Västgötmodellen, for the Swedish area in which it was developed, this system relies on straw, pigs’ natural behavior, group housing and keen animal husbandry. Recently, Swedish techniques have been transported to the U.S.

Looking for an income-generating practice that would allow him to quit his off-farm job and help support three families, Nolan Jungclaus established a Swedish-style system on his Minnesota farm in 1995. With Honeyman and other researchers and farmers, he traveled to Sweden to look at the systems firsthand. He found that Swedish farmers fit the system to the animal rather than the animal to the system. In doing so, hog producers must have excellent stockmanship skills, an appreciation of pig behavior, attention to detail and a desire to work with pigs in a more natural environment.

The two versions of Västgötmodellen are Ljungström, farrowing in individual pens in a farrowing room and transferring sows and litters to a group nursery when pigs are 14 to 20 days old; and Thorstensson, farrowing in temporary wooden boxes in a group room with removal of boxes when pigs are seven to 10 days old. Nolan and Susan Jungclaus received a 1994 SARE producer grant to remodel an existing 36-by-60 foot machinery pole shed to accommodate four phases of Thorstensson swine production: breeding/gestation, farrowing, nursery, and growing. After their first year of production, the Jungclauses decided that their set-up would eventually be a profitable, environmentally safe, and family friendly way to raise hogs.

Gilts start litters in temporary, but roomy “nesting boxes,” which are removed after about one week, when sows and piglets are free to roam the large room together. In a typical Swedish system, sows should farrow within five days for optimum group lactation. At weaning, the piglets stay in the building and sows are moved. The Jungclaus hogs are blessed with ventilation from intake and exhaust fans, plenty of space (the equivalent of about 80 square feet per sow and litter), and quiet surroundings — where they can exhibit natural desires to nest and live in family units. This environment produces a happy, healthy pig, free of antibiotics, and provides the Jungclauses with a clean, healthy working environment. Nolan said the system allows him to farm with his children, who are often found romping with piglets.

With the Swedish system requiring about 2 tons of straw per sow per year, manure handling can be time-consuming. Bedding is cleaned out in 3-month intervals and can reach a depth of up to 4 feet. High straw to manure ratio is crucial to induce composting, which reduces disease problems, improves hygiene and puts the Jungclauses on good terms with neighbors who would rather not smell liquid manure. Pig mortality can be problem, but a watchful eye from the farmer and culling bad mothers can help alleviate the lay-ons. A “farmer’s eye” is also necessary in battling infection and disease without the use of antibiotics.

In general, the Swedish system requires more management, observation and planning than a conventional system, but labor averages only about 18 hours per sow per year. And repairs, cleaning, moving, medicating and assistance at farrowing is lower in the Swedish system. “It’s a higher management system than a confinement system,” Nolan said. “But I don’t think that’s bad.”

Pigs on Pasture

In 1937, Tom Frantzen’s father bought 80 acres and started pasture farrowing hogs. More than sixty years later, Frantzen, a northeastern Iowa farmer, continues a contemporary version of his dad’s system. Frantzen farrows smaller groups of more sows on strip crops. “Underground watering systems and electric fencing have really changed pasture farrowing in the past 50 years,” Frantzen said. “But farrowing hogs on pasture has always provided a healthier, cleaner place to work and raise pigs with limited labor. There’s no manure to haul, and it’s naturally disinfected.”

Frantzen, who has received several SARE producer grants, has 335 acres of diversified crops, a stock cow herd, and a farrow to finish hog operation, which provides the bulk of economic return in his integrated system. Pasture farrowing requires simple, portable housing (huts), a watering system, portable electric fencing and feeders. Structures are dispersed over several acres. Pigs and huts can be moved with a tractor, loader, hydraulic cart, or all-terrain vehicle. Investigations by ISU found that pasture farrowing provides lower initial and annual costs for capital improvements, lower energy costs, fewer manure handling/storage problems, slightly poorer weight gain and FE, added bedding costs, and minimally higher labor costs.

However, Frantzen's project proved that his pasture farrowing system is productive with less labor than ISU estimates. "One of the things I want to dispel is that pasture farrowing is labor intensive," he said. "There's no manure to haul. As we rotate sows, nature cleans up with less labor." ISU found that overall, fixed costs of outdoor pasture operations were 30 to 40 percent lower than confinement systems. Total costs were about 5 to 10 percent lower on pasture. Frantzen has estimated that it costs him only \$15 to produce a 40 pound pig. "You aren't going to see high production per pig per year when you're pasturing hogs, but profit per acre is very high," Frantzen said. "That's what we should be looking at anyway."

After rotating gestating sows on pasture, Frantzen stocks nearly 100 farrowing sows on about 14 acres. He farrows half his sows on strip crops and the other half in hoop house huts, finishing them all in hoops. "If you have 10 or 12 sows or more in a group, you get too much exposed soil. When going to a half dozen hogs you maintain ground cover," Frantzen said. "And it's a lot easier to manage a half dozen than a larger group."

A variety of farrowing huts are available; Frantzen uses a modified A-frame design. Primary considerations for huts include ability to moderate temperature extremes, keep pigs dry and draft free, and minimize pig crushing. Frantzen stresses that huts should be at least 50 square feet and not oblong to minimize lay-ons. Bedding in huts could include low-quality grass hay, whole or ground corn cobs, baled corn stalks, shredded paper, or straw.

Pasture-farrowed hogs can feed on row-crops or on pasture. Frantzen's rotation includes underseeding oats with clover then pasture farrowing there after combining the oats and baling the straw. He then plants corn the following year. In the fall, his sows and gilts graze corn and soybean stubble. Frantzen has been happy with pig health, and it has been documented that pasture farrowers have lower swine health expenses than producers using confinement systems. However, outdoor herds need a rigorous parasite control program.

Disadvantages of pastured pigs include adverse weather conditions and predators. However, when taking into account lack of handling manure, less odor problems, flexibility to expand or downsize, low overhead and production costs, healthier pigs, and outdoor working conditions, some producers may opt to turn their pigs out to pasture.

Do Something Different

"Alternative systems are pig friendly, people friendly, community friendly and environmentally friendly," said Honeyman, who has been exploring alternative hog production systems for a decade. He suggests that mid-sized family farmers and risk-averse, part-time or beginning farmers would fare well in alternative swine production. In his work, he has found that alternative systems can be cost competitive with hog confinement systems under the right circumstances. A hog producer must take a self-inventory and make sure he or she enjoys working with animals, has access to high-quality bedding, is located in a proper climate and

wants to integrate hogs into his or her farm system. Producers must also be willing to relinquish some control to nature.

In his travels through Europe, Honeyman found a different attitude towards farming systems. “Americans have a mindset of wanting to control nature, and we are capitalists. We often solve problems with capital, automation and technology while some Europeans tend to work with nature and solve problems with management,” Honeyman said.

Honeyman is beginning to gather more research data on alternative swine production, as he explores coupling various systems. Honeyman added, “Alternatives have lower fixed costs and higher variable costs, but the latter are usually things that farmers can raise; most producers are short on capital. If we want an agriculture that is family-based, entrepreneurial, and moderate-sized, we have to have it structured to be flexible with less permanence and investment.”

Further Information

Tom Frantzen
1155 Jasper Ave
New Hampton IA 50659
phone: 515-364-6426

NCR SARE: Full project reports. 13A Activities Building, University of Nebraska, Lincoln 68583-0840, 402-472-7081, sare001@unlvm.unl.edu, www.sare.org/ncrsare

Iowa State University: Mark Honeyman, 20 Curtiss Hall, ISU, Ames, IA 50011, 515-294-3849, honeyman@iastate.edu

ATTRA (Appropriate Technology Transfer for Rural Areas): PO Box 3657, Fayetteville, AR 72702, 800-346-9140, askattra@ncatfiv.uark.edu

Center for Rural Affairs: 101 S. Tallman St., PO Box 406, Walthill, NE 68067, 402-846-5428, info@cfra.org

Sustainable Farming Connection Website: sunsite.unc.edu/farming-connection/
Go to “Livestock”

Land Stewardship Project: 2200 4th St., White Bear Lake, MN 55110, 612-653-0618

Organic Valley/CROPP Cooperative: Pork marketing group. 507 W. Main St., PO Box 159, La Farge, WI 54639, 608-625-2602.

Practical Farmers of Iowa, 2035 190th Street, Boone, Iowa 50036-7423, Phone: 515/432-1923, Fax: 515/294-9985, e-mail: dnexner@iastate.edu (Rick Exner)

Trees and Herbs: A Multi-Storied Agricultural System for Southeastern Iowa

Tom Wahl and Kathy Dice
Red Fern Farm

Tom Wahl and Kathy Dice are developing an integrated agroforestry system on their 55-acre Red Fern Farm in Wapello, IA. Comprehensive Integrated Agroforestry combines several agroforestry practices into an integrated, sustainable agricultural system. A mosaic of fruit/nut trees and shrubs are planted, one species to each 1/10th acre block. High value herbaceous perennials such as ginseng, goldenseal, and Echinacea are interplanted into the existing vegetation between the trees. Most of the trees are managed for both timber production and fruit/nut crop. Soil is not left exposed to erosion. Fertilization comes from a combination of animal manure and wood ashes. The high biodiversity, with up to 10 species of trees and shrubs per acre, prevents serious outbreaks of pests and diseases. Some of the advantages of this system compared to conventional agriculture are:

- *No need for expensive, complex equipment*
- *No or low use of chemical pesticides and fertilizers*
- *Very low consumption of fossil fuels*
- *Negligible soil erosion (< 0.02 tons per acre)*
- *High biodiversity and excellent habitat for wild plants and animals*
- *Well suited for marginal land*
- *High profit potential for small acreages (up to \$20,000 per acre per year)*

Comprehensive Integrated Agroforestry

Comprehensive Integrated Agroforestry is a highly flexible, intensively managed system of sustainable agriculture. The system combines several different agroforestry practices including forest farming, alley cropping, riparian buffer strips, shelterbelts, silvopasture, and a few others which have not been named or even considered by the world of academia.

The system uses a mosaic of fruit/nut bearing trees and shrubs planted in 1/10th acre blocks, one species to a block. Adjacent blocks contain different and preferably unrelated species.

The species blocks contain a tree population sufficient to supply the cross pollenization required for fruit and nut set, and each block is large enough to manage as a unit. At the same time the blocks are small enough to allow the planting of up to ten different species of trees per acre. This high biodiversity prevents the pest and disease problems which would have been invited by a larger monoculture.

Species blocks consist of one-hundred foot long lengths of a pair of rows spaced 20 feet apart. Tree spacing within rows is dependent on the species, and ranges from five to twenty feet. As the trees grow larger, they will be thinned to maintain high fruit/nut production. Most of the tree species will be pruned to a clear trunk up to a height of eight to twelve feet above ground to allow for production of high quality timber for lumber, veneer, or fuel.

Between and underneath the trees high value medicinal herbaceous perennials such as ginseng, goldenseal, and *Echinacea* are interplanted into the existing vegetation. The herbaceous ground cover protects the soil from erosion while the trees provide the shade required by the ginseng and goldenseal. The *Echinacea* is not dependant on shade and is planted between tree rows.

During the early life of the planting, vegetation is controlled by mulching immediately around each tree, and by mowing two to three times per year between trees. Once trees become large enough to withstand browsing, livestock grazing may be used. The ground cover may provide forage while the livestock crop the vegetation low enough to make nut harvesting easier.

In his classic book Tree Crops, J. Russel Smith describes what he called two story agriculture (now called "alley cropping") in which crops were planted between rows of nut bearing trees. Comprehensive Integrated Agroforestry takes this idea a few steps further, to what I call "four story agriculture". Intensive management is applied and crops are harvested at four levels: medicinal roots from underground, livestock forage and/or medicinal plants at ground level, wood from the tree trunks up to about twelve feet, and at the fourth level the fruit, nuts, and leaves are produced.

The species blocks are grouped together in units of one to four acres on fairly level ridgetops between drainages. The steep slopes of the drainages are heavily wooded with native forest, and serve multiple purposes, including shelterbelts for protection of the tree plantings, riparian buffer strips, and travel corridors for wildlife.

The agroforestry planting itself is excellent habitat for wild plants and animals, including a wide variety of woodland and savanna wildflowers, and wildlife ranging from red bats and treefrogs to deer, turkeys, and coyotes.

The exact combination of species used in the CIA system must be matched to the specific site, and no two will be exactly alike. The species I used on my farm in Southeast Iowa include:

Black Walnut (*Juglans nigra*) - Named cultivars of black walnut were used, and whenever possible, were grafted onto saplings which already existed on the site. The cultivars tend to produce annual heavy crops of high quality nuts, i.e. large, thin shelled nuts with a percent kernel two to four times higher than ordinary walnuts, and which crack out kernels in quarters or halves. In well managed orchards, the cultivars average about one thousand pounds per acre. A few individuals may be capable of bearing up to five thousand pounds per acre. Black walnuts may

wholesale for 10¢ - 25¢ per pound. Kernels retail for \$8 per pound or more. A well managed black walnut log harvested at fifty years old may be worth more than all the nuts harvested in the interim.

Chinese Chestnuts (*Castanea mollissima*) - This is the blight resistant relative of the American chestnut. Chestnuts may begin bearing as early as three years after planting. At maturity, they may produce up to two to four thousand pounds per acre, and wholesale for \$1 - \$3 per pound. Chestnuts are in very high demand worldwide and in the United States.

Hybrid Hazels (*Corylus americana x avellana*) - This strain was originally bred by Carl Wescke and developed by Philip Rutter. These shrubs tend to bear very heavy crops of medium sized, thin shelled nuts. Philip Rutter had yields reaching five thousand pounds per acre in 1996, and production is still increasing. Hazelnuts wholesale for 40¢ to \$1.00 per pound.

Pecans (*Carya illinoensis*) - These are northern pecan varieties, smaller and better tasting than southern pecans, and capable of ripening nuts in a shorter growing season. I have no data on northern pecan productivity, but I believe it is rather low.

Shellbark and Shagbark Hickories (*Carya laciniosa* and *Carya ovata*) - As with the black walnuts, grafted varieties with larger, thinner-shelled, better cracking nuts were topworked onto existing saplings whenever possible. These hickories bear even less than pecans, but many people believe they are the best tasting nuts in the world.

Heartnuts (*Juglans ailantifolia* var. *cordiformis*) - The heartnut is a sport of the Japanese walnut producing a flattened, valentine heart-shaped nut with a fine, delicate flavor. The kernel cracks out easily whole or in halves. The tree is very fast growing and heavy bearing. Trees are reported to bear one hundred pounds by the age of seven or eight years. Heartnuts are eagerly purchased by consumers even at \$3 per pound. Hardiness and disease problems limit the viable growing regions for heartnut.

American Persimmon (*Diospiros virginiana*) - Most American persimmons are small and seedy, but the grafted varieties I used bear larger and higher quality fruit. The scientific name for persimmon means "food for the gods." Ripe persimmons are among the sweetest fruits in the world. There are a few companies which buy persimmon fruit and market persimmon pulp to gourmet restaurants.

Pawpaw (*Asimina triloba*) - For some reason, this native fruit is not well known, even in areas where it is plentiful. This small tree produces a green-skinned fruit about the size and shape of a small potato. It tastes like a cross between banana and canteloupe, hence the nickname "prairie banana". The few growers of this fruit report demand always exceeds supply. A market for pawpaw fruit in the near future may include the pharmaceutical industry. A researcher recently discovered a powerful anticarcinogenic chemical which is concentrated in the unripe fruit.

Nut Pines (*Pinus koraiensis* and *Pinus siberica*) - These pines are closely related to the North American white pines, but they produce a large edible nut similar to the piñon pine of the southwestern U.S.. The delicately flavored pine nuts are considered gourmet food and retail for \$15 per pound or more.

Ginkgo (*Ginkgo biloba*) - The Ginkgo tree is slow to come into bearing (20 years or more) but makes up for it by producing two crops at the same time. The fruit kind of resembles a wild plum but has a foul odor. Inside the fruit is a one inch long nut which is highly valued in oriental communities. Well cleaned nuts may sell for three or four dollars per pound. The leaves are another potentially lucrative crop from the ginkgo tree. Demand for ginkgo extract is increasing rapidly worldwide, and dried leaf will wholesale for over \$5.00 per pound.

Herbaceous Perennials:

Ginseng (*Panax quinquefolia*) - This is one of the most highly valued medicinal plants in the world. In the fall of 1996 local collectors received \$550 per pound for wild ginseng root (dry weight). The price for wild roots has since dropped to about \$200 per pound due to the Asian financial crisis, but it is still a potentially lucrative crop. Ginseng requires about 70% shade, such as that produced by forest trees. Ginseng plantings may produce anywhere from three hundred to three thousand pounds per acre of marketable root in three to ten years, depending on the growing method used. The value per pound of the root may range from about \$50 to about \$200, again depending on the growing method.

Goldenseal (*Hydrastis canadensis*) - This is another forest medicinal plant requiring the same shade and soil conditions as ginseng. They are often found growing together in the wild. Goldenseal may produce anywhere from five hundred to two thousand pounds of marketable root per acre in three to five years, depending on intensity of cultivation. The value of the root is between \$20 to \$30 per pound regardless of the method used to grow it. The tops of the plant are worth \$8 - \$10 per pound, and may account for one third of the value of the crop.

Purple Coneflower (*Echinacea purpurea*) - A very adaptable medicinal plant. It may grow under forest shade or in full sun, but thrives best in partial shade. This plant is ideal for ally cropping between rows of trees. This plant grows much faster than ginseng and goldenseal, and may mature in two to three years. The yield of dry root may be one thousand pounds per acre or more, with a value of around \$24 per pound.

Some other plants which may be incorporated into the system in the future are: Kiwis (*Actinidia* sp.), Maypop Passionflower (*Passiflora incarnata*), Grapes (*Vitis* sp.), Medlar (*Mespilus germanica*), St. Johnswort (*Hypericum pyramidatum*).

Some of the advantages this agroforestry system has over conventional agriculture include:

- Negligible soil erosion, less than 0.02 tons per acre, compared to eleven tons per acre for nearby corn and soybean fields.
- Increased water infiltration and reduced runoff due to well maintained soil structure.
- Low or no need for chemical fertilizer and pesticide inputs.
- No need for expensive, high tech. equipment.
- Very low fossil fuel consumption compared to conventional row crop production.
- Energy balance, i.e. the system will "produce" more energy than it consumes in inputs, compared to conventional corn production which consumes 12 - 20 calories of energy for every calorie produced.
- More efficient use of solar energy. The perennial plants in this system will leaf out and begin converting solar energy to useful plant material at least six weeks earlier in the spring as compared to corn and soybeans. The agroforestry system will continue converting solar energy for another four to six weeks in the fall after the corn and soybean plants have died.
- Carbon sink, i.e. the woody perennials in the system take carbon dioxide (the most important "greenhouse gas") out of the atmosphere and put it into long term storage.
- High biodiversity, with up to ten species of trees per acre as well as hundreds of species of wild plants and animals will prevent the build up of serious pest and disease populations.
- Excellent habitat for wild plants and animals is found year round in the agroforestry system.
- The system is relatively stable and durable. Once established, the system could maintain and regulate itself for many years without annual plowing, planting, fertilizing, cultivation, or any other human interference.
- The system has high profit potential from a small area of land (more than \$20,000 per acre per year at maturity), making possible more, smaller, yet more prosperous farms on a given area of land.

The Comprehensive Integrated Agroforestry system does have some serious disadvantages:

- Establishing the system is very labor intensive and time consuming.
- It may take several years investment in labor and capital before the first returns are seen.
- The break-even point may not be reached for seven to ten years.
- The mature level of production may not be achieved for as long as twenty years.
- Markets for some of the products are not as well established. You can't just take a load of chestnuts down to the local elevator and sell them.
- The biggest problem seems to be overcoming the paradigm of agriculture in most peoples minds in which large monocultures of annuals must be planted in the spring and harvested that fall.

My Comprehensive Integrated Agroforestry project is still in the early stages of establishment. It will take years to develop and mature. It will take even more years to prove it is a viable alternative to conventional row crop agriculture. Some of the disadvantages of the system will prevent it from ever being accepted by some people. In spite of all this, I am confident Comprehensive Integrated Agroforestry will prove to be at least an important part of the solution to the problems with conventional agriculture.

Appendix Financial Projections

The following are first year cost per acre projections for establishing a mixture of fruit and nut trees. They assume no brush/tree clearing or groundcover seeding costs. They also assume each tree will be protected with a 3-foot tall open mesh tree shelter and bamboo stake, and with a woven polypropylene landscape cloth mat 3' x 3'. Each mat would be staked down at all four corners with 6" ground staples.

In the case of direct seeding, two seeds would be planted at each site and if both germinated only the best of the two would be retained. Each seeding site would be protected from rodents with a 1' x 1' square piece of standard poultry netting ("chicken wire") staked down at all four corners with 6" ground staples. This is in addition to mats and tree shelters.

Tree spacing would be 10' x 20' for seed or seedling (except for hazels) and 20' x 20' for grafted trees. Hazels are spaced 6' apart and rows alternating 10' and 15' apart.

Annual maintenance costs for all but hazels and grafted trees are estimated at \$100/acre/year for tree and material replacement, fuel, Tree Guard® deer repellant, and miscellaneous, plus 6 hours labor. Costs for grafted trees and hazels are estimated at \$200 per acre per year. Labor would be 6 hours per acre for grafted trees and 12 hours for hazels. After 5 years, maintenance cost would be expected to be lower.

Costs per acre

Direct Seed (\$100 + 6 hours labor yearly maintenance)

400 seeds @ 10¢ each	\$40
200 nets and staples @ 35¢ per unit	\$70
200 poly mats & staples @ \$1.25 each	\$250
200 stakes & shelters @ 30¢ each	<u>\$60</u>
20 hours labor	Total
	\$420/acre + 20 hours labor

Bare-root Seedlings (\$100 + 6 hours labor yearly maintenance)

200 seedlings @ \$2.00 each -	\$400
200 poly mats & staples @ \$1.25	\$250
200 stakes & shelters @ 30¢ each	<u>\$60</u>
20 hours labor	Total
	\$710/acre + 20 hours labor

Container Seedlings (\$100 + 6 hours labor yearly maintenance)

200 seedlings @ \$3.00 each	\$600
200 poly mats & staples @ \$1.25	\$250
200 stakes & shelters @ 30¢ each	<u>\$60</u>
20 hours labor	Total
	\$910 + 20 hours labor

Grafted Trees (100 trees/acre), (\$200 + 6 hours labor yearly maintenance)

100 trees @ \$20.00 each	\$2,000
100 poly mats & staples @ \$1.25 each	\$125
100 stakes & shelters @ 30¢ each	<u>\$30</u>
20 hours labor	Total
	\$2,155 + 20 hours labor

Hazels (Badgersett) (\$200 + 12 hours labor yearly maintenance)

600 seedlings @ \$4.00 each	\$2,400
600 mats & staples @ \$1.25 each	\$750
600 stakes & shelters (18") @ 15¢ each	<u>\$90</u>
60 hours labor	Total
	\$3,240 + 60 hours labor

Income Projections at Maturity

Years to Maturity	Wholesale Price/Pound	Pounds/Acre/Year	Gross/Acre/Year
25 Black Walnut	nuts 10 - 20¢ /lb	1,000 lbs	\$100 - \$200
50	Lumber/veneer \$3.00/board ft.	100 bf	\$300
		Walnut Total	\$400 - \$500
15-20 Chestnut	nuts @ \$1.30/lb	3,000 lbs	\$3,900
6-7 Hazelnut	nuts @ 40¢ - \$1.00/lb	5,000 lbs	\$2,000-\$5,000
8 - 10 Heartnuts	nuts @ \$3.00/lb	3,000 lbs	\$9,000
15 - 20 Pawpaws	fruit @ \$1.00/lb	2,500 lbs	\$2,500
15 - 20 Persimmon	fruit @ 1.00/lb	2,500 lbs	\$2,500
10 - 15 Ginseng (wild simulated)	\$500/lb	40 lbs	\$20,000
3 - 5 Goldenseal	roots @ \$25/lb	400 lbs	\$10,000

Further Information

Tom Wahl and Kathy Dice
Red Fern Farm
13882 I Ave.
Wapello IA 52653-9449
phone: 319-729-5905

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Nurseries

Badgersett Research Farm Box 141 Canton MN 55922	Hybrid hazels, hybrid chestnuts http://www.badgersett.com
Bear Creek Nursery Box 411 Northport WA 99157	Wide variety of low cost nut and fruit trees
Burnt Ridge Nursery 432 Burnt Ridge Road Onalaska WA 98570	Wide variety of low cost nut and fruit trees
Cascade Forest Nursery 22033 Filmore Road Cascade IA	Pecan seedlings from Iowa seed source
Red Fern Farm 13882 "T" Avenue Wapello IA 52653-9449	Container grown chestnut, pecan, persimmon, pawpaw.
Empire Chestnut Company 3276 Empire Road SW Carrollton OH 44615	Seedling chestnuts
John Gordon 1385 Campbell Blvd Amherst NY 14228-1404	Very wide variety of fruit and nut tree seed, seedlings, scionwood, grafted trees, and a very good book.
Nebraska Nut Growers Association 122 Mussehl Hall University of Nebraska Lincoln NE 68583-0716	Black walnut and pecan scionwood.
Nolin River Nut Tree Nursery 797 Port Wooden Road Upton KY 42784	Widest variety of grafted nut trees, but often must be ordered 1 to 2 years in advance.
Stevens Tree Farm 5214 N. M-88 Central Lake MI 49622	American and Chinese chestnuts, potted and bareroot. Also hybrid willow and poplar cuttings.
Buckhorn Ginseng 23863 Buckhorn Lane Richland Center WI 53581	Source of ginseng seed. Also buyers of ginseng, goldenseal, and other roots and herbs.

Integrating Quality of Life, Economic and Environmental Issues: An Agroecosystem Analysis of Amish Farming

Deborah Stinner, Richard Moore, Benjamin Stinner, Fred Hitzhusen
The Ohio State University.

Many Amish communities are thriving in the same market economy that is driving out so many other farm families. Deborah Stinner and several colleagues are conducting research to learn more about the basic principles that contribute to Amish sustainability and to use these findings to stimulate discussion in the larger society. Following are excerpts from the group's Final Report to the North Central Region Sustainable Agriculture Research and Education Program, March 23, 1999. Copies of the full report are available from North Central Region SARE, 13A Activities Building, University of Nebraska, Lincoln, NE 68583-0840.

Objectives

1. Determine quality of life and community values for case study Amish families.
2. Analyze the economic efficiency of Amish agriculture with particular emphasis on quantifying economic benefits of community.
3. Develop whole farm nutrient budgets for selected Amish farms in Ohio to evaluate nutrient cycling efficiency of Amish agriculture.
4. Facilitate discussion on how what we learn from the Amish can help other farm families balance quality of life, economic and environmental goals and become more sustainable.

Methods

The approach we used in this study is based on methods of agroecosystem assessment, which strongly incorporate a human ecology perspective and the influence of social factors (such as the values and culture of farmers and their society) on the structure and function of agroecosystems. Our results are based on intensive work with three case study Amish families and their farms in three different Amish church communities in Holmes County, OH.

Results

Two of the families were Old Order Amish and one was New Order. A 4- to 5-year rotation of hay, corn, corn silage (on 2 of the farms), small grains/hay was used on the 82-, 86-, and 120-acre farms with 7 to 27 dairy cows. Important quality of life values included: 1) integrity of families and church communities, 2) living a simple Christian life, with minimal materialism, 3) small scale family farming, 4) shared labor with neighbors, 5) love of creation, and 6) living and working in a pastoral landscape rich in biodiversity.

The Amish farms kept an average of 54% of their gross income as cash profit compared to 17% for 4 non-Amish dairy farms. In some years, the New Order Amish farm netted as much cash profit from 27 cows as a non-Amish dairy farm with 68 cows (not including labor for either). The Amish farms had very little hired labor costs compared to 13% on non-Amish dairy farms. Machinery costs on the Amish farms were 50% lower than non-Amish dairy farms. On the two Old Order Amish farms, having several income generating enterprises from a diversity of crops and livestock was important. On all three farms, shared labor within families and neighborhood work groups was a critical factor in sustainability in addition to being an important quality of life value. In studies of nutrient cycling efficiencies, ratios of nutrient inputs to outputs at the whole farm level averaged across the farms were: 2.4 for nitrogen, 2.3 for phosphorus, and 0.88 for potassium. The N ratios indicated a high level of nitrogen efficiency, derived primarily from N-fixation in legume hay crops. Two of the farms had corn yields in 1996 of 187 bu/ac and 178 bu/ac compared to a county average of 116 bu/ac.

Description of Farms

We obtained agreement with three Amish families belonging to three different church communities in Holmes County, Ohio to cooperate with us by providing information and allowing us to collect soil and plant samples from their farms. The following is a brief description of their farming operations. These families do not represent a random sampling for that is not our purpose in this work. Rather, these families were chosen for their commitment to sustainable agriculture and willingness to share their experience, knowledge and time with people outside their culture.

Farm 1. New Order Amish — 120 acres, 70 tillable, 15 pasture, 35 woods; milking machine, 50 Jersey cows, 20 hogs, 150 chickens, 6 draft horses; 5 year rotation — hay, corn, corn silage, oats/wheat, hay; management intensive grazing used in pastures, hay fields and on crop fields after harvest; Community Supported Agriculture garden managed by the wife. Farmer 1 (David Kline) is author of two books and numerous articles on nature and an extremely effective communicator of Amish values and philosophy to non-Amish people as well as a master farmer. He and his family host various groups, such as college classes and Amish Study workshop participants, on their farm each year. In addition, David often is an invited speaker for college seminar programs and conferences on issues related to sustainable agriculture.

Farm 2. Old Order — no milking machine; 86 acres, 62 tillable, 20 pasture, 4 woods; 4 year rotation — hay, corn, oats/barley, hay; rotational grazing used in pastures and fields; 7 Holstein cows, 7 draft horses, 15-20 hogs and 10 chickens are stable livestock, in addition the farmer runs at least one other major livestock operation depending on the market, baby calves in 1995, sheep in 1996 and 1997; in addition to the livestock enterprises, 5 acres of market vegetable production added to their already extremely diversified farm in 1996. This is a young family with three children.

Farm 3. Old Order — milking machine adopted in 1996; 82 acres, 70 tillable, 9 pasture, 3 woods; 10 - 17 Holstein cows, 8 hogs, 15 chickens, 8 draft horses; 5 year rotation: hay, corn, corn silage, oats/spelts, hay; rotational grazing on some pastures. The grandfather recently retired from farming and set up a woodworking shop on the farm. The farm was rented and managed by one of the sons and his young family with 5 children.

Amish Farming Practices

"...we farm the way we do because we believe in nurturing and supporting all our community— that includes people as well as land and wildlife" (Kline 1990). The farming practices used by today's Amish farm families have developed during 300 years and sustained the Amish as one of the most persistent and successful subcultures in North America (Stinner et al. 1989, 1992). Their farming systems generally are much more diversified than non-Amish farms, and they are "solar powered" by draft horses (Belgians and Percherons in Holmes County) rather than fossil fuel powered (although small amounts of fossil fuel are used). Animal manure is valued highly for building and maintaining soil fertility and was the main source of fertility on the three farms in our study (low levels of chemical fertilizers are used by most Amish farmers). Although a growing number of Amish families are shifting into market vegetable production in Holmes County, dairy and diversified livestock farms still dominate. Natural breeding, with male animals instead of artificial insemination, is the primary breeding method for dairy cows, hogs and horses. This helps to increase genetic diversity within livestock species. Holsteins are the dominant dairy animal, although a few Amish farmers, such as Farmer 1 in our study, prefer smaller breeds such as Jerseys (Guernseys are preferred but existing gene lines do not meet with Amish farmer approval). Horses and cows all have names such as Tom, Barney, Maggie, Tony, and Linda and this helps both to identify and create a close bond with individual animals.

In addition to crop and animal production, many Amish farm families, including ours, manage woodlots for hardwood lumber, wood stains, maple syrup, nuts, soil and fuel. All Amish families (even the growing number who are not farm based) have vegetable gardens, which the women typically manage. Meat for the family is raised from chickens, hogs and bull calves. On the mixed livestock and dairy farms, a four to five year rotation of: hay (a mixture of *Trifolium pratense*, *T. hybridu*, *Medicago sativa* and *Phleum pratense*) - hay - corn (*Zea mays*) - (corn silage) - oats (*Avena sativa*) - spelts (emmer wheat, *Triticum dicoccum*)/wheat (*Triticum ustivum*/barley (*Hordeum vulgare*) is used. In addition to crops, Amish livestock farms have

permanent meadows/pastures. As seen on all three of our farms, increasingly, some form of rotational grazing (Voisin 1960) is being used on pastures, hayfields and crop fields after harvest.

The diversity of crops with the rich sources of organic matter from legumes and manure create several ecological and economic benefits for Amish farm families that contribute to their farm's sustainability. Most insect and disease cycles are broken, therefore there are few expenses for insecticides or fungicides, and there are healthy communities of beneficial below- and above-ground organisms. Soil quality is good and fertility levels are sufficient for high levels of production with low purchased fertility costs. Our research indicates that the case study farms are operating on extremely efficient nutrient cycles for nitrogen. Finally, Amish farming practices create a diversity of ecological zones that promote a rich biodiversity on their farms and in their communities which is an important quality of life value.

Some Amish still grow heirloom varieties of open-pollinated field corn (usually raised for millers who grind it into corn meal for human use), but the majority of Amish farmers plant hybrid varieties of field and sweet corn. Interestingly, what we have found is that even though the seed corn is purchased, they prefer to buy from small family-owned seed corn companies such as Yoder's, Doeblers and Rupp instead of buying from the giant seed corporations. As a result, Amish farmers are helping to preserve genetic diversity of maize.

Farm Management Flexibility

Amish farm management is flexible owing to several principles and values: 1) Agricultural tasks are seasonally arranged to use household labor evenly throughout year; 2) Labor is exchanged and age and gender division of labor and the authority to maintain it is clear; 3) Pooling (sharing) resources; 4) Maintaining rotations in small plots, and 5) High level of information flow.

Local Knowledge

The elderly hold a cache of knowledge concerning past experience that comes in handy when unusual weather or pest cycles present themselves. For example, in the spring of 1996 steady rains prevented timely planting for most farmers but the elderly quickly compared it to the spring rains of 1947. Their advice was critical in helping farmers to take advantage of their many small fields, which provided opportunities for the draft horses to plow fields that had drained. Plowing techniques were modified to enable plowing in wetter conditions and muddy or poorly drained spots were temporarily skipped. This contrasted with the conventional cornbelt farmers who were not able to plant until the end of June — a full month and a half after normal scheduled planting

Biodiversity

Our study concurs with Stinner et al. (1997) that increased biodiversity on farms has other positive impacts ecologically, economically, and socially on their quality of life. Nature's "free services" (Odum 1997) are reaped in many forms ranging from "free" fertilizer from the manure of cows and horses to the "free" pest removal by the multitude of birds constantly flying overhead. For the families in our study, living and working close to the land surrounded by a diverse array of their God's creations is a very important part of their quality of life, making life more joyful. Their workplace and homeplace is one and the same which seems to cultivate a deep connection to their place on earth and the flora and fauna that share it with them. Their small-scale animal powered farming practices create diverse habitats to maintain rich biodiversity on their farms and communities, which sustains not only their spirits but also their economic and ecological viability.

By choosing to live "simple lives" with low levels of fossil-fuel based technologies, they interact in complex ways with the natural environment and biodiversity through managing their ecosystem on a daily basis. Their slower pace of life and non-industrial technology seem to offer them opportunities to observe and learn from nature if they are so inclined. "We often joke that where tractors can plow a six-acre field in two hours, I figure two days — but my time includes listening to vesper sparrows and meadowlarks and watching clouds scud across the sky" (Kline 1997). Since the Amish choose not to have radio and television, they naturally watch the signs of nature — the song of the cardinal and robin, the leaves on the maples, the wind and the clouds.

Economic Analyses

Economic Analyses of Amish Farms—Cash Basis. Averages of the three Amish farms compared to four non-Amish dairy farms, 1995-1996.

	Farm 1	Farm 2	Farm 3	Amish average	non-Amish average
Gross income	\$53,428	\$42,554	\$32,978	\$42,987	\$336,025
Total cash expenses	\$22,460	\$17,614	\$17,679	\$19,251	\$279,084
Net cash profit	\$30,969	\$24,940	\$15,299	\$23,736	\$56,941
Number of acres	105	86	82	91	266
Net cash profit/acre	\$295	\$290	\$187	\$257	\$214
% of gross income kept as profit	58.0	58.5	46.3	54.3	16.9

Applicability of Results to Non-Amish Farmers

If many farmers adopted the farming practices used by the Amish farmers we are collaborating with, there would no doubt be major environmental, economic and quality of life impacts. However, the intent of our work is not to promote Amish farming practices for non-Amish farmers. Rather, it is to illustrate that there are small scale and family/community based alternatives that really do work and in so doing to encourage people to stop and think about their own lives and values with respect to sustainability issues. Our results to date indicate that there are some real economic benefits to low overhead horse-based agriculture within a community context, especially when combined with reduced cost of living needs. Furthermore, our nutrient budget work suggests that these Amish farms may be even more efficient at cycling nitrogen than even organic and management-intensive grazing farms and be profitable. Nor, do the Amish farmers in our study suffer yield reductions as a result of their low-chemical input and technological practices, indeed they did well above average. While these findings are still preliminary, they have some very interesting ramifications with respect to potential contributions of this work.

Specific recommendations we would make to farmers in terms of day-to-day operations as a result of our study thus far would include: keep your overhead down; be diversified in your enterprises; do not be a slave to technology, control it instead of it controlling you; learn to be happy living a simple life finding joy in working close to the earth and with your family and with your neighbors whenever possible; and bigger does not have to be better.

Further Information

Deborah Stinner
OARDC
Department of Entomology
1680 Madison Avenue
Wooster, OH 44691
phone: 330-263-3725
fax: 330-263-3686
email: stinner.2@osu.edu

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Adding Value: Pastured Poultry, Direct Marketing, Agritourism, and Other Strategies

Muriel Barrett
Sutherland, NE

"Farmers are the only entrepreneurs who buy retail, sell wholesale, and pay the freight both ways." Running a business like this just does not work. Muriel Barrett is exploring the concept of value-added, direct marketing farm products. Rather than being told by an outsider how much their products are worth, this type of system allows farmers to figure costs plus a reasonable profit, and set their own prices for the commodities they produce. In this win-win situation, consumers are provided with direct access to the freshest, highest quality products available.

Ms. Barrett pursues this strategy on Seifer Farms, a 4,000 acre farm/ranch located in the South Platte River Valley in west central Nebraska. The land base also includes two sections of Sandhills grassland. The farm is run by Irene Seifer and her children, Ray Seifer and Muriel Barrett and their families. The majority of the crop and pasture land is rented out to conventional corn/soybean/wheat farmers and a rancher that practices rotational grazing. On the remaining acreage, sustainable farming activities include raising and butchering 10,000 broilers each year and maintaining a 400-hen laying flock. There is also a sporting clays range and the farm offers family vacations, farm tours and hunting packages. Planned expansions include the addition of trout to the mix in the two miles of stream traversing the land, as well as honey production on sweet clover.

The following article was prepared by Richard Olson based on an interview and the seminar presentation of Ms. Barrett.

Introduction

At the time of his death in 1993, Muriel Barrett's father saw little future in farming. However, his five children all wanted the option of returning to the farm, so the family, led by Muriel, her mother and one of her brothers, is pursuing the goal of developing a farming system that could eventually support five families without off-farm work.

The total operation is a little more than 4000 acres, so it could be quite a big operation. Until 1997, they had their own cow-calf herd on the pasture, but the projected returns fell below the returns from leasing out the land. So, the family has chosen to rent out most of the pastureland and most of the farmland to conventional operators, so they can focus on intensively managing less than 100 acres. Their four thousand acres isn't enough to support five families

conventionally, and a corporate farm mentality isn't part of their lifestyle goals, so they are exploring alternatives to the bigger-is-better paradigm. The main components of the 100-acre system are pastured poultry (25 acres), a sporting clays range (15 acres), alfalfa hay (20 acres), and prairie hay (30 acres).

Pastured-Poultry

Pastured-poultry, processed on-farm and direct-marketed to local customers, is the keystone of the new system. Day-old chicks are purchased in lots of 2000 from a hatchery in Iowa, and after arriving by mail are placed in brooder houses for three weeks before moving onto pasture.

Two types of pasture pens used. One measures 12' x 12' x 2' and holds 80 to 85 birds per pen. Muriel and her family build them from 1" square tubing and chicken wire at an estimated cost of \$100 each, but they can be built from a variety of free or inexpensive materials. Other birds are kept in houses made from oil storage tanks cut in half (\$350 per house) and holding 250 birds each. The doors are open during the day and the chickens are free to range, but rarely go far. They are lured inside in the evenings with some feed, and shut in for the night.

The oil-tank houses are moved every four days, while the smaller pens are moved daily to provide fresh grass. Although the majority of the chickens' food consists of supplemental feed, they do eat a lot of grass. Muriel estimates that 1/4 of the chickens' diet consists of grass and insects. Although Seifer Farms uses no antibiotics or growth hormones with their chickens, they are not organic producers, and see no immediate advantage in becoming certified.

The pastures are primarily native grasses, which are grazed to 4 to 6 inches height by some of the neighbor's cattle before the chickens are moved onto it. In this rotational system, the chickens eat grain from the cow manure and break up the patties, while the cows eat any grain left behind by the chickens. The combination of managed grazing and chicken manure has improved pasture quality.

After five weeks on pasture, the birds are eight weeks old and ready for slaughter. Purchases of chicks are timed so that a new group of chickens is ready to move onto pasture soon after a group has been butchered. The eight-week growing period means that in a typical year the first of five 2000-chick batches might arrive April 7, and the final batch of broilers would be butchered October 20.

Slaughter and processing is done on-farm by family members and includes some custom butchering of chickens from other farms. The small size of chickens means that children can work alongside their parents. There is lots of time to talk, and the kids' contribution is real and valuable. The main equipment used includes a scalding vat, feather-picker (very important), cooling vat, and walk-in cooler. Guts, feathers, and other waste are composted in pits using sawdust from a local door company. Chicken heads are sold to falconers.

Labor

During the six months that chickens are being raised, labor requirements include basic chores (3 person-hours/day or 600 hours total), supplemental watering during summer (400 hours), butchering (1000 hours), and custom butchering (250 hours). The total of 2250 hours is roughly the equivalent of a full-time job for one person for a year. Delivery and marketing take additional time. The three operators have no off-farm work, and have lots of time to do other things. For example, Muriel's brother covers high school sports for the local newspaper.

Marketing

All chickens are sold before butchering because Seifer Farms doesn't have the facilities to carry-over frozen chicken. Most customers come to the farm to pick up their birds, giving them a chance to see how their birds are raised and processed. Some deliveries are made. The chickens are placed in a freezer on a trailer and taken to several towns in the area. Customers come to a park or other delivery point at a set time and pick up their order.

The primary advertising medium is word of mouth. The chicken is delicious and customers tell their friends. Other approaches include newspaper and radio ads, and displays at farm shows and county fairs, which include drawings for free chickens. The drawings provide new names for a mailing list and a brochure is mailed out.

Economics

Seifer Farm's estimated total capital investment in the poultry operation exclusive of land is \$38,000 including \$30,000 for building and equipping a processing facility. The main pieces of equipment — scalding tank, walk-in cooler, cooling tank, stainless steel tables — were purchased used.

In 1998, the processed chickens sold for \$1.35 to \$1.65 per pound with the higher prices covering the extra costs of transporting birds to more distant locations. On an annual basis, Muriel estimates that the net income (return to land and labor) from the sale of 10,000 broilers exceeds \$30,000 on a gross income of \$50,000. The main expenses are the chicks at \$.50 each, and feed (\$10,000 to \$12,000). Lesser costs include electricity, liability insurance, and advertising.

Other enterprises

Seifer Farms makes and sells alfalfa and native grass hay, and keeps laying hens and sells the eggs. Other enterprises make use of the existing characteristics of the farm so additional capital expenses are minimal. A sporting clays range fits into the landscape of the pasture. Hunting

parties pay to take advantage of the good wildlife habitat on the farm. And other people pay to be agri-tourists, gaining an appreciation for a rural lifestyle and the complexities of making a living by farming.

Future plans

Although the hay produced on the 100-acres is sold now, the Seifers eventually want to get back to feeding their grass to cattle as they used to do. They are considering raising Dexters or some other small breeds of cattle, which produce more beef per acre and are easier to handle for home butchering. The farm has 1.5 miles of warm-water stream, and they have found a variety of trout that will grow under these conditions. Aquaculture options include raising trout for on-farm processing and local sale as they do with poultry, or selling fishing rights.

They would like to eventually include some of the Platte River Valley land that they are leasing out as part of the family operation. For that to work, the income from family-enterprises on those sections would have to equal the rental income they currently generate. Among the options being considered are raising the feed for the chickens as well as organic grain for baked goods. Sweet clover and honey bees is another possibility.

Regardless of the specific strategies that are adopted, the basic goals remain the same: development of a family-farming system that can support five families in an environment conducive to family ties, personal enjoyment, and good stewardship of the land. Muriel and her family want to preserve a particular lifestyle for themselves and their children.

In a situation involving multiple families and generations, solid legal planning is essential, yet many farmers fail to plan. For Seifer Farms, ownership is based in two limited liability companies, one of which is the farming operator, while the other is the landholding entity. All the family members are involved in the landholding company, while only Muriel, her mother and brother are part of the operating entity. The landholding company is the estate planning tool for intergenerational transfer of the farm. Estate planning is critical for the longterm survival of a farm, particularly to avoid estate taxes that might force a sale.

Legal planning, marketing, adding value — these are foreign concepts to many farmers whose interests lie with growing crops or livestock. However, in a world of collapsing prices for basic commodities, corn and beans no longer suffice.

Further Information

Muriel Barrett
RR 1, Box 91A
Sutherland NE 69165
phone: 308-386-2591

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Integrating Management-Intensive Grazing with Crop Production

Tom Larson
St. Edward, Nebraska

Tom Larson farms a quarter-section in east-central Nebraska. The Larson farm integrates crops and livestock in a rotational way that tries to reap as much synergism as possible. The cropping system is a narrow strip type that employs corn, oat, turnip, and soybean. Minimal tillage is performed and about one-fourth of the crop acres are sowed to alfalfa for one year. The grazing system is a 34-cell paddock type with buried pipe and high tensile fencing. Grazing alfalfa and grazing maize are used for the stocker operation. The spring-seeded alfalfa of the crop system is grazed, not hayed.

Larson is past president of the Nebraska Sustainable Agriculture Society, and a frequent contributor to agricultural policy discussions at national and international levels. The following description of his farming system is derived in part from the article "Creating sustainable farming systems," which appeared in the Nebraska Sustainable Agriculture Society newsletter, number 53.

Tom Larson's 160-acre irrigated farm in St. Edward, Nebraska includes 60 acres of row crops and 90 acres of pasture and hay ground. The farm has been in the family for more than 60 years, and Tom has been farming for more than 20 years. He has developed a farming system that emphasizes interactions among crops and integration of crops and livestock. His basic strategy for increasing his profits is to reduce input costs while reclaiming some of the agricultural dollar that has been lost to the marketing sector. His current system represents an ongoing evolution that began as a conventional corn monoculture and is now a certified organic crop system.

Tom's main crops are corn, soybeans, oat/turnip, and alfalfa grown in rotation. Corn, soybeans and oat are planted in 152-inch wide strips (4x38") on ridges, using ridge-till equipment that Tom constructed from used machinery. After harvesting the oats in July, Tom plants turnips in the oat stubble. Gated-pipe is set across each of his fields so that he can water corn and beans. Approximately one-fourth of the cropland is planted each spring to alfalfa. The alfalfa is grazed later that year, and then the alfalfa ground is put into strip-crops the following year.

Livestock are an integral part of the system. Tom used to do cow-calf, but now raises stockers. He purchases heifers in March or April, and sells them seven months later. His pasture

land is divided into 34 paddocks using electric fencing. The heifers are rotated among paddocks in a manner that gives the grass in a paddock at least one month's rest before being grazed again.

After the soybeans and corn are harvested, the strips are grazed. In addition to the bean and corn stubble, the turnips provide excellent grazing. Turnip leaves are 16% to 18% protein, and the bulbs are about 9% protein. Both bulbs and tops are eaten. Tom estimates that one acre of turnips has a forage value equivalent to five acres of smooth brome. With the cost of turnip seed only \$1.50 per pound and a seeding rate of four pounds per acre, the economic benefits are clear.

Tom also grows some grazing maize. At tasseling, the maize has a whole-plant protein content of 16%. Costs are reduced because the cattle do the harvesting and spread their manure. Results of a recent study of grazing maize conducted by Terry Gompert, an extension educator in Knox County, Nebraska, are attached.

Organic certification and the selection of crops for the food, not feed, markets has resulted in premium prices. Last year Tom's certified crops brought the following prices: corn, \$4.50/bu; soybeans, \$15/bu; and oats, \$2.40/bu. The oats were sold to a Midwestern manufacturer for processing into cereal and cookies. The soybeans, a clear hilum variety, were shipped to Japan to be made into tofu. The corn is a food-grade hybrid used to make tortillas and other products. Tom does not market his cattle as organic.

Tom said that his yields for soybeans have remained constant compared to the conventional beans he used to grow. Corn yields, however, have slipped by a third. Planting alfalfa one year and then corn has helped him recoup some lost yields. Rotations have greatly reduced insect and weed problems, while greater management and spot tillage (such as repeatedly undercutting Canadian thistle) are important. The increased crop diversity has distributed the work load more evenly, reducing the spring planting and fall harvest time crunches associated with growing only one or two crops.

Changes to the farming system are driven by Tom's focus on the consumer. "A lot of farmers think the consumer is the local elevator," he said. "We need to look beyond that. Where does the grain go from there? We've gotten out of the feed business and into the food business." As an organic producer, Tom now identifies market demands and tries to meet them rather than trying to find a market for what he wants to produce. Tom feels that organic farming "fits the small- and medium-sized farmers, giving them an opportunity to make a decent living on a smaller-scale farm by emphasizing quality rather than volume." The bottom line should be dollars per acre rather than bushels per acre.

Where profit is concerned, one dollar saved through reduced inputs is worth the same as an additional dollar's worth of production. "Basically, do only what's necessary," advises Tom. Always look at what you are doing and ask yourself, 'Why am I disking? Why am I planting and harvesting in this manner?' Constantly ask the question, 'Is this absolutely necessary, and is there an easier, cheaper way of doing it?'"

Further Information

Tom Larson
RR1, Box 250
St. Edward NE 68660-9759
402-678-2456

Nebraska Sustainable Agriculture Society (Cris Carusi)
1200 N St., Suite 610
Lincoln NE 68508
phone: 402-471-0817
fax: 402-471-8690
email: crisc@navix.net

Organic Crop Improvement Association
1001 Y St, Suite B
Lincoln NE 68508-1172
402-477-2323
email: info@ocia.org

1996 Grazing Maize (Corn) Project
Terry Gompert, Extension Educator / Nebraska

Project Goal:

- * To produce and graze grazing maize on rented ground with hired equipment (Gompert owns no equipment or crop land).
- * To make a profit during a dismal part of the beef cycle.
- * To finish some beef on grazing maize.

Conclusion:

- * Grazing maize gives great flexibility and allows retained ownership.
- * Steers can be finished on grazing maize.
- * Steers can be finished at about one half the cost per gain as compared to placing them in a commercial feedlot.
- * An average profit of \$46 was produced per steer fed.
- * Estimated cost of gain by period:
 - winter: 52 cents per pound gain
 - pasture: 42 cents per pound gain
 - grazing maize: 32 cents per pound gain
 - comparable commercial feedlot charge: 60 to 65 cents per pound gain
- * Daily gains of 2.1 pound per day were achieved while grazing maize.
- * 454 pounds of beef was harvested per acre from grazing maize.

Project Description and Discussion:

Mostly Angus cross steers (104 head) were purchased and wintered on hay before they went to grass (compensatory gain was desired). The extremes in cattle type were selected off and sold as feeders off grass. The balance of the 49 steers were finished on grazing maize.

The 49 steers that were on grazing maize were marketed 83 and 105 days after starting on the maize. They were all sold for slaughter, although lean. They sold about \$4 under top slaughter cattle prices.

The amount of corn allowed to graze daily was about .2 of an acre (just about what they would eat in a day). The amount allowed was adjusted daily depending upon how much they ate the previous day. Grazing started shortly after tassel (July 24th) and concluded at full maturity (November 6th). While the plant was young, nearly all the plant was eaten leaving only a corn stock stump. As the plant matured less stock and leaf was consumed. All the ear (corn, cob and husks) were eaten at all stages. Once there was no green in the plant, consumption seemed to drop. At this stage, supplementation with 1 1/3 pounds of soybean meal daily seemed to improve consumption.

Steers were controlled by the use of electric fence and poly tape. It took nearly 30 minutes each day to chore during the grazing maize period. No digestive problems were observed. Two cases of coccidiosis and two cases of pink eye occurred. Cattle did escape 5 times during the grazing period because of leaving electricity off (goof).

(Financial on next page)

Profit/Loss Statement: Grazing Maize 96, Gompert

Expenses:

	<u>Total Costs</u>	<u>Per Animal Costs</u>
A. Steers (104 head purchased Oct through Dec 1995)		
Average weight was 500 # with an average costs of \$64 cwt		
Animal costs (100 hd)	\$32,000	
Death loss costs (4 hd)	\$ 1,280	
Sub-total	\$33,280	\$333
B. Winter (Oct 13, 1995 - March 31, 1996)		
102 T hay	\$ 4,386	
min & salt	\$ 97	
hired labor	\$ 600	
misc	\$ 40	
Interest	\$ 1,648	
vet	\$ 470	
Sub-total	\$ 7,241	\$ 72
C. Pasture (April 1 - Sept 11, 1996)		
pasture rent	\$ 5,156	
min and salt	\$ 97	
hired labor	\$ 600	
misc	\$ 37	
interest	\$ 910	
vet	\$ 170	
Sub-total	\$ 7,270	\$ 73
D. Grazing Maize (July 23 - Nov 6, 1996)		
22 acre grazing maize COP	\$ 2,598	
min and salt	\$ 97	
misc	\$ 268	
interest	\$ 570	
vet	\$ 470	
soybean meal (1,000 #)	\$ 163	
Sub-total	\$ 4,106	\$ 41
Total Expense	\$ 51,397	\$519

Income

5-11 (light steers) 25 hd 14,610 # (584 ea)		
@ \$60cwt net.....	\$ 8,766	\$351
9-11 (large frame steers on grass) 26 hd		
21,395#(823 ea); @\$62.67cwt net....	\$ 13,149	\$506
10-6 (heaviest to Excel) 7 hd 7945#(1135 ea)		
@\$115.50 G&Y; 56.57% yield; 1 cb;	\$ 4,500	\$643
10-6 (heaviest to live market) 7 hd		
7,700#(1,100 ea); @ \$67.10	\$ 5,088	\$727
11-6(balance of grazing maize steers) 35 head		
36,960# (1056 av); @\$68; net.....	\$ 24,997	\$714
Total Income	\$ 56,500	
NET Income:	\$ 4,603	\$ 46 (more)

1996 Grazing Maize (Corn) Project
Terry Gompert, Extension Educator / Nebraska

Page 3

Hybrids Used: BH 511 (105 day) Dk 527 (102 day)
 BH 611 (112 day) MW6106T (106 day)

Cost of Production (58 acres were planted):

* seed (20,000 plant population)	\$16.49	
* herbicide	\$18.85	
preplant: Dual II & 2,4-D		
post plant: Sencor & 2,4-D		
* fertilizer (53# N & 21#P)	\$26.00	
* machine hire	\$16.89	
* land rent	\$30.00	
* interest	\$ 4.87	
* misc	<u>\$ 5.00</u>	
Total Cost for Grazing Maize		\$118.10
* combine and truck (if harvested)	<u>\$22.00</u>	
Total Cost for Harvested Corn		\$140.10

Yield: 34 acres of the corn was harvested for grain. It yielded 60.4 bushels per acre. It was sold for \$2.54 per bushel at harvest. This net \$13.32 per acre above cost. The 22 acres that were grazed by the steers produced an estimated 454 pounds of beef per acre. Two acres were left for stock cows to graze. The stock cows will eat nearly all the material there.

The corn was planted on sandy dryland that has an FSA established yield of 52 bushels per acre.

Applications:

- * **GROWING STEERS**
- * **FINISHING STEERS**
- * **COW / CALF (WINTER FEED AS A STOCK PILED FEED)**
- * **FEED FOR SUMMER GRASS SLUMP**
- * **FLEXIBILITY FOR RETAINED OWNERSHIP**
- * **LIMITED YOUR OWN IMAGINATION**

For Questions Please Contact: Terry Gompert, Extension Educator
 Knox County Extension
 P.O. Box 45
 Center, Ne 68724
 402-288-4224

A Diversified Organic Crop/Livestock System

Dave Welsch
West Blue Farm, Milford, NE

West Blue Farm has been certified organic since 1993 by the Organic Crop Improvement Association. The Welsch's began farming together in 1980. Their farm consists of 328 acres divided into about 1/3 pasture and 2/3 cropland. The dryland crops which they raise are corn, beans, wheat, oats, alfalfa, sweetclover, and turnips. They use ridge-till, livestock manures and crop rotations in the cropping system. Livestock includes a cow/calf herd, ewe/lamb flock and broiler chickens. Much of their livestock is direct marketed to the consumer. They also incorporate management intensive grazing and computer records in their operation.

To help make up for fewer acres, Dave and Deb Welsch get premium prices for their grains by selling most of them on the organic market. After a few years of test plots, they've switched entirely to clear hilum soybeans. About half the corn they grow is white corn for food processing. Other crops in their nine-year rotation (see attached description) include alfalfa, milo, wheat and oats. The rotation is designed to address the primary problems of any organic operation—fertility and weed control.

The Welsches add value to their milo and some of their yellow corn by feeding it to their livestock — 16 ewes, 30 cows and their calves and lambs. The stock also graze 100 acres of pasture where the Welsches are intensifying their grazing management as their skills and resources allow. The pasture is divided into 25 to 35 paddocks, and the cows spend about two days in a paddock before moving to the next paddock.

Calving and lambing occurs in April or May. Calves are weaned in January or February, kept on pasture until about 850 pounds, then fattened for 90 days on the farm and direct marketed as fat beef.

But their primary livestock enterprise is broilers. The Welsches raise the chickens in batches of about 1,200 in open-front buildings once used for winter lambing. They attract customers through newspaper ads and by word of mouth. Chickens are taken to a local processor at age seven or eight weeks, cooled overnight and then picked up by the Welsches for delivery to a few central dropoff points. Dressed birds average four-pounds each, and sold in 1998 for \$5.25 per head. Since its inception with 400 birds, the broiler business has grown steadily and last year they sold more than 6,000 birds. "Customers like our chickens because they taste better and are bigger than supermarket birds," says Dave.

Each winter, Dave and Deb mail brochures to customers (see attached example) so they can pre-order broilers as well as lamb and beef. "Instead of selling feeders, we can finish right here on the farm. And the more finishing we do, the less grain we'll have to sell." When Dave and Deb started feeding chickens, they used commercial feed for the first several weeks. Now the chicks get commercial feed only for the first three or four days. After that, they get home-ground feed — a mix of milo, oats and soybean meal.

Further Information

David Welsch
West Blue Farm
Rt2, Box 63
Milford NE 68405-9401
phone: 402-826-5361

Nebraska Sustainable Agriculture Society (Cris Carusi)
1200 N St., Suite 610
Lincoln NE 68508
phone: 402-471-0817
fax: 402-471-8690
email: crisc@navix.net

Organic Crop Improvement Association
1001 Y St, Suite B
Lincoln NE 68508-1172
402-477-2323
email: info@ocia.org

DAVE AND DEB WELSCH FARM
OCTOBER, 1998

CROP ROTATION:

YEAR	CROP	COMMENTS
1	ALFALFA-1	3 YEARS TO TRY AND KEEP THE SUB-SOIL FROM DRYING OUT.
2	ALFALFA-2	
3	ALFALFA-3	
4	MILO OR CORN	GOOD DRYLAND CROP AND CAN BE PLANTED LATER AFTER WORKING UP ALFALFA. ALFALFA SUPPLIES NITROGEN FOR NEXT 2 YEARS.
5	BEANS	RIDGE-TILL INTO C/M STUBBLE. BEANS SUPPLY NITROGEN FOR CORN.
6	CORN	RIDGE-TILL.
7	BEANS/WHEAT	RIDGE-TILL INTO C/M STUBBLE. IF TIME, PLANT WHEAT AFTER BEAN HARVEST. DISK LIGHTLY ONCE AND DRILL. BEANS SUPPLY NITROGEN FOR WHEAT OR OATS.
8	WHTorOATS/WHT	PLANT OATS IN SPRING IF UNABLE TO PLANT WHEAT PREVIOUS FALL. APPLY MANURE OR COMPOST AFTER GRAIN HARVEST TO SUPPLY NITROGEN FOR WHEAT AND NUTRIENTS FOR OTHER CROPS.
9	WHT/ALFALFA	BACK TO ALFALFA AFTER WHEAT HARVEST.
ALFALFA = 3 YEARS = 33%		
CORN/MILO = 2 YEARS = 22%		
SOYBEANS = 2 YEARS = 22%		
WHEAT/OATS = 2 YEARS = 22%		

This is our 6th year of being certified organic by the Organic Crop Improvement Association (OCIA). We were close to meeting the standards several years ago and decided to complete the process. The hardest things to give up are often herbicides and nitrogen fertilizer. The rotation we have was planned to replace these two purchased inputs.

WEST BLUE FARM

Dave and Deb Welsch
Telephone 402-826-5361

Rt. 2 Box 63
Milford, NE 68405-9401

Dear Valued Customer,

We would like to thank you for buying your chicken, beef, and lamb from West Blue Farm. We greatly appreciate your business and we are looking forward to serving you again as we begin our ninth year of direct marketing. The enclosed pages describe in more detail how we raise our animals. If you ever have any questions feel free to call us, we would be happy to answer your questions. If you would like to visit our farm give us a call. You're always welcome!

It is time once again to place your orders. The return postcard system has worked well for us and we hope it serves your needs as well. We would like you to order your chickens, beef, and lamb in advance so that we can be sure to produce enough for your needs. We understand that it may be difficult to plan ahead for the whole year but we appreciate your efforts. If you know of someone who did not receive this letter, feel free to pass it along. Also enclosed is a flyer which you may post or share with others.

PLEASE return the enclosed card with your order.

The card lists our planned delivery dates and locations.

Fill in your **name** and **phone number**.

Fill in the **number of chickens** you want on the dates and location that works for you.

Please note the specific locations for the Lincoln dates.

Don't forget friends and relatives who may have ordered through you last year.

If you will pick up your chickens at Brainard or our house indicate this in the comments.

Mark the dates on your calendar with the number of chickens ordered.

Also mark if your are interested in **beef or lamb**. Simply write in 1, ½, or ¼ for the amount of beef you want on the planned processing dates. For lamb write in 1 or ½ for the amount of lamb to be processed this winter. Refer to the "FARM FRESH" letter for more information.

Include any comments you may have to help us serve you better.

Return the card as soon as possible.

*****Dates will be filled on a first come first served basis.*****

When we receive your order, if your date is already filled, we will call you right away to set up another date. Otherwise just plan on a call a few days ahead of your delivery dates which you have marked on your calendar.

If you need to adjust your order let us know as soon as possible. Your order is only your best estimate and can be changed at any time. **Thank you for letting us serve you!**

FARM FRESH CHICKEN

We will be starting our ninth year of raising chickens in 1998. We start them as day old chicks using a complete purchased feed for four days which includes an antibiotic. After four days we grind our own certified organic grain and mix it with a purchased poultry base consisting of mostly soybean meal and no antibiotics. We take our 7 and 8 week old chickens to Brainard Meats to be processed on a Wednesday. They cool them down overnight and we pick them up the next day. We stop at one or two sites in each town and customers come to pick up their chickens. The chickens come whole and not bagged. The chickens can be cut up and bagged or cut in half for an extra charge. Coolers work well to take them home. This year we will again be shooting for an average weight of 3.8 to 4.2 pounds. If they weigh less than 3.8 pounds we will make a cost adjustment, if over 4.2 you can enjoy the extra bite! The cost this year is \$4.35 per head for the chicken and \$.90 per head for the processing. **This year we plan on having you write just one check for \$5.25 per head.**

BEEF

Again this year we will be offering our farm fresh beef for sale. For the first 1 ½ years the calves will be raised on grass, alfalfa hay, and crop residue. When big enough they will be finished on organic alfalfa hay and corn for approximately 75 days. This allows the meat to become slightly marbled and improves the flavor and tenderness of the meat. No low level antibiotic feeding or growth hormones will be used. The animal will then be delivered for you to Milford Supermarket. You can make arrangements for how you want it cut (see attached sheet) and then pick it up when it is ready. The cost is based on the hanging (carcass) weight at the locker. Wholes, halves, or split halves are available. A split half gives you a quarter of beef with a full range of cuts from both the front and hind quarter. You can either find a friend to split a half with or we will match you up with someone, no problem. **The cost is \$1.30 per pound hanging weight plus processing** (see attached sheet). Mark the amount of beef you want (1, ½, ¼) on the card for the time period which suits you. If you have any questions, please call.

GROUND BEEF

If you prefer high quality, lean, tasty ground beef, we can be of service to you. This year we will again be offering ground beef in frozen 1 pound packages for **\$2.25 per pound**. Write "ground beef" and the number of pounds in the comments section. The ground beef may be picked up at the chicken delivery locations or at the farm.

LAMB

Our lambs are raised on pasture and then finished on organic alfalfa hay and corn. Lambs are usually ready for butchering in November-December or January-February. The price of lamb is **\$1.80 per pound hanging weight plus processing** (see attached sheet).

Estimated Weights and Costs

BEEF

		<u>WHOLE</u>	<u>HALF</u>	<u>SPLIT HALVES</u>
Live Weight	=	1200 lb.	600 lb.	300 lb.
Hanging Weight (57% of live)	=	684 lb.	342 lb.	171 lb.
Packaged Meat (65% of hang)	=	444 lb.	222 lb.	111 lb.
\$1.30 per lb. * Hanging Wt.	=	\$889.20	\$444.60	\$222.30
Slaughter, \$20 per head	=	20.00	10.00	5.00
Process, \$.30 / lb. * Hang. Wt.	=	205.20	102.60	
Process, \$.32 / lb. * Hang. Wt.	=			54.72
TOTAL COST	=	\$1114.40	\$557.20	\$282.02
Price/lb. Packaged meat	=	\$2.51	\$2.51	\$2.54

LAMB

		<u>WHOLE</u>	<u>HALF</u>
Live Weight	=	110 lb.	55 lb.
Hanging Weight (50% of live)	=	55 lb.	27.5 lb.
Packaged Meat (70% of hang)	=	38 lb.	19 lb.
\$1.80 per pound * Hang Wt.	=	\$99.00	\$49.50
Slaughter, \$12.00 per head	=	12.00	6.00
Process, .39 per lb. * Hang Wt.	=	21.45	10.73
TOTAL COST	=	\$132.45	\$66.23
Price per lb. Packaged meat	=	\$3.49	\$3.49

Please remember that the above numbers are only estimates. The main factor in your final price per pound of packaged meat is in how you have the meat cut up.

Thanks for your interest in beef and lamb. We hope this information answers your questions. If you have any questions, please give us a call.

West Blue Farm

Dave and Deb Welsch

Rt. 2 Box 63

Milford, NE 68405

402-826-5361

Milford Super Market
402-761-2014

SW corner of Milford on Hwy. 6
Open Monday thru Saturday, 7:30 a.m. to 7:30 p.m.

Suggested Cuts of Beef and common ways to Cut and Package

How many people in your family? Adults _____ Kids _____
How thick do you want your steaks? $\frac{3}{4}$ inch, or _____ inch. Number per package _____
($\frac{3}{4}$ inch is used for split halves)
How big do you want your roasts? 3-4 lb. or 5-6 lb.

Select the cuts you want from the following:

T-bone Steak

Sirloin Steak

Round Steak or tenderized Cube Steak

Sirloin Tip Steak or Roast

Rib Steak with bone

or Rib Eye Steak w/o bone

or Rib Roast with bone

or Prime Rib Roast w/o bone

Chuck Steak or Roast

Swiss Steak or Arm Roast

The following are other cuts you may select. If you do not want them some of these cuts will become ground beef.

How many pounds of ground beef per package? 1, 1.5, 2, etc.

Brisket 2-3 pkgs. per half beef

Rump Roast

Heel of Round Roast

Soup Bones, 1 lb. pkgs.

Stew Meat, 1, 1.5, or 2 lb. pkgs.

Neck Bone, small square pkg.

Short Ribs

Do you want any of the following? If not, they will be given to the Lincoln City Mission.

Liver yes no

Heart yes no

Tongue yes no

Ox Tail yes no

When you call Milford Super Market with your cutting instructions, feel free to ask any questions you may have. They are very helpful.

Making a Small Farm Work: Lessons from a Vineyard & Winery

Larry Mawby
Suttons Bay, Michigan

*Now in the light fluid colors dance
as aromas of heaven from earth ascend
& our tongue lies wrapped
in mystery and joy.*

*And so we drink the heart of agriculture
& so it is we
are sustained.*

Making a small farm work begins with clear-headed self examination: what is most important for me, the owner-operator, to accomplish, what are my own limits; what are the limitations placed on my enterprise by the farm site itself, available capital, labor force [family and other], etc.; what are the limitations of the market for my product? From this examination a long-range plan can be developed for the small farm enterprise. Implementing the long-range plan calls for a series of short-term plans to be made and carried out. As these plans are implemented, they help to re-define the long-range goals, tempering the initial plan with the experience of the actual enterprise. Integrating all aspects of the enterprise in a sustainable fashion is essential - growing crops, family, community, marketing, all interact in a well-run enterprise to nurture each other.

Larry Mawby has learned and practiced these principles in his vineyard in Suttons Bay, Michigan. Twelve of his 32 acres are currently planted to grapevines with plans to plant another five or six acres. He grows grapes to make wine, and sells most of his wine directly on-farm or in the local area, taking advantage of northwest Michigan's role as a tourist destination. This strategy allows him to make a good living on a small farm, and avoid the get bigger or get out trend in agriculture.

The following article about Mawby, his philosophy, and his winery was written by Lori Hall Steele, and is reprinted with the permission of Hour Detroit Magazine, 117 W. Third Street, Royal Oak, Michigan 48067.

A Leelanau Winery that's Ripe for a Visit

Believing that making wine is like creating art, Larry Mawby defies labels by taking a hands-on approach at his northern Michigan vineyard.

Winemaker Larry Mawby will tell you he doesn't exactly make wine. Rather, he raises it like a child, composes it from the earth up, mentors its transformation from vine to bottle. "It doesn't have to be an industrial process," the 48-year-old northern Michigan vintner says. "It can be an art form. As an artist I want to get my hands dirty."

This self-acknowledged "local wine character" keeps his 25-year-old operation Spartan so he can do just that: get messy at every stage of the process. He crunches through snow drifts with vine loppers. He fills 60-gallon oak barrels with a "little community" of fermenting whites. He writes verse for labels.

Inside Mawby's tasting room, which overlooks rolling cherry fields and rows of lushly laden grapevines, Ronald Reagan's face on a poster announces "No Reds" to visitors, which Mawby really means. With the exception of the annual short-run Thanksgiving Beaujolais, nouveau-style Turkey Red, this is a *vin blanc* world.

Mawby's is among the smallest of about a dozen wineries in northwestern lower Michigan's young and growing grape-stomping region, located along the 45th parallel — the same latitude as celebrated French and Italian wine-growing regions. Grand Traverse wines, first introduced commercially less than three decades ago, are growing up and becoming more consistent. And, Mawby says, not naming names, "some wines have dramatically increased in quality."

Mawby's 12-acre vineyard is also considered among the more eccentric wineries around, sometimes compared with the quirky and highly regarded Bonny Doon Vineyards in California's Santa Cruz mountains. Maybe it's the haikus on Mawby's answering machine or the free verse on his bottles ("And so we drink the heart of agriculture/& so it is we/are sustained"). Maybe it's his hippie-era sensibility — wine is self-expression and he has no interest in mass production, thank you — or the dedication to ancient techniques, like allowing gravity and time to clarify wine, rather than rigging up a high-tech centrifuge that could do the job in minutes. What's the hurry? Mawby asks.

Located in the hills north of Traverse City, the winery is a Petoskey stone's throw from the sail-boat-dotted blues of West Grand Traverse Bay and the gingerbread boutiques of Suttons Bay. This is the heart of sports-utility vacation country, Detroit and Chicago playland, complete with praline fudge, fishing, epic fall color and — in summer — picnics at Mawby's (there's a waiting list).

These days, Mawby is straying from the pack of regional winemakers — which soon will include Madonna's father, Silvio "Tony" Ciccone — by shifting the emphasis of his production from whites like Vignoles, Pinot Gris and Riesling to sparkling wines, made by the French *methode champenoise*, or champagne method. Effervescent wines, which require not-too-ripe grapes, are suited to Michigan's sometimes moody growing seasons, Mawby says, and though they require more work, it's worth it.

Three years ago, sparkling wines made up only 15 percent of the winery's annual 2,000-case output. Today, champagne-style bottles comprise 70 percent of L. Mawby-label wine. Mawby's bubbly now is served up by such tony Up North restaurants as Tapawingo and the Rowe Inn. *The Detroit News* this year hailed his *cremant brut*, saying it "has fooled enthusiasts into thinking it's French-made."

But Mawby isn't much wowed by praise or gold medals awarded to some of his wines. He's busy searching, joyfully, for his Holy Grail: a wine that will transport people in spirit to the tip of Michigan's pinky. Mawby sees his wines as envoys that can "speak to you of their birthplace, of the land of the Leelanau, the vines, the season." Think of them as ambassadors, ready to party.

"Wine can play a magical role in the lives of people who are living in an urban area," Mawby says. "Any time they taste the wine from that area, it's unlocking pleasant memories. That's the major reason that wine is so appealing to people. It's that connection."

A need to connect to the land first lured Mawby to grow grapes in 1973. The Michigan State University English grad decided to take up the family business, fruit farming. He eventually acquired 32 of his own acres — 12 of which are now planted with grapes — to make an independent living as a vintner.

He likes that he can take a crop from start to finish: growing, processing, packaging and selling it, all from that limited acreage. He likes, too, that his own winemaking bucks the bigger-is-better trend in agriculture. "My great-grandfather farmed 80 acres; my grandfather farmed 1,200 acres," Mawby says. I didn't want to be part of that. The idea of bigness for bigness' sake is not good."

From the window of the winery's tasting room, near a wall of quotes — "Real wine has sediment/Real wine has sentiment" — Mawby points out the window to the boundaries of his property. To the rustling poplar windbreak, past the apple trees and beyond the vines on the hill. "Here I get to say, 'Here, I grew this,'" Mawby says. "This is an expression, as best I can make it, that speaks to people of this land and of this time. And every year is different."

About L. Mawby Vineyards
(from an interview of L. Mawby by R. Olson)

*Fragrant fruity ferment,
raspberry tart new wine.
Celebrate!
A little death for the vine,
pour the wine - a little life.*

Leelanau County, Michigan has a rolling topography with well-drained, low organic matter soils derived from glacial debris. While the area has long been a major producer of tart cherries and other tree fruits, wine grape production began here about 30 years ago.

Mawby's first vines were planted in the spring of 1973, and have been increased with later plantings. Today his vineyards cover about 12 acres and he has plans to plant an additional four to six acres during the next few years. The vineyards today include the direct producer varieties vigneoles, seyval, marechal foch, cascade and dechaunac, and the vinifera varieties pinot noir, pinot gris, chardonnay, pinot meunier, pinot auxerrois, and pinot blanc. Current annual production is about 2000 cases: this modest volume allows him the pleasure of winemaking in the style he enjoys — barrel fermented small lots made with only simple machinery and minimal handling.

Mawby grows grapes in order to make wine. Crop production, wine making, and marketing are all part of a single seamless process. At this small scale, such an integrated approach is needed if the farm is to be economically viable. Mawby's time is proportioned approximately 10%/20%/70% among growing grapes/making wine/marketing. He believes that a similar division of time is necessary for the success of any small, niche, value-added agricultural enterprise. At such a small scale, his time as marketer becomes too valuable for him to spend too much time in the vineyard. The same holds with packaging — he hires others to do that because his time is needed elsewhere.

Exclusive of harvest, Mawby hires about 4000 hours of labor per year. Harvest occupies 8 to 10 people half-time for a month or about 600 hours. The non-harvest labor is provided by two full-time local employees, while the harvest is conducted by migrant laborers. With a strong economy offering easier alternatives, obtaining enough labor is difficult. Housing for migrant laborers is limited. Fortunately, there is enough crop diversity in the area that harvest crews can switch back-and-forth between Mawby's vineyard and other orchards, and Mawby can rent migrant housing from other growers who require labor at different times. Overall, the paperwork and management required in hiring migrant labor is a barrier to many growers who wish to diversify into labor-intensive crops.

Mawby is not certified organic and doesn't expect to become certified. At the moment, he sees no evidence of a marketing advantage for organic wine. He uses chemical pesticides if needed, but tries to use the most unintrusive methods possible. Fertilizer requirements are small. The grapes remove only a small amount of nutrients from the soil, and most of the organic matter is returned to the soil after pressing and composting. Thanks to regional air pollution, precipitation contains sulfur and nitrogen (20 lbs available N per acre per year), so only 30 pounds of N needs to be added per acre as fertilizer. Mawby applies foliar sprays of NPK and micronutrients, and grows a sod cover crop to stop erosion. Herbicides are used under the vine row, and copper and sulfur are used as fungicides. Grapes are a perennial crop grown on a 50-year cycle, so pest control through crop rotation is obviously not an option.

Mawby sells 65% of his wine through his tasting room and his mailing list (he makes one mailing per year). Twenty percent of his wine is sold to retail stores or restaurants within 50 miles of his vineyards, while another 15% is sold through a distributor.

Currently, 15% to 30% of Mawby's production is from purchased grapes. His long-term plans to plant another five to six acres of vines will provide sufficient grapes to meet his eventual goal of producing 2500 to 3000 cases per year. His overall goal though is to provide himself with a reasonable income in a way that permits him to improve the health of his land, to minimize his impact on other systems, and to enjoy life.

Further Information

Mr. Larry Mawby
L. Mawby Vineyards
4519 S. Elm Valley Rd
Suttons Bay, MI 49682
phone: 616-271-3522
fax: 616-271-2927
email: larry@lmawby.com

L.Mawby Vineyards homepage
<http://www.lmawby.com/>

Nebraska Vine Lines. Free. Edited by Paul Read, professor of horticulture at UNL. Contains news of people and developments in the grape/wine industry in Nebraska. Published monthly. Dept. of Horticulture, U. of Nebraska, Lincoln, NE 68583-0724, 402-472-2854.

The Economics of Small Farms

Michael Duffy
Iowa State University

Discussions of sustainable agriculture never go far without mention of economics, so it is fitting that our set of papers on Small Farming Systems for the Midwest, which began with a contribution by an agricultural economist (John Ikerd), ends with an article from the same discipline. Michael D. Duffy is an agricultural economist whose research interests include farm management, production economics, natural resource economics, integrated pest management, and sustainable agriculture. In this article, he discusses economies of scale for Iowa farms, and strategies by which small farms can optimize their use of scarce resources.

My topic is the economics of small farms. Needless to say, this is a topic that covers more space than is available, and as I prepared for the talk, I struggled with knowing what points I wanted to make and how best to make them in the time available. To start, I think it is important to remember that economics is the study of allocating resources. Too often, it is considered only as the study of money. While this is one aspect of economics, not all resources available or decisions to be made can be quantified in monetary terms.

There are many different approaches to the economics of small farms. One would be to concentrate on the food production aspects. There are some who say that it would not be possible to feed the world with small farms alone. The food production argument usually stresses the supposed lack of efficiency of small farms relative to large farms. The concern relates to the efficiency of small farms relative to large farms with respect to resource use, especially labor. This is an issue to which we will return shortly, but for now I am simply noting that the level of food production possible is a valid area to consider when discussing small farms.

Another approach to small farms concerns sustainable agriculture. This argument centers on whether small farms are more sustainable than large farms. This, too, is a multifaceted discussion. It is interesting to note in a recent survey of Iowa farmers by the Leopold Center, small farmers (those with sales between \$50,000 and \$250,000) were more likely to indicate familiarity with sustainable agriculture than farmers in the other income groups.

A third possible approach to the economics of small farms considers their impact on the rural communities. Questions about the impact of small farms relative to large farms on the quality of life in rural communities, the social impacts, and so forth, are all subject to debate and discussion.

Finally, a fourth possible way to look at the economics of small farms is from the individual farm perspective. What aspects should be considered at the individual farm level? This is the approach I will use here. I will touch on several other aspects, but I want to concentrate on what I consider the most important factors to be considered when thinking about the economics of small farms from the individual farm perspective.

The other approaches mentioned have merit and need to be part of any overall discussion of the economics of small farms. However, the considerations for the individual farm are of paramount importance if the farm is to be successful.

Definition

One of the first questions that needs to be addressed is, “What do we mean by a small farm?” This is a very difficult question to answer, and in most circumstances a small farm is best defined by considering why the definition is sought. The recent USDA Small Farms Commission also grappled with the definition issue. Their solution was to say that a small farm is any farm with sales less than \$250,000.

What is considered a small farm in some cases may not be a small farm for other purposes. Similarly, a small farm in one area of the country may be a large farm in another area. I have never seen a definition that did not have some problems. The key is to try and minimize the problems created by assigning a definition.

Recently the term small farms has been used almost synonymously with family farms. While there may be some truth in this approach, I would urge caution in strictly interpreting small farms as the only type representative of family farms. A 1997 survey of Iowa farmers for the Leopold Center found that 26 percent of all farms were actually multi-family farms. Here a multi-family farm is defined as one where more than one family is involved with the decision-making or where the farmer works for another farm owned by a direct family member. For farms with sales between \$50,000 and \$250,000, 30 percent of the farms were multi-family, and for farms with sales of greater than \$250,000, 34 percent were multi-family. These farms were large but they were still family farms. If more than one family is involved, a farm has to generate enough income to support all the families.

For purposes of this paper, a small farm is not a hobby farm and is not a large farm. I think that it is important not to include hobby farms. I am not demeaning these farms, but for our purposes we will focus on farm operations that are not simply weekend endeavors.

The overriding theme or message of this paper is that there are options and alternatives for small farms. These options will vary according to the farm and the individual situation, but there are always options. Which option is best can be determined only at the individual farm level. The options will change with the individual farm and the best choice will also depend on the

individual circumstances. We will now turn our attention to how the operators of small farms can evaluate these options and alternatives.

Three Basic Questions

There are three basic questions that must be answered before it is possible to determine the alternatives available and to choose the one that will work best in the individual situation. These basic questions are:

Why are you farming?

What are the goals for the farm?

What are the resources available to the farm?

These questions overlap, but it is important to think about them separately to determine which options are feasible and offer the best outcomes. It is important to remember that the goals have to be consistent with the resources available. It does no good whatsoever to try to achieve something that is not possible. You must know your limitations.

There are many different reasons why people are farming. Some enjoy the job, others enjoy working out-of-doors, some like the idea of being their own boss, others want to raise their family in a rural environment. Recently I heard one person explain that he was a farmer because it was a noble occupation to feed others. Obviously there is no right or wrong answer to such a question and there are more than likely multiple reasons why someone chooses to be a farmer. It is important to ask this question because the answer will determine which of the available options should be considered. People who enjoy farming because they enjoy being their own boss will not be happy in a contractual arrangement where they make few, if any, decisions.

There are many different options available but they all involve varying degrees of risk taking, management, and so forth. To choose the right one, it is important to know why you are farming. What are the goals for the farm? In many respects the answer to this question is intertwined with the reasons for being a farmer. However, there are important differences and that is why these should be considered as separate questions. There can be family goals, there can be personal goals, and there can be business goals for the farm. Small farmers need to know what percent of the family income is to come from the farm. They need to know if the farm is expected to provide full-time employment, if this is seasonal or year-round employment, and for how many people. How much risk can the farmer take on?

All these types of questions must be answered as small farmers consider the options and alternatives available to them. Some alternatives will do a better job of meeting these types of goals than other alternatives. If a farmer does not know the answer to these questions, it will not be possible to select the proper option.

Finally, the farmer must accurately assess the resources that are available. There are four categories of resources: land, labor, capital, and management. Land is one of the major limiting factors when deciding which option to pursue. We usually think of land only in terms of quality for production. However, land as a resource has many more attributes that will determine the feasible options for the small farmer. The location of the land is extremely critical. Not only will location determine the feasible cropping patterns, but it will also affect the feasible marketing strategies. For example, a you-pick operation located many miles from a population center faces many drawbacks. A specialty crop produced hundreds of miles from the market will experience higher transportation costs. The limitations of the land are also important considerations. Can it be row cropped? Is it fenced? Is there water readily available? All these attributes will determine what is feasible for the land. Additionally, they will determine the value of the land. The higher the price of the land, the greater the profit necessary to earn an acceptable return on investment.

Labor is another complex resource that will dramatically affect the feasible options for the small farm. Obviously, the amount of labor needed is important but there are many other labor-related issues that must be considered when assessing the feasibility and desirability of the different options available. The quality of the labor is also an important consideration. Labor characteristics will change over time, especially family labor. A 25-year-old is able to do more hard physical labor than a 45-year-old. Similarly, help from the children will end when they leave home. Different options will require different amounts of labor and provide a different quality of labor. For small farms, timeliness of the labor demands and availability are also crucial factors. Small farm operators will likely have other employment, and farm labor needs must coincide with labor availability. This will also impact the opportunity cost for the labor.

Capital can be grouped in two areas. There is capital that can be turned into other inputs. For example, you can buy pesticides, fertilizer, hire labor, and so forth. Capital can also refer to the physical capital such as machinery and buildings that are available. Obviously, these resources will influence which options are feasible and desirable. The machinery and buildings also include the technology which they embody.

The final category of resources is management. In general, this is considered as the combination of the other resources. Management can also be the marketing and other tasks necessary to run a successful business. This is the area where small farms need to pay considerable attention because it represents an area where they may have an advantage. This is a point to which we will return shortly.

The question for any farm, large or small, is how to combine the resources to achieve the goals. There are many different ways to join resources and different technologies, and various options will require different mixes of resources. The small farm must seek a level of technology and mix of resources that is consistent with its resource endowment and goals. Using appropriate technology is extremely important for the small farms to succeed.

General Considerations

One of the major issues often raised with respect to small farms is the issue of size and efficiency. Efficiency here refers to the cost of production. The general assumption is that the larger farms make more efficient use of resources and have lower costs of production.

It is important to remember that production involves two types of costs; fixed and variable. The fixed costs are those that do not vary with the level of production. For example, the ownership costs for a tractor or a building do not vary with the level of production. They are fixed and must be paid or assigned regardless of the level of production. Variable costs are those that change with the level of production. Seed, fertilizer, weed control, and so forth are examples of variable costs. The more acres farmed, the higher the cost for seed and other inputs.

The more units of production over which you can spread the fixed costs, the lower those costs will be per unit of output. For example, assume the fixed ownership costs for a particular combine are \$30,000 per year. If you cover 500 acres, the ownership cost is \$60 per acre, while with 1000 acres it drops to \$30 per acre, and with 1500 acres it drops to \$20 per acre. This is one of the areas where size helps lower costs of production and makes more efficient use of resources.

Larger farms are also credited with purchasing capabilities that are not available to smaller farms. The argument is that if the farm purchases large quantities, there will be some form of quantity discount. Of course, on the other side of the coin, larger farms have higher costs in other areas. Management costs rise with more acreage and the more units produced. Similarly, labor costs and the type of labor required will be different. A complete discussion of the cost advantages and disadvantages of size is beyond the scope of this paper. Suffice to say, there are advantages and disadvantages associated with farm size.

Examination of farm level data in Iowa reveals that the cost per unit of output for corn, soybeans, and hogs exhibits what is referred to as an L-shaped average cost curve. The costs of production do drop as the fixed costs are spread over more units; however, the low point is reached much sooner than most people realize. The low point on the average cost curve occurs at a level of production lower than full-time employment or an adequate level of income. Based on 1997 data from farms in the Iowa Farm Business Association, the low point on the average cost curve is realized somewhere around 300 to 400 row crop acres and approximately 1000 pigs marketed. These findings are consistent with other years and other studies of Midwestern agriculture.

Farms are getting larger not because it lowers costs of production, i.e., they are more efficient, but because operators want more income. The current farming systems we employ do not provide an adequate income with only 400 acres. Current farming practices have resulted in tighter profit margins. In the 1950s, net farm income in Iowa as a percent of gross farm income averaged 35 percent; over the last decade it has averaged less than 20 percent. If you subtract the

government payments from both the gross and the net farm incomes, the percentage in the 1950s remains almost identical, while the percentage during the last decade drops to 9 percent.

There are many reasons for these tightening margins. One of the most salient is the substitution of capital for labor. The capital is used to purchase inputs and the inputs to a large extent remove the labor. Production has increased, but the farm has merely become a place where the money passes through.

The primary response to the tight margins has been to increase the volume of production. There are, however, ways to widen the margin that can increase the income without having to increase volume. These techniques fall into two general classes; those that lower the cost of production and those that increase the value of what is produced.

The Leopold Center sponsored a project in 1996 called the Leopold Challenge. It involved 12 farmers who farmed 100 acres under the guidance of a crop consultant using integrated crop management (ICM) techniques, and 100 acres under their usual practices. The results for the ICM acres showed an average increase in net returns of \$19.53 per acre over the conventionally farmed acres. The techniques used by the crop consultant are ones that a farmer can be trained to follow. The consultant in this particular study estimated that the time spent for all the testing, scouting, and other activities would amount to approximately 10 hours per year.

Smaller farmers can use these ICM techniques and earn the savings themselves. This type of an approach represents a substitution of labor and management for capital. The results vary by individual farm but they are documented and offer a proven savings approach. Another example of substituting management for capital is intensive or rotational grazing. With this type of approach, the pasture is divided into paddocks and managed based on the animals and particular pasture characteristics. Again, this has been shown to allow increased production without having to increase the amount of pasture used.

There are many examples of activities that can be used to improve the value of the commodity produced. These will require different degrees of sophistication and mixes of resources used. They also illustrate the importance of knowing the goals for the farm. Specialty grains are an example of what can be done to improve the value of production. These varieties differ from bulk grain commodities because of special attributes or qualities, often making them more valuable for food production. The specialty grains can be produced under contracts where the farmer bears varying degrees of risk and receives varying returns.

Organic production is another area that has increased in popularity over the past few years. Although organic production is usually associated with vegetables, there have been increasing interest and opportunities in organic grain production. Organic production requires a different mix of resources and will generally favor the smaller farmers.

Direct marketing and networking are other marketing tools that farmers can use to increase the value of their production. These techniques require time and effort in areas that most farmers are unfamiliar with, but they do offer provide proven opportunities for the smaller farmer who has the flexibility to capture and move with the changing demands of the consumer.

The key for small farmers is to use the mix of technologies that accentuate their strengths. What will work in one situation will not work in another. The small farmer cannot react like the big farmer. The ability to change and add value right on the farm are comparative strengths of the small farmer and these must be exploited in the mix of production techniques and marketing strategies that are employed. The appropriate technology can be determined only when the goals and resources are known, and these will vary with each farm.

Opportunities and Alternatives

The small farm needs to think in terms of a systems approach. Which crops can be grown and marketed, what labor is available, when is it available, what are the competing uses for the labor, and so forth, all have to be considered in small farm planning. Many of the larger farms today look at production only in terms of how many acres can be covered. The small farm needs to review decisions in terms of what realistically can be done and how much income the various activities will generate.

The systems approach requires a different mind set when considering production and the different jobs that must be done. Allocating resources, especially capital and labor, will require more attention to the details and more careful planning. One of the primary reasons given for wanting to be a farmer is being one's own boss. This entrepreneurial spirit has driven U.S. farmers for many years. But small farmers, if this is one of their reasons for being a farmer, must begin to take a more serious look at the whole business picture.

A business is rewarded for three things; risk, work, and luck. Some of the contracting opportunities available today remove a majority of the risk but they also will provide a much lower return. Risk is a part of any successful business. The issue is how to manage that risk. This is especially important for small farmers because they typically will not have the financial reserves to withstand major adverse consequences. How much risk a business is willing to take is an individual decision, but the rewards should be commensurate with the risk taken.

Work or labor, like risk, is a part of any business. The small farm requires different types of work from production to marketing to management. Usually these jobs are performed by the same individual or family member. It is important for the small farmers to ask themselves how much time they spent in each of these necessary functions. If they spend most of their time as a laborer, then they will be rewarded accordingly. The issue is to achieve the proper balance that reflects the desires of the family for the farm.

Luck is something that happens. However, we can be in positions to create our own luck. People who know what they have and what they want are better able to take advantage of opportunities as they come along. The flexibility advantage of the small farms will place them in better positions to seize opportunities as they present themselves. Small farms cannot operate like big farms. They have different resource mixes and they have different strengths and weaknesses. It is important that the small farm use the systems approach and have the mix of products, methods of production, and marketing tactics that capitalize on their strengths and minimize their weaknesses.

There are many examples of appropriate technology for small farms. In this seminar series you have heard of examples such as the hoop structures for pork production. You have heard about trees, shrubs, pasture, poultry, and organic production. The key is to look for technologies and methods that are management-intensive rather than capital-intensive. Again, know what you have and what you want. Any of the technologies employed will call for a different mix of resources. Choose the one that works for your situation.

When evaluating the alternatives, remember the need to generate the income necessary to survive. It is vital that the system chosen provides an adequate income to meet the goals for the farm. The most appropriate system can only be selected at the farm level after determining the goals and resources that are available.

Concluding Thoughts and Comments

Remember to know your resource mix and be aware that the mix will change with time. One of the key distinguishing differences between the small and large farm is the amount of capital available. It is a ticket to disaster to try and think that a small farm is just a scaled down version of a large farm. Small farms must look for management-intensive technologies that will enable them to take advantage of their biggest asset, flexibility.

Business earnings will reflect the amount and type of risk taken and the amount and type of work performed. Someone wanting full-time, well-paid employment on a small farm today is going against the trend. It is possible, and there are many examples of options and alternatives, but successful small farm operators today have to find a market niche and know what works for the farmer, the family, and the situation in which they find themselves.

Some of the contractual arrangements available today offer the opportunity to be a small farmer and bear little risk. The rewards will reflect this lack of risk, but they are still opportunities. Other opportunities are extremely risky. The questions for the small farmer are, "Can I afford to bear the risks presented? What would happen under adverse consequences? What are the risk management tools available?"

Look for options and alternatives that are appropriate for your situation and needs. There is a magazine for small farmers, and there is research specifically for small farmers, albeit not nearly as much as what benefits larger farmers. Look for alternatives that work for you in your situation.

Small farms, large farms, non-farmers, and everyone today needs to remember the difference between wants and needs. Small farmers have to remember that they are doing things differently and a large measure of whether or not they are successful will depend on how they define success.

Further Information

Michael Duffy
Department of Agricultural Economics
560-C Heady Hall
Iowa State University
Ames IA 50011-1070
phone: 515-294-6160
mduffy@iastate.edu

Leopold Center for Sustainable Agriculture.
<http://www.leopold.iastate.edu/centers/leopold/Leopold.html>

Feeding the Village First

(A Northern Plains Sustainable Agriculture Society Position Paper on the Global Economy)

"But we have to feed the world . . ."

—A North Dakota farmer

"Why are American farmers investing so heavily in expanding ag export markets, when the richest, most valuable market in the history of mankind---and the market the rest of the world's farmers want access to through upcoming free trade talks---is right here in the US? Can both strategies be right? Simultaneously?"

—Alan Guebert

The title of the spring seminar series—Reintegrating Agriculture and Community in the Midwest—reflects the premise that this connection has been lost, and that reestablishing it would be beneficial to agriculture and to society. Because this premise has important ramifications, and because not everyone agrees with it, we have asked for and received permission to reprint the following paper from the Northern Plains Sustainable Agriculture Society that addresses the impacts of the globalization of agriculture and provides support for our premise. This paper was not presented as part of the seminar series, but it provides a good foundation for the papers in the second half of this volume.

Summary

In this paper we provide an analysis of the role of agriculture in the global economy, using sustainability as the measure. We argue that as a first priority we should begin rethinking our food system in terms of local, self-reliant, value-added, value-retaining foodsheds, that supply a region's food needs, instead of relying totally on industrial production factories designed to supply raw materials to the global market, leaving local communities to import all of their food needs. International trade would be based on surplus production, not vital production, making local communities self-reliant, and therefore truly "free" to trade. Finally, we offer a few strategies for beginning the journey toward this new food system.

I. The Global Economy: Myths and Realities

Herman Daly, the well known former World Bank economist, is fond of quoting John Maynard Keynes (one of the founders of the World Bank) with respect to world trade:

I sympathize therefore, with those who would minimize, rather than those who would maximize, economic entanglement between nations. Ideas, knowledge, art, hospitality, travel--- these are the things which should of their nature be international. But let *goods* be homespun whenever it is reasonably and conveniently possible, and, above all, let *finance* be primarily national (Daly 1996) (Emphasis ours).

These words have taken on a special significance in our time. In the current climate of economic deregulation (sometimes called neo-liberalism) the prevalent notion among economists is that the evolution of a global economy is inevitable, necessary and highly preferable. But it is important to remember that not all economists share this judgment and that this judgment is not based on scientific certainty. Indeed, critics like David Kortan argue that it is based on "ideological extremism" (Mander and Goldsmith, 1996).

Economic neo-liberalism, which has crafted the intellectual justification for a global economy, is based on a belief system. It is a "story" that describes one way of organizing our economic lives. It is not the only story available to us, however. And, of course, it is not the only economic future we can choose.

Economic liberalism's story is similar in many respects to the economic belief system of Karl Marx. Marx also believed that it was economics that determined history. He believed that the economic system inherent in capitalism would inevitably cause capitalism's demise. Most economists today contend that it was a flawed belief.

Economic neo-liberalism's belief is similarly flawed. The problem with theories of economic inevitability (like those of Marx and neo-liberalism) is that they are based on assumptions that are hardly self-evident. For example, neo-liberalism's assumption that individuals always act in their own rational financial self-interest cannot be substantiated from human experience. If that assumption were true, no one would affiliate with a religious organization that requires sacrifice. No one would have children. There would be few great works of art. And there would certainly be even fewer farmers.

The reason it is important to recognize these false assumptions is that it is only when we entertain the possibility that the current predominantly held views regarding the global economy are not inevitable, and that economics is not the only determining factor that shapes human society, that we can begin to think critically and creatively about the economic welfare of our communities and choose alternative futures.

It is also important to recognize that taking a stand against the development of a global economy does not necessarily mean that one is anti-trade or "protectionist", or that one has a callous disregard for the world's hungry and homeless.

International and inter-tribal trade is as old as human history. In the last half century archaeologists have found evidence of international trade among ancient societies that was much more extensive than historians had previously believed possible. For example, archaeologists in North Dakota recently discovered that a particular type of flint rock that lent itself especially well for making spear and arrow heads, can only be found in North Dakota. Yet spears and arrow heads made from this flint can be found all over North and South America. Indians living in what is now North Dakota traded them. They apparently also extensively traded food stuffs. But the interesting thing about the trade policies of these indigenous people is that they insisted on meeting the needs of the village first. Trade was based on surplus production.

We contend that these ancient trade policies were wise. Accordingly, while we support international trade, we question whether our local economies ought to be made dependent on, or victims of, a global economy which seeks to fit all cultures and communities into a one-size-fits-all economic system. We question the wisdom of forcing all cultures and countries, each of which have emerged out of different histories and different economic situations, into one economic straight jacket.

Could it be, for example, that Russia, now suffering from one of its most severe depressions, needs a Roosevelt-styled 'new deal' economy, instead of the Herbert Hoover-style free market economy that the G-7 nations are trying to impose on it? The global community needs a diversity of economic systems, not a single homogenized one.

In particular, we question the wisdom of a homogenized economic system where food and agriculture are concerned. We believe that in the case of food and agriculture it is particularly important (as it was among ancient societies that practiced international trade) to "feed the village first".

Feeding the village first is a concept which suggests that local community economies are healthiest when they are as self-reliant as possible, especially where food and agriculture are concerned. Self-reliant communities are healthiest because they are free to pursue their own course, shaped by cultural norms that evolved in those communities to maintain the local public good. For this reason it is also important to maintain a diversity of cultures, as these ancient societies did. Each local culture must be free to evolve so that it can protect the unique ecology and public good of each local community.

The global economy, by contrast, makes local communities vulnerable to the economic health and well-being of distant communities and of "owners" over which they have little influence.

Herman Daly has reminded us that trade is only free when we are free not to trade (Daly 1996). What Daly recognizes is that when the economy of a local community or region is dependent on distant communities to supply its needs and buy its raw materials, then its own economy becomes extremely vulnerable to economic forces over which it has no control. The effect of the collapse of the Asian and Russian economies on Northern Plains farmers in the United States in recent months has clearly demonstrated that phenomenon.

We can, for example, see this principle at work as we watch the agricultural economy of North Dakota collapse. The globalization and industrialization of agriculture has reduced farmers in North Dakota to raw materials suppliers of a few specialized commodities—primarily wheat and beef cattle. That means that almost no local resources are devoted to producing locally needed value added products for local consumption. That, in turn, means that we export all of our cheap raw materials and import all of our needed, expensive value-added products. This drains both the wealth of the region's income, and the wealth potential of the region's raw materials out of our local communities. Such an economy is reminiscent of colonial economies.

Of course the proponents of economic neo-liberalism will argue that while all this may be true, it is still to the overall economic advantage of local communities to be part of a global economy so we can avail ourselves of the benefits of "comparative advantage". The theory of comparative advantage was first espoused by David Ricardo, one of the great classical economists. To put it simply, the theory of comparative advantage suggests that each country (or region) should produce what it can produce most efficiently and import those things that others can produce more efficiently. And no trade barriers should be erected to "protect" the less efficient local production systems. This is the classical argument advocated by free trade proponents.

But as Daly points out, Ricardo's theory was based on a very specific set of assumptions, including the expectation that capital would remain "immobile between nations." Daly argues that since capital is now no longer rooted in local communities, Ricardo, were he alive today, "would not support a policy of free trade." Given the fact that capital today is controlled primarily by transnational corporations (TNC's) who are not held accountable to any local community, we no longer accrue the benefits of comparative advantage to the communities in which we live. Most of the benefits accrue to shareholders of TNC's who generally live in distant communities.

Consequently, Daly suggests that we need to ascertain whether or not trade is really mutually beneficial before we engage in it. We should determine whether or not "the gains from international trade and specialization are not canceled by the immediate disadvantages: higher transportation costs, increased dependence on distant supplies and markets, and a reduced range of choice of ways for citizens to make a living." We should also determine whether or not trade will cause a deterioration of natural ecosystems, destroy local natural resources or reduce quality of life before we trade.

But proponents of economic neo-liberalism will argue that even if these negative consequences occur, the globalization of agriculture is still necessary to feed an expanding human population. We have to feed the world!

That assumption is based on at least three flawed propositions. First is the assumption that people are hungry because we are short of food—that farmers are unable to produce enough. That assertion is totally false and repeatedly proven to be so (Kirschenmann 1997, Lappé and Collins 1986, Sen 1981, 1987).

Second is the assumption that we can solve the population explosion problem simply by intensifying food production, especially the production of cereal grains. But ecologists have raised disturbing questions about that proposition. They argue that such intensification itself creates serious obstacles to meeting those goals. The obstacles include:

- the destruction of the very genetic resources needed to develop transgenic technologies;
- the degradation of the very ecosystem services needed to increase production;
- the environmental and human health consequences of intensive agricultural practices;
- the extreme climactic changes that accompany global warming which will likely jeopardize food production capacity (Baskin 1997, Daily et. al. 1998).

Third, is the assumption that the only way to produce enough food for future human population growth is by intensifying our mass production of a few specialized commodities with new technologies. But we know from several thousand years of observation that small-scale, labor-intensive, local food production systems, wherein local people have access to production resources, are by far the most productive.

For example, under the ecological management of the Anazasi Indians, a small region near Dolores, Colorado in the desert Southwest, supported a population of over 100,000 citizens around 1,000 AD. That same region today supports less than 15,000. The Anazasi raised dryland corn that produced an average 40 bushels per acre. Today with all the modern technologies at our disposal, farmers can only obtain 14 bushels per acre average dryland corn production in that same region (Anazasi Museum, Dolores, Co).

Once and for all we should acknowledge that hunger is caused by social inequity and the lack of access to food producing resources, not lack of production. As E.F. Schumacher pointed out so eloquently 25 years ago, what we need to keep the world fed is not mass production, but production by the masses (Schumacher 1973). What Schumacher understood all too well, was the fact that when small, local farmers are pushed off the land (as Mexican farmers will be en masse in the next decade, due largely to free trade policies (Brandon and Franklin 1998)), the land gets concentrated in the hands of large land owners, and then the land gets used to mass produce commodities for export, rather than feeding local populations. And that usually creates surpluses of raw materials which end up putting farmers all over the world out of business. That exacerbates, rather than solves the problem of "feeding the world."

II. Industrial Agriculture and Unsustainable trends.

The global food system is fed by an increasingly industrialized agriculture which cannot be sustained. Industrial agriculture is based on three principles: specialization, standardization and centralization. These principles grew out of the factory model of industrialization. This factory model has proven very efficient in the production of many manufactured goods.

However, many business leaders are now questioning these principles because they largely fail to calculate the importance of the human factor in production. They also increasingly recognize that since these principles tend to externalize social and environmental costs, they put much of society, and sometimes even the industry at risk. When hamburger gets contaminated with E coli in a huge centralized beef packing plant, for example, the losses and liabilities connected with the recall of millions of pounds of hamburger, as well as the number of people at risk, is far greater than if a similar contamination were to occur in a locally owned, diversified butcher shop.

More important for agriculture, however, is our failure to recognize that farms are not factories and that the effort to impose these three principles on farms has created an agriculture that is headed for collapse. These principles create huge monocultures that have numerous adverse effects. They make farmers vulnerable to the economic fortunes of a very narrow band of commodities. Farmers who have specialized in the production of hogs or wheat, for example, are currently being forced out of business due to the record low prices of those commodities. Farmers who have diversified farms, on the other hand, have also diversified their risks.

These industrial principles also impose a system of agronomic practices that dramatically increase costs and destroy the habitat of many species that are critical to efficient production. Our monocultures, for example have largely destroyed the habitat of indigenous pollinators, and have placed imported pollinators (like European honeybees) at great risk. The fact that one out of every three mouthfuls of food that we all eat is dependent on pollinators (Buchmann and Nabhan 1996) requires us to ask what impact industrial farming practices actually have on our ability to keep the world fed.

The three principles of industrial agriculture are also largely responsible for farmers' increased production costs. A recent University of Minnesota Plant Diversity Task Force concluded that our vast monocrop systems in the Red River Valley have now revved up disease and pest cycles to such an extent that there is no way the research community can keep up with resistance technologies to stay ahead of the curve—no matter how much money we allocate for research.

Given the ever increasing need for inputs to support this system of agriculture, the North Dakota Extension Service calculated that it now costs North Dakota farmers \$117 an acre to produce wheat. Most county-wide average wheat yields in North Dakota run below 30 bushel an acre. That means farmers need to consistently get at least \$4 per bushel just to break even on

their input costs. But given global-wide surplus production in 1998 prices hovered at \$2.50 per bushel. So farmers find it impossible to generate the cash to repay loans or purchase inputs for the next crop cycle.

Furthermore, standardization is based on the assumption that the environment is predictable and controllable. It assumes that one can take an isolated phenomenon (like corn borer pressure) and apply a standard therapy, like an insecticide or Bt seed corn. But every high school biology student knows that nature is complex and always evolving, and that therefore nature's response to applied technologies will vary from place to place and year to year. Accordingly, standardization is fundamentally contrary to nature's functioning.

But perhaps the greatest fallacy of industrial agriculture is the assumption that one can abstract a few agronomic principles and then develop standardized farming techniques to be applied universally. From experiments with hybrid seeds, for example, we concluded that hybrid seeds were superior in all places under all circumstances. In point of fact hybrid seeds are only superior when soil, climate and synthetic inputs are optimized. As one farmer put it, "you buy expensive seed and fertilizer and if you don't get rain, its like throwing money into the wind."

Because farming is an activity that takes place in living, local ecosystems, it simply makes more sense to craft farming systems that continually adapt to the local ecologies in which the farm is located. Ironically such adaptation suggests principles that are diametrically opposed to the three industrial principles. Ecological farming requires that we employ the principles of diversity, variability and integration, rather than the principles of specialization, standardization and centralization.

If we managed our farms by these ecological principles they would look very different from the industrial farms that now dominate the landscape. Instead of huge wheat farms and cattle ranches in North Dakota, for example, we would have more moderate-sized diversified farms that grow five or more crops and have two or more animal species. The crop and livestock systems would be fully integrated. The waste from the cropping systems would be fed to the livestock and the wastes from the livestock would be used to fertilize the crops. In some locations crops and livestock would both be rotated through the system. In other locations, due to the ecology of the land, livestock would be grazed on native prairie and crops would be grown in the "niches" of the prairie landscape. In all cases the diversity would keep diseases in check and provide for natural habitat that would harbor the species that help control insect pests.

The central operating principle of such a system would be "to manage nature so that she doesn't have to be managed" (Eisenberg 1998). In other words a farm would be a production system in which nature's own ecosystem services would provide the majority of the fertility and pest and disease control that optimizes production.

A few USDA scientists are now actively promoting this kind of alternative agriculture. They argue that the "therapeutic" interventionist strategies of industrial agriculture, wherein the

prevailing pest control strategy has been to kill pest organisms with toxic chemicals, has created a classic treadmill. The solution becomes the problem. That treadmill has actually increased crop losses due to pests. On a world basis crop losses due to insects, weeds and disease were 34.9% in 1965 and rose to 42.1% in 1988-1990.

These same USDA scientists argue that the more recent substitution of new classes of chemicals and the technologies of molecular biology has not changed the problem since these new technologies still conform to the same paradigm (Lewis et. al. 1997).

III. Strategies for Developing Sustainable Local Communities.

In his thoughtful book *Earth Community, Earth Ethics*, Larry Rasmussen suggests that we should stop talking about sustainable development and start thinking about sustainable communities. The global economy will not help us here. Building sustainable communities, as Rasmussen argues, requires an ethic (Rasmussen 1996).

What kind of production ethic do we need to develop sustainable communities? Rasmussen points out that "the scientific discovery of the twentieth century" is the fact that the earth is a community. As Thomas Berry put it, the earth is a "community of subjects", not "a collection of objects" (Berry and Swimme 1992). And the earth community is not a single, homogenized global ecosystem, but a complex array of many diverse, interconnected local ecosystems (Eldridge 1995).

This scientific discovery suggests that if we want to live on the earth in a sustainable way we have to begin to understand the "place" of the earth community in which we live, and learn how to interact with that place to preserve it as a healthy local community. And that place includes all the species with which we co-evolved. It follows that if we want food and farming systems that sustain local communities we really do have to "consult the genius of the place" as Alexander Pope advised us some years ago.

Accordingly, local community life shaped by a culture that is rooted in the wisdom inherent in each local ecology, is the core requirement of sustainability. Living and farming in accordance with those principles must be the cornerstone of our new production ethic. Developing such an ecological consciousness as the proper context for farming, is the new challenge facing agriculture.

This new ecological consciousness is beginning to penetrate the fields of medicine, nutrition, forestry, and fishing, as people in all walks of life are recognizing that the human species is not insulated from the rest of earth community. It is that new consciousness that will shape the ecological farming revolution.

What are some of the strategies we need to implement to effect the transition from an industrial/global to an ecological/local food and farming system?

First, it means recognizing that changing from a global economy to sustainable communities, will require that we rethink the whole food and farming system. Simply getting farmers to rethink their farming systems, or to "go organic", won't work.

Today's farms are part and parcel of the global, industrialized economic system. The global market only demands a very narrow band of commodities. Just fifteen plant species are used to produce 90% of the calories consumed on this planet (Soule et.al. 1990). In the grain sector the market is largely limited to corn, wheat, soybeans and rice. Eighty percent of the 220 million acres planted to annual crops in the United States are devoted to corn, soybeans and wheat. Consequently there are no markets for the diversified crops that must be grown on ecologically managed farms. That, in turn, insures that without changing the entire food system the market will continue to force farmers into monoculture production, producing cheap raw materials for the global economy.

So we need alternative marketing systems as well as alternative farming systems. As a first priority we need to begin rethinking our food system in terms of local, self-sufficient, value-added and value-retained foodsheds that supply all of a region's food needs. Most food processing and packing operations must be locally owned, retaining the value that is added by such processing in local communities.

This would be a clear alternative to the industrial production factories designed to supply cheap raw materials to the global market, which forces producing communities to import all of their local food needs, and to export the value of their locally produced raw materials. International trade would be based on surplus production. In other words, it would be a marketing system that feeds the village first and truly makes local communities "free" to trade.

Admittedly, changing our whole food system will be a mammoth undertaking and we will not accomplish it in the next few months. But the new system is, in fact, already being developed so we also don't have to start from scratch. Direct marketing schemes and locally owned value-added processing enterprises of various kinds are already in place and many of them are very successful (Welsh 1997).

But to expand these ventures, many of them small and largely isolated, into a comprehensive food system alternative, will require a systems dynamic approach that begins to systematize this sustainable alternative to the industrial food system. We will need to inaugurate new initiatives in education, public policy and market reform.

Following is a beginning list of things we can do:

Education

1. Initiate dialogs throughout farm communities that help farmers to understand that recurring farm crises are not due to low prices, unfair trade practices, timid export promotion, deficient safety nets, insufficient research or inadequate technologies. Economic farm crises are, in fact, inherent in the global economic system, which operates on the principles of cheap labor, cheap raw materials, and externalized risk. So as long as farmers are suppliers of raw materials of a few specialized commodities, requiring intensive inputs that put farmers on treadmills, and force them to absorb most of the risk involved in producing those commodities, they will never be economically empowered. That is the first lesson every farmer has to learn.

2. Land Grant University systems need to begin helping farmers to understand the ecological neighborhoods in which they farm, and then provide assistance in developing natural systems farming technologies that mirror those ecologies. In the Northern Plains that means learning to understand the complexity of prairie ecologies, breeding seeds that produce food plants which thrive in such ecologies, and creating habitats that produce symbiotic relationships between native species and farming systems.

3. Develop media exposure that helps international communities to recognize that "feeding the world" is not a solution to the chronic problems of hunger and homelessness. We must create media scenarios that show practical alternatives to ADM's "supermarket to the world." Those scenarios would represent individuals and governments working together to eliminate hunger by promoting local cultural norms that bring human populations in line with other earth species in each ecological neighborhood (Norberg-Hodge 1991). Those efforts would include the education of women in every community. Those scenarios must include practical strategies for making adequate nutrients available to all people. Those strategies would include, but not be limited to:

- more efficient animal agriculture, cutting grain-based diets for ruminants at least in half, thereby making more nutrients available for humans,
- restoration and preservation of seafood ecologies (while cereal production accounts for 50% of the energy intake of the world's poor, 60% of the world's population depends on seafood for 40% of its protein),
- international debt restructuring that would allow developing nations to use local production resources to feed local populations, and
- restoration of soil quality throughout the world to preserve and increase the yield potential of appropriate new technologies. It is now generally agreed that the reason crop yields have leveled off or declined despite new technologies is that declining soil quality prevents the yield potential of such technologies from being realized (National Research Council 1993).

4. Reconnect eaters with the ecological cycles of food production. No one should be considered properly educated without having first hand knowledge of where food comes from and how to produce and prepare it. Such knowledge should be considered as "basic" as reading, writing and math. Everyone should grow at least some of what they eat, regardless of where they live.

Public Policy

1. Gradually reduce the public subsidies that support industrial agriculture and shift part of those subsidies to programs that would help farmers transition to ecologically sound farming systems. In 1997 the Dutch Institute for Research on Public Expenditure prepared a report for the Rio+5 Forum which revealed that "subsidies from the public purse" in just four sectors (water, energy, road transportation and agriculture) amounted to \$700 billion annually, more than the entire international expenditure for arms. They noted, further, that of the \$335 billion in annual agricultural transfers, only 20% actually ended up as "additional farm income" (Renske van Staveren, INTERNET: rvanstaveren@iatp.org).

It is precisely the subsidies in these four areas that enable industrial agriculture to survive and largely contribute to the unlevel playing field on which local ecological farming systems must compete. If a small portion of these subsidies were redirected toward research to develop natural systems pest management, nutrient cycling systems, the reintegration of crop/livestock systems, and the development of locally-owned food processing enterprises and direct marketing, it could dramatically expand sound, locally based ecological farming systems that would benefit farmers, local communities and the environment.

2. Encourage state and local governments to establish tax policies which require that a percentage of local food needs purchased with public money be purchased from local farmers. If local governments required that 25% of the food purchased for prisons, state universities, county and state hospitals, and school lunch programs (all purchased with public funds) must be purchased from local farmers, it would create a substantial market for locally produced foods. Such local purchases would create an infrastructure for local production that the private sector could build on to create substantial markets for locally produced food.

3. International policies should be established through the United Nations that would focus on empowering the masses to produce their own food, rather than relying on transnational corporations to mass produce a few commodities to feed the world. The TNC strategy jeopardizes food security, pushes small, local farmers off the land, and appropriates food producing resources for profit-making, and for debt reduction in developing countries. As Martin Kimani, a leading agriculturist from Kenya puts it, it leads farmers to "producing food they didn't eat, and eating food they didn't produce" (INTERNET: avkrebs@earthlink.net).

Simultaneously it overproduces the few commodities for which there are markets, forcing independent farmers all over the world out of business. This process concentrates food production resources in the hands of a very few people, jeopardizing global food security.

4. Firmly enforce anti-trust laws and enact appropriate economic and social regulations (Castle 1998) in the food and agriculture arena to insure free and open markets for farmers. The unprecedented mergers and buyouts in the food and agriculture industry are not designed to insure greater efficiency and lower costs for consumers. They are designed to concentrate economic power which will ultimately harm the interests of both producers and consumers, and surely will not feed the world.

5. Begin a comprehensive review of international energy policies and develop plans for an energy efficient food system in the post-petroleum era. Some oil industry analysts now predict that the world has about one decade of cheap oil left (Campbell and Laherre`re 1998). By the year 2010 we will begin to see oil prices rise dramatically. We need to establish policies now that will prepare for that future to insure a continued supply of affordable food to all people on the planet. And that means food and farming systems that are much less petroleum dependent than the industrial farming systems of today.

Market Reforms

1. Encourage public/private partnerships to develop direct marketing systems, local entrepreneurship, and locally owned, value-added, value-retained food processing operations. North Dakota's public/private partnership arrangement, which has developed numerous locally owned value-added processing cooperatives and companies, could be expanded and used as a model for other regions. The North Dakota experience demonstrates that such partnerships don't necessarily require public subsidies because the increased tax revenues from such newly created locally-owned enterprises often return the public's investment with interest.

2. Study the evolution of Farmers Markets, CSA's and other direct marketing institutions, and use them as models to explore additional direct marketing opportunities. There are numerous opportunities to develop direct marketing arrangements in various components of the farming sector. Mobile meat processing units, for example, could dramatically increase the direct sale of locally produced meat products.

3. Explore the possibility of establishing commodity "pools" (or other collective bargaining strategies) to give farmers additional bargaining power in negotiating fair prices of the raw materials they continue to produce. Such collective bargaining strategies would serve to help keep farmers on the farm while we transition to a local, community-agriculture future.

4. Exploit the weaknesses of large firms as a means of insuring the sustainability of smaller, locally owned enterprises. Large industrialized operations do not possess the flexibility to adapt

rapidly to changing market demands or the diversity to meet the quality requirements of market niches. Such weaknesses create market opportunities that smaller, innovative, local farmers and food processing enterprises can exploit (Castle 1998).

These strategies are not simply schemes to "save the family farm" or to "preserve our agrarian lifestyle" or to provide "safe, wholesome food" to well-to-do middle class Americans, important as those goals may be. The question which this transition from a global to a local food system seeks to address is one that was eloquently raised by Harold Breimyer and Wallace Barr. The question facing us all is

. . . whether some version of a dispersed farm
production and marketing organization is to prevail
or whether the control of U.S [and world] farm
production and marketing will be concentrated in a
relatively small number of large firms (Breimyer and Barr 1972).

The answer to that question has grave implications for every citizen of the planet.

Clearly the suggestions proposed in this position paper are a very meager beginning to getting us on the path to a transition from a global food system to one that feeds the village first. And it invites a dialog on these important issues among everyone invested in international food systems designed to keep the human species fed, while enhancing the ecological neighborhood that we share with the rest of earth's species.

As we engage in that process it might be well to be guided by some over-arching principles. We think that the late Stanley James Hallett, minister and renowned national community organizer gave us three principles that might serve us well on our journey. Hallett suggested that when it comes to human systems that are suppose to serve people

small is better than big
simple is better than complex
and local is better than distant (McCarran, 1998).

The other bit of wisdom that we might put into our saddle bags as we go down this path of reorganizing our food system comes to us from Rick Welsh, policy analyst with the Henry A. Wallace Institute for Alternative Agriculture. We must understand, he writes,

that the structure of agriculture in this or any other country is not an
evolutional or inevitable process, but a socially constructed
arrangement of institutions, rules and relationships. The organization
of agriculture today has resulted solely from decisions made by people,
and can be altered and reorganized if enough people wish to alter or
reorganize it (Welsh 1997).

We believe enough people do!

Further Information

Theresa Podoll
Northern Plains Sustainable Agriculture Society
Executive Director
9824 79th ST SE, Fullerton, ND 58441-9725
email: tpnpsas@hotmail.com
Phone 701-883-4304

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Getting it Straight Before We Eat Ourselves to Death: From Food System to Foodshed in the 21st Century

Jack Kloppenburg, Jr. & Sharon Lezberg
University of Wisconsin-Madison

*Jack Kloppenburg is an Associate Professor of Rural Sociology at the University of Wisconsin-Madison. He is well known for his analysis of the emergent social impacts of biotechnology, and for his work on the global controversy regarding access to and control of genetic resources. He is the author of *First the Seed: The Political Economy of Plant Biotechnology, 1492-2000* (Cambridge University Press) and is editor of *Seeds and Sovereignty: Use and Control of Plant Genetic Resources* (Duke University Press). His most recent work is marked by a concern for the darker side of "globalization" and by a recognition of the need to build an alternative to the corporate-dominated global food system.*

In his article, "Coming In To The Foodshed," Kloppenburg has outlined a vision of that alternative. As its derivation from the term "watershed" is meant to imply, the "foodshed" calls attention to the geographic sources from which food flows to particular points of consumption. The term also reflects the central hypothesis that shapes Kloppenburg's approach: that as a general principle, food ought to be produced relatively near to where it is consumed.

Foodsheds will be founded on sustainable, self-reliant, local/regional food production. Such production must in turn be founded on the regional reinvestment of capital and local job creation, the strength of community institutions, and direct democratic participation in the local food economy. What is eaten by the great majority of North Americans comes from a global everywhere, yet from nowhere that they know in particular. The distance from which their food comes represents their separation from the knowledge of how and by whom their food is produced, processed, and transported. In what he terms "foodshed analysis," Kloppenburg is developing a statistical and graphic summary of how a particular place — Madison, Wisconsin — is connected to the global food system. He is attempting to answer the question, "How does Madison eat, and what are the socioeconomic and environmental implications of that pattern of production and consumption?" The results of that research will be used to complete a "State of the Madison Foodshed" report. That report is intended to provide a baseline for continued monitoring of the state of the foodshed, to raise awareness of the policy issues that arise from the way we eat, and to stimulate action that would facilitate bringing the way we eat into better alignment with the sustainability of the natural and human communities in which we live.

*Jack's ideas regarding foodsheds are explored in the following article, "Getting it Straight Before We Eat Ourselves to Death: From Food System to Foodshed in the 21st Century," co-authored with Sharon Lezberg and originally published in *Society & Natural Resources* 9:93-96, and reprinted here with the permission of Taylor & Francis, Philadelphia, PA.*

One of our favorite cartoons of the past few years is one in which a young boy watches a Willie Nelson concert on television while his father reads from a newspaper the headlines of which report famine and starvation in Africa. Perplexed, the boy says to his father, "Now let me get this straight. There was a Live Aid concert 'cause there isn't enough food and this is a Farm Aid concert 'cause farmers produce too much food." The boy is really asking, How can it be that we live in a world in which the food production "problem" appears in some places and social contexts as scarcity, and in others as overabundance?

One implication of this simple question is that there is a connection between these twin moments of scarcity and surplus. And, of course, there is a connection. When consumers from the overdeveloped North bite into a banana, they bite into a chain of production processes that links them directly not only to landlessness and labor conditions on plantations in Costa Rica or Venezuela, but also to the misuse of pesticides and the destruction of tropical forests (Hecht and Cockburn 1990). The production processes that bring food to our plates often involve both the displacement of small and subsistence farmers and the replacement of biologically complex landscapes with monocultures, thus undermining both local food security and biodiversity. Even though some displaced farmers may find employment on plantations or in the industrial sector, the need to purchase food—often imported and high-priced—can actually be associated with declining nutritional status in the third world (Wimberley 1991).

Whereas the impact of agricultural development on natural resources in developing nations has received much attention in recent years, the environmental and social effects of agricultural production in the North are less well recognized but similarly problematic. The technologies that have provided an apparent superabundance of food in the United States have also facilitated surface and groundwater pollution, the salinization of irrigated land, soil erosion, the depletion of fossil fuels, wetland and wildlife habitat destruction, loss of genetic diversity, and social dislocation (National Research Council 1989). The 75 cents of every dollar spent on food that goes to processors, packagers, shippers, advertisers, and retailers is a rough measure of the additional costs that processing, shipping, packaging, and disposal of foodstuffs imposes on the environment (Orr 1991).

How we eat is a major determinant of how natural resources are used and misused. The global sourcing increasingly being practiced by the food industry has resulted in the emergence of the "global steer" (Sanderson 1986), the global broccoli plant, the global grape, as well as the "global car." And because the 20% of people who live in the North consume 80% of global production, it ought to be apparent that should our profligate and destructive patterns of consumption continue, we are in danger of eating ourselves to death as we are already eating the poor of the South to death. If we are to move toward a sustainable future in the coming century, patterns of food production, processing, distribution, and consumption must be recognized as natural resource issues.

We agree with Francis Moore Lappé (1991, p. 8) that what we eat is an effective "entry point" to the much larger issues of the global community. We all eat. The preparation and

sharing of food is one of the clearest expressions of the care and affection we show to one another. Food is still wrapped with family, ethnic, and community traditions that remind us of who we are, where we are, and what we value. Food is closely connected with the health and vitality of our bodies. Food represents our most intimate link with the land and with the other beings with whom we share that land. In the production, purchase, and preparation of food we yet retain substantial capacity to disengage from some of the most damaging components of the global economy and create alternatives.

Recognizing the ecological and social destructiveness of the globally based food system, a variety of analysts have suggested an alternative founded on respect for the integrity of particular sociogeographic places (e.g., Berry 1992, Crouch 1993, Dahlberg 1993, Friedmann 1993, Kemmis 1990, Kneen 1989). Although there are differences among these approaches, the differences are less important than the degree to which a common vision is shared. Counterpoised to the global food system in such analyses are self-reliant, locally or regionally based food systems comprised of diversified farms using sustainable practices to supply fresher, more nutritious foodstuffs to small-scale processors and a broad range of consumers to whom producers are linked by the bonds of community as well as economy. Rather than a reliance solely on necessary but weak and uneven governmental regulatory mechanisms for the protection of workers, consumers, and the environment, mutual responsibility and stewardship are seen as the basis for community-based regulation. The landscape is understood as part of that community and, as such, human activity is shaped to conform to knowledge and experience of what the natural characteristics of that place do or do not permit.

Bioregionalists such as Gary Snyder have championed the utility of the concept of the “watershed” as an organizing framework for thought and action directed to understanding and implementing appropriate and respectful human interaction with particular pieces of land (Snyder 1992). In a creative analogue to the watershed, permaculturist Arthur Getz has recently revived the term “foodshed” to facilitate thought about where our food is coming from, and how it is getting to us (Getz 1991).

The “foodshed” is a particularly rich and evocative metaphor; but it is much more than metaphor. Like its analog the watershed, the foodshed can serve as a conceptual and methodological unit of analysis that provides a frame for action as well as thought (Kloppenburg et al. 1996). While the corporations that are the principal beneficiaries of a global food system now dominate the production, processing, distribution, and consumption of food, alternatives are emerging that together could form the basis for foodshed development. Just as many farmers are recognizing the social and environmental advantages to sustainable agriculture, so too are many consumers coming to appreciate the benefits of fresh and sustainably produced food. Sustainable producers and sustainable eaters are being linked through such innovative arrangements as community supported-agriculture and farmers markets. Alternative producers, alternative consumers, and alternative small-entrepreneurs are rediscovering community and finding common ground in municipal and community food councils (Dahlberg 1993, Toronto Food Policy Council 1993).

A methodological tool that appears to be particularly effective for uncovering the environmental and social costs of agricultural production and for elaborating the nature-society nexus in food is “commodity chain analysis” in which particular products are traced from point of production to point of consumption (Gereffi and Korzeniewicz 1994). Commodity chain analysis illuminates the complex interaction of production processes and the environment at multiple levels of organization. The method allows each commodity to tell its own story—a story of travels across vast distances, of transformations in the landscape, of environmental impacts, of power relations among human actors, of the effects of rapidly changing technologies, and of the linkages between the local and the global. Through commodity chain analysis we can link the consumption of french fries with groundwater pollution in the Pacific Northwest’s Columbia River Basin and the barrios of Hispanic factory workers (Egan 1994). From the imported Brazilian grapes available in Chicago’s supermarkets can be teased out the story of unequal gender relations and increasing landlessness in the San Francisco river valley of northeastern Brazil (Collins 1995). Similarly instructive analyses have been accomplished for coffee (Durning and Ayers 1994), tomatoes (Salitan 1994), and shrimp (Hamilton 1994).

Examining commodity chains has the potential to catalyze action as well as analysis. What is eaten by the great majority of North Americans comes from a global everywhere, yet from nowhere that we know in particular. The distance from which our food comes represents our separation from the knowledge of how and by whom what we consume is produced, processed, and transported. If the production, processing, and transport of what we eat is destructive of the land and of human community—as it very often is—how can we understand the implications of our own participation in the global food system when those processes are located elsewhere and so are obscured from us? How can we act responsibly and effectively for change if we do not understand how the food system works and our own role within it?

By illuminating the concrete ways in which local food consumption is linked to global structures, commodity chain analysis can help elucidate how consumption choices in one place affect natural resource use and social conditions elsewhere. Such knowledge can provide the impetus for consumers to become more sustainable eaters. And just as eating globally obscures the negative impacts of food production, eating locally can catalyze positive local transformations. Recognition of one’s residence within a foodshed can confer a sense of connection and responsibility to a particular locality. The foodshed can provide a place for us to ground ourselves in the biological and social realities of living on the land. A political economy of food is now well established (Bonanno et al. 1994, Goodman et al. 1987). But perhaps we need a political *ecology* of food, which explicitly encompasses natural resources. Social scientists interested in natural resources have much to contribute to such an endeavor.

Further Information

Jack Kloppenburg
Department of Rural Sociology
340A Agricultural Hall
1450 Linden Drive
University of Wisconsin
Madison WI 53706
608-262-6867
jrkloppe@facstaff.wisc.edu

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City Farmer
Canada's Office of Urban Agriculture
#801-318 Homer St.
Vancouver, B.C. V6B 2V3
Phone: (604) 685-5832
Fax: (604) 685-0431
www.cityfarmer.org

Community Food Security Coalition
P.O. Box 209
Venice, CA 90294
Tel: 310-822-5410
Fax: 310-822-1440
<http://www.foodsecurity.org/>

The Food Alliance
1829 NE Alberta, Suite 5
Portland, OR 97211
call (503) 493-1066
fax (503) 493-1069
www.thefoodalliance.org

Food First
<http://www.foodfirst.org>

International Forum on Globalization.
1555 Pacific Avenue
San Francisco, CA 94109
<http://www.ifg.org>
Publishes IFG News quarterly

Rural Advancement Foundation International (RAFI)
<http://www.rafi.ca/>

Urban Gardening: Creating Community through Agriculture

Kate Brown
City Sprouts, Omaha, NE

In an old, inner-city neighborhood in North Omaha, people are coming together to garden. Sprouting from the soil are lettuce, tomatoes, potatoes, and hope, beauty, and a sense of community. Using urban gardens, the volunteers of the grassroots group City Sprouts are beautifying their neighborhood, revitalizing their community, and creating economic hopefulness. They are doing all this in an area known for deteriorating buildings, violence, and low incomes. Reintegrating agriculture—in this case, urban gardens—helps create community in cities.

City Sprouts became a group in 1995 when concerned community members came together to reclaim an overgrown city lot and make it a garden. The group's organizers bought the ½-acre lot and began the hard work of reclaiming the degraded soil. With the help of hundreds of volunteers, weeds were cleared, beds were dug, and seeds planted. The resulting harvest was much more than the vegetables, flowers, and value-added products sold to local restaurants or at the Omaha farmers' market. Produce shared with neighbors created trust. Youth working in the garden plots learned new skills. And an eyesore became a place of beauty.

City Sprouts soon began to include educational activities in its programs. Through an Omaha Public School program, City Sprouts' new garden was used for a summer science project in 1996 and 1997. Sixty students used eight raised beds to learn about biology. In 1997, members of Girls, Inc. And Creighton University women science students made two small prairie plots in the garden that will be used for education on the ecology of prairies.

City Sprouts also holds horticulture, marketing, and nutrition classes for the public. Hands-on learning takes place during the volunteer work parties to maintain the garden.

Besides being nutritionally beneficial, the produce grown in the City Sprouts garden may become a small business for resourceful entrepreneurs. During 1998, City Sprouts worked with the Boys and Girls Clubs of Omaha to train 15 low-income teenagers in horticulture production, marketing, accounting, and team-building skills. Volunteers and interns constructed at least 30 new garden plots with low-income families and community groups in nearby neighborhoods.

Ties to the community are very important to City Sprouts. When starting the garden, volunteers handed out leaflets in the neighborhood announcing their plans and inviting everyone to work days. Local ministers were contacted to involve interested parishioners and the work has been closely coordinated with two nearby neighborhood organizations. The efforts to involve the community have paid off: volunteers have come from more than 15 community groups including churches, neighborhood associations, schools and unions. Two universities, the Omaha Public Works Department, and Douglas County Extension have also become involved as well as eight different businesses that donated services or materials.

This good work has not gone unnoticed. City Sprouts has received numerous awards and honors including the Orchard Hill "Neighbor of the Month" award. Their success has also attracted grants from the Omaha Community Foundation, the America the Beautiful Fund, the American Community Gardening Association, and the Nebraska Environmental Trust.

With its mailing list nearing 600, City Sprouts is growing like the zucchini in its garden. To keep things organized, an 18-member board of directors sets the groups direction while a small executive committee makes the day-to-day decisions. But while City Sprouts has grown, so too has the expense and organizational complexity of running its operations. Andrew Jameton, a University of Nebraska Medical Center professor and founding member of City Sprouts says, "The planting of the seeds is not such a problem compared to trying to organize everyone." In 1998, City Sprouts hired a volunteer coordinator, Jennifer Schumaker, to cultivate and sustain volunteer participation.

City Sprouts' work in 1998 included the intern program mentioned above, a North Omaha garden tour, and activities at their current garden. The group is also planning a demonstration project to develop an additional garden in an empty lot by first recycling lawn waste and other organic materials to build up the soil. "Operation Recover" is the project funded by the Environmental Trust Fund to deliver and monitor the effects of organic materials at the new site. Creighton University botanist Mary Ann Vinton and soil specialist Mike Elson will work with Creighton University science students on this project.

On the original City Sprouts brochure, the description of the group stated "An organic gardening project." Three years later that description had changed to "Sustaining communities through gardening." The group's broader goal is to act as a catalyst for the greening of inner city Omaha. They are now starting new projects that address local access to food and that establish more community gardens on abandoned land in the city.

Jameton, who lives in the North Omaha neighborhood where City Sprouts works, thinks the hard work is worth it. He says, "The sense of community and rootedness, of getting people together" has been the greatest reward of City Sprouts' work.

Further Information

Kate Brown
3606 Lafayette Ave
Omaha NE 68131-1364
402-558-5938
kbrown@earthlink.net

City Farmer
Canada's Office of Urban Agriculture
#801-318 Homer St.
Vancouver, B.C. V6B 2V3
Phone: (604) 685-5832
Fax: (604) 685-0431
www.cityfarmer.org

Community Food Security Coalition
P.O. Box 209
Venice, CA 90294
Tel: 310-822-5410
Fax: 310-822-1440
<http://www.foodsecurity.org/>

The Food Alliance
1829 NE Alberta, Suite 5
Portland, OR 97211
call (503) 493-1066
fax (503) 493-1069
www.thefoodalliance.org

GardenWeb
<http://www.gardenweb.com/>

Lincoln's Historic Haymarket Farmers' Market

Billene Nemec
Manager, Haymarket Farmers' Market

In 1985, a nonprofit corporation — the Lincoln Haymarket Development Corporation (LHDC) — was formed to revitalize the Historic Landmark District of Lincoln, Nebraska. As part of this effort to recapture the past vitality and energy of this area, the LHDC along with the Small Farms Action Group relocated the city's Farmers' Market to the Haymarket District. Although the LHDC saw the move as contributing to the success of the Haymarket, to the vendors it was just another in a long string of moves that made it difficult for them to build a customer base and achieve the status of a valid business as opposed to a hobby. In 1989, the LHDC became the sole contractor for the city of Lincoln's Public Market, and made the economic and management commitments to ensure the success of the Farmers' Market. Since then, the Farmers' Market has grown from hope for a few to hope for many; from a handful of vendors and a trickle of customers to a respected seasonal business; and from a tribute to the past to a vision of the future.

Since 1975, the City of Lincoln (NE) has sponsored a farmers' market through contracts with several non-profit agencies. As different organizations sponsored the market they would want the market close to them — so about every two years the market would move and customers had to try to find it. Sometimes it felt more like a shell game than a market. As a result, in 1986 there was just a handful of dedicated vendors and customers.

In 1986, the Lincoln Haymarket Development Corporation in partnership with the Small Farm Action Group brought the farmers' market to the Haymarket, an older, historic commercial sector of Lincoln. Initially the market was located on the back side of a dock area of questionable structural integrity, but still an improvement on previous locations under the viaduct.

In 1989, I found myself in the position of not only a vendor, but as the temporary manager of the market. This was to be for a few weeks until a new manager could be hired, and now I'm starting my 11th year. With this new role I became aware of what a farmers' market is and how important it is for so many in and outside of the community. A successful market is community driven and produce based.

The community starts to come together on Saturday morning as the first vendor arrives at 6:00 am. The vendors set up, greet each other, and visit to see what the other vendors have and to check prices. The vendors work in friendly competition and try to avoid depressed pricing. Vendors who do try to underprice others generally don't fare well — customers come to buy quality and expect to pay for it.

Customers start to arrive to watch the theater in the street unfold and to see who has produce to their liking, what will fit their menu, and to check to make sure their favorite vendors are there and to plan their strategy of who goes to which line to buy what product.

Customers gather and wait. A silence falls over the market and you can tell that it is almost 8:00 am, and they are waiting to hear the whistle blow. When it does, a cheer goes up and the marketing, education, and selling begins.

In the last 13 years, the market has grown from a handful of vendors to more than 100 vendors and an average of 6000 customers per Saturday (8am to noon) in a season recently expanded to early May through the end of October. The market started as produce only and will always be mainly produce, but in response to customer demand, its product mix is now about 60% produce and the rest baked goods, other value-added products, and crafts. Eggs, poultry and beef are sold. In 1998, 95 vendors purchased season passes and a few stalls were rented by the day. Estimated total sales for the year were more than \$3 million. Within the next few years, the city plans to expand to four farmers' markets, located in different parts of the city and held at different days and times.

Customers come because they love it. They fill the streets, the sidewalks and the curbs. The market is motherhood and apple pie; they come for the memories; the smells of grandma's kitchen; the garden produce they remember helping to gather as a child. They bring their children to help educate them about food choices.

They come to visit and to be seen, but most of all for the wide variety of produce.

The market is community-driven and produce-based. It is the city's market and many agencies are involved including the Lancaster County Health Department, the police department, the mayor, the city council, the Department of Agriculture, the Department of Weights and Measures, and the Department of Urban Renewal. The businesses and residents of the area are also supportive.

Why do 6000 people come to the market? It puts a face to their food. Where else in the food shopping experience can you visit with the producer of home-baked breads? Or the vegetable grower, to ask if they could grow an heirloom variety not found in the supermarket anymore?

Customers come to learn about products that are new to them, such as goat milk cheese that they can sample, get a brochure, and visit with the producer. They come for the variety — 25 to 30 varieties of Nebraska-grown tomatoes! — and to see the growers' pride in their products.

Vendors come as a family to sell and the customers come because they remember the pie made from gooseberries they once picked in grandma's backyard. There have been many success stories involving family vendors. One family's two children sold at the market since they were 10 years old. They grew the produce and they baked the sweet breads. They sold through their

high school days and when it came to college they both received full scholarships and after college fellowships because, in part, their marketing experience showed that they were self-starters, had business skills, could work with a wide spectrum of people, could set goals and knew how to achieve them. The farmers' market is produce based, but it is about a lot more than food.

Community bonds grow beyond the Saturday market. Customers visit vendor's farms and learn about the land that grows their food. Vendors visit each other's farms to learn about different production techniques.

Customers come for the food, they stay for the fun, and as they leave they take with them the flavor and memories they came for. And knowingly or unknowingly, they are helping to preserve the landscape of rural Nebraska. A bond is made between grower and consumer, urban and rural. Customers become loyal supporters and better understand what farming is about — it's about food. The process is like a ladder — one side is the vendor, one side is the consumer, and the connecting rung is the farmers' market.

Further Information

Billene Nemec
Historic Haymarket
Lincoln Farmers' Market
335 North 8th, Suite B
Lincoln NE 68508
402-435-7496

Gibson, E.L. 1993. *Sell What You Sow: The Grower's Guide to Successful Produce Marketing*. New World Publishing.

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Community Strategies for Preserving Farms and Farmland

Michael Pressman
1000 Friends of Minnesota

A local food system requires local farmland. Community supported agriculture, U-pick operations, and farmers that sell direct to customers through farmers' markets and other means do best when located in proximity to their customers. However, land near towns and cities is often under pressure for conversion to housing and other development, and agriculture cannot compete for land at development prices.

As sprawling development patterns continue to overtake our countryside, communities throughout the country are working to create an alternative future that recognizes natural resources as a key part of a healthy community. The Green Corridor Project is an innovative, community-based approach to protecting farmland and natural areas in two rapidly developing Minnesota counties east of the Twin Cities. Four incentive-based tools will be the primary mechanisms to create the Green Corridor: donated conservation easements, Purchased Development Rights (PDR), Transferred Development Rights (TDR), and land acquisition.

Michael Pressman is Director of Planning for 1000 Friends of Minnesota, Minnesota's only statewide growth management organization. He holds a Masters Degree in Regional Planning from the University of Pennsylvania. Michael has been involved in numerous land protection planning projects from the site scale to the landscape scale.

The following Fact Sheets describe the Green Corridor Project and the main land protection tools used by the project.

Further Information

Michael Pressman
1000 Friends of Minnesota
- 370 Selby Ave, Suite 300
St. Paul, MN 55102
phone: 651-312-1000
fax: 651-312-0112
mpress@1000fom.org
<http://www.1000fom.org>

American Farmland Trust

Farmland Information Library: <http://farm.fic.niu.edu/fic/home.html>
Homepage: <http://www.farmland.org>

GREEN CORRIDOR PROJECT

Proposed Green Corridor Opportunity Areas

What is the purpose of the Green Corridor Project?

The Green Corridor Project is dedicated to helping Chisago and Washington counties' residents keep the beautiful countryside, farmland and special natural areas that make them great places to live.

What is a 'green corridor'?

Green corridors are farmland, natural areas, environmentally sensitive lands, and scenic areas that are linked together throughout the community. The Green Corridor will link these lands with already protected public and private lands in Chisago and Washington counties.

What will happen in the Green Corridor?

It is proposed that owners of lands in the Green Corridor would be eligible for incentive-based land conservation tools that they can use in considering the future of their property. The Green Corridor Project will work closely with local government and land owners to selectively apply the following four land protection tools to lands located in the designated green corridor: donated conservation easements, purchased development rights (PDR), transferred development rights (TDR), and land acquisition. Lands to be protected must meet the criteria for each tool and **must be owned by landowners interested in participating in the programs.**

How were the Green Corridor Opportunity Areas determined?

The Green Corridor Project determined the criteria of lands that would meet each of the main four program objectives: protect agricultural land, preserve natural habitat diversity, protect environmentally sensitive areas, and preserve scenic areas. Data were mapped for each of the criteria to guide the mapping work. At public forums in the fall of 1997, more than 250 citizens provided information on their conservation priorities and lands that they would like to see protected. A Green Corridor Advisory Team, of more than a dozen people with specialized technical expertise, used all of this information to map three corridor options of lands that best met all of the program objectives.

During the fall of 1998, more than 260 citizens attended 6 public forums and another 60 local government officials and staff attended special local government meetings to review the three options. Input from these meetings and selected community plans were reviewed by the Green Corridor Advisory Team to help create the Proposed Green Corridor Opportunity Areas.

What will happen next?

The Green Corridor Project will be scheduling meetings with townships and cities in the Proposed Corridors early in 1999 to review the proposed corridors. The collaborative team is providing technical and limited financial assistance to communities and watershed districts interested in implementing conservation programs. A roundtable of community officials and staff, land owners, real estate interests, conservationists, and others is exploring development of proposals for implementing Purchase of Development Rights (PDR) and Transfer of Development Rights (TDR) programs. The Minnesota Land Trust is working with landowners interested in donated conservation easements.

If you or your community is interested in helping to implement the Green Corridor, please contact 1000 Friends of Minnesota or any of the project collaborators.

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The Green Corridor Project

Fact Sheet #1

> 1000 Friends of Minnesota
(612) 412-1000

> Land Stewardship Project
(612) 451-0016

> Chicago Green
(312) 555-1000

> Minnesota Farmland Action
(612) 630-1234

> Minnesota Rural Trust
(612) 412-1000

> Rural Minnesota Initiative
(612) 630-1234

> Twin Cities Farmland
(612) 555-1000

> Growth on Green
(612) 412-1000



The Green Corridor Project... Keeping Open Spaces for Tomorrow

The Green Corridor Project is dedicated to helping the residents of Washington and Chisago Counties keep the beautiful countryside, farmland, and special natural areas that make this a great place to live.

Green corridors are areas of farmland, natural areas, scenic areas and other open spaces that are linked together throughout the community. Green Corridors help communities keep the landscape they love while accommodating growth. This is achieved through incentive-based programs that provide interested landowners with new options.

Open Space: Save It or Say Goodbye

Our communities are growing very fast. We can continue to grow and thrive, but we need to plan proactively for where we want growth to go. If we don't, we can say goodbye to the landscape we love.

- *Every day in Minnesota, an area the size of the Mall of America is paved over.*
- *Minnesota is the fastest growing state in the upper Midwest.*
- *The 13-county Twin Cities area is the fastest growing metropolitan region from the northern plains to the eastern seaboard.*
- *This metropolitan area also is one of the most sprawling (land and resource consuming) of the top 25 metro regions in the country.*
- *Washington County is one of the fastest growing counties in the state and the country.*
- *By June 1994, Chisago County had already passed its projected population growth for the year 2000 by 41 percent.*

Sprawl Costs Us All

Property taxes continue to increase in Minnesota, and more and more communities are finding that explosive, sprawling growth is part of the problem.

Growth can expand a community's tax base, but it also increases demand for costly roads, schools, police, fire, sewer and water lines and other services for which the community must pay. There is mounting evidence that inefficient, sprawling growth is actually a net drain on community tax coffers.

- *Houses Cost More than Farms:* A 1994 analysis of three Minnesota cities shows that residential development costs more tax dollars than it contributes in tax revenues. For every \$1 paid in taxes, farmland demands \$.47 in services, while residential development demands \$1.04 in services.

	Tax revenues	Cost of services demanded
Farmland	\$1.00	\$.47
Residential development	\$1.00	\$1.04

- *Sprawl Costs Taxpayers More:* Economic research done in Minnesota shows that compact developments save taxpayer dollars because services can be provided more efficiently. In Wright County, when service costs of residential development were compared with the revenue they generated, low density residential development had a net deficit which was more than four times that of high density residential development.

Green Corridors Protect More than Open Space

Around the Midwest and throughout the country, green corridors have worked to help communities accommodate fast growth and still keep the landscapes they love. Green corridors provide connections between communities, between already protected lands, and between people and the land. Green corridors protect our green infrastructure, providing a legacy for future generations.

Communities in places from Massachusetts and Michigan to Colorado and Oregon have used green corridors to improve the appeal of neighborhoods and support their long-term tax base. Economic studies around the country have demonstrated proximity to open spaces, agricultural land, and parks boosts property values and enhances the appeal of neighborhoods.

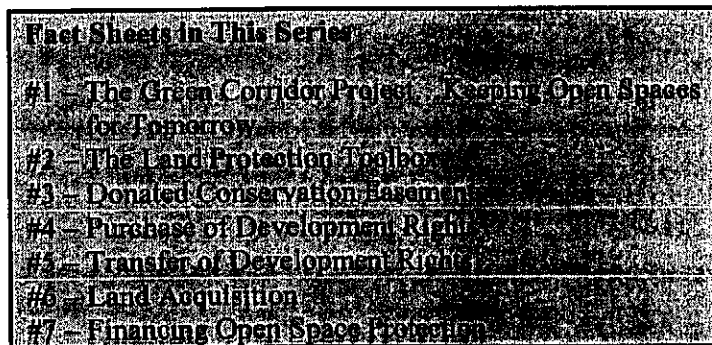
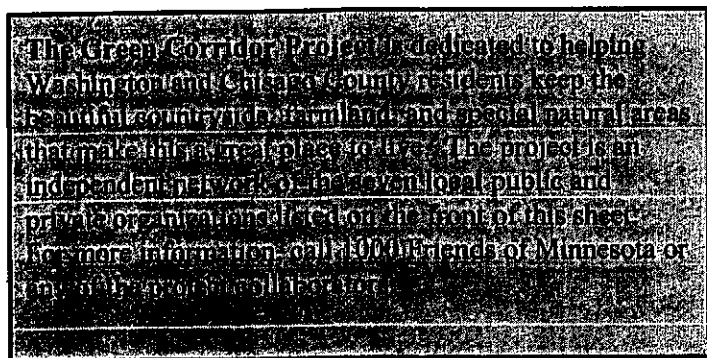
- A study in Boulder, Colorado found that properties immediately next to green corridors had market values 32 percent more on average than similar properties without green corridors nearby.
- In Minnesota, 61 percent of property owners living next to the Luce Line Trail noted an increase in their property values. Realtors confirm that proximity to the trail enhances the appeal and selling value of property.
- An Oregon study found that urban land next to agricultural land was worth \$1,200 more per acre than similar land 1,000 feet away.

Tools to Keep Open Spaces

The Green Corridor Project will help people keep the landscape we love using four incentive-based tools.

- *Donated Conservation Easements*
- *Purchased Development Rights (PDR)*
- *Transferred Development Rights (TDR)*
- *Land Acquisition*

For more information on these tools, refer to the other fact sheets in this series.



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The Green Corridor Project

Fact Sheet #2

> 1000 Friends of Minnesota
(651) 312-1000

> Land Stewardship Project
(612) 611-0611

> Minnesota Conservation Council
(651) 312-1000

> Minnesota Department of Natural Resources
(612) 609-1313

> Minnesota Department of Transportation
(612) 609-1313

> Rural Communities Development
(612) 609-1313

> The Nature Conservancy
(612) 609-1313

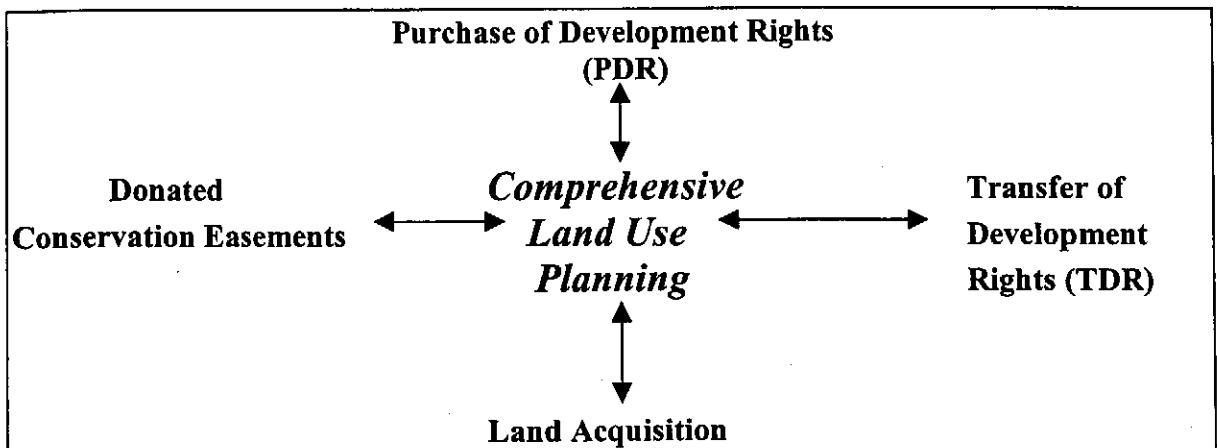
> Washington County
(763) 438-1111



The Land Protection Toolbox

Communities that are concerned about the long-term impacts of development pressures on their farmland and natural areas can look at a number of options. While each of these tools can play a valuable role in maintaining a critical mass of open space and agriculture, no silver bullets can meet all of a community's needs. The most effective strategy is to use the combination of tools that make the most sense for your own city, county, or township.

The Green Corridor Collaborative can help individual communities in Chisago and Washington counties as they examine the toolbox. We can provide technical assistance and references to other communities who have successfully applied these tools.



Donated Conservation Easements are voluntary legal agreements between a landowner and a land trust or local government agency that allow landowners to permanently limit or prohibit development on their property. Conservation easements run with the title so that all future owners of the land are bound by the original agreement.

Purchased Development Rights (PDR) are voluntary legal agreements that allow owners of land meeting certain criteria to sell the right to develop their property to local government agencies, state government, or to a nonprofit organization. A conservation easement is then placed on the land. This agreement is recorded on the title to permanently limit the future use of the land to agriculture, forestry, or other open space uses.

Transferred Development Rights (TDR) are enabled by local ordinances that create *sending areas*, or preservation areas, and *receiving areas* where communities encourage additional growth and development. Landowners in the *sending area* receive *development right credits* which they can sell in exchange for not developing their land. Real estate developers, speculators, or the local unit of government can then purchase the *development right credits* and use them to increase existing or planned densities in *receiving areas*. **Land Acquisition** – is used in select cases when willing landowners want to conserve their land by selling or donating it outright to a public agency or land conservation organization. This mechanism allows the public agency to have full control over a property's future.

Land Protection Tool	Pro	Con
Donated Conservation Easements	<ul style="list-style-type: none"> • Permanently protects land from development pressures. • Landowners may receive income, estate, and property tax benefits. • No or low cost to local government. • Land remains in private ownership and on the tax rolls. 	<ul style="list-style-type: none"> • Tax incentives may not provide enough compensation for many landowners. • Little local government control over which areas are protected.
Purchase of Development Rights	<ul style="list-style-type: none"> • Permanently protects land from development pressures. • Landowner is paid to protect their land. • Landowners may receive estate and property tax benefits. • Local government can target locations effectively. • Land remains in private ownership and on the tax rolls. 	<ul style="list-style-type: none"> • Can be costly for local unit of government.
Transfer of Development Rights	<ul style="list-style-type: none"> • Permanently protects land from development pressures. • Landowner is paid to protect their land. • Landowners may receive estate and property tax benefits. • Local government can target locations effectively. • Low cost to local unit of government. • Utilizes free market mechanisms. • Land remains in private ownership and on the tax rolls. 	<ul style="list-style-type: none"> • Can be complex to manage. • Receiving area must be willing to accept higher densities. • Most successful programs typically require a strong real estate market.
Land Acquisition	<ul style="list-style-type: none"> • Provides maximum flexibility for local unit of government to determine future use of land. • Financial incentive for landowner. • Local government can target locations effectively. 	<ul style="list-style-type: none"> • Can be costly for local unit of government. • Government takes on the costs and liability of land management.

Comprehensive Land Use Planning – Each of these land protection tools has pros and cons which must be weighed by the local unit of government. To most effectively utilize a combination of these tools, the local unit of government should develop a new comprehensive land use plan, or amend an existing plan, to ascertain its unique needs and apply the most appropriate tools for the situation. Comprehensive plan changes should always be undertaken with a maximum level of citizen participation from throughout the community. Land protection tools can complement effective zoning to carry out the goals of the comprehensive plan.

The Green Corridor Project is dedicated to helping Washington and Chicago County residents keep the beautiful countryside, farmland, and special natural areas that make this a great place to live. The project is an independent effort of the local public and private organizations aligned on the front of this sheet. For more information, call 1-800-444-4444 or Minnesota or any other local development.

Fact Sheets in This Series

- #1 – The Green Corridor Project: Keeping Open Spaces for Tomorrow
- #2 – The Land Protection Toolbox
- #3 – Donated Conservation Easements
- #4 – Purchase of Development Rights
- #5 – Transfer of Development Rights
- #6 – Land Acquisition
- #7 – Agricultural Open Space Program

Funding for this project approved by the Minnesota Legislature: ML1997, Chapter 216, Section 15, subdivision 9(d) as recommended by the Legislative Commission on Minnesota Resources, from the Environmental Trust Fund

The Green Corridor Project

Fact Sheet #3

> 1000 Friends of
Minnesota
(651) 312-1000

> Land Stewardship
Project
(612) 331-0019

> Chicago Council
(612) 331-2500

> Minnesota
Farmer Union
(612) 331-2323

> Minnesota Land
Trust
(612) 331-2000

> Rural Community
Development
(612) 331-2000

> Minnesota
Public Lands
Institute
(612) 331-2000

> Minnesota
Conservation
(612) 331-2000



Conservation Easements and Tax Benefits for Landowners

What Is a Conservation Easement?

A conservation easement is a legally recorded agreement by which landowners may voluntarily restrict the use of their land. A conservation easement protects important land resources and can be held by a qualified conservation organization (such as the Minnesota Land Trust) or local unit of government. Provided that certain conditions are met, donors of easements may be eligible for income, estate and/or property tax benefits. One condition is that there must be an established, recognizable public benefit, such as protecting rare species, public water supplies, or scenic vistas visible from roads. Public access is **not** a requirement.

Although the duration of a conservation easement can vary depending on the desires of the landowner, tax benefits are available only for perpetual easements. Many land trusts will only accept perpetual easements, since they provide permanent protection by subjecting all future landowners to the same restrictions. Conservation easements are also the principal legal mechanism used to protect land in a Purchase of Development Rights (PDR) or Transfer of Development Rights (TDR) program (see other fact sheets in this series).

What Types of Land Can Be Protected through Conservation Easements?

Any type of undeveloped or sparsely developed property can be protected with a conservation easement. Conservation easements can be used to protect agricultural land, forested land, wildlife areas, wetlands and other scenic or natural lands.

What Effect Does This Agreement Have on My Property Rights?

A landowner who conveys a conservation easement retains all rights to use the land for any purposes that do not interfere with the conservation of the property as stated in the terms of the easement. The landowner retains the title to the property, the right to sell it, the right to restrict public access, and the right to give it to whomever he or she chooses. However, most or all of the rights to develop are restricted or eliminated. The terms of a conservation easement are individually tailored to reflect each landowner's particular needs, situation and property. For example, one landowner may want to prevent any future development. Another may want to retain the right to construct an additional barn or shed. A third landowner may want to reduce, beyond what is allowed by current zoning, the number of homes that may be built on a certain parcel. The easement can be written to apply to the entire property or to only a portion of it.

How Is the Easement Value Determined?

Land ownership can be viewed as owning a variety of separate rights on the property. These rights include, but are not limited to, the right to farm the land, the right to build on the land, and the right to exclude the public. When a conservation easement limits any of these rights, the value of the land is affected. The value is determined by having a 'before' and 'after' appraisal completed by a qualified appraiser who meets IRS requirements. First, the land is appraised in light of its full development potential. Then the land is appraised again, taking into account the easement restrictions which limit some or all of the property's development rights. The difference between these two figures is the value of the easement.

In instances where the easement is donated and qualifies under IRS regulations, this amount also is the value of a charitable contribution which can be taken as an income tax deduction. Appraisal costs are the responsibility of the landowner considering donating a conservation easement.

What are the Tax Benefits of a Donated Conservation Easement?

Federal Income Tax Benefits—Under the IRS code, the donation of a qualified conservation easement may be treated as a charitable contribution. The value of the contribution can be deducted at an amount up to 30 percent of the donor's adjusted gross income in the year of the gift. If the easement's value exceeds 30 percent of the donor's income, the excess can be carried forward and deducted (again, subjected to the 30 percent limit) over the next five years, if needed.

Estate Tax Benefits—Donation of easements, whether during the landowner's life or by bequest, can reduce the value of the land upon which estate taxes are calculated. This can greatly benefit the landowner wishing to transfer land to relatives. The estate tax benefits of a conservation easement can often mean the difference between heirs having to sell property to pay estate taxes or being able to keep the property in the family.

Property Tax Benefits—The conveyance of a conservation easement may reduce a landowner's property taxes. This depends on current zoning and land use, current assessed value, and whether the owner participates in a current-use assessment program like Green Acres or Metropolitan Agricultural Preserves Program. Under Minnesota law, county assessors must take a conservation easement into consideration in establishing the market value of the land subject to the easement. However, existing tax basis, assessed value, and current zoning of each piece of property are important factors in determining the potential benefits of any easement. The exact terms of each individual easement also have a bearing on its effect on property taxes.

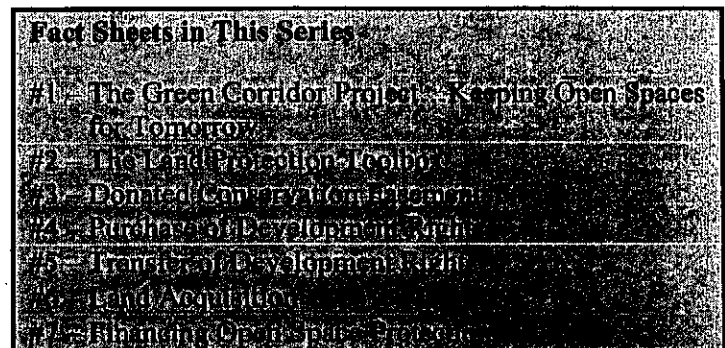
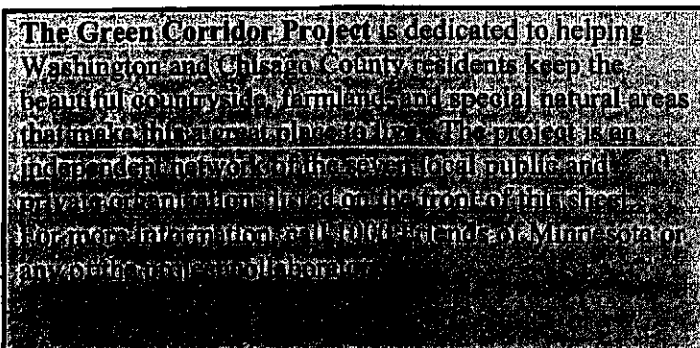
What Criteria Must Be Satisfied?

To be eligible for most of the above tax benefits, the agreement must be entered into with a qualified conservation organization, such as the Minnesota Land Trust, or a local unit of government. In addition, the terms of the easement must be perpetual and they must meet other IRS requirements. The criteria that must be satisfied for the Minnesota Land Trust to accept such a donation are available upon request.

What Rights Does the Easement Holder Have to My Land?

If the Minnesota Land Trust or another qualified organization accepts an easement on your land, it is obligated to oversee and enforce the easement's terms and conditions. For example, an organization has the right to enter and inspect the property (usually once a year) to ensure that the terms of the agreement are being upheld. Except in unusual circumstances, these visits are scheduled with the landowner. The organization does not have the right to use your property, nor does the easement allow public access to the property since it remains privately owned.

To learn more about donated conservation easements, contact the Minnesota Land Trust.



Funding for this project approved by the Minnesota Legislature: ML1997, Chapter 216, Section 15, subdivision 9(d) as recommended by the Legislative Commission on Minnesota Resources, from the Environmental Trust Fund

The Green Corridor Project

Fact Sheet #4

> 1000 Friends of Minnesota
(651) 312-1000

> Land Stewardship Project
(612) 631-0011

> Greater Twin Cities
(612) 315-1100

> Minnesota Farmers Union
(612) 416-3121

> Minnesota Land Trust
(612) 315-1100

> Rural Community Initiatives
(612) 315-1100

> The Trust for Public Land
(612) 315-1100

> The Trust for Public Land
(612) 315-1100

> The Trust for Public Land
(612) 315-1100



Purchase of Development Rights

Purchase of Development Rights (PDR) programs have been used successfully in many areas around the nation. They were pioneered in Suffolk County, New York in 1974 and have since been used across the nation to preserve an estimated 400,000 acres of farmland alone. Programs focused on natural areas and other open spaces have protected additional acreage.

Description

Under a PDR program, a landowner voluntarily sells his or her rights to develop a parcel of land to a public agency or a charitable organization interested in natural resource conservation. The landowner retains all other ownership rights attached to the land, and a conservation easement is placed on the land and recorded on the title. The buyer (often a local unit of government) essentially purchases the right to develop the land and retires that right permanently, thereby assuring that development will not occur on that particular property. The landowner is generally compensated for the value of the right to develop the land through the following formula:

General Approach – Appraisal Method

Appraised Value for Development	-	Appraised Value for Agriculture/Conservation	=	Appraised Value of Development Rights
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Considerations

When considering where PDR fits into a community's land conservation plan, one should consider the cost involved in purchasing development rights on a significant amount of land. In areas with high growth pressure, the cost of a PDR program can be high as the difference between development value and conservation value increases. Used strategically, however, a PDR program can be an effective tool to help maximize a community's conservation efforts. Money for PDR programs can be raised through a variety of means, including bonding initiatives, private grants, and various taxation options. Many communities have found matching dollars from state and federal sources. Additional considerations are noted on the back side of this fact sheet.

Where It Is Working

One of the most successful PDR programs in the country is run by the Agriculture Preserve Board of Lancaster County, Pennsylvania. It has preserved over 23,500 acres of farmland since 1981.

Closer to home, Dunn Township, Wisconsin, located near Madison, initiated a PDR program in 1996. In 1997, the Minnesota legislature passed enabling legislation to explicitly allow local units of government to develop and utilize PDR programs.

The Green Corridor Project is working to develop one of Minnesota's first Purchase of Development Rights program.

Selected State and Local PDR Programs

Jurisdiction	Year of Inception	Acres Protected	Farms Protected	Funds Spent to Date	Funding Source
Selected State PDR Programs					
Colorado	1994	1,878	3	\$610,000	A portion of lottery proceeds, FFP
Delaware	1991	15,961	65	\$18,950,000	Appropriations from special capital fund, FFP
Maryland	1977	128,031	884	\$140,637,690 (not including admin costs)	Agricultural transfer tax, portion of real estate transfer tax, FFP
Massachusetts	1977	39,334	430	\$95,000,000	State bonds, FFP
Michigan	1994	79	2	\$709,600	Withdrawal penalties from state circuit breaker program, FFP
New Jersey	1983	34,972	234	\$167,826,221	State bonds, FFP
Pennsylvania	1988	91,813	730	\$186,000,000	Cigarette tax, state bonds, county allocations, FFP
Selected Local PDR Programs					
Marin Co., CA	1980	25,504	38	\$17,000,000	State bonds, 10% of unallocated county funds
Sonoma Co., CA	1990	22,850	60	\$34,000,000	.25% sales tax, state bonds
Peninsula Twp., MI	1994	724	10	\$1,253,000	Property tax increase, state grants, FFP
Suffolk Co., NY	1974	5,568	139	\$26,000,000	Municipal bonds, FFP
Forsyth Co., NC	1986	1,236	20	\$1,869,965	County budget reserve, FFP
Virginia Beach, VA	1995	48	1	\$267,016	Property tax increase, cellular phone tax
King Co., WA	1979	12,691	209	\$54,113,724	Municipal bonds, FFP
San Juan Co., WA	1990	670	5	\$1,419,401	Real estate transfer tax
Dunn, WI	1996	174	1	\$260,000	Property tax increase

Source - Tables 3.1 and 3.2 in "Saving America's Farmland: What Works", American Farmland Trust (1997) pages 86-87

FFP: Federal Farmland Protection Program.

Program in Colorado is a multi-purpose programs; the figures in the table represent easement acquisitions on farmland.

Detailed information on setting up a PDR program is available in the Green Corridor Project's publication: "Protecting Your Communities Natural Resources: A Land Protection Toolbox of Local Government"

The Green Corridor Project is dedicated to helping Washington and Lincoln County residents keep the beautiful country, wildlife, and special natural areas that make this area a place to live. The project is an independent entity serving both local public and private organizations in the development of this area. For more information call 1-800-888-6666 or visit our website at www.green-corridor.org.

Fact Sheets in This Series

- #1 - The Green Corridor Project: Keeping Open Spaces for Tomorrow
- #2 - The Land Use Planning Toolbox
- #3 - Donated Conservation Easements
- #4 - Encouraging Development in Rural Areas
- #5 - Transfer of Development Rights
- #6 - Land Acquisition
- #7 - Financing Open Space Protection

Funding for this project approved by the Minnesota Legislature: ML1997, Chapter 216, Section 15, subdivision 9(d) as recommended by the Legislative Commission on Minnesota Resources, from the Environmental Trust Fund

The Green Corridor Project

Fact Sheet #5

> 1000 Friends
Montgomery County
(651) 317-1000

> Land Stewardship
Project
(612) 457-0018

> Citizens County
(601) 316-6500

> 1000 Friends
Pinelanders
(912) 317-1231

> Minnesota
TNR
(651) 647-9500

> Wildlife
Shoreline
(612) 317-1000

> 1000 Friends
Greenland
(603) 317-1000

> 1000 Friends
Greenland
(603) 317-1000



Transfer of Development Rights

Transfer of Development Rights (TDR) programs use market forces to simultaneously promote conservation in high value natural, agricultural, and open space areas while encouraging smart growth in developed and developing sections of a community. Successful TDR programs have been in place since 1980, and have protected tens of thousands of acres of farmland and open space throughout the country.

Description

In a TDR program, a community identifies an area within its boundaries which it would like to see protected from development (the sending zone) and another area where the community desires more urban style development (the receiving zone). Landowners in the sending zone are allocated a number of development credits which can be sold to developers, speculators, or the community itself. In return for selling their development credits, the landowner in the sending zone agrees to place a permanent conservation easement on his or her land. Meanwhile, the purchaser of the development credits can apply them to develop at a higher density than otherwise allowed on property within the receiving zone.

The attached sheet provides a visual example of how TDR can work in a community.

Considerations

TDR programs have the advantage of using free market mechanisms to create the funding needed to protect valuable farmland, natural areas, and other open space. However, many people find TDR programs complex and administratively challenging, requiring the local unit of government to make a strong commitment to administering a potentially complicated program and educating its citizens and potential developers. TDR programs must be combined with strong comprehensive planning and local controls in order to be successful.

Where It Is Working

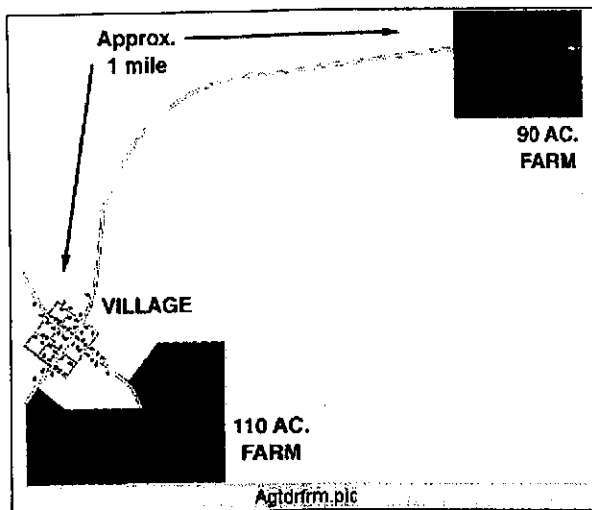
Montgomery County, Maryland, near fast growing Washington, D.C., established its TDR program in 1980. By the end of fiscal year 1997, the TDR program had protected 39,180 acres (out of a total sending area of 89,000 acres) under protective easement. Prior to 1980, the county lost an average of 3,500 acres of farmland per year to development. In the first decade following the establishment of the TDR program, the county lost a total of 3,000 acres to development, a drop of approximately 92 percent.

The New Jersey Pinelands, an environmentally unique and sensitive area of about one million acres, was targeted for protection through The New Jersey Pinelands Protection Act of 1979. The Pinelands Commission, the regional land use authority, established a TDR program in 1980 which had protected 5,300 acres by 1991.

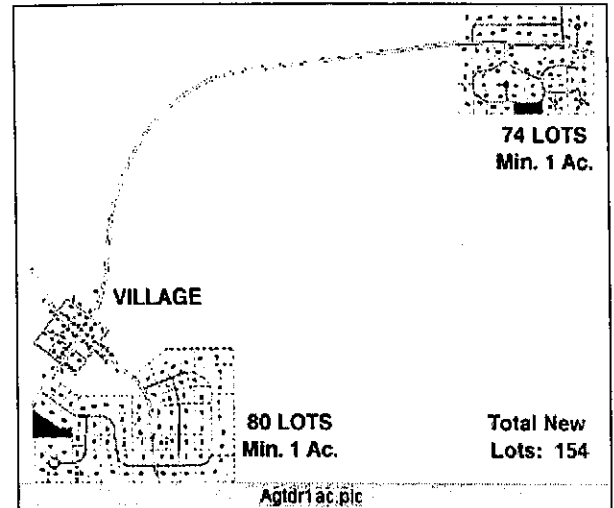
In 1997, the Minnesota legislature passed enabling legislation to explicitly allow local units of government to develop and utilize TDR programs. The Green Corridor Project is working to develop Minnesota's first formal Transfer of Development Rights program.

Transfer Of Development Rights

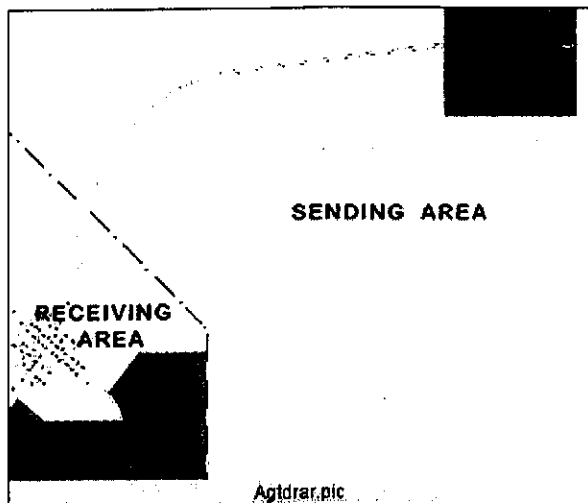
Hypothetical Example



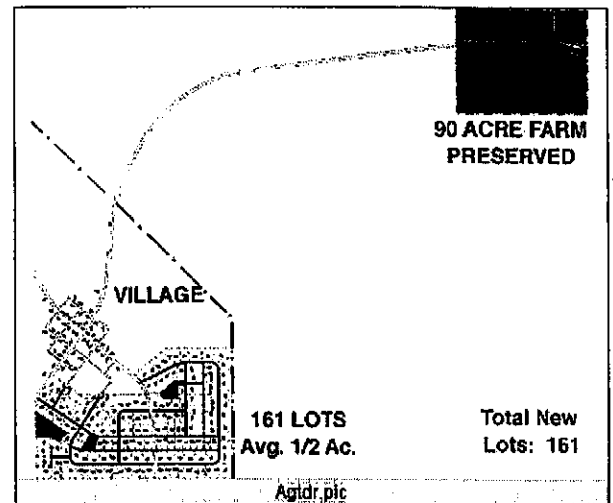
Existing Conditions



Conventional Development



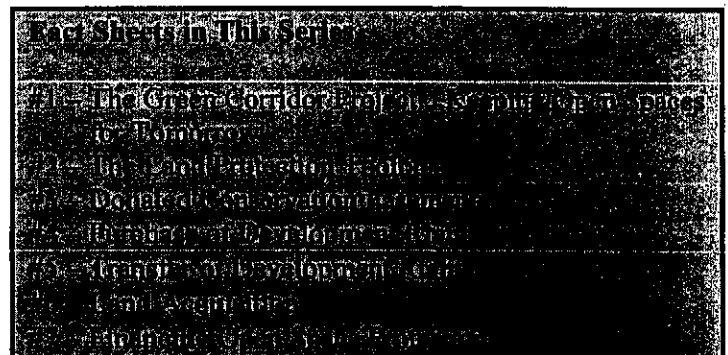
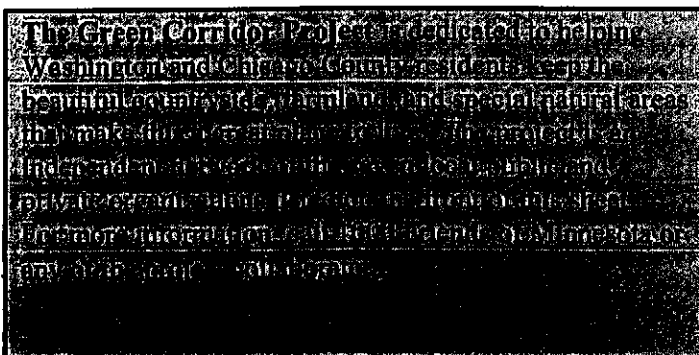
TDR Concept



TDR Implementation

*Note – the actual density bonus is set by local ordinance and need not be this high.

Detailed information on setting up a TDR program is available in the Green Corridor Project's publication: "Protecting Your Communities Natural Resources: A Land Protection Toolbox of Local Government"



Funding for this project approved by the Minnesota Legislature: ML1997, Chapter 216, Section 15, subdivision 9(d) as recommended by the Legislative Commission on Minnesota Resources, from the Environmental Trust Fund

The Green Corridor Project

Fact Sheet #6

1000 Friends of
Minnesota
(612) 312-1000

Land Stewardship
Project
(612) 612-0610

Chicago County
(612) 312-1000

Minnesota
Farmers Union
(612) 612-1111

Minnesota Land
Trust
(612) 312-9500

Minnesota
Land Trust
(612) 312-9500

Minnesota
Land Trust
(612) 312-9500

Minnesota
Land Trust
(612) 312-9500

Land Acquisition

Land acquisition is a process in which a public agency or nonprofit land conservation organization purchases all the ownership rights to the land from a willing seller.

WHAT ARE THE PUBLIC BENEFITS OF ACQUIRING LAND FOR CONSERVATION?

- **Special Management Needs of Waterways and Other Sensitive Areas Can Be Met**
- **People Can Enjoy Public Access for Education and Recreation**

Public ownership of land may be the best choice when local governments need full control of the land. Drinking water sources and land by lakes and rivers may need special management to protect water quality. Environmentally sensitive lands such as steep slopes and areas with native plants or wildlife may need special care. People may want public access to the land for education and recreation.

WHAT ADVANTAGES CAN THE LANDOWNER ENJOY?

- **Landowner Paid Full Fair Market Value**
- **Landowner May Receive Tax Benefits with a Donation of the Land's Value**
- **Landowner May Exchange Land to Avoid Tax Liability**

Landowners are paid full fair market value based on an independent appraisal of their land. They may enjoy tax benefits by donating all or part of the value of their land or by exchanging land (purchasing another property within a short period of time).

HOW DOES A PUBLIC AGENCY OR NONPROFIT ORGANIZATION ACQUIRE LAND? WHAT IS THE PROCESS?

First, the landowner and a public agency or a nonprofit conservation organization (such as the Trust for Public Land) negotiate an option or an agreement to purchase the land at a certain time and at a price based upon the appraised fair market value. The agency or the nonprofit organization then identifies and secures funding for purchasing the land and takes care of real estate transaction details: appraisal of the land's fair market value, environmental assessment, title investigation, and land survey. The final step is transferring the land's ownership and payment on a specific date, known as the closing.

WHAT ARE SOME WAYS TO STRUCTURE A PURCHASE TO MEET PUBLIC AGENCY AND LANDOWNER NEEDS?

- **Landowner Can Continue Living on the Land**
- **Payment Can Be Spread Out Over Time**

To provide for a landowner who wants to continue living on the land, a public agency can delay public control of all or a portion of the land by negotiating a life estate or a lease-back arrangement. With a life estate, the public agency pays the landowner fair market value for the land minus the value of the landowner's use during his or her lifetime, which depends on the projected life span of the landowner. The landowner receives payment during his or her lifetime and continues to live on the land.



For tax planning reasons, a landowner may prefer to receive several payments spread over time instead of one large sum at closing; lease-purchase and annuities are two potential methods to meet the landowner's needs. In a lease-purchase, the agency purchases the land after making lease payments through an agreed-upon time period; the title is conveyed to the agency when the last lease payment is made. The total cost is usually the land's fair market value at the time of the agreement plus interest. With an annuity, a buyer purchases an annuity benefiting the seller and receives title to the land. The seller receives annuity payments, a set dollar amount, over time.

Payment by the agency can be spread out or made in one lump sum. For budgetary reasons, a public agency may prefer to pay over time. With a lease-purchase involving only the seller (described above), the agency pays the seller directly over time. When the seller wants to receive a lump sum, but the agency can only pay over time, the agency can use a variety of financing strategies to purchase the land. Please refer to the Financing Land Protection Fact Sheet in this series for more information on financing public purchase of land for conservation.

WHERE DO PUBLIC AGENCIES SECURE FUNDS TO PURCHASE LAND?

Funding is available from many different sources, both private and public. Local sources used elsewhere in the United States are property taxes, special assessment districts, sales and use taxes, real estate transfer taxes, impact fees, bonds, and user fees. Other public sources are state matching grants, mitigation funds, and habitat protection funds. Corporations, foundations, and individuals may contribute private funds. Being creative about funding strategies and assembling funding from several sources may make land protection possible when it would otherwise be difficult. The Financing Land Protection Fact Sheet in this series provides more information about funding sources.

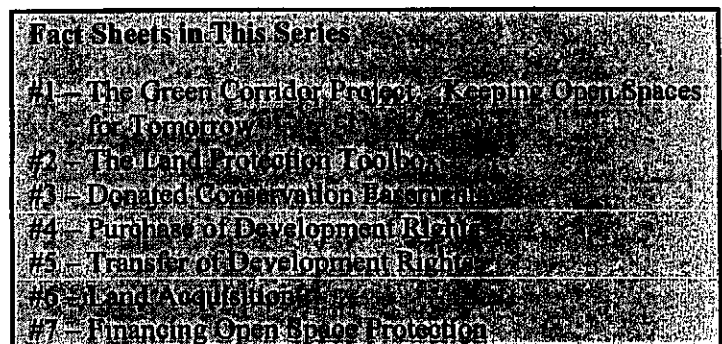
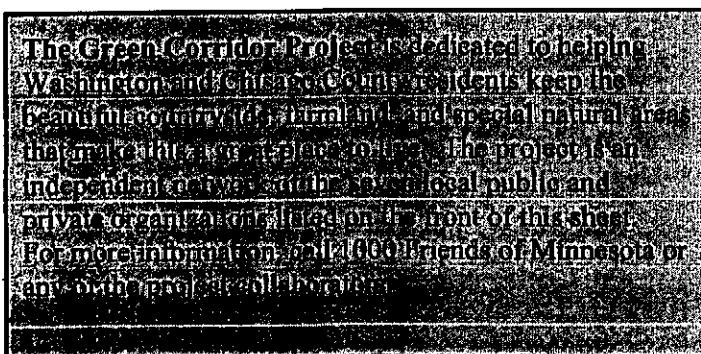
HOW CAN LAND PROTECTION AND DEVELOPMENT BE COMBINED?

- Limited Development May Be a Solution**

In some cases, the most important part of the land can be protected while the rest of the land is developed in a manner which is compatible with the public open space and is sensitive to community interests. Limited development may generate sufficient funds to preserve open space without public funds.

To learn more about purchase of land by public agencies or nonprofit organizations, contact the Trust for Public Land.

For more information on these tools, refer to the other fact sheets in this series.



Funding for this project approved by the Minnesota Legislature: ML1997, Chapter 216, Section 15, subdivision 9(d) as recommended by the Legislative Commission on Minnesota Resources, from the Environmental Trust Fund

Community Supported Agriculture

Molly Bartlett
Silver Creek Farm (Ohio)

Community Supported Agriculture (CSA) is an innovative approach that connects local food producers with local food consumers. For an up-front payment in the spring, a member becomes a shareholder for the growing season, receiving a weekly distribution of fresh produce plus establishing a personal connection to a local farm. Farmers benefit from the pre-payment which allows them to pay for seed and other input costs without the need for a bank loan. CSAs are thriving throughout the United States as well as Japan and Europe.

Silver Creek Farm is a small family farm located in Hiram, Ohio, 40 miles east of Cleveland. The farm is certified organic for vegetables and berries. Poultry and a 100-ewe flock are raised for meat and fiber. For six years there has been a 100-member CSA group in place. It is undeniably the most rewarding and sustainable style of direct marketing that this farm has undertaken in its 15-year history. CSA is a meaningful and delicious way for people to take some responsibility for the health of their bodies and communities.

The following article describing Silver Creek Farm CSA was written by Holly Harman Fackler, editor of the Ohio Ecological Food and Farming Association, and appeared originally in the October 1998 issue of Growing for Market.

“What we try to sell is the whole idea of being part of the farm. No one understands that initially. What happens is that you get a critical mass of people who, besides being committed, also become your advocates.”

Ted Bartlett

The cacophonous crowing of an insomnolent rooster splits the silence, and the farm issues a collective yawn beneath a cloudless June sky. From the barn, ewes deliver a contralto retort to bleating lambs, and curly-coated kids nuzzle the bellies of their mohair-clad mothers. Hatchlings keep up a steady chorus of peeps and cheeps from their cozy lamp-lit nurseries. Slow, throaty utterances of laying hens escape the chicken coop. Nervous guinea fowl pick endlessly at the dirt while two well-dressed women from the city step gingerly around drying mud puddles, assessing the farm's value as a garden club destination.

Sometime between 8:30 and 9, cars and vans begin to fill up the farm drives, and energetic occupants spill out in every direction. The newcomers—young and old, mothers with children, single adults, whole families—are dressed for the farm in knee-high rubber boots, cut-off shorts, faded tee-shirts and hats. Some pull up chairs in the shade near the packing shed to help repot tomatoes, one of the day's scheduled tasks. Others gather up bushel baskets and amble toward sun-drenched fields to harvest greens. A group of sunscreen-slathered children confer in a rectangle of tilled earth, deciding among themselves where to plant what, then disappear to find the necessary implements and supplies.

One boy's boots provide inadequate protection from the seduction of a barnyard mudhole, so he heads off towards the farm pond for a rinsing. The slime-splattered youth is followed by a pair of smaller children zigzagging their way toward the vegetables, equipped with a butterfly net, stalking a toad.

Amid the spinach and snow peas, mothers exchange grievances and trade ideas for resolving the latest parental challenge or countering the newest threat to the food supply. Two farm interns and an employee provide gentle guidance and direction to the pickers, making sure the necessary work gets done and passes muster with mission control back at the packing shed, with whom they stay in radio contact. The pickers follow the flow but keep up the prattle. It is mindless work, good for the body, good for the soul.

This is Silver Creek Farm CSA on a Thursday. Its shareholders have come (as a different group does on Sundays) not just to fulfill the work requirement necessary for a \$100 season discount and to pick up their weekly bag of produce. They are here because the opportunity to invest themselves in this farm is part of the dividend they receive. To many that experience is just as important as what they carry home in the bag.

In many cases the time devoted far exceeds the required work obligation. One woman with an eight-year relationship to the farm says she's been volunteering weekly in the greenhouse since March, just because she wants to. Another indicates that she and her children help out on the farm six months of the year for the sheer joy of it. For a family of home schoolers, Silver Creek Farm provides a lab for their science curriculum. One woman informs me that being associated with Silver Creek has inspired her adolescent daughter to think about farming herself someday. Members use words like 'lucky' and 'appreciate' and 'wonderful, good food' to describe their experience here. The connection is not only with the food, and the people, but with the very earth of the place.

By noon most of the produce for 52 households is ready for pick-up or delivery, and the workers are hungry. Rather than dispersing in haste to the nearest fast food drive-thru, the CSA-ers continue their conversations in the backyard of the farmhouse over a leisurely potluck lunch that showcases Silver Creek produce to fine advantage. As the adults clear away meal remnants and tend the infants and toddlers, older children peel down to bathing suits and hop an ATV to the pond, which has an inviting sandy beach. Earlier in the spring the Silver Creek kids

hiked through the back 50 with a local naturalist/field ornithologist, learning to identify the farm's songbirds and flora. Last fall, they created a ghost trail in the 20-acre-woods, completely on their own initiative.

Don't say it too loudly, but this is a 75-acre working farm (with 18 acres of vegetable crops), not an amusement park. Not every distribution day is as picture perfect, of course. Sometimes it rains and there's a lot of slipping and squishing about.

Silver Creek Farm, established 15 years ago by Cleveland natives Ted and Molly Bartlett, has the longest running CSA in Ohio, now in its sixth year. It also is the largest Ohio CSA, even after downsizing from 165 to 100 member households. Silver Creek Farm was already established as a wholesaler of certified organic vegetables in 1993 when Ted and Molly signed up 45 CSA households recruited from the mailing list they had built during their four previous years of marketing direct and to retailers. They focussed on quality.

Over the next two years, they gradually came to realize that although the herbs and vegetables and blueberries were important, that isn't really what CSA is selling. As they moved beyond the idea of CSA being an alternative distribution pipeline for produce, and began to emphasize shareholder involvement, members started to grasp the implications of buying into a farm.

"To make a CSA successful for the long run, you have to have more to offer than commodities. You have to sell the farm, not just the tomatoes," Ted says. "If you simply offer commodities you will lose out to the supermarket or co-op every time. You have to have quality produce, but it's got to be more than vegetables."

That 'more' is what the Bartletts call the social benefits of belonging to Silver Creek. It's the idea of 'joining a farm' — of spending time in a safe place with like-minded people and addressing in a proactive, concrete way some important environmental and land-use issues. "The social aspect is a big part of what we have to offer," Ted asserts. Molly wholeheartedly agrees, noting that CSAs are a lot like churches: "They're a place where people connect."

In 1993 and 1994, the Bartletts grew vegetables for hungry clients who had been convinced that they wanted local, organic produce. Now many of the consumers also participate in the life of the farm. "For two years we did it alone," Molly remembers. "In opening the doors, it was all positive."

Farming is an additional career for both Bartletts. An avid outdoorsman attracted by the opportunity to work outside and be his own boss, Ted still has a sort-of regular day job — professor of philosophy at Cleveland State University. Molly is an accomplished, practicing potter, with a studio in their farmhouse. She has lifelong experience in crafting and design (she worked for years in her family's clothing design business), which led naturally to a fascination with fiber and the animals that produce it. Silver Creek Farm's own wool and mohair blend is

sold as spun and dyed yarn and as finished sweaters through various outlets, including from the small fiber and pottery shed located on the farm, and through optional CSA shares.

The Bartletts encourage CSAers to be working core members and almost half of the 96 member households are. “Our experience has clearly shown that those who become the most involved with the farm are the ones who are the most satisfied with their experience,” Silver Creek Farm’s CSA literature states. “Not only do you get good fresh food, but you also establish a local farm connection. You have a season long open invitation to come visit your food, see how it is grown and even lend us a hand.”

A working core person pays \$325 and is expected to spend eight half-days on the farm volunteering. Non-working members pay \$425. Grazers, who come to the farm whenever they want and pick their own produce for the week, pay \$375 and are required to have at least a year of experience with the farm. In all cases, the Bartletts request payment in full at the time of sign-up, but will accept three payments, with the last one due on June 1. Late joiners still pay the full price.

A share is designed with the needs of two adults in mind. Beyond that, Silver Creek makes few promises. Advises Molly: “You shouldn’t ever promise anything that you can’t for sure deliver. I made the mistake of printing a harvest calendar to provide a guide of when to expect what. With it I was offering them an opportunity to find fault.”

The latest CSA brochure is vague about availability windows, and anything having to do with when, what or how much: “The only thing for sure about farming are the farmers!” it reads. “We can promise you our best effort and that you will get your fair share of whatever grows.... We figure about 22 weeks of produce beginning around the end of May.... We promise to plant more than enough to supply your needs. For this to get to your kitchen we need the cooperation of both the weather and our volunteer work force.”

Shareholders pick up their food at the farm on Thursdays or Sundays (distribution days were chosen by the shareholders), or at a number of dropoff locations around Cleveland. In an effort to relieve Molly of some responsibilities, much of the dropoff and work schedule coordination, and distribution troubleshooting is now handled by a paid adult coordinator. She receives \$100 a week for a very theoretical 10 hours of work. Except when dovetailing a CSA delivery with a wholesale delivery, the Silver Creek farmers pretty much stay put. “You have to get people to understand that we can serve them best when we’re on the farm,” Ted notes.

The Bartletts talk with members about farm rules and send out a handbook “so as to create an atmosphere where everyone should feel safe and welcome.” While they do carry liability insurance, they put much more energy into building relationships with their members than they do into fretting about being sued. “We all assume some responsibility together for this farm. It’s a lot more a ‘we’ thing than a ‘Ted-and-Molly’ show,” Molly says, adding that she is always surprised by the paranoia farmers feel over this issue.

Over the last four years Ted and Molly have assembled a loosely organized board to help make CSA decisions. “The board is less interested in being a board than we are in having one,” Ted admits. Even so, it’s been helpful. One year he presented a CSA budget that reflected a \$15,000 deficit—most of it for paid labor—from the previous season. He’s not sure what happened exactly, or who to credit, but the next year volunteer CSA labor saved the farm \$11,000.

During the planning for this year, the Bartletts expressed their need to improve CSA income, which accounts for about 50% of the farm’s sales. Presented with a choice of increasing the number of CSA households or increasing the amount of money each household spent on the farm, they decided to aim for the latter.

This year, Silver Creek Farm offers 10 optional shares which allow members to spend more food and fiber dollars at ‘their’ farm. Egg, chicken and lamb shares are a way of buying other items raised at Silver Creek. The sweater share utilizes wool and mohair from the farm’s sheep and goats; the knitting is done by an 80-plus year old family friend. A kid’s knitting share involves a how-to-knit class with Molly, supplies included. A preserver share involves bushels of produce, instruction, and use of the on-farm canning shed which, thanks to a grant, was outfitted with propane burners and canning supplies in 1996. A home brewing share allows members to discover how to make their own. The beef, flower and goat cheese shares are fulfilled by other farmers. Ted and Molly collect the money for these optional shares at the beginning of the season and distribute the money to collaborating farms at that time. They retain \$5 per share sold to help cover their marketing and bookkeeping expenses.

“It’s a challenge for a CSA farmer to provide adequate variety,” Molly says. “We have made it clear that we are willing to buy, barter or trade with other farms.” “As farmland disappears, cooperating with other farms is good for CSAers and good for farmers,” Ted adds. “As a single, isolated farm we couldn’t exist. We need other farmers. We need a farming infrastructure.” Silver Creek’s CSA sweet corn is grown by a weekend farmer down the road. Strawberries come from a nearby Amish farm that uses organic methods, but does not certify. Apples from a local low-spray orchard are available at Silver Creek in the fall.

CSA members widen the farm’s circle of support by bringing friends to help out for a day or inviting elderly parents to join in the distribution day potlucks. Some of these people end up becoming next year’s shareholders, or tomorrow’s farmers. During the last couple of CSA seasons, shareholder donations have funded shares for several WIC recipients.

“CSA has helped us recognize what we want to accomplish,” Molly says. The timing for this revelation is good since Ted is eyeing retirement. Where they see their greatest mission now is in educating their shareholders and others about farm preservation, life on a small diversified farm, and the importance of and the how-to of eating locally and seasonally. Toward that end they are setting up a 501(c)(3) non-profit corporation to help them develop an educational program that could pursue a variety of projects — for instance, turning brownlots in downtown Cleveland into

CSA gardens for people who live in the neighborhood. Or providing school children with regular visits to Silver Creek Farm so they get a feeling for seasonal cycles on a working farm (a pilot program in 1997 was well received by students and teachers). They have already received a number of small grants to fund various on-farm innovations and projects.

Financial viability? Ted says that they could not have done what they do without regular income from another source, and the health benefits his job provides. Even with their diversity of enterprises, the farm doesn't show much profitability on paper. Raising capital became a critical issue for the farm several years ago, and to meet their needs they sold off 45 acres of the farm to a gentleman farmer who keeps horses.

The farm actively reaches out, both to retail its products and simply to offer opportunities for friends of the farm to come and enjoy the place. Silver Creek holds an annual Ramp Festival and Seedling Sale, and a Fall Festival. The Farm Market is open Wednesday through Saturday during the growing season, and every Saturday in the off-season for sales of chicken and lamb, organic beef, local maple syrup, pottery, yarn and sheepskins. School classes, garden clubs and other groups can arrange walking tours, picnics, educational activities and classes in organic gardening at the farm. In winter, Molly is willing to take the (slide) show on the road. Most of these efforts generate income, if not immediately then down the road.

The variety of on-farm enterprises makes working at Silver Creek Farm an attractive experience for summer interns, who usually live on the farm. This year one full-time seasonal employee completes the labor force. Ted and Molly, whose five children are all out of the nest and far away, value the relationships they've developed with interns over the years and remain in contact with many of them.

The Bartletts have an on-farm greenhouse, an assortment of tractors and equipment suitable for field-growing vegetables, and a drip irrigation system that serves anyplace that vegetable or fruit crops might be planted. Belly-mount basket cultivators manufactured by Buddingher stay permanently fixed to the Farmall A, always ready for service. Another favorite piece of machinery is the bed shaper, which they use in preparing ground for tomatoes, peppers and squash. Their clay loam soil has required a lot of drainage work. They improve it with mulch hay, organic matter, undersowing (they use yellow clover because it's cheap and mow it when it's about six inches tall), and green manure crops of rye and vetch.

As for the CSA shareholders, the working core members tend to be in their thirties and forties, and they often have children. These are the ones who are being most easily informed about food issues, Molly says. The other members generally are older and busier. Most are very well educated and spend more of their money on education and food. The Silver Creek Farm CSA has a 50 to 60 percent carryover of members from year to year, and some who drop out one year will rejoin the next. Only about three percent come from within a 10-mile radius. Most live 15 to 60 miles away. While half are working members, about 10% the Bartletts never set eyes on.

Once in a while, someone who simply doesn't belong in a CSA slips through the screening process. Typically these individuals are bargain hunters. They don't understand seasonality, aren't that interested in local agriculture, and complain regularly about quantity and variety. When Molly identifies these cheap food seekers, she politely gives them the option to opt out, and sends them packing with a refund.

Which brings up the question, How do you decide what to charge? It's much easier to price the optional shares which, unlike the vegetable shares, promise a finite amount of a given product. CSA members get 10% off Silver Creek's retail prices, but they pay up front. The basic share price is a seat-of-the-pants decision. Molly thinks that it is probably too low for what they get, but not raising the price from last year became an important political issue this year when they challenged members to spend more of their food dollars at Silver Creek.

"I think you have to keep tinkering with CSAs, not to make them more attractive, but to see how people can benefit more from them," Molly reflects. They make changes yearly based upon input from members and results from their end-of-season surveys. A current problem is how to impress upon working core members with children how much the farm needs their help when they show up on Thursdays. "We've organized a lot of kids activities on Thursdays in hopes of freeing up the adults but are finding the adults won't leave the kids. It is a tough one to solve as we are dependent on their labor," Molly says.

Throughout the delivery season Molly handwrites a weekly newsletter to update shareholders on farm news. She views it as is another opportunity to build community. The accompanying recipe sheet is important for similar reasons: "I want everything in the bag to connect," she says.

Because 'connection' is what the Bartletts are after, they have had to deal with the question of scale. They felt that 165 members was too many. "We want to keep the volume down and the value per customer high," Ted says. They now base their CSA budget on 100 members. They do very little wholesale, preferring to sell direct to consumers — preferably CSA members — from the farm. They also sell to buyers clubs, food coops and restaurants.

With all of the comings and goings and phone calls and questions and people, even on Sundays, don't they ever feel intruded upon? "Oh sure," Molly readily admits. "We don't have all the answers."

ADVICE FOR THE ROAD

- Don't start a CSA until you have a list of customers who have some interest in you. That's the group you appeal to.
- Starting out small may not be a good way. If you're going to do it, you may as well do it all the way.
- Don't promise what you can't deliver.

- If you value your privacy and don't want people to come onto your farm, sell at the farmers' market or have a roadside stand.
- Having a lot of membership carryover from year to year is critical to a CSA's success.
- While someone may join because they're serious about organic produce, they're going to rejoin because their kids had a great time and it's something families can do together.
- Learn not to take it personally when there are complaints.
- Carry workers compensation and have liability insurance because it's part of running a farm as a business, not because you expect your employees or CSA members to sue you.

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Further Information

Silver Creek Farm
 Ted and Molly Bartlett
 7097 Allyn Rd, PO Box 254
 Hiram OH 44234-0254
 330/569-3487
 fax 330/569-7076
silvrcef@aol.com

Holly Harman Fackler
holly@appleseedwool.com
 Appleseed Wool Corp
 55 Bell St, PO Box 101
 Plymouth Ohio 44865
 419/687-9665 voice; 419/687-8272 fax
<http://www.appleseedwool.com>

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Strengthening the Local Food Economy through Involving Institutional Food Buyers

Kamyar Enshayan
University of Northern Iowa

Kamyar Enshayan teaches environmental studies at the University of Northern Iowa. In 1997, with a grant from the Leopold Center for Sustainable Agriculture, he began working with three institutional food buyers who made a commitment to buy a greater portion of their food purchases from local farms and processors of locally grown agricultural products. During the 1998 growing season, all three buyers — University of Northern Iowa's Dining Services, Allen Memorial Hospital (Waterloo, Iowa), and Rudy's Tacos (a Waterloo Restaurant) — bought from local farmers and processors. The food dollars spent locally by these three buyers (food dollars that otherwise would leave the region) represent a significant link between institutional food buyers and local farms and local food processors. In the following article, Kamyar describes his work-in-progress, details of the process, how things worked, challenges, what he is learning, and his future plans.

Introduction

This paper is a description of our work-in-progress with three institutional food buyers who have made a commitment to buying a greater portion of their food purchases from local farms and processors of locally grown agricultural products.

People in many communities throughout the United States are working towards establishing a more local and regional food system (Feenstra 1997). These efforts include a rebirth of farmers markets (Lyson et al. 1995), formation of more than 1,800 community supported farms, several projects promoting institutional buying of local food, producer cooperatives, and a wide variety of direct marketing strategies. Some of the key principles underlying these efforts include supporting local farms, investing our food dollars in the local community, re-establishing connections to our food and to those who grew and processed it, taking steps towards a diverse farm economy and away from concentration of the market in the hands of few multinational food companies, and promoting ecological farming practices.

Engaging institutional food buyers is important for two reasons: 1) they buy large quantities of food items and have a large food expenditure, which means they could potentially leverage their large buying power to encourage more local, ecological and equitable patterns of production and processing, and 2) these institutions are public places where large numbers of eaters could learn about food and agriculture through a variety of publicity strategies. The Hendrix College

Local Food Project was one of the early efforts by an institutional buyer to buy from local sources (Valen 1992). The University of Wisconsin recently conducted a study of a few colleges and universities, mostly small liberal arts colleges, that are currently engaged in local buying practices (Johnson et al. 1998). The Leopold Center for Sustainable Agriculture in Iowa has made institutional buying of local agricultural products a funding priority for the last four years and as a result a number of projects, including this project at the University of Northern Iowa, are on-going in the state of Iowa (Leopold Center 1999). Many other institutional food buying projects are on-going nationwide (Feenstra 1997). Our work documents the efforts of three institutional food buyers in Northeast Iowa who are trying to figure out how to make a larger portion of their purchases from local farms and processors.

Approaching the Institutional Food Buyers

We approached three food buyers in the Cedar Falls/Waterloo, Iowa metropolitan area: Allen Memorial Hospital in Waterloo, University of Northern Iowa's Dining Services (UNI), and Rudy's Tacos, a Waterloo restaurant. We explained to them that we wanted to:

1. identify practical pathways that would enable them to invest their food dollars in our region as much as possible and to support Iowa/regional farmers, processors and distributors,
2. identify existing constraints/barriers as well as opportunities for institutional food buyers to buy locally produced food items, and
3. identify and link local/regional producers and processors to the three buyers and begin the local buying process (if the process was practical for the buyers).

The food buyers indicated interest in the project and agreed to participate. There was an implicit understanding among us that none of the buyers would be required to buy locally but they would try it, when feasible, to see how things worked.

Learning from What We Eat: A Tale of Two Chickens

During the early stages of this project, the restaurant in Waterloo (Rudy's Tacos) switched from purchasing chicken of unknown origin to buying local chicken. We decided to trace each type of chicken and learn about their histories (Bainbridge and Enshayan 1997). What we learned, outlined in Table 1, was very instructive for all of us and provided a lesson for all three buyers.

Table 1. Attributes of the local and non-local chickens served in Waterloo, Iowa.

Non-local Chicken	Local Chicken
Production dominated by one absentee-owned corporation	Production involves many independent Iowa businesses
Produced and processed in Alabama	Produced and processed in Iowa
Traveled longer distance	Traveled shorter distance
Food dollars leave Iowa	Food dollars invested in independent Iowa businesses
Contract grower a marginal part of the picture while assuming a large risk	Farm family controlled every aspect of the operation
Contact grower did not grow the feed and did not know what was in it. Antibiotics were part of the feed	Farm family raised and mixed the feed. No antibiotics.
Consumers and farmer were distanced from one another	Consumers closer to those who grew and processed their food

It became clear that while these two chickens might appear very similar on our plate, they represent two fundamentally different economic structures; they each affect our communities and our future differently. The non-local chicken has many characteristics of a pattern of industrial agriculture, while the attributes of the local chicken are part of a larger set of characteristics advocated and practiced by the sustainable agriculture movement.

This study of two chickens at the initial stages of our project was written up in two Iowa newspapers, which helped to publicize this initiative locally. It also helped us make a case, particularly to institutional food buyers, that our food choices can shape the kind of agriculture and rural life we have around us.

Institutional Food Expenditure

We compiled food expenditure data for UNI and Allen Memorial Hospital (Tables 2 and 3). The totals for various food categories helped us to realize the great potential for local buying of certain items.

Table 2. Food expenditures (dollars) in 1997 by UNI Dining Services.

Meats, frozen	308,448
Meats, fresh & eggs	205,328
Fresh fruits & vegetables	208,856
Frozen fruits/vegetables/juice	210,943
Dairy	193,174
Ice cream	36,749
Breads	57,498
Chips	33,399
Groceries, Food Stores	693,639
Groceries, Not Food Stores	14,491
Grab & Go	5,473
Total	1,967,996

Table 3. Allen Hospital food expenditures (dollars) in 1997.

Groceries	381,205
Meat	184,928
Produce	43,198
Dairy	62,558
Vending	53,882
Total	725,771

Identifying Local Farmers and Processors

We wrote a letter to about 100 farmers in northeast Iowa who were listed in the Iowa Department of Agriculture's 1998 Iowa Fruit and Vegetable Growers Directory. Twenty-five farmers responded through a return post card indicating that they were interested in supplying the three buyers with Iowa-grown produce. In addition, we knew several farmers at local farmers' markets who were not listed in any directories but turned out to be key suppliers to these buyers.

We have also identified processors such as Iowa Oats Processors (rolled oats), Potter-Siding Creamery (butter), many meat lockers (beef, pork, lamb, chicken), a tofu maker, honey producers, and many others who can supply the institutional buyers with locally produced and processed agricultural products year-round.

Each Institution's Experience in 1998

Allen Memorial Hospital, Waterloo, Iowa

The hospital has 220 beds (140 to 175 usually occupied) and serves 400 breakfasts, 550 lunches and 350 suppers daily including the meals served at the cafeteria. Four distributors currently supply the hospital. Because the hospital recently joined a network of other hospitals, Allen Memorial Hospital has to buy 80% of all its purchases from one distributor, the prime vendor.

Beginning in May 1998, we placed an intern at the hospital to help Mr. Jacobsen, the cafeteria and purchasing manager, locate sources of locally-grown produce. The intern contacted area farmers, and identified who had how much of what items and at what price. Some short-season items like strawberries were picked up by the intern and brought to the hospital, but the majority of the produce purchases were delivered to the hospital by farmers. The hospital bought a wide variety of vegetables from June 1 (beginning with strawberries) through December (ending with greenhouse tomatoes). From June through December, Allen Memorial Hospital bought \$21,762 worth of produce, of which \$4,845 (22%) was locally-grown produce. The goal for 1999 is to purchase 50% locally-grown produce.

When locally-grown items were served, small signs were placed near them with the names of the farms and the Iowa towns. According to Mr. Jacobsen, the response from the customers was very positive and the number of complaints went down significantly, even about issues totally unrelated to food.

Cost is a major consideration for all buyers, especially in institutions with limited budgets. According to Mr. Jacobsen, buying locally has not cost him more; sometimes he paid 10 cents per pound more and other times 10 cents less—in the end, it all evened out. But he did receive fresher and tastier produce that he enjoyed serving. He said that price, while an important factor,

is not the most important consideration. Quality is equally important. Also the hospital's relationship to the community means a lot to many people.

The logistics of ordering from six different farms, receiving separate deliveries and paying the farmers on time have not been a problem. The intern was extremely helpful to Mr. Jacobsen who was very busy and could not have made all the contacts by himself.

Rudy's Tacos, Waterloo, Iowa

Rudy's Tacos is an independently owned restaurant with 20 staff, five of whom are full-time. Rudy's buys from 12 different vendors. Before becoming involved with our project, Rudy's was buying cheese, tortillas, and some beer from the Northeast Iowa region. Now, Rudy's is buying local chicken, ground beef, pork, fresh vegetables in season, and the list is growing.

Many customers have responded positively to Rudy's choice of locally grown food. When the signs at every table announced that local chickens were served, the chicken dish sales increased, according to the owner Mr. Eastman. He said he paid twice as much for the local chickens but the chicken yielded almost twice as much meat compared to the ConAgra chickens that were shipped from Alabama. In this case, local chickens have less fat and it takes less labor to remove the meat from the bones. According to Mr. Eastman, the local chickens he is getting are far superior to what he was getting.

The process of increasing local food purchases has been very easy for Rudy's. In 1998, Rudy's spent \$206,204 for all food purchases, \$97,726 of which (47%) was locally and regionally grown agricultural products. In 1997, before we started this project, Rudy's purchased 37% of its food locally. For 1999, locally purchased food is projected to equal 65% of total food purchases.

University of Northern Iowa's Dining Services

Dining Services at the University of Northern Iowa is a large operation consisting of four residential centers, a centralized bakery, a centralized meat and cheese processing area, a food storage warehouse, two convenience stores, a sit down restaurant, two quick services restaurants, a grab and go breakfast operation, and a mobile food cart and catering.

UNI serves 1,500,000 meals per year with 70 full-time staff and 750 student employees. Food is purchased centrally by the Food Stores Manager. Fresh and frozen meats, produce, bakery, dairy and frozen foods are ordered weekly and delivered directly to a residential dining center. Canned, dry and some refrigerated products are delivered to the food storage warehouse. Fresh meats and produce are bid weekly; other products are bid either annually or by the semester. Food is supplied through at least 18 vendors.

From June 1998 through October 1998, UNI bought \$8,202 worth of fruit and vegetables from local farmers. That amounts to 11% of total fresh fruit and vegetable purchases during the same period. Signs were posted in some dining centers, indicating the locally grown items for the week and the names of the farms where they were grown.

During 1998, most of the produce came from one grower who could supply large quantities to the University. Some of the difficulties included the initial logistics of setting up accounts, and communication about the size of produce, variability in variety, and size of orders. Lack of a fax or an answering machine at the farm created some ordering delays. For 1999, we are planning to refine the ordering process and incorporate more locally available items in season. UNI Dining Services is buying many other items locally year-round and the list is growing. They include dairy products, meat, spices, and other processed products.

Insights Gained

1. It can be done. Buying locally is a gradual process of establishing an infrastructure and institutional organization that can accommodate local agricultural products. That will take time and effort, and in the long run it will benefit the entire region.
2. Each institutional buyer is different in size, menu, vendor arrangements, internal organization, customer taste,... . Farmers who wish to sell to a hospital, college, or other institutional buyers should take the time to get to know the food buyer, and learn about the way they operate and what are their needs.
3. Price was not the most important consideration for the three institutional food buyers in this project. They were willing to pay for the high quality they were receiving. Sometimes the price was more than what they used to pay, other times less.
4. Building working relationships is the key. This is at the heart of this project. In the existing system, food buyers, eaters, farmers, and processors are distanced from one another. Efforts to strengthen our local/regional food economy work to re-establish strong relationships among them.

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Further Information

Kamyar Enshayan
205 Physics Building
University of Northern Iowa
Cedar Falls IA 50614-0150
phone: 319-273-6895
fax: 319-273-7136

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Profile of a Kansas Beef Co-op: From Ranch to Retail Supermarket

Diana Endicott
Rainbow Organic Farms, Bronson, KS

Difficult financial times pose a threat to the continued survival of small family farms. Many small-scale producers are uniting to form new generation value-added producer cooperatives. A group of Kansas and Missouri farmers pulled together and formed a natural beef coop, developed value-added products, broke into the retail market, and did it all on a shoestring budget. The cooperative retains control of its product from conception to consumption, and its products bear the cooperative's label. Direct sales by the cooperative include fresh meat to a grocery store chain in Kansas City. In-store kiosks are used for market research and advertising.

The following article by Lisa Bauer is one of an ongoing series on the USDA's Sustainable Agriculture Research and Education (SARE) program. Projects sponsored by SARE feature innovative ways to boost farm profitability, enhance rural communities, and protect the environment. Contact the national SARE program at 301-405-5270 or www.sare.org or the North Central SARE program at 402-472-0265 or www.sare.org/ncrsare.

Kansas producers Diana and Gary Endicott have big ideas for their small farm. In their application for a SARE producer grant, they envisioned following their organic beef from the farm to a rural slaughtering plant to a small processor to a major supermarket and finally to a satisfied customer: alternative marketing in the mainstream food system. In today's perilous conventional ag markets, realizing this kind of vision takes initiative, energy, and a lot of courage — the Endicotts have an abundance of all three. Farming in southeast Kansas on their 400-acre certified organic "Rainbow Farms," Diana and Gary grow greenhouse vegetables and grain and hay and run a small cow/calf operation.

Fulfillment of their goals began in the mid-1990s. They wanted to sell tomatoes at a large, upscale, conventional grocery store — Hen House Markets — with more than 10 stores throughout Kansas City. Diana said she simply took her tomatoes to Hen and passed out samples to produce managers. With her trademark enthusiasm, Diana added, "We went into that store and not only tried to sell our product, but we tried to sell ourselves."

Hen House started buying tomatoes from the Endicotts. Not long after that, she approached Hen House meat managers about selling hormone- and antibiotic-free, corn-finished beef. Hen House, coincidentally looking for a branded beef product, began buying Endicott's beef. When demand exceeded supply, the Endicotts searched for other producers in their area who could

provide “natural beef” to Hen House. Diane added, “I started as someone who knew little about marketing,” which is an incredible statement, considering that in five years she has led marketing efforts for a farmer cooperative that has found a profitable niche in a major supermarket chain.

Pooling with other Producers for Profit

Cooperatively producing and marketing allows producers to participate in the “value-added” sector of the marketplace, while sharing risk, knowledge and profits. “The meat market is very competitive,” Diana said. “We’re all competing for shelf space in the supermarket, and we don’t have the volume to compete with the large producers. We’re trying to develop the local markets, and the best way to do this is to have many producers band together.”

In 1997, Diana and other area farmers decided to form a closed cooperative to ensure quality and consistency in their Hen House beef. Ten producers formed the “All Natural Beef Cooperative” to sell through the grocery chain under the “Nature’s Premium All Natural Beef” label. The co-op has added 10 more members since then. To qualify for membership in the co-op, cattle must be raised without growth hormones or the use of sub-therapeutic antibiotics, on a “small family farm” — where family income is primarily generated from the operation and the family members are actively involved in labor.

Most cattle raised in Diana’s co-op are Angus crossbred. Cooperative producers must raise the calves or know the source of them. Animals are free-ranged and finished for 90-120 days on a 50 percent corn ration. Grain used to feed out calves does not have to be organically grown; however, most producers in the co-op try to be as natural as possible in their production methods. Primarily third and fourth generation farmers, All Natural Beef Co-op members come from central and southeast Kansas and west central Missouri. They operate diversified farms using certified organic, transitional, or sustainable practices.

Organizing farmers in a formal cooperative was challenging. The Endicotts read a lot, networked with knowledgeable people, and attended meetings to learn about technicalities such as articles and bylaws, business plans, feasibility studies, tax registration, and trademarks. It took a lot of legwork, but she brought her co-op to successful fruition in a fairly short time period.

Amazingly, Diana has taken over most marketing duties of the co-op — functioning with no paid staff — in a market where her competitors include numerous branded beef programs. While she’s taken the marketing reins, she and Gary have learned from other co-op members about production practices in raising organic beef. Eugene Edelman, co-op president, does all of the slotting for the group. “A cooperative is like a family. You put together a diverse group of people and you have to respect each other’s knowledge and opinions,” Diana said. “Each of us tries to do what we think we can do best. Getting people together who have different skills and attributes really helps the business.”

The All Natural Beef Producers Co-op is presently slaughtering 10 head of cattle per week for Hen House, and they plan to increase that number. Diana said they are realizing \$35 to \$55 more per head than if they sold their cattle on the open market.

An Unconventional Path to Market

As if the challenge of organizing a producer cooperative wasn't enough, Diana and her troupes had to find a small plant to slaughter their beef and a small processor to accommodate the co-op's need to follow each cut from field to grocery. In order to sell their beef at all Hen House Markets, located in both Kansas and Missouri, Diana had to slaughter and process in federally inspected facilities. This meant meandering the maze of USDA regulations.

They found a meat slaughtering plant — Adrian Meats, in Adrian, Mo., and a third generation meat processing plant — Sambol Meat Co., in Kansas City, Kan., that dry-ages and distributes the co-op's beef. Diana worked with inspectors and bureaucrats at both the federal and state levels to understand and comply with the strict labeling and food safety laws. In fact, she wrote her own labels, with very little assistance. "Anyone can do this," she said. "I just formatted some information by looking at other labels. I would send it in to be approved, and the USDA Food Safety and Inspection Service would send it back with corrections, and I'd send it back in."

Looking at labels and ear tags on the cattle, the co-op members can follow animals through feeding, transporting, processing and retail sale. Using detailed information recorded on a producer data sheet, farmers can match final cuts with specific animals. "From the data sheet, we can find out which beef performed well and which didn't," Diana said. A spreadsheet for each carcass indicates hot weight, weight of individual cuts, and how much eat cut will sell for. At first, producers were frustrated with the detailed paperwork and confusion of spreadsheets; however, because this information allows farmers to learn more about their beef quality, Diana said, "They learned to read the spreadsheets pretty quickly."

Another topic that required research was pricing of their meats. Diana said they took into account five-area daily weight averages, USDA five-year average primal prices, and other branded beef program pricing grids in developing their own pricing spreadsheet. Diana added that the middle meats are easiest to sell, while "end meats are the hump we needed to get over."

With assistance from Kansas State University students, they now process chucks and roasts into homemade ethnic sausages at Ragan Meat and Sausage Co. in Kansas City, Kan., to increase their profits. Sausages are sold as a value-added product. Diana admits that independently taking animals from slaughter to store has inefficiencies — costing nearly double what it would cost to slaughter conventionally. But she sees this as incentive to reap higher profits as they increase efficiency.

Cattle in the Hen House

After slaughter and processing, Nature's Premium All Natural Beef finds a prime spot of shelf space at Hen House Markets. At a Hen House butcher block, customers can choose from a variety of mouth-watering All Natural Beef cuts — strip steaks, rib eyes, filet mignons, ground chuck, back ribs, and many more.

Diana makes her co-op's entry into this upscale grocery market sound easy. Hen House is unique in its commitment to local and regional food producers and processors, and meat managers there happened to be looking for a branded beef product, which helped. But it took plenty of store visits and free samples. "The retail meat managers and meat employees behind the counter can make or break sales of meat products," Diana said. "This is especially true of new meat products."

She and her co-op partnered with Michael Boland, an agricultural economist at Kansas State University, to survey meat manager attitudes towards Nature's Premium All Natural Beef. Five participating meat managers were given a total of nearly \$1,500-worth of meat products to prepare and judge for 15 consecutive weeks. Thirty-eight responses collected information on product attributes from price to flavor to attractiveness. Information from the survey not only provided producers with valuable production and marketing information, but helped cement positive, reciprocal relationships with meat managers. With support of the meat managers, the co-op now has lead-off counter space in eight Hen House stores throughout Kansas City.

Connecting with Consumers

As with any alternative marketing strategy, selling at supermarkets requires large doses of consumer contact and education. Diana has helped market the co-op's beef products by collecting market research, doing in-store food demonstrations, and offering various buying incentives. A Kansas State student developed a market survey for consumers through a master's program. After Gary Endicott built and developed a computer program for an interactive "kiosk," the Endicotts brought the computer to Hen House so consumers could take the survey and then receive a beef coupon for their efforts. Consumer opinions from the survey are highly valuable, not only for the co-op, but also for Hen House.

"Demo, demo, demo, market, market, market," said Diana when talking about in-store beef samples for customers. She hired restaurant chefs to prepare samples so Hen House shoppers could taste All Natural Beef, and then buy some with coupons. Taste tasting also gave Diana an opportunity to bring in producers from the co-op to meet with customers, fostering a valuable urban/rural bond, where consumers can learn more about rural communities and family farms and producers can learn what urban consumers are looking for in their food products. Food demonstrations also allowed Diana to introduce and gather survey information for new products, such as their Nature's Premium All Natural Beef Franks.

She's had customer contests, allowing her to gather names and addresses on entry cards for a database. The co-op has given away free All Natural Beef "grill packs," and Diana has also partnered with the Bourbon County, Kan., tourism division to give away free weekends at southeast Kansas bed-and-breakfasts with a purchase of her beef. Diana sells more beef and gets more addresses for her database, and Bourbon County b-and-b's get some low-cost advertising. In the future, Diana plans to add a shopper card scanner to her kiosk, allowing her to use the store's mailing list and build a database of customers to whom she can send newsletters and other information about their beef products.

Lessons from the Pros

Spending endless hours reading, networking and attending meetings and conferences, not to mention working the farm operation, has been exhausting for the Endicotts. "But I just go, go, go, then take a breath and go again," said Diana, on her way home from a meeting where she spoke to a diverse audience at the University of Nebraska. Unlike producers who are protective of markets, Diana believes that there is room for a lot more direct marketing, and that saving family farms means educating other farmers about profitable alternatives. The Endicotts are gracefully willing to share lessons they've learned.

One of the primary lessons has been positive results from mutually beneficial relationships, such as allowing graduate students to do market research for a master's project or working with Bourbon County tourism to support local businesses and simultaneously promote natural beef through contests and give-aways. She suggests that producers build relationships with private and governmental agencies, organizations, and businesses. Diana said that her first producer grant from the USDA's North Central SARE program gave the project a lot of credibility and created more interest from other funding organizations. "It is working with people like Tom Moore (meat director of Hen House) and Pat and Mary Oates (of Adrian Meats) that have made this project so very rewarding to me," Diana added, speaking positively about their relationships with processors and retailers.

The connection between survival of farm communities and the rural businesses is obvious to Diana. Working with small, local processors and meat lockers boosts rural economies. And working with grocery stores helps foster a necessary urban/rural connection that benefits both consumers and producers in selling locally. Diana warns producers that the road will most likely be rough, but producers should persist and be prepared to sacrifice for awhile until they get a project going. "Do the leg work process yourself and hire as little done as possible," she said. "This will allow you to understand the necessary procedures from the farm through the market."

Future Visions

The Natural Beef Cooperative, with Diana's marketing leadership, has many plans for the future. Eventually, they would like to vertically integrate the operation by partnering with others to buy a processing facility. To increase producers accountability to label claims, co-op members will also be working with ATTRA — the Appropriate Technology Transfer for Rural Areas — on a "beef farm sustainability checklist."

Educational efforts will continue to be a hallmark of the All Natural Beef Co-op. Producers will invite meat managers and other non-farmers on tours of cattle operations and processing facilities, and Diana will continue to use the kiosk in gathering consumer survey information. Diana also wants to publish a newsletter to link producers and consumers. Eventually, the newsletter will be online when the All Natural Beef Co-op develops a website.

Their biggest vision remains keeping the small farm viable. As the co-op sets forth in beef promotional materials: "They believe and practice sustainable agriculture not only to achieve the health and environmental benefits, but also to economically produce beef a new way to hold on to an old way of life — the family farm."

Further Information

Diana Endicott
Rt1, Box 117
Bronson KS 66716
Phone: 316-939-4933

Lisa Bauer
NCR SARE
13A Activities Building
University of Nebraska
Lincoln, NE 68583-0840
Phone: 402-472-0265
Fax: 402-472-0280
Email: lbauer@unlnotes.unl.edu

The Legal Guide for Direct Farm Marketing

Neil D. Hamilton
Drake University Law School

Direct marketing offers farmers some great opportunities for diversifying their operations and increasing profits. However, direct marketing also exposes farmers to laws and regulations with which they may not be familiar. Ignorance of the law can lead to serious problems.

*Neil Hamilton, Director of the Agricultural Law Center at Drake University Law School, has written a book, *The Legal Guide for Direct Farm Marketing*, the purpose of which is to educate producers on how the law may affect their direct farm marketing operation. Following are some excerpts from Chapter 2, "How Law Relates to Direct Farm Marketing: Considering the Benefits and Risks."*

How the Law Can Impact Direct Farm Marketing

There are a variety of ways in which common forms of direct farm marketing may trigger the possible application of laws or raise legal issues. These include:

- marketing directly to consumers can raise issues of customer satisfaction and liability,
- selling processed food items can raise food safety concerns,
- dealing in specialty products, such as meat or eggs, may implicate special licensing or inspection requirements,
- operating a retail food business on your farm can raise issues concerning the application of local zoning laws and the need to have a business license,
- employing workers on the farm to raise labor intensive vegetable crops, may make complying with labor and safety rules important,
- forming unique marketing relations, such as subscription sales or home deliveries, may raise questions about payment and business relations, and
- providing non-food related products or services, such as recreation or other "on-farm" experiences, can raise issues of insurance and liability.

Considering the Responsibilities of Direct Farm Marketing

Many of the legal issues associated with direct farm marketing relate to the “additional” functions being assumed by producers engaged in direct marketing. When a farmer sells commodities in the traditional market the main concerns are producing the crop, selling it for a good price, and then getting paid. When you become involved in direct marketing you have these same concerns but many others as well. By taking on the function of marketing you have other responsibilities and functions.

First, you will have to prepare your product in a form that can be sold. For most fruits and vegetables this is not a problem but for other products it may require further preparation or processing.

Second, you will have to find your consumers either by going to them or by bringing them to your product. This means you will have to choose among the various forms of direct marketing available in your area and decide which work best for your farm.

Third, you will have to choose a location for your marketing efforts. This will usually involve either a site on your farm or require taking your products to market outlets organized by others, such as farmers’ markets.

Fourth, you may have to advertise your product or operation to attract customers. You will have to label your food and set a price for it so people know how much to pay. When farmers sell traditional commodities they do not have to worry about advertising, setting prices, or in most cases worrying whether someone will buy it.

Fifth, you will have to deal with individual customers. Rather than sell all or a large portion of your crop in one transaction, direct farm marketers sell their crops in hundreds and even thousands of individual, relatively small transactions. This involves personal effort in dealing with hundreds of people and it will mean collecting the sales proceeds in numerous transactions.

Sixth, since you are selling food for human consumption you will need to address customer satisfaction and perhaps deal with a few customers who are not satisfied. Food safety and attention to the health and safety aspects of the products you sell are essential.

This list of responsibilities gives you an idea of what may be involved in direct farm marketing. In each of these different steps there may be state or local regulations which may affect your decisions. In situations where you deal directly with consumers or where people come to your farm, other legal concerns relating to such things as liability in case of accidents, will also apply. By being a direct farm marketer you become more than just a farmer, you may also become a retailer, an employer, a business manager, and even a food processor.

Eight Things that Will (probably) Get You Into Legal Trouble

As you will learn from this book, there are many legal issues which direct farm marketers must consider. Another way of thinking about this is to recognize there are many ways you can get into legal trouble. A review of the laws and court cases in this area reveals there are eight common ways a person can get into legal trouble in relation to direct farm marketing. They are:

1. selling more products at your roadside stand which were produced by others than you raised yourself
2. not carrying sufficient liability insurance for your type of operation
3. failing to comply with labor and safety rules when hiring non-family employees
4. conducting a "commercial" business in an area not zoned for such use
5. allowing unsafe conditions to exist on your property if customers are allowed to visit
6. selling processed foods which have been produced at an unlicensed facility
7. failing to observe farmers' market rules designed to protect safety or quality of food
8. not complying with recordkeeping and paperwork rules for tax or labor laws

General Observations About Direct Marketing and the Law

In writing this book we examined most of the American laws and court cases relating to the subject of direct farm marketing. As a general conclusion, it appears that direct farm marketing has not been a major legal concern in the past, with some exceptions. The most notable exception concerns questions about how local zoning laws apply to the operation of roadside markets. But while direct farm marketing has not typically been an issue of extensive legal attention, this does not mean there is not a great deal of law relating to the subject. The discussion in the following chapters reflects what our research found on the various issues. But before moving to those more detailed discussions, here are several general observations about how the law relates to direct farm marketing.

First, as a general rule, the more your operation begins to look like something other than a traditional farm - for example a recreational venture with a cornfield maze - the more likely you are to encounter an increasing number of state and local laws and regulations.

Second, the corollary of this rule is that the less you look like a traditional farm the less likely you are to be protected by many of the special legal rules which have been created to protect farming, such as exemptions from local zoning or labor laws.

Third, the reverse of these first two rules is also generally true. The more you look like a traditional farm, the less likely you are to be regulated in the first place and to the extent regulations may apply, there may be special exceptions which apply to your farm.

Fourth, the more you begin to resemble a large-scale or full-service retail foodstore, such as being open year-round, handling a range of processed foods, carrying many non-food items, or carrying more items produced by others than are raised on your own farm, then the less likely you are to be treated as a farm - or even a roadside market. The point is that if you become a store - rather than just selling your own produce - you will probably be treated like a store and face a new set of legal issues ranging from employment to zoning.

Fifth, bringing people on to your property - such as workers, tourists, customers, and "U pickers" - introduces many legal issues which might not be present when just your family is involved. While the risks or potential liabilities in most of these situations are manageable - such as through insurance and training - there are potential legal challenges and costs you will face when dealing with the public.

The Five Phone Calls to Make Before You Begin Direct Farm Marketing

1. the local land use planning authorities
2. your insurance agent
3. the state food inspection and licensing officials
4. the state labor commissioner
5. the state department of agriculture's marketing and diversification office

Further Information

Neil Hamilton
Director, Agricultural Law Center
Drake University Law School
2507 University Avenue
Des Moines IA 50311
phone: 515-271-2065
fax: 515-271-2530
nh8681r@acad.drake.edu

American Agricultural Law Association
University of Arkansas College of Law
Fayetteville, AR 72701
501-575-7389
www.aglaw-assn.org

For information on how to obtain a copy of Neil Hamilton's book *The Legal Guide for Direct Farm Marketing*, contact Lisa Bauer, NCR-SARE, 402-472-0265, lbauer@unlnotes.unl.edu

The Legal Guide to Direct Farm Marketing

by Prof. Neil D. Hamilton
Drake University Agricultural Law Center

The first practical legal guide written for farmers and their advisors on direct farm marketing will be published in 1999 by Drake University Law School. The 225-page book contains 12 chapters which address the major legal issues facing direct farm marketers today. The chapters include:

- An Introduction to Direct Farm Marketing and the Law
- How Law Relates to Direct Farm Marketing
- An Introduction to the Common Forms of Direct Farm Marketing
- Farmers' Markets: Organizing, Managing and Participating in America's Favorite Way to Buy Food
- Organizing and Operating a Direct Farm Marketing Business
- Contracts, Food Stamps, and Getting Paid
- Marketing Your Products: Advertising, Organic Certification, Eco-labels and other Claims
- Land Use and Property Law: Zoning, Leases, Farmland Protection and Pesticide Drift
- Labor and Employment: Who is an Employee, What Laws Apply, Workers Compensation and Internships
- Insurance and Liability
- Marketing High Value Products and Processed Foods: Inspection, Licensing, and Food Safety
- Marketing Meat, Poultry, Eggs and Dairy Products: Inspections, Exemptions and other Legal Issues
- Appendix - Public and Private Contacts in the Fifty States

Developing an Infrastructure for Local Processing of Agricultural Products

Jill Gifford & Steve Wang
UNL Food Processing Center

In the fifty years since WWII, the production, processing, distribution and selling of consumer food products have undergone a fundamental change. The value-added portion of consumer ready food products have basically shifted away from a production agriculture basis to one that emphasizes the importance of particular demographic and niche product features of the individual consumer. Paralleling this trend is the continual decline of commodity prices and globalization of consumer tastes and preferences. It is important for rural and small gourmet and specialty food producers to understand these as well as future trends to be able to fully take advantage of the opportunities in the consumer food market.

The Food Processing Center at the University of Nebraska-Lincoln provides technical and business assistance to food manufacturers. It supports value-added food production as a means to promote and sustain rural economic growth, and to improve the economic position of Midwestern farmers. The Entrepreneur Assistance Program specifically assists individuals wishing to start a new food processing enterprise.

Food Processing Center

The Food Processing Center at the University of Nebraska-Lincoln offers a combination of technical and business development services to the Nebraska food manufacturing industry. This unique feature allows the Center to provide a broad spectrum of services to the food industry. The Center's services are customized to the specific needs of each client. A major advantage to contracting services with the Center is the assurance of project development under strict confidential and proprietary commitments. This combination truly separates the Center from other programs in the country.

Business Development Assistance

Business development assistance includes operations plan development, business plan development, export marketing assistance, media and promotional plan development, product introduction strategy, production layout and design, equipment, ingredient and packaging sourcing, custom processing and private labeling referrals, market research and financial analysis.

Technical Assistance

Technical assistance includes comprehensive product development, acidified foods assistance and pilot plant services. The pilot plants specifically offer assistance in the areas of twin screw extrusion, dehydrated products, meat processing, fruit and vegetable processing, dairy production and research, baking, fermentation and modified atmosphere packaging. Information regarding food labeling requirements, sanitation and food safety is available. In addition, there are several workshops conducted annually that contain in-depth information about food ingredients and food processing technologies.

Entrepreneur Assistance Program

In addition to these services offered to all existing businesses, the Center also offers the nationally recognized Entrepreneur Assistance Program (EAP). The EAP was developed by the Center in 1989 as a method of assisting individuals interested in starting a food processing company. This successful program provides assistance to individuals throughout the United States.

The program is organized and presented in a format that provides a comprehensive package for this particular segment of the food industry. The EAP is divided into two phases: Companies in the “idea” or start-up stage enter the program by attending the “From Product to Profit” seminar. Following the seminar companies can receive customized assistance in developing their business in the Start-Up Services and Consultation phase of the program. Companies that already exist and are selling in the market place are evaluated on an individual basis and offered services appropriate to their needs. Following is a description of each phase with related services.

Initial Technical Consultation

The purpose of the initial technical consultation is to gain an understanding of the product concept and the overall issues associated with the specific product. During the technical consultation, we will discuss the type of product being considered, the recipe or formulation being used, whether the product is acidified, low acid, or naturally acidic and what might be the next development steps. We will also review the processing steps for the product, provide an overview of potential microbiological issues and review the next development steps. The initial technical discussion will conclude with an agreement between the client and the Food Processing Center regarding the need for additional technical services.

Facility Identification & Search

A start-up food business must determine what type of facility and equipment will be utilized for processing a product. There are four options: 1) build a facility; 2) purchase an existing facility; 3) rent a facility; 4) contract with a custom processor. Each option will be discussed

with the client, advantages and disadvantages will be weighed and assistance will be provided in selecting an option.

Market Selection

Determining the primary market for selling the product is a critical decision. The most commonly selected markets are grocery, gourmet/specialty, corporate gift-giving, mail-order, and food service. These markets will be discussed and assistance provided for conducting basic market research and making a market selection.

Corporate/Product Identity

A product's packaging, label and name all create an image that is conveyed to the consumer. Therefore, it is important that the image is appropriate for the targeted market and consumer. Assistance will be provided in selecting packaging, labeling design, trademark searches, graphic artists and printers. The Center will also function as a liaison between the client and the graphic artist and printer during the label development.

Pricing/Cost Analysis

Pricing can assist or prohibit a company in attaining its marketing objectives. In this step the client will receive assistance in determining all costs and establishing an appropriate product price in relation to these costs and the primary market.

Promotional Material Development

Product alone cannot convey the entire message about a product and a company. Therefore it is important to create appropriate promotional materials. These "tools" assist in establishing and increasing sales. Clients will receive assistance in identifying the features and benefits of their product and the creation of basic promotional materials needed to enter the market place.

Product Introduction Strategy

During this segment, clients will learn how to introduce their product to the market place and maximize sales potential. Assistance will be provided in preparing presentations, qualifying buyers and establishing an effective follow-up procedure.

Conclusion

State-of-the-art facilities and equipment combined with an outstanding team of food scientists and business consultants make the Center what many consider to be the best and most comprehensive resource in support of the food manufacturing industry.

Further Information

Jill Gifford
Food Processing Center
143 Filley Hall
University of Nebraska
Lincoln NE 68583-0928
402-472-2819
fax: 402-472-1693
email: jgifford@unlinfo.unl.edu

Steve Wang
Food Processing Center
60 Filley Hall
University of Nebraska
Lincoln NE 68583-0928
402-472-8852

Growing the Three Sisters: Community Organizing and Local Food Systems

Robert Karp
Field to Family Project

Several of the Native American tribes had a gift for growing corn, beans and squash together. The beans used the tall straight corn as a trellis, and the squash spread out luxuriantly in the shade beneath. Placed intelligently together, the three made up a fruitful and harmonious whole. The Native Americans called them the three sisters, thus acknowledging them as living beings, creative forces that in turn sustained their culture for thousands of years.

In our time there are also three sisters, three movements which, working together, have the potential to transform our agricultural landscape. These three sister movements are: the sustainable agriculture movement, which is largely focused on transforming agricultural production methods, and which has many, many tributaries; the holistic health, environmental, and social justice movements (taken as whole), which are transforming how Americans relate to food, diet, health, nature and social issues; and, most recently, the local or community food systems movement.

We wanted to conclude our seminar series, and this volume, with a story that pulls together many of the strategies and approaches described throughout the series. The following story from Iowa does just that. The Field to Family Community Food Project is a comprehensive food system project that employs several strategies in order to foster a more equitable, sustainable and local food system in central Iowa. Robert Karp, the head of Field to Family, prepared this overview of the project.

The Field to Family Project is an effort of Practical Farmers of Iowa, which began in 1996 with the goal of fostering a more equitable, sustainable, and local food system in central Iowa. It has received grant support from *Vision 2020*, the *Leopold Center for Sustainable Agriculture*, the *Evangelical Lutheran Church in America*, the *Presbyterian Hunger Program*, the *Woodhouse Foundation*, *Story County DECAT*, the *ISU Agricultural Foundation* and the *USDA Community Food Projects Program*. Below is brief overview of our many efforts to develop a comprehensive approach to local food and farm issues.

Magic Beanstalk Community Supported Agriculture (CSA)

From its inception, the Field to Family Project has been intimately linked to a local Community Supported Agriculture (CSA) project called Magic Beanstalk, and we continue to provide staff time toward its development. Magic Beanstalk is a unique CSA in many respects. In the first place it was started by consumers and activists rather than farmers. Secondly, it works with multiple farmers and growers. This year 5 local producers will provide the vegetable shares for Magic Beanstalk and 12 other producers will sell other products including: beef, pork, chicken, lamb, turkey, fresh cut flowers, fresh baked bread, eggs, honey, garlic, strawberries, and hand spun woven goods. In the last three years, with the support of the Field to Family Project, Magic Beanstalk has become a self sustaining enterprise serving 170 member families.

Hunger Efforts

A significant part of the mission of Field to Family involves addressing local hunger issues. For the last 2 years Field to Family has helped over 30 low-income families, as well as a local domestic abuse shelter, afford to participate in the Magic Beanstalk CSA. In addition, over 5000 pounds of fresh, surplus locally grown vegetables have been gleaned and distributed by Field to Family to low-income families through local food pantries and shelters.

Starting in 1999, we are expanding these efforts through a partnership with the Good Neighbor Emergency Assistance Cooperative, which is a coalition of local churches. With Good Neighbor we are starting the "Healthy Food Voucher Program" which will provide families with vouchers good toward shares in Magic Beanstalk or toward the purchase of fresh produce and other perishables from local farmers' markets and grocery stores. Vouchers will also be provided toward local cooking classes.

In addition, Field to Family is working to bring about greater cooperation and coordination between all the different agencies and organizations working on hunger and nutrition issues in the county. In 1997, Field to Family formed the Community Food and Nutrition Team, which meets monthly to plan and coordinate hunger and nutrition related efforts among 12 different local agencies and organizations. Just recently, the Food and Nutrition Team published a comprehensive "Guide to Food and Nutrition Resources in Story County."

The Downtown Farmers' Market

In 1998, in response to the desires of downtown merchants and local growers, Field to Family started a new farmers' market on Monday afternoons in downtown Ames. In its first year 28 total vendors participated with an average of 11 per day. The City of Ames provided the space free of charge and downtown merchants contributed over \$4000 in advertising support. End of the year evaluation revealed that vendors, downtown merchants and city staff were extremely pleased with the market.

Based on this success, starting in 1999 the Downtown Farmer's Market is going to become a 2-day a week market (Saturday mornings and Monday afternoons) and is moving to a new, more convenient and congenial location. In addition, Field to Family has made a formal request to the City of Ames to consider constructing a covered pavilion over the current location of the market, an idea which the City found promising and referred to their Public Works Department for feasibility analysis.

Institutional Buying and Producer Cooperation

Starting with the Leopold Center's annual conference in 1998, Field to Family began acting as a broker for purchases of local and sustainable-produced foods by the ISU Scheman Continuing Education Center in Ames. In our first year at this effort, we acted as an informal broker for 11 Iowa grown meals at several locations, serving over 1000 individuals, with food products purchased from 26 farms across Iowa.

Based on the success of these meals, Field to Family is gearing up to expand this effort. In the first place we have developed an "Iowa's Choice" menu for the ISU Scheman Center featuring local, organic and sustainably grown foods from around the state. This menu will be an option of all groups renting the Scheman Center for events. Secondly, we have been identifying farmers, growers and processors of Iowa products who are interested in selling to institutional markets. In addition, we have begun working with a group of local produce growers who desire to cooperate in meeting the increased demand being created for 'Iowa Grown' meals. And finally, we are just about to embark on a new two year Leopold Center grant focused on doing more in-depth feasibility studies of various approaches to linking Iowa farmers practicing sustainable agriculture to hotel, restaurant and institutional (HRI) markets.

Nutrition Education

Field to Family is involved in several innovative nutrition education efforts. We co-sponsor each year with Wheatsfield Grocery (a local health food store), a series of six hand-on cooking classes focused on whole grain and fresh vegetables, with themes ranging from "The Joy of Soy" to "Quick and Easy Vegetarian Meals" to "Not So Decadent Desserts." These classes involve twelve participants and 2 teachers preparing together a six course sit-down meal for themselves and their families! Special scholarships are made available to allow low-income families to participate.

In addition, we have piloted a new program in conjunction with ISU Extension Nutrition's Family Nutrition Program called **Family Basics**. This program is targeted specifically to low-income families and involves 6 in depth sessions, 3 of which involve hands on cooking classes and 3 of which are focused on issues like money management, nutrition education and menu planning.

Youth Education

Field to Family has several efforts focused on youth education. Since 1997 Field to Family has been co-sponsoring the **Practical Farmers of Iowa summer camp**. This 3 day overnight camp gives youth and their families a chance to share their experiences, have fun, and learn more about the relationships between food, farming, the environment and communities—all through hands-on activities!

Starting in the spring of 1999, the Field to Family Project will organize and coordinate a new **Garden and Nutrition Project at the Boys and Girls Club** in Ames. The Boys and Girls Club recently moved to a new location where they are serving between 500 and 1000 youths a year. The garden will be on site and will include a nutritional education program. Produce from the garden will be used for snacks at the Boys and Girls Club, be taken home by the children, donated to local food pantries or shelters, or sold at a nearby farmers' market.

Seasonal Festivals

For the last 3 years Field to Family has co-sponsored an annual Harvest Festival attended by over 200 people each year. Other seasons festival and community meals are also put on in the course of the year to showcase Iowa grown foods and to build community between rural and urban citizens and between people from different racial, ethnic and socioeconomic backgrounds.

Annual Statewide Local Food Systems Conference

Field to Family is also a co-sponsor of the Annual Local Food Systems Conference. This conference brings together farmers, consumers and activists from around the state and the region to build community, share knowledge and explore ways of rebuilding the intimate relationship between farms and communities.

Further Information

Robert Karp
Field to Family Project
917 Burnett #3
Iowa State University
Ames IA 50010
515-232-7162
robertftf@isunet.net