Summer 2002

FOCUS Spring/Summer 2002

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Economic Issues For Nebraskans

Department of Agricultural Economics
University of Nebraska-Lincoln

In this issue:
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Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Elbert Dickey, Dean and Director of Cooperative Extension, University of Nebraska, Institute of Agriculture and Natural Resources.

From the department head's desk:

Planning to serve you better

It is safe to say that most professors, myself included, have a natural aversion to strategic planning. Usually, we would rather be doing what we came to the university to do—conduct research, teach classes, and deliver outreach programs. However, once in awhile there comes a time in the life of every organization when it needs to stop for a moment, reflect on its mission, take stock of itself, and perhaps chart a new course. For this department, such a time came about a year ago. Faced with new challenges and a rapidly changing environment, many of us were concerned that the department might not be doing the best it could for those we serve. We also thought we could be doing a better job of letting the public know about the many things we already were doing well.

In April 2001, the department's faculty voted unanimously to initiate a strategic planning process expected to last a year or more. The process began with a one-day listening session in May and a two-day faculty retreat in June. At the June retreat, the faculty identified several topics as important and deserving further discussion. Those topics included:

- Possible reorganization of the department, including the establishment of a faculty advisory council and working groups to coordinate the department's research, teaching, and outreach programs in specific areas.
- Establishment of degree programs and curricula in economic and community development.
- Development of a comprehensive staffing plan.
- Consideration of the possible need for a departmental name change.
- Creation of an external guidance committee.
- Exploration of programmatic linkages to the newly formed School for Natural Resource Sciences.
- Examination of various issues relating to internal governance, including issues concerning standing committees and course assignments.

After the retreat, several committees were formed to study these topics and develop recommendations for consideration by the faculty. As *Focus* went to press, the faculty had voted on specific proposals for restructuring the department and establishing an external guidance committee. Additional proposals will be considered by the faculty in the next few months.

As a result of this process, we hope to build a department that better serves its stakeholders' needs. If you have comments or suggestions that can help us achieve that goal, please feel free to share them with us.

Jeffrey S. Royer

Jeffrey S. Royer
Professor and Head

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Departmental Programs and News

Focus is published twice a year by the University of Nebraska Department of Agricultural Economics, P.O. Box 830922, Lincoln, NE 68583-0922.

Current and past issues are available online at *agecon.unl.edu.*

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Research on Nebraska agricultural productivity

by Richard K. Perrin

What is "productivity"?

Simply defined, productivity relates to the amount of output generated from some unit: a plot of land or an employee, for example. But it isn't just the *quantity* of output that's important. It's also the *quality*. If what the plot of land is producing in greater quantity are weed seeds, or if an employee harvests more acres in a day but leaves half of it in the field, then the increased productivity is of little value. Likewise, if more inputs (seed, chemicals and labor) are used to help generate greater outputs (corn yield), the value of the increased productivity suffers. Productivity, then, is *the quantity of valuable output produced per unit of valuable input.*

Why is measuring productivity important?

On a business level, productivity is important because it indicates how competitive a business is and can help gauge possible success or failure. Businesses that achieve more output per unit of input, or the same output with fewer inputs will have lower costs and greater competitiveness.

On a consumer level, increased productivity reduces production costs and prices for individual consumer items, and permits our society to consume more goods and services from the limited resources at our disposal.

Productivity also is important at the state and regional level, because it reflects how competitive Nebraska farms are as a group. On an aggregate level, it only partially reflects our progress as a society as we attempt to obtain more goods and services from the limited resources at our disposal. It is not always a complete or accurate measure of social progress, however, because some kinds of "output," such as contributing toward a pollution-free environment, are not usually included in the set of outputs that are used to measure agricultural productivity (more about this in a later section).

What influences agricultural productivity and measurement?

The year-to-year productivity of agriculture is certainly affected by weather, but it also is affected by the improved quality of any of the inputs — from labor to land, machinery to agricultural chemicals. The quality of the agricultural labor force improves through education and training, while the quality of other inputs results from research that produces new technology.

In the first two-thirds of the last century, most agricultural research was conducted by land grant universities such as the University of Nebraska-Lincoln, but by the end of the century, private commercial firms were spending almost twice as much on agricultural research as the universities. This was due in part to stagnating funding levels for public agricultural research, and in part to the new incentives for privately funded research created by advances in science, and by new intellectual property rights available to biological discoveries and inventions.

While agricultural productivity was once a "scorecard" for how well public research expenditures were paying off, it is now due more to private than to public research efforts. Still, tremendous returns have come from new innovations produced by public research. For example, we recently examined the payoff from feeding wet gluten feeds to beef cattle (a new technology developed primarily at UNL) and found that just this one research effort produced enough new annual income to Nebraska feeders and processors to pay the entire research budget of UNL's Agricultural Research Division. New technology such as this provides the basis for Nebraska's growing agricultural productivity, and the educational level and general business acumen of Nebraska producers determine how well and how quickly the technologies affect productivity.

How is productivity measured and how does Nebraska's agricultural productivity stack up?

If there were just one output (corn) and just one input (land), the productivity of a farm would be simple to measure and to track through time or compare with other farms. Computing the yield per acre would be an appropriate and simple way to measure it. But there are almost always more than one kind of output and input, so we must rely on some kind of index of outputs compared to a comparable index of inputs to understand where and when productivity improved or worsened.

The standard measure of productivity is the Tornquist-Theil index ("TT productivity"), a ratio of a share-weighted index of outputs divided by a share-weighted index of inputs. The United States Department of Agriculture publishes TT estimates of agricultural productivity for all of U.S. agriculture (identified in *Figure 1* as US) and for Nebraska agriculture (identified as NE:USDA). The other line in *Figure 1* shows our own calculations for Nebraska productivity, which differs from that of USDA because of different methods used to evaluate the quality of land, labor and capital equipment. The top two lines indicate that when productivity is calculated on a comparable basis, Nebraska agricultural productivity has just barely kept pace with the average in all states.

The final values of the index, about 2.0, indicate that by 1995, we were able to produce about twice as much product per unit of input as was possible in 1960. Conversely stated, it indicates that it required only about half as many inputs to produce a unit of output in 1995, as it did in 1960. Either way, this record of productivity improvement is dramatic and clearly indicates the competitive improvements in U.S. agriculture. Without such improvements, Nebraska farmers would be at a terrible disadvantage in competing with other world producers, who themselves are making substantial productivity improvements.

Figure 1. U.S. and Nebraska productivity measurements

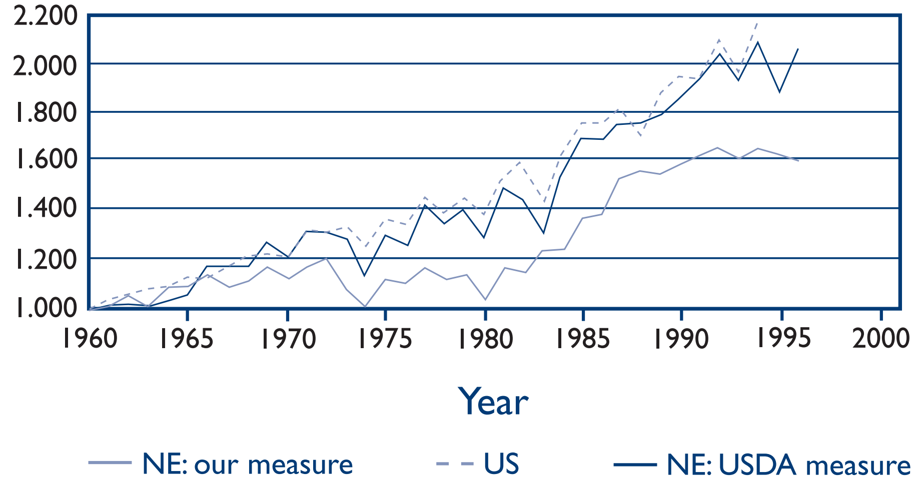


Figure 2. State agricultural productivity comparisons

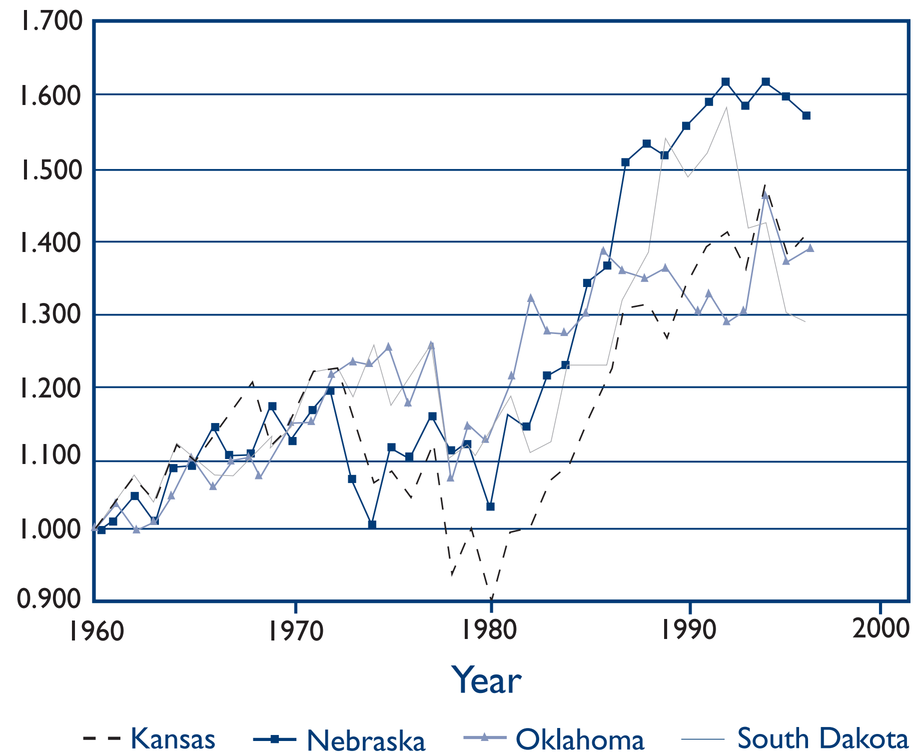
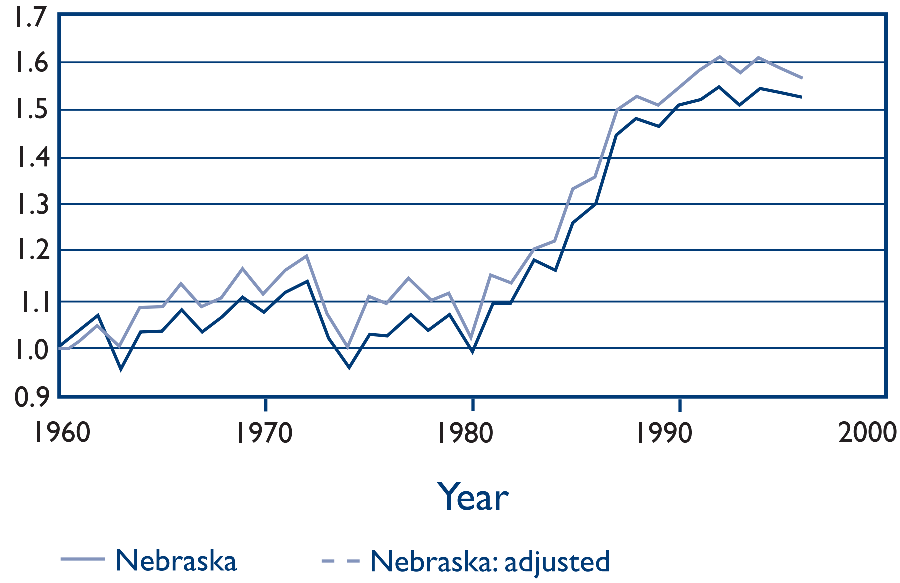


Figure 2 shows our own measures of Nebraska productivity as contrasted with some neighboring states. While the differences are not great, it is clear that productivity in Nebraska has realized improvements that are at least as great as those of neighboring states.

Measuring environmental and other nonmarketed goods?

The productivity indexes described above calculate input and output indexes using market prices to reflect the relative value we place on the traditional outputs and inputs included in the index. Changes in nonmarket agricultural positives such as a scenic countryside, or negatives such as nitrogen in surface

Figure 3. Traditional and environmentally-adjusted agricultural productivity



water and groundwater were not included. It is very difficult to measure the levels of these positives and negatives, and once measured, it is difficult to assign a weight to them so that they can be incorporated into the dollar-valued indexes of other outputs.

Agricultural Economics faculty, with contributions from students, are experimenting with new techniques that will allow environmental negatives to be included in the productivity index, along with traditional positives. *Figure 3* contrasts the previously mentioned productivity estimate for Nebraska with an environmentally adjusted estimate. To construct this estimate, we first calculated "excess agricultural nitrogen" as the amount of new nitrogen available to crops (from chemical applications, rainfall and plow-down) over and above the amount taken away by harvested crops. This is a crude estimate of the amount of the agricultural nitrogen that might show up in surface water and groundwater. This was included as a bad output, along with crops and livestock as good outputs, in productivity calculations using a technique called data envelopment analysis.

Figure 3 shows that productivity is lower when we adjust downward for the bad output, but close inspection shows that the two measures are closer together in recent years than in the 1970s and 1980s. This reflects that nitrogen pollution (or at least the potential for pollution) from agriculture has been shrinking while crop and livestock output has continued to expand. Similar results occurred when we adjusted productivity measures for potential pesticide pollution. These improvements in environmental impacts no doubt reflect an increase in farmers' awareness of the problem, but they also reflect improved agricultural technologies developed from research to make agriculture more environmentally friendly.

Further research needed

It is important to understand the progress of agricultural productivity among Nebraska's competitors, as well as in Nebraska, because productivity is the best long-run indicator of competitiveness. If Nebraska agriculture continues to improve its productivity faster than competitors, it will reduce costs faster than those competitors and be in a better position to compete with them. We have found that Nebraska productivity improvements are slightly behind U.S. agriculture as a whole, but have been the best in the Great Plains area. It appears from other studies that most of our international competitors have had slower productivity gains. We are continuing to explore why Nebraska seems to lag behind the rest of the U.S., and whether our productivity record has been underestimated in recent years because of ignoring environmental progress that our producers have been making.

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Nebraska's Farm Real Estate Market:
a quarter-century perspective

by Bruce B. Johnson and Glenn A. Helmers

This is the 25th year of the UNL Nebraska Farm Real Estate Market Survey. This survey series has provided valuable information about the transfer and cash rental markets by sub-state regions as well as at the state level. While we usually concentrate on the more immediate conditions and current market trends, it is also certainly appropriate to reflect on the longer view as well.

In this article we present the magnitude of the market in terms of the state's land resource base and the level of activity experienced in any given year, followed by a long-run historical perspective that compares and contrasts the market dynamic over time. From this viewpoint, the evolution of the market can be better understood.

Our Abundant Agricultural Land Base

Nebraska's agricultural land base totaled more than 46 million acres in 1999, which ranked the state fourth in the nation. Of these acres, over 22.1 million are cropland, with the remainder being primarily pasture and rangeland. With most of the state being situated over the Ogallala Aquifer, more than 7.5 million acres of cropland are irrigated annually, with approximately two-thirds of that acreage being irrigated with the highly-efficient center pivot technology. This places the state in a close race for second place with Texas for total irrigated acres, exceeded only by California.

In 2001, the USDA's estimate of total market value of Nebraska real estate was $33.6 billion, the sixth highest of the 50 states. By virtually any measure, our agricultural land endowment is substantial — the very foundation of this state's rich and diverse agricultural economy.

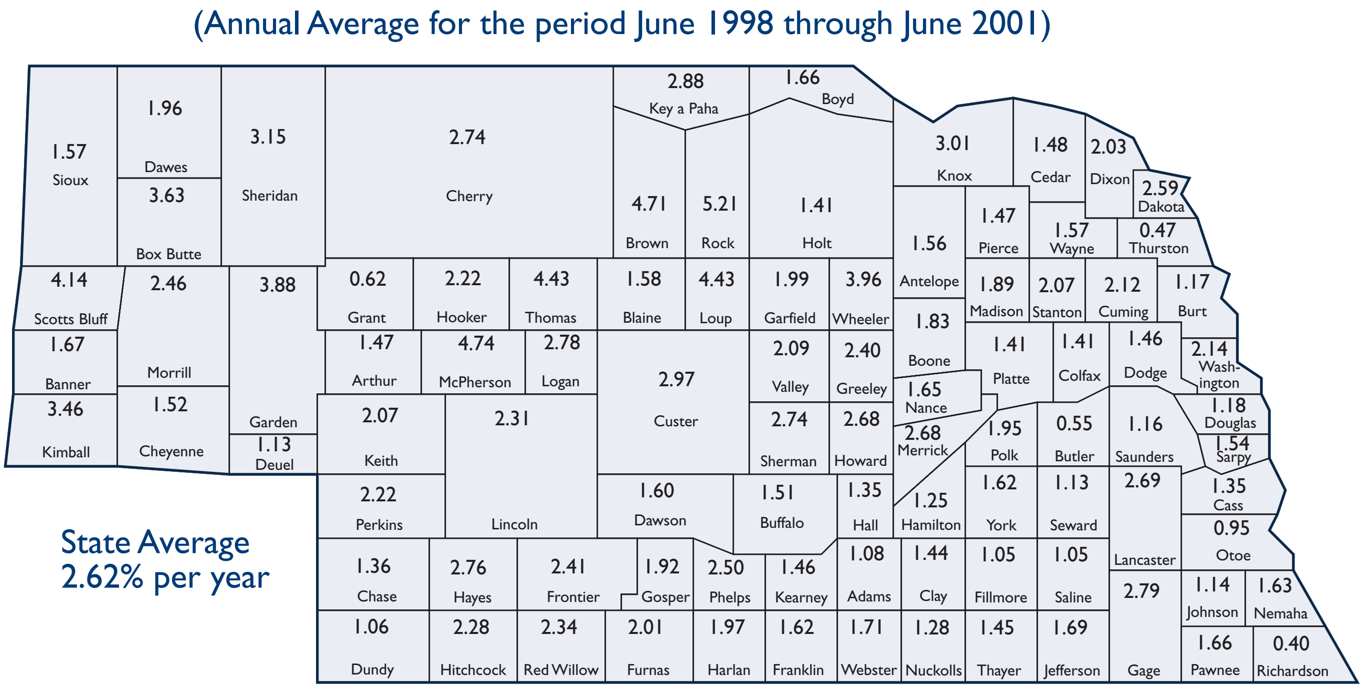
Agricultural Real Estate Market Activity

While Nebraska's farms total just over 50,000, most of which contain at least some owner-operated land, the number of individuals holding title to agricultural land in this state is far greater — probably in the range of 90,000 to 100,000 land owners. That is because many individuals, at any point in time, own agricultural land as part of an inheritance, or have decided to acquire farmland for investment purposes. These individuals typically do not farm the land themselves but rather lease it to active farmers through a well-functioning land rental market. Currently, more than four out of every 10 acres of Nebraska farmland are leased out annually. In turn, our real estate market activity is comprised of two elements — the **transfer** market in which land title changes hands and the **rental** market in which the rights to use for short-term periods are transferred from the landowner to the tenant operator.

Just how active are these markets? More specifically, how much land acreage changes ownership each year and how much is leased to a new tenant each year? As indicated in *Figure 1*, the turnover rate of land ownership is quite low — on average less than 3 percent per year. That implies that only about 1.2 million acres of Nebraska farmland changes ownership annually. It also suggests that for a given parcel of land, ownership typically changes hands about once every 35 to 40 years! The fact that so little of the land base is for sale at any given time certainly contributes to a generally robust market activity, whatever the short-run economic conditions may be. And for the individual who has been wanting to acquire a particular parcel for some time, he/she will bid more aggressively for it, knowing it may be a once-in-a-lifetime opportunity.

In addition to the low ownership turnover rate, it is apparent that the market is not one of whole farms or complete ranches, but rather parcels. A parcel market reflects the general ownership configuration of the area. In eastern Nebraska, parcels sold are frequently 40, 80 or 160-acre units, only a fraction of the typical farm size. Even in the major rangeland areas of the state where acreage transfer size is larger, it is

Figure 1. Percentage of farmland transferred per year by Nebraska county*

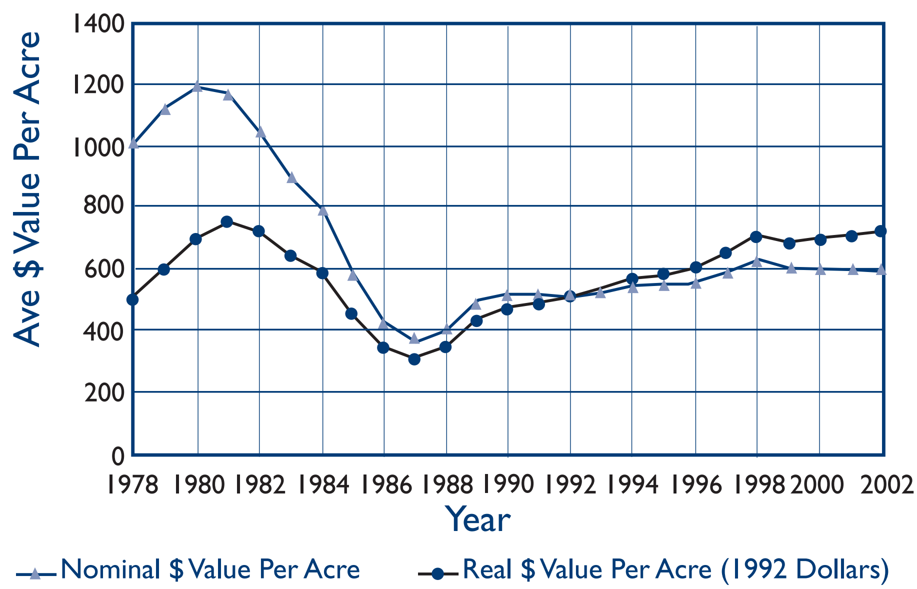


*Source: Unpublished sales transfer records for agricultural land maintained by Nebraska Department of Property Assessment and Taxation.

still much smaller than the acreage base of the typical operating ranch.

As for the turnover rate of land in the rental market, it too is fairly limited, although more active than the transfer market. In a 1996 UNL Nebraska leasing study, tenant respondents reported their existing leasing arrangements averaged 12 to 13 years in length, even though most rental land is being leased on a year-to-year basis and is subject to renegotiation annually. In other words, the average turnover rate of agricultural land leases in Nebraska is about 7 to 8 percent per year. Given that about 43 percent of the state's agricultural land base is being leased, this turnover rate converts to a level of 1.4 to 1.6 million acres of land that is actually available in the rental market annually.

Figure 2. Average per acre value of Nebraska Farmland 1978 to 2002*



Chronology Of Values and Rents over the Past Quarter Century

While 25 years is a relatively short span of history, Nebraska's agricultural land market has experienced tumultuous changes over the past quarter century — from land "boom" to "bust"and everything in between *(Figure 2)*. Twenty-five years ago, 1978, we were already about five years into a very "*bullish*" land market, the likes of which had not been seen for more than six decades. Following a momentary single-year retraction in 1977, the market resurged, taking the state's agricultural land values up at double-digit annual rates for the next three years. The state's all-land average value peaked at a historic high in 1981 ($741 per acre), which has not been seen since. Economic hindsight now indicates that this "spike," occurred in an extremely fragile market driven by market participants' expectations of continuing value increases, and heavy debt-leveraging by buyers. When the "agricultural crisis" settled in with plunging farm incomes and soaring interest rates on bloated debt levels, the result was obvious — a land "bust" that bordered on being an economic meltdown. For six straight years, agricultural land values fell. By early 1987, the all-land nominal average value was $306 per acre. In other words, land assets were devalued to 41 cents on the dollar from their historical peak just six years previous.

From this low point in 1987, income conditions in agriculture began to rebound, and, in turn, land values. For the next 11 consecutive years, the average value of Nebraska farmland moved steadily upward before a slight decline was recorded in 1999, followed by generally minor value changes ever since. It has taken the last 15 years for Nebraska land values to rebuild a more solid basis of value and return to levels of two decades previous.

In nominal terms, the 2002 levels are essentially in the same range as those of the previous peaks (in 1981) and are about 80 percent higher than those of 1978. In that context, the 25-year pattern of appreciation looks reasonably favorable for landholders.

However, when adjusted for general inflation in the overall U.S. economy, and expressing these land values in real (or purchasing power) terms, the economic performance of agricultural land over 25 years is much less favorable. Compared with the value of 25 years ago, the 2002 average value of Nebraska farm real estate is nearly 28 percent **lower** in real dollars. In other words, a farmland parcel purchased 25 years ago has not maintained its purchasing power value for its owner. This carries important implications for investors who generally look to real estate, and agricultural real estate particularly, as a sound investment whose value will tend to increase with inflation, and thereby be a good *store-of-value.* While in the long run that may be the case, nevertheless its value-holding potential is still highly dependent on the timing of investment and the period of ownership.

As for the income-earning capacity of agricultural land, the level of cash rental rates over time gives a realistic perspective. The UNL Farm Real Estate Survey began a cash rent component in 1981, so the series does not go back to 1978. However, over this 22-year period, the average reported cash rents for the various land types and areas of the state generally show a distinct pattern — neither increasing as fast as values when the latter is on a rapid climb, nor falling as far when values experience decline. In short, cash rental rates tend to follow a more deliberate and conservative path of change. As of 2002, cash rental rates for dryland crop land range from as low as $20 to $30 per acre in western Nebraska to as high as $90 to $100 per acre in eastern Nebraska. Irrigated crop land rents often approach $150 per acre or higher in the more productive areas of the state, but also will show up less than $100 per acre in some regions. Pasture rents range from less than $8 to more than $30 per acre reflecting the differing forage-production capacity across the state.

When adjusted for landowner expenses, the residual rent (or net income) as a percent of current land value is about 4 to 7 percent for crop land and 3 to 5 percent for pasture land. In recent years, these rates of returns have declined somewhat as values have out-paced earnings changes.

A Still Longer Run Perspective on Values

While the preceding land value discussion focused on the past 25 years with the market, it is also interesting to place the market in an even longer run perspective using USDA-estimated Nebraska land values. These market or nominal values are shown in *Figure 3* for 1915 to 2001, as well as real (inflation adjusted) land values using 2000 as the base year. When land values are calculated on a real or inflation-free basis it allows us to more accurately compare land value changes over time. Nominal land value changes are important to the financing and debt servicing of land purchases. However, real land value changes also are important because these represent true wealth changes for the land owner. Inflation obviously impacts market land values, but inflation also is positively related to interest rates which are important to financing costs.

Using the above historical value series for Nebraska, nine district periods can be identified from 1915 to 2001:

1. 1916-1920. The period was characterized by rapidly increasing market values, very high inflation and moderately low real land value declines.
2. 1920-1924. During this period land values declined at a very rapid rate, high deflation occurred, and severe declines in the real value of land were observed.
3. 1924-1933. Here, large market declines in land continued along with moderate deflation. Real land values declined at a moderately rapid rate.
4. 1933-1941. Market values for land continued their decline with moderately-low inflation, resulting in further real land value declines.
5. 1941-1972. For this 31-year period, market land values increased at a steady rate. However, moderately high inflation was occurring as well, resulting in only a moderate increase in real land values.
6. 1972-1982. Rapidly increasing market values were observed in this time frame along with very high inflation levels. Yet, real land values increased at rapid rate.
7. 1982-1987. Here large declines in market values occurred with moderately low inflation, and very high declines in real land values.

8. 1987-1993. Moderate increases in market values along with low to moderate inflation resulted in relatively stable real values for farmland.

9. 1993-2001. Continued moderate increases in market values coupled with relatively low inflation resulting in low increases in real land values.

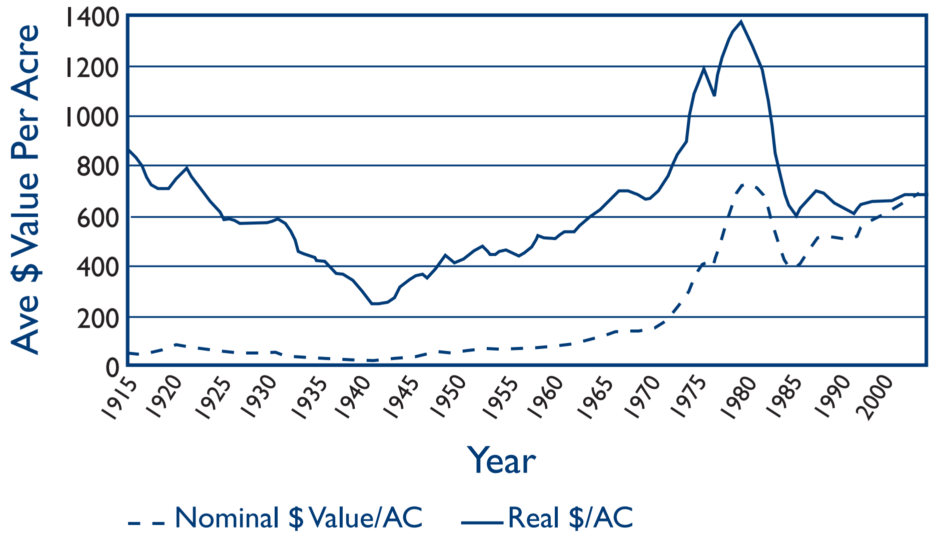
It is interesting to note that overall, real land values in 2001 closely match 1923 averages. Over the long run, land values follow inflation but as can be seen in *Figure 3* that is not necessarily the case for short-run periods. This is particularly obvious for the volatile periods 1972 to 1982 and 1982 to 1987. Still, by comparing real land values at any point in time to the average real land value for 2001 ($640 in *Figure 3*). Differences tend to exhibit either long run opportunities or long run caution when purchasing land. From 1915 to 1943, real land values were relatively high and falling. In the middle period from 1943 to 1971, real land values were low and rising. From 1971 to 2001, real land values began at roughly the long-run average, rose rapidly, declined rapidly, experienced a period of stability, and finally increased slowly.

Currently real land values are above the long-run average and recent annual changes are low, denoting a somewhat stable land market. From this long-term perspective, current land values do not appear to offer opportunities for long run dramatic increases. Yet, it must be kept in mind that merely maintaining real land values in an inflationary economy (increases in market values consistent with the overall rate of inflation) is a positive.

The Changing Nature of the Market

While land values and the associated rents represent key economic indicators of the agricultural real estate market, it is also important to consider the characteristics and trends of the transactions

Figure 3. USDA series of average value of Nebraska farmland, 1915 to 2001



themselves, including the nature of the market participants. The UNL Nebraska Farm Real Estate Market Survey annually collects this information on a representative sample of actual sales. Since this sample typically constitutes more than 10 percent of the total sales volume for the year, it provides a definitive analysis of these characteristics. The general characteristics of these sales, in terms of state averages, are presented in *Table I*.

It is evident from *Table I* that the average size of the tract sold does not show any discernible trend over time. Average size varies from year to year depending on the various configuration of cropland and pastureland which constituted the annual sales activity. The average sale price per tract, however, does show movement, reflecting per-acre land value movements. What is particularly noteworthy of tract sale prices is that they constitute relatively large dollar transactions — in recent years averaging more than a quarter million dollars. This implies that the market is not accessible to everyone, only to those of some financial means.

The trends in the financing associated with these transactions reiterates the above implication. Through the early 1980s, the preponderance of sales involved debt financing of some type — mortgage or seller-financed land contract. Ten percent or less of the land transfers were for cash. However, with the onslaught of the farm crisis, debt financing abruptly slowed; and the percentage of sales purchased outright with cash shot upward to more than half by 1987. The percentage of cash sales has continued to stay at 40 percent or more for the past 15 years. Most recently, the fact that essentially half the transactions are cash purchases, despite quite favorable mortgage interest rates, reflects two factors: (1) purchases by individuals with large-scale farming operations who are readily buying parcels for further expansion as they become available, and (2) purchases by investor buyers whose motive is tax (capital gains) deference through the current tax-exchange provision in the federal tax code. The result is that today's demand side of the agricultural land market is mostly comprised of individuals who can rely heavily upon their own equity capital for buying parcels.

As a comparison with 25 years earlier, this change in the land market from debt capital to equity capital is pronounced and significant. From 1977

Table I. Characteristics of representative agriculture land sales in Nebraska, 1977-2001

Year	Average Size of Tract Sold	Percent of Cropland	Percent of Pasture or Other	Acreage Price Per Tract	Percent of Sales For Cash	Percent of Sales Where Debt was Incurred
	Acres	----------Percent----------		Dollars	----------Percent----------	
1977	240	--	--	134,000	12	88
1978	360	38	62	156,300	10	90
1979	305	43	57	93,000	8	92
1980	225	58	42	185,000	9	91
1981	250	52	48	211,000	9	91
1982	228	49	51	173,000	15	85
1983	230	51	49	170,000	20	80
1984	240	49	51	145,000	26	74
1985	270	43	57	104,000	45	55
1986	295	48	52	126,000	43	57
1987	285	48	52	118,000	53	47
1988	390	43	57	135,000	45	55
1989	245	52	48	146,000	42	59
1990	295	42	58	151,000	42	58
1991	320	42	58	160,000	53	47
1992	400	32	68	185,000	48	52
1993	480	25	75	174,000	48	52
1994	235	53	47	164,000	42	58
1995	220	59	41	185,000	40	60
1996	285	47	53	221,000	44	56
1997						
1998	445	34	66	285,000	46	54
1999	290	42	58	222,000	49	51
2000	365	41	59	284,000	46	54
2001	330	42	58	257,000	46	54

Source: UNL Nebraska Farm Real Estate Market Survey Series.

to 1978, 90 percent of purchases involved debt capital with down payments (of owner equity) that generally averaged 20 percent or less. In other words, in 1978, the debt capital portion of the purchase price was more than 70 percent (.90 x .80 = .72). In contrast, from 2001 to 2002, only 54 percent of the purchases involved debt financing with average down payment levels of 40 percent or even more. As a result, the debt capital portion of current transactions is just over 30 percent (.54 x .60 = .32). In short, the debt-equity ratio associated with the agricultural land market has essentially been inverted over the past 25 years, and with it, a much more financially resilient group of new owners.

Other notable changes are the motives behind buying and selling agricultural real estate. How are current patterns different from 25 years ago? As for buyers, farm expansion continues to be the primary factor behind purchases, while the proportion of purchases by beginning farmers has fallen, further substantiating the point made earlier that the buyer side of the market has, over time, become increasingly restricted to people of considerable financial means. Also, it is evident that nonfarmer investor buyers are more prevalent now, sometimes in direct competition with farmer buyers and sometimes inadvertently working with farmers by buying the parcel and leasing it back to an active farmer in need of expanded acreage.

On the seller side, land has always tended to be held for lengthy periods, meaning that estate settlement continues to be the primary motive for sale. Likewise, individuals quitting farming for health or other reasons are a major seller group. One significant change over 25 years ago is the drop in the proportion of financially-forced sales. Today, there appears to be a very low incidence of selling activity arising from forced sales due to financial stress, which is further confirmation that ownership of agricultural real estate typically remains in strong financial hands, despite chronically low income levels recorded for the farm sector as a whole over the more recent past.

A Final Note

Nebraska's agricultural land market is dynamic in that it is constantly evolving to changing economic conditions and expectations of the future. Moreover, it is extremely diverse, varying significantly from one area to another. In reality, we have literally hundreds of local real estate markets in the state, each unique in some manner from all others, whether it is for the transfer of ownership or the transfer of leasing rights. The challenge for us is to understand the general market patterns and trends in the context of this *virtual market kaleidoscope.*

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The dynamics of water quality policy

by Raymond J. Supalla and Saeed Ahmad

Serious groundwater quality problems exist in many of the intensively farmed regions of the United States. Nitrates exceeding the public health standard of 10 mg/1 have been found in over 25 percent of the wells in 87 U.S. counties (Williams, et al., 1988). Pesticides are generally less of a problem, but significant amounts of some pesticides, most notably atrazine and alachor, have been found in the groundwater of 16 states.

Nitrate pollution of groundwater tends to be the most severe in areas that are intensely irrigated. A staff analysis conducted by the Economic Research Service, USDA (ERS, 1987), found that extensive groundwater irrigation was widely practiced in over 80 percent of the U.S. counties which have a high potential for groundwater contamination from nitrogen fertilizers. The majority of these problem counties are found in the irrigated High Plains of Nebraska, Colorado, Kansas and Texas.

In Nebraska, nitrate pollution of groundwater is most severe in the intensively irrigated Central Platte Valley where nitrate levels are more than three times the public health standard, but serious groundwater nitrate problems can be found in 79 of Nebraska's 93 counties (Exner and Spalding, 1990). The primary cause of the problem is the leaching of nitrogen fertilizers below the root zone. Some leaching occurs naturally and is an essential part of crop production, but overusing nitrogen fertilizer and excessive irrigation has been a major contributor to the problem.

Groundwater is the primary source of domestic water for over 90 percent of Nebraskans and thus the public health implications of nitrate pollution are of major concern. Nitrates affect the ability of the blood to carry oxygen in infants under six months of age (blue baby syndrome) and there is some evidence that very high nitrate levels can be carcinogenic. Communities that face the prospect of unacceptably high nitrate concentrations in their domestic water supply must either invest in a treatment process to remove the nitrate, find an alternative source of water and/or pursue programs to reduce nitrate pollution levels. This article addresses the economics of programs to reduce nitrate pollution from irrigated lands in the Central Platte Valley.

Previous research suggests that nitrate pollution of groundwater can be reduced by encouraging farmers to use soil tests and reasonable yield goals when deciding how much nitrogen to apply, by restricting fall or very early spring application of anhydrous ammonia, and by careful irrigation scheduling (Lee, 1998; Johnson, et al., 1991). Other more restrictive and costly pollution reducing practices include on-demand fertilization, reducing nitrogen applied to a level below crop requirements, and crop shifts from continuous corn to alfalfa or to a corn-soybean rotation. In those cases where current nitrate pollution is especially high it is possible to actually clean-up the aquifer by fertilizing and irrigating in a manner which increases the amount of nitrogen that the crop extracts from the irrigation water (Supalla et al., 1996). Generally this involves reducing applied nitrogen and increasing the uniform application of high nitrate irrigation water. Whether any of these pollution reducing practices are appropriate from a public policy perspective, however, depends in part on the relative costs and benefits.

Most previous research on the effectiveness and cost of farm management practices for reducing pollution have been static or single-year studies, even though most groundwater pollution occurs over a long period and corrective policies necessarily consist of multi-year programs. Knowing how much agricultural activities contribute to nitrate pollution in a single year and how much it would cost to change this annual contribution is a useful starting point, but the most important result is aquifer nitrate concentration and this changes very slowly. A slow rate of change makes social time preference a critical part of water quality policy discussions and makes it necessary to consider the costs and benefits of policy choice in a present value framework. This paper adds a dynamic dimension to earlier static analyses and focuses on the following policy questions:

1. Can public water quality objectives be met in a timely manner through changes in farm management practices?

2. What will it cost society to meet alternative future water quality goals?

3. What are the tradeoffs between the rate of water quality improvements and the long- run social costs?

Methods and Procedures

The multi-year dimension of water quality policy is essentially a dynamic optimization or optimal control problem. The optimal control problem can be conceptualized as maximizing profits subject to a water quality constraint that is specified in terms of aquifer nitrate concentration. In this analysis, aquifer concentration depends on the amount of nitrogen removed or added to the aquifer and on the net change in the amount of water in storage.

The optimal control model used in this analysis required defining profits and aquifer concentration as continuous functions of net nitrogen removed (NNR) and the volume of water withdrawn. These functions were estimated for each crop activity using simulated crop yield and NNR values for alternative water and nitrogen management practices. This was done using the Erosion Productivity Impact Calculator (EPIC) and Agricultural Policy Environmental Exchanger (APEX) models developed by the Agricultural Research Service, USDA (Williams, et al., 1990). Profits were defined as net returns to land and management and estimated for representative farm conditions using a crop budget simulator (Selley, et al., 1999). Both the production functions and the net return estimates were used as inputs to the optimal control model which was solved using GAMS (General Algebraic Modeling System).

The production functions and crop budgets were developed for a representative farm in the Central Platte Valley. The available land consisted of one square mile (640 acres), with 20 acres lost to roads and noncropland uses, leaving 620 acres of actual cropland. Soils were assumed to be a silt loam (Hord association). All cropland could be either sprinkler irrigated, gravity irrigated or farmed as dryland.

The sprinkler irrigated field was assumed to be irrigated uniformly and was accordingly simulated based on a single point. For center pivots, a well flow rate of 800 gpm was assumed, with a pressure requirement at the pivot point of 45 psi and a corner attachment to permit irrigating a total of 155 acres. For gravity irrigation, blocked ends and one-fourth-mile rows with a slope of 0.15 percent was assumed and the distribution of water down the row was simulated based on a water distribution function developed by Watts & Eisenhauer (Watts & Eisenhauer, 2000). Irrigation power source was assumed to be electricity.

The management alternatives considered were nitrogen quantity, irrigation amount, irrigation system type and alternative crops (corn, alfalfa, wheat and a corn-soybean rotation). All corn options assumed 50 pounds of starter fertilizer (18-46-0), with varying amounts of additional nitrogen applied just before planting in the form of anhydrous ammonia. The winter wheat options assumed no starter, with varying amounts of anhydrous ammonia applied at planting time. All these management practices were evaluated for several different water quality scenarios.

Net economic returns were calculated as a return to land and management. All costs were assumed to be variable and were estimated in 1999 dollars using a crop budget generator developed by the Nebraska Cooperative Extension Service *(Table I)*. Major input prices were anhydrous ammonia, $0.11 per pound; labor, $7 per hour; with variable irrigation costs of $2.09 per inch for gravity systems and $2.34 per inch for center pivots. Output prices were based on the average market price received by

Table I. Operating and Ownership Costs, by Crop and Irrigation System Type

Crop Description	Corn Center Pivot	Corn Gravity	Corn Dry Land	Soybeans Center Pivot	Soybeans Gravity	Soybeans Dry Land	Alfalfa Center Pivot	Alfalfa Gravity	Alfalfa Dry Land	Wheat Dry Land
	Dollars Per Acre									
Operating Costs[a]	131.8	126.8	70.5	82.02	82.02	86.31	80.88	80.88	38.62	47.95
Irrigation Ownership Costs[b]	67.79	57.56	0.00	67.79	57.56	0.00	67.79	57.56	0.00	0.00
Machinery Ownership Costs	47.15	48.13	47.15	47.15	48.13	47.15	47.15	48.13	47.15	48.13
Total Operating and Ownership Costs	246.76	232.5	117.6	196.96	187.71	133.46	195.8	186.57	85.77	95.10

[a]Operating costs include all variable costs except water, nitrogen and other yield dependent costs.
[b]Ownership costs consist of interest and depreciation.

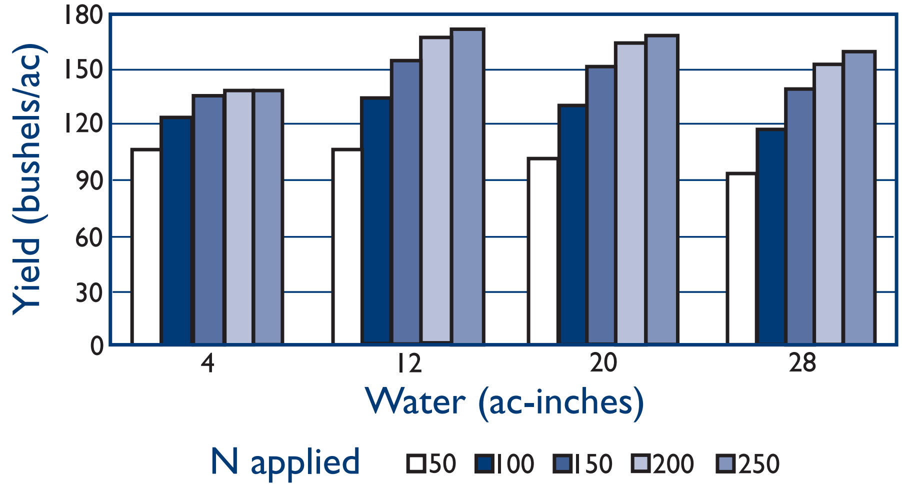
Nebraska producers from 1996 to 2000. The prices used were corn, $2.38 per bushel; soybeans, $5.90 per bushel; wheat, $3.38 per bushel; and alfalfa, $59.50 per ton. No price adjustments were made for farm program payments.

Economic and Hydrology Linkage

The economic model was linked to area hydrology using a simplified mixing cell approach. This approach assumes instantaneous mixing of inflow and outflow water such that the nitrate concentration in the cell is uniform at all times. For our model, this mixing cell was a cube that was one mile wide, one mile long and extended from the surface of the ground to the base of the aquifer. The saturated zone was 50 meters deep (1,969 inches) with an average storage coefficient of 0.23, based on typical study area characteristics (Arumi, 2000). Water was pumped from the cell for irrigation, with some water returning through deep percolation. Water also flowed into and out of the cell through lateral flow and percolation from noncropland. For purposes of this analysis, the mixing cell was assumed to be fully saturated at all times, i.e., recharge from deep percolation and lateral inflow equaled water pumped plus lateral outflow.

With the mixing cell approach, one can calculate the time required to change the average concentration of nitrate in the aquifer as the amount of nitrate removed or added changes with changes in farm management practices. In reality the aquifer concentration is often layered and nonuniform, but for shallow aquifers such as those found in the Central Platte Valley the mixing cell simplification permits a reasonable approximation of the time required to change water quality conditions through alternative management practices.

Figure 1. Effect of nitrogen and water applied on corn yields, assuming irrigation water quality of 0 mg/l



Farm Level Results

Three sets of static farm level results are of particular interest: (1) the relationship between grain yield, water and nitrogen, which determines the cost of pollution reduction; (2) the relationship between the amount of pollution, called net nitrogen removed (NNR) and the amount of nitrogen and water applied to the crop; and (3) the relative attractiveness of each practice when summarized in terms of cost per unit change in water quality.

The relationship between grain yield, water and nitrogen is most interesting in the case of corn, which is the dominant crop grown. This relationship was very dependent on the amount of nitrogen in the aquifer. In the case of clean water (0 mg/l nitrate nitrogen) the amount of nitrogen and the amount of water applied affected corn yields at all application levels up to and including 250 lbs/acre of nitrogen and 28 inches of irrigation water *(Figure 1)*. With clean water, corn yields actually declined when more than 20 inches of irrigation water was applied, because the excess irrigation leaches out some of the nitrogen needed by the crop. The result was very different for high nitrate water (30 mg/l), however, because with high levels of nitrate in the irrigation water maximum yields were reached at 50 pounds of applied nitrogen and 12 inches of irrigation water *(Figure 2)*. More than 12 inches of high nitrate irrigation water neither increased nor decreased yields.

The effect of water and nitrogen applied on net nitrogen removed (NNR) was also very dependent on the amount of nitrogen in the irrigation water. With clean water NNR was always negative, which means that when producing corn pollution increases irrespective of the level of water and nitrogen applied *(Figure 3)*. In this case, increased water applied and increased nitrogen always resulted in increased leaching. On the other hand, with 30 mg/l of nitrate nitrogen in irrigation water, corn production actually reduced pollution as long as at least 8 inches of water and no more than about 100 lbs/acre of nitrogen was applied *(Figure 4)*.

By expressing the physical and economic effects of each management practice as a cost per unit change in water quality, it is possible to examine the relative attractiveness of different practices. The results for all management practices considered, including different crops and irrigation system types, showed that the most efficient way to substantially improve water quality was to shift from gravity-irrigated corn to sprinkler-irrigated alfalfa. This action

Figure 2. Effect of nitrogen and water applied on corn yields, assuming irrigation water quality of 30 mg/l

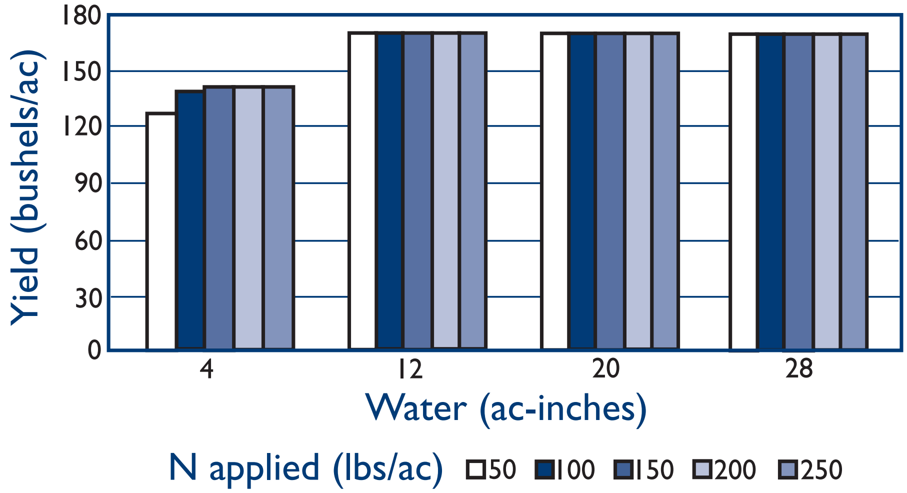


Figure 3. Effect of nitrogen and water applied on the amount of Net N removed with sprinkler irrigated continuous corn, assuming irrigation water quality of 0 mg/l

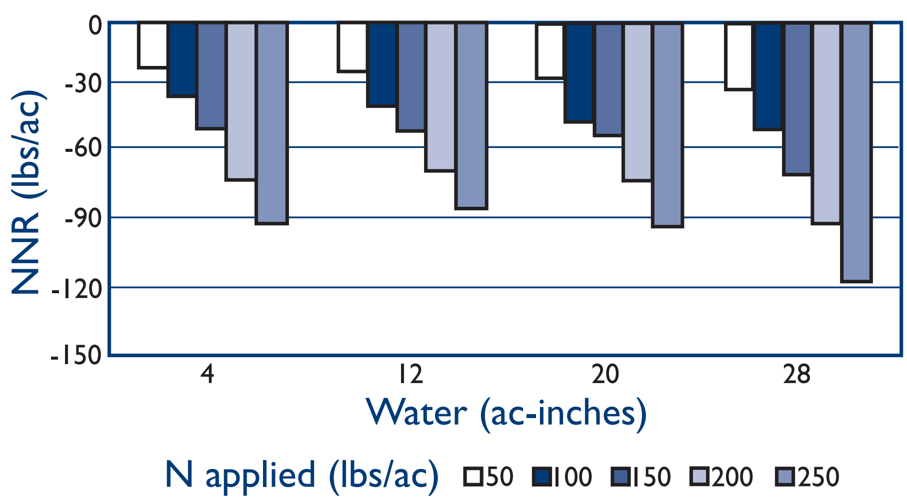
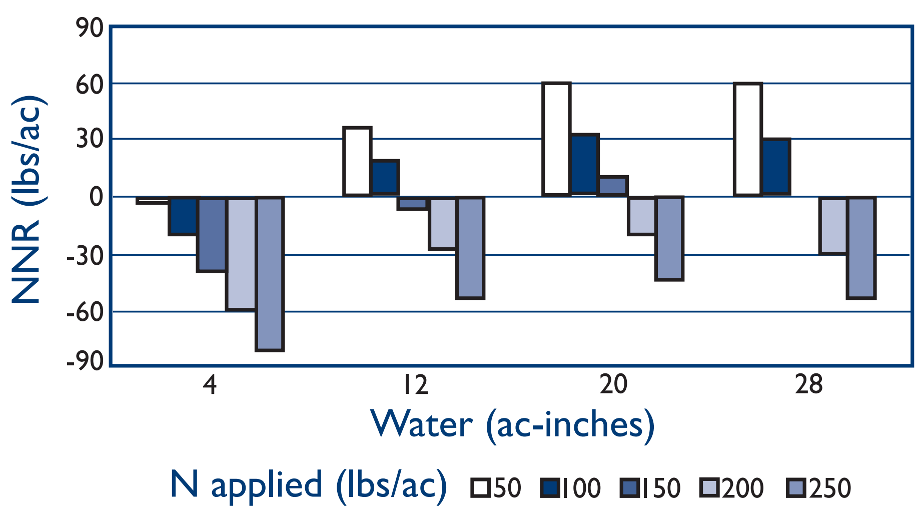


Figure 4. Effect of nitrogen and water applied on the amount of Net N removed with sprinkler irrigated continuous corn, assuming irrigation water quality of 30 mg/l



reduced net returns by $5 to $14 per acre, depending on water quality, while increasing net nitrogen removed by over 100 pounds per acre at all water quality levels *(Table II)*. This translates to a cost per pound of only 5 to 13 cents. The alfalfa option has limited applicability, however, because for many producers shifting to alfalfa is not practical, and if a large acreage shift did occur, local area alfalfa prices would fall to levels which would make other pollution reducing practices more economic.

The most cost effective practice that could be widely used is simply to reduce the amount of nitrogen applied to irrigated corn. Costs in this case ranged from less than 10 cents to over 1 dollar per pound, depending again on the amount of nitrogen in the irrigation water and the amount of nitrogen stress imposed on the crop.

When there were high levels of nitrate nitrogen in the irrigation water, increasing the amount of irrigation water applied while reducing the amount of fertilizer nitrogen was also found to be an attractive management practice, costing less than 30 cents per pound of nitrogen removed. However, this practice actually worsens water quality when the amount of nitrate in the irrigation water is less than about 15 mg/l.

Converting from gravity- to sprinkler-irrigated corn was not found to be very cost effective when water quality was poor, costing over $1.50 per pound, but as water quality improved, this option became competitive. This is because the improved irrigation uniformity associated with sprinklers is not very helpful until water quality improves to the point that the water which is pumped from the aquifer contains less nitrogen than the water which percolates below the root zone.

Table II. Effect of Selected Management Practices on Water Quality and Net Economic Returns

Selected Management Practices	Water Quality of 30 mg/l			Water Quality of 10 mg/l		
	Net N Removed	Net Returns	Cost/lb* Removed	Net N Removed	Net Returns	Cost/lb Removed
	lbs/Ac	A/Ac		lbs/Ac	A/Ac	
Gravity Irrigated Corn						
Optimum Levels of N and Water	14.6	$106.15		-60.2	$97.21	
Optimum Water, N Reduced 10%	22.6	$105.68	$0.06	-49.1	$95.80	$0.13
Optimum Nitrogen, Water Reduced 10%	20.0	$105.60	$0.10	-60.0	$96.76	$2.25
Sprinkler Irrigated Corn						
Optimum Levels of N and Water	18.8	$ 99.26	$1.64	-48.9	$91.63	$0.49
Optimum Water, N Reduced 10%	26.1	$ 58.76	$0.64	-39.6	$90.35	$0.33
Optimum Nitrogen, Water Reduced 10%	24.5	$ 98.65	$0.76	-48.1	$91.09	$0.51
Sprinkler Irrigated Alfalfa	123.1	$ 92.54	$0.13	40.3	$92.54	$0.05
Gravity Irrigated Corn-Soybean Rotation	23.6	$ 76.01	$3.35	2.5	$80.50	$0.27

[a]Cost/lb of N removed was calculated as the difference between gravity irrigated corn at optimum amounts of N and water (the unconstrained case) and each of the other crop activities.

Dynamics of Water Quality Improvement

In the Central Platte Valley where groundwater quality is substantially worse than the public health standard, the time required to improve water quality has important policy significance. If the time required to improve water quality is too long or too costly the governments involved may choose other options for meeting their domestic water supply needs. The time required depends on how much nitrogen can be feasibly extracted from the aquifer through farm management practices, on the volume of groundwater in storage, and on the amount and quality of the water which flows to the zone of interest from lateral flow or other noncropland sources.

How much water quality improvement is possible for the typical conditions found in the Central Platte Valley and how long it might take depends on inflow water quality and on the level of effort. Assuming relatively good inflow water quality of 5 mg/l, and assuming that agriculture does everything possible to improve the current situation, it was estimated to take 40 years to improve from a current pollution level of 30 mg/l to the public health standard of 10 mg/l. The time required to reach the public health standard increased to 45 years if the inflow water contained an average of 10 mg/l of nitrate. Finally, if the inflow water quality was very poor, e.g., 20 mg/l, as it might be for the most seriously polluted parts of the aquifer, then the public health standard of 10 mg/l would not be achievable at any cost within the 50-year period that was analyzed.

Cost of Water Quality Improvement

The time requirements discussed above probably understate the realistic time requirements, because the cost of a maximum effort program is likely to be prohibitive. For the maximum effort scenarios, average annual costs were about $80 per acre, ranging from about $10 per acre for the first five years of a 50-year maximum effort program to about $150 per acre for the last five years. Costs increase over time, because as water quality improves there is less nitrogen in irrigation water. Under a maximum effort program no nitrogen other than what is contained in 50 pounds of starter fertilizer is applied to corn and, thus, less nitrogen in irrigation water means lower grain yields and sharply decreased net economic returns.

Economic Vs. Environmental Tradeoffs

Water quality policy decisions necessarily involve balancing economic and environmental tradeoffs. Tradeoff curves for the Central Platte valley suggest that the cost of water quality improvement varies widely as a function of the water quality goal *(Figure 5)*. Assuming inflow water quality of 10 mg/l, the estimated present value cost to improve water quality from 30 mg/l to the public health standard of 10 mg/l was $800 per acre, which amortized at 5 percent over 50 years is $44 per acre per year. Measured in terms of discounted marginal cost, the corresponding cost of improving water quality was $8.58 per acre ($0.47/acre/year) to improve from 30 to 29 mg/l, increasing to $115 per acre

($6.30/acre/year) to go from 11 to 10 mg/l.

Water quality improvement costs were higher when inflow water quality was better and lower when it was poorer. Improving from 30 to 10 mg/l had an estimated cost of only $510 per acre ($28/acre/year) with and inflow water quality of 5mg/l. The corresponding marginal costs were $5 per year ($0.28/acre/year) to improve from 30 to 29 mg/l, and approximately $25 per acre ($1.36/acre/year) to improve from 11 to 10 mg/l. With very poor inflow water quality, 20 mg/l, the marginal cost of improving from 30 to 29 mg/l was about $13 per acre ($0.70/acre/year) and it was not physically possible to reach the public health standard of 10 mg/l at any cost.

Cost of Maintaining a Current Water Quality Level

For those situations where current water quality is at or near the public health standard, the relevant policy question is what will it cost to prevent further pollution and maintain quality at the preferred level. It was estimated that it would cost $24 per acre per year to maintain water quality at the public health standard of 10 mg/l if the inflow water quality was also 10 mg/l. With better inflow water quality of 5 mg/l, this cost decreases to $17 per acre per year, but if inflow water quality was a poor 20 mg/l, maintenance costs increase to $43 per acre per year.

Summary and Policy Implications

An aquifer and irrigated farm situation typical of the Nebraska Central Platte Valley was analyzed to determine the physical and economic feasibility of modifying agricultural production practices to improve, or at least maintain, groundwater quality. The primary pollutant in this case was nitrate nitrogen from nitrogen fertilizers. It was found that: (1) there were things which producers could do to improve water quality; (2) that it was technically possible and probably economically feasible to maintain water quality at a level that was at or slightly better than the public health standard of 10 mg/l, if pollution has not yet occurred; (3) that it will take several decades to improve water quality to 10 mg/l or better in those areas where current water quality is 30 mg/l or worse; and (4) that in most cases using agricultural management practices to clean up nitrate pollution that has already occurred is impractical, if not prohibitively costly.

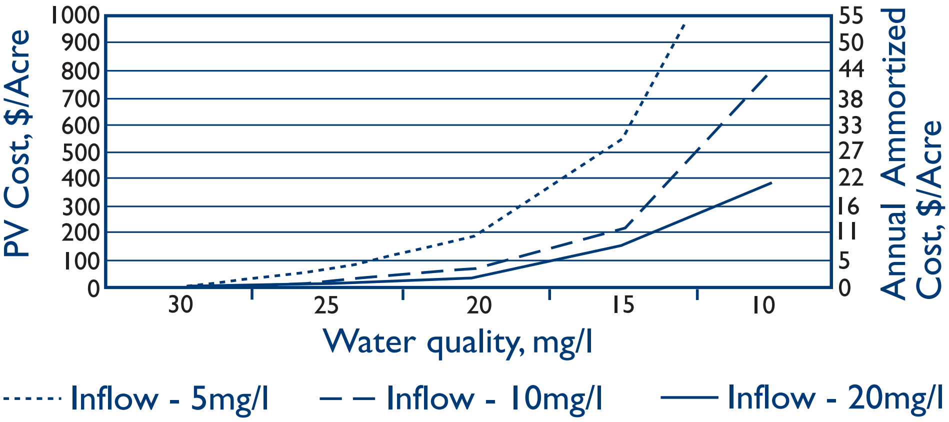
For all water quality cases considered, the most cost effective option for improving water quality was always to reduce the amount of nitrogen applied to corn to about 90 percent of the profit maximizing level. If more reduction in pollution was desired the next best option was to go to as much sprinkler-irrigated alfalfa as practical. If still more reduction was needed, the most cost effective option was to reduce the amount of nitrogen applied to corn to lower and lower levels. Another management practice that was desirable under some circumstances was over irrigation of corn to maximize the amount of nitrogen supplied by irrigation water, while minimizing applied nitrogen.

The estimated time required to improve water quality from a seriously polluted condition of 30 mg/l to the public health standard of 10 mg/l was 40 to 45 years, even if agriculture ignored all costs and did everything technically possible to improve the situation. When cost is considered, however, it is likely to take much longer and meeting the public health standard may even be an impractical or unrealistic goal over the ultimate long-term.

Incremental water quality improvement costs were quite modest when water quality was very poor, but the cost of further improvement increased dramatically as the water quality level approached the public health standard. Under typical conditions, the incremental cost of water quality improvement was $8.58 per acre to improve from 30 to 29 mg/l, increasing to $115 per acre to go from 11 to 10 mg/l. The corresponding total cost of going from 30 mg/l to the public health standard of 10 mg/l was $813 per acre, which amortized at 5 percent over 50 years is $45 per acre per year. Hence, programs to improve very poor quality water by a significant amount may be possible, but the amount of time required and the high cost of water quality improvement probably precludes the aggressive use of agricultural management programs to restore a badly polluted aquifer to a quality level that meets public health standards. Other methods of meeting the public need for high quality domestic water supplies, such as water treatment or alternative well field locations, are likely to be technically necessary for at least several decades and are also probably more economic over the long-term, once pollution has occurred (Hay and Ziebarth, 1990).

The most cost effective practice that could be widely used is simply to reduce the amount of nitrogen applied to irrigated corn.

Figure 5. Economic versus water quality tradeoffs



What is much less clear from a public policy perspective is whether policies should be implemented to prevent further deterioration of water quality in an aquifer which still meets the public health standard. It was estimated that it would cost about $24 per acre per year to maintain water quality at or near the public health standard of 10 mg/l. Some people would consider this a reasonable price to pay to maintain water quality and would be willing to impose this cost on producers; others would consider it a reasonable cost as long as there was at least some public subsidy; and still others would suggest that there are more efficient ways of protecting public health.

Water quality policy decisions are ultimately a matter of public choice, a choice which depends in part on preferences or values and in part on the options and tradeoffs involved. What is clear from this analysis is that there are important choices to be made involving economic, environmental and intergenerational tradeoffs. Understanding these tradeoffs is necessarily a first step in the difficult process of water policy formulation.

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Beef industry structure, marketing and policy issues

by Dillon M. Feuz

United States farm bills are often written with little interest or concern, and certainty with limited disagreement by beef producers. While beef industry lobbyists have always been present to protect beef producers from unwarranted environmental regulations, unjustified taxation, and unfair trade agreements, these issues have generally enjoyed broad support from the vast majority of beef producers. However, debate surrounding proposed legislation for the current farm bill has been very passionate, extremely divisive, and has left many beef producers bitter and angry as they have attended meetings this past winter. There are several issues creating this debate but the most divisive issue for the beef industry is know as the Johnson Amendment to the Senate version of the Farm Bill. The proposed legislation, if passed, would prohibit beef and pork packers from owning, feeding or controlling livestock for more than 14 days prior to slaughter.

The National Cattlemen's Beef Association policy does not support the proposed legislation. The Nebraska Cattlemen have a policy statement that does support the proposed legislation. I have visited with cow-calf producers and feedlot owners in Nebraska who are adamantly opposed to the proposed legislation and others who are equally passionate in their support for it. Why are there such divergent views from producers in the same industry? Regardless of the outcome of the proposed legislation, It is important to try and understand the issues that gave rise to the proposed legislation and to understand why there are such divergent views. That is the intent of this article.

Review of Beef Industry Trends and Marketing Practices

The cattle industry is composed of several production segments, each fulfilling a unique purpose in the production of the commodity, cattle. Cow-calf producers throughout the country use the forage resources in their environment to produce calves. Stocker operators add weight, age and value to the calf by using wheat pastures, corn stalks, native grasses, and other resources to grow the calf. Feedlot operators then use high energy feedstuffs, primarily corn, to fatten the animal to a desired level of finish for consumer satisfaction. Beef packers then take these commodity cattle and break them into the various products demanded by consumers: steaks, hamburgers, leather boots, etc.

Traditional cattle markets have relied on cash live animal markets to coordinate the market system between each of these segments and ultimately to provide beef products possessing characteristics consumers desire. However, as consumers demanded more product choice, more consistent products, and more information about the beef products they purchased, this cash method of livestock procurement provided very poor signals to producers to produce what consumers wanted. The result has been poor coordination of the vertical beef production and marketing system (Lamb and Beshear 1998; Schroeder et al.1998) and a loss in beef demand of nearly 50 percent from 1980 to 1998 (see Beef Demand Index at *www.aaec.vt.edu/rilp*).

The resulting loss in consumer demand was fewer total consumer dollars to spread throughout the beef industry. Initially, I think most beef producers responded in one of two ways to the shrinking margins: 1) they accepted smaller margins and less income and supplemented their income with off-farm employment; or 2) they aggressively pursued new technologies, increased the size of their operation, and sought to be low-cost producers. With both of these strategies, the beef industry remained a commodity industry and demand continued to decrease.

However, a third and more recent response by some producers and processors has been to fundamentally change how they produce and market beef by ceasing to be commodity producers and to be product suppliers. As processors have begun to market specific, value-added, branded products to consumers, they have become more concerned with procuring cattle that will meet the specifications for their branded products. For example, some branded products promote claims regarding how the animal is raised, Coleman's Natural Beef, or where it is raised, Nebraska Corn Fed Beef. The cash, live animal market pricing system has failed to reward producers for producing cattle with specific attributes, or assure necessary supply of cattle possessing the desired attributes for processors.

The failure of the price system to accomplish such coordination and related quality control was the primary reason that vertical integration, alliances, grids, partnerships, producer-owned coopera-tives, and contracts were developed (Ward 2001). Beef packer survey results reported by Lawrence, Schroeder, and Hayenga (2001) indicated that in 1999 more than 30 percent of fed cattle were sold to packers under some arrangement other than cash trade. Coordination and quality control via nonprice means including contracts and vertical alliances have facilitated a modernization of the fresh beef offerings that has helped reverse a 20-year decline in consumer demand. This has put more consumer dollars into the beef industry.

However, the increasing use of contracts in various forms has generated a very contentious price issue for the beef industry. Market price with many of these contracts, alliances and partner-ships is based on a pricing grid that rewards producers for delivering cattle with desired characteristics and penalizes them for cattle with undesirable at-tributes. The base price for these grids is frequently tied to the average cash market from the current week or preceding week. This creates an economic incentive for beef packers to try and buy cattle cheaper in the live cash market to not only increase their returns on those animals but also increase their returns on the contracted cattle.

Cattle that are owned, contracted, or otherwise committed to a packer through a vertical alliance are know as captive supplies. Several economists have addressed captive supplies from theoreti-cal and empirical perspectives. A recent summary of all such research suggests some theoretical support for negative price effects and empirical evidence on price impacts have usually been negative but small (Ward 2002). Some studies have found small, positive price effects associated with contracting.

The auction house: Where value is established in a commodity industry.

Captive supplies are the reason we have the Johnson Amendment. Cattle producers who view the industry as a commodity industry and want their price determined in a competitive live cattle market are likely for the amendment. Cattle producers who view themselves as product suppliers getting paid to deliver a specific product at a specific point in time are likely against the amendment. This is not a size of operation issue, nor is it a region of the country issue — it is a business philosophy issue. This is the reason behind the intense debate over the Johnson Amendment.

Economic Implications of Proposed Legislation

The economic impact of this proposed legislation would largely depend on how writers of the law would define the word "control" and how the courts would interpret it. If it is defined and interpreted in a very narrow sense to only deal with ownership, then I am positive that the beef packers have smart enough attorneys to write up business arrangements that would not violate the proposed legislation. Therefore, business would carry on as is with limited changes to the market. However, if control is given a broader interpretation and would prohibit many of the current contracts, alliances and grid pricing agreements, then there would be substantial economic impacts.

Eight agricultural economists (Feuz et.al. 2002) who have spent most of their careers analyzing the beef and pork industries collaborated on a white paper to address the economic impacts of prohibiting alliances, marketing agree-ments, contracts, partnerships, and other ways to improve vertical coordination in the beef and pork industries. Some of the preceding material was from that report and the following **five potential economic impacts** are all directly taken from that report. The full report with nine impacts that are addressed can be accessed online at: http://www.aaec.vt.edu/rilp/.

1. Threaten the billions of dollars packers (including farmer cooperatives) have invested in product and market development in recent years.

Negative trends in beef demand were not reversed until beef packers changed their business models from being low cost commodity operators to producers of quality controlled and convenient new meat products. The proposed legislation would constrain the ability of packers to accomplish the coordination and quality control they need for new branded products and put these important investments at risk.

2. Block independent livestock producers from access to new branded product lines that offer producers a larger share of the consumer's food dollar and better profit opportunities.

In concentrated processing markets, market access is a concern for producers. Contract arrangements with packers and membership in producer alliances with packers are ways for producers to ensure market access and provide the opportunity to participate in producing branded product lines developed in response to consumer needs (Ward 2001). If contracts that specify genetics, weight ranges, feeding regime, slaughter intervals, etc. would be banned because they constitute packer "control," producers would have less access to these developing product lines and the added margins coming from them.

3. Limit the role and diminish the gains carcass merit pricing has made.

The supermarket: Where value is established in a product industry.

Carcass merit pricing is possible without contracts and marketing agreements. However, part of the benefit of carcass merit pricing for buyers and sellers is having supplies of known quality committed well in advance of harvest. Gains in product development and consistency, meeting consumer demands, are clearly related to the use of carcass merit pricing. This legislation would limit the use of carcass merit pricing by buyers and sellers and damage the strong linkages between supply and quality assurance and branded meat programs.

4. Prices of livestock would not increase from the proposed legislation.

There is almost no scientific research concluding packer ownership of cattle or packer actions through forward contracting and control of ownership of cattle hurts producers. It is a popular belief that concentrated processing industries have market power enabling processors to reduce livestock prices. But there is almost no evidence of this in the output from a broad and comprehensive research review on this subject (Azzam and Anderson, page 124).

5. Would give the efficient, vertically integrated, U.S. poultry industry further competitive advantage over pork and beef industries.

The U.S. pork and beef industries would lose coordination gains they have recently made while the poultry market would be free to operate in a very efficient, vertically integrated, and coordinated system.

Conclusion

A large cattle feeder in Oklahoma recently commented: "I can remember when there were 12 cattle buyers living in Guymon, representing eight or nine different packers. Life was good then. I remember those days fondly, but Swift, Wilson, Cudahay, Armour, American Beef and a number of others are gone, and no act of congress is going to bring them back. The whole world of meat production has changed, and those of us who are involved in it had better change with the times, or be left behind." (The Hitch Report, 2002)

The beef industry has changed. Consumers want specific, convenient, branded products. Retailers and processors have consolidated and formed alliances to deliver specific products. Producers are also aligning themselves to deliver cattle meeting certain specifications and are being rewarded for doing so. This is changing how and where value and price are established in the market place.

The beef industry does need to look at alternative pricing points. Formula, alliance, and grid base prices need to be divorced from the commodity spot markets. This will alleviate some of the problems associated with captive supplies. But, banning producers from contracting with or aligning with a packer to supply a specific product is not the answer. In my opinion, that would send the beef industry back to a strictly commodity industry and beef demand would likely stagnate or decline. While some supporter of the Johnson Amendment view it as positive for smaller producers, I disagree. In a commodity industry, large, low-cost producers will benefit at the expense of smaller producers.

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UNL's Agribusiness Program works for students

by Ronald J. Hanson and Jessica L. McKillip

The University of Nebraska-Lincoln Agribusiness Program was the first nationally recognized joint degree program in agribusiness to be offered between a College of Business Administration and a College of Agricultural Sciences and Natural Resources.

The initial development of the UNL Agribusiness Program began in 1981 after a joint meeting of representatives from ConAgra and the UNL administration. ConAgra expressed concern that while the College of Business Administration was graduating students skilled in business, and the College of Agricultural Sciences and Natural Resources was graduating students well educated in agricultural sciences, the agribusiness industry actually needed students well prepared in both fields.

With a five-year grant totaling $500,000 from ConAgra, Inc. and the University of Nebraska Foundation, the College of Agricultural Sciences and Natural Resources and College of Business Administration at UNL began laying the cornerstones for the new agribusiness program. A committee comprised of faculty from both colleges developed a four-year program of study which allowed students two options. They could major in agribusiness through either college and take a well-rounded blend of business and agricultural economics courses. The agribusiness major was first offered to UNL students in January 1984.

A faculty member in each college was appointed as director of the Agribusiness Program for each college and given the responsibility of all academic advising and student recruiting efforts. The idea behind having co-directors was to coordinate the activities of the program as a joint partnership between both colleges. In 1986, Dr. Ron Hanson was appointed director of the Agribusiness Program for the College of Agricultural Sciences and Natural Resources. Professor Hanson directs the Agribusiness Program activities for students in the department as well as several scholarship and internship programs.

Two agribusiness program offices (one in each college) serve as a resource base for students in the program. Each office has an Agribusiness Program coordinator who is available to answer questions and provide information on internship and career placement opportunities, scholarships, and undergraduate research opportunities. Jessica McKillip currently serves as the Undergraduate Program Coordinator for the Department of Agricultural Economics.

UNL Agribusiness: An Area of Excellence

The UNL Agribusiness Program has served as a model and benchmark to many other universities developing a degree program in agribusiness. In response to the concerns and needs expressed at a White House Conference, "Today's Priorities for Tomorrow's Agribusiness Education," held in 1987, a group of 24 agribusiness leaders, university administrators, and government representatives formed a committee — the Agribusiness Education Development Project — that had a two-year mission to work to strengthen agribusiness education in universities across the United States. The project targeted intercollegiate cooperation in faculty development, continuing education, master's degree programs, and strengthening ties between universities, government, and the private sector. In examining current agribusiness programs across the nation, the UNL Agribusiness Program was deemed a good model for universities considering developing an agribusiness program. The UNL program has been identified by university administration as an area of excellence for directed program support.

The UNL Agribusiness Program has exceeded the projected expectations in enrollment, growing from 36 students in 1984 to the current 255 students in 2001 *(Figure 1)*. The agribusiness major is the largest single major in the UNL College of Agricultural Sciences and Natural Resources, with nearly 20 percent of the college's total enrollment.

Importance of Faculty Advising

When a student enters the Agribusiness Program they are assigned a faculty member that they work closely with throughout their undergraduate career. Faculty advising is key to the success of the program. Freshman and transfer students often say one of the reasons they chose UNL's Agribusiness Program through the College of Agricultural Sciences and Natural Resources is because they heard from other students the level of commitment and dedication that the faculty members in the department provide for their advisees.

Chris Gross, an agribusiness graduate and a senior commodity merchant with the ConAgra Trade Group remembers the strength of the program coming from outstanding faculty members and advisers: "As an agribusiness major, I had the opportunity to enjoy the benefits of a larger college while still receiving the individualized attention that a smaller college would provide in terms of class size, career counseling, internship opportunities, and accessibility to faculty advisors and professors."

Brandon Raddatz, a grain merchandiser with Archer Daniels Midland and an agribusiness graduate from Sidney, Neb., agrees, "The department offers great ways to get involved with faculty. Working with Dr. Johnson, I was able to study land values across the state along with taxation studies for the Nebraska State Legislature. I was able to learn and work with a special task force trying to find ways to change Nebraska tax laws for the better. Working directly with a faculty member was an experience that I greatly benefitted from."

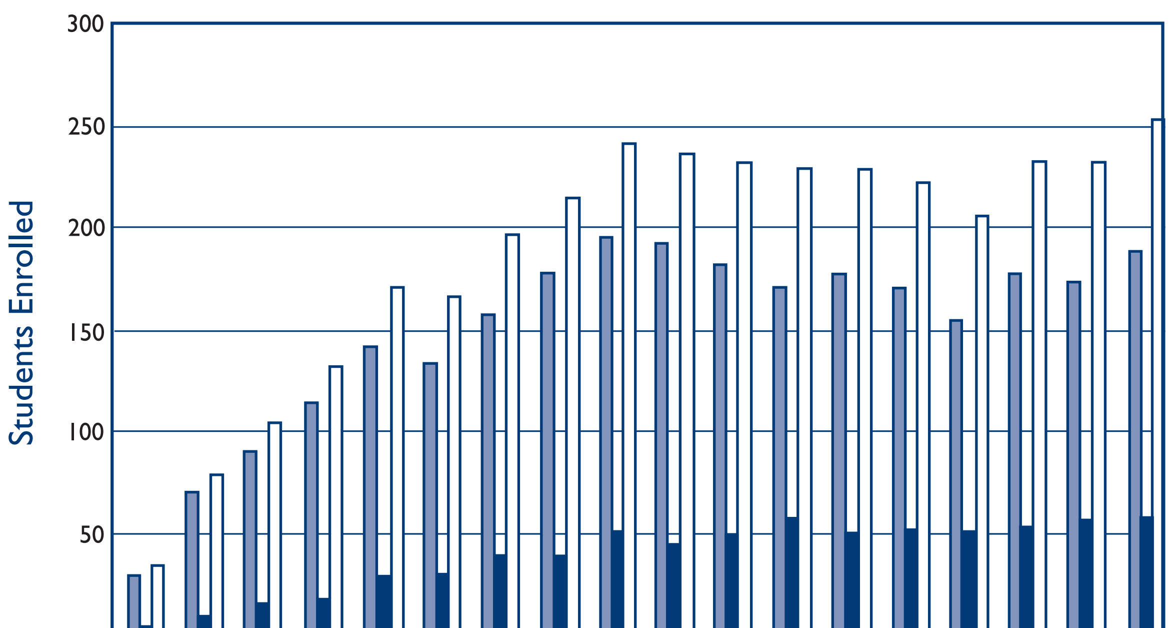
Faculty advising in the department is centered around a core group of six faculty members who have volunteered their time to work with students to achieve success in their academic program.

Core Curriculum and Supporting Courses

Agribusiness students in the College of Agricultural Sciences and Natural

Dr. Ron Hanson instructs freshmen students in the department's career orientation class.

Figure 1. Agribusiness enrollment



	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Men	30	72	91	116	144	134	158	198	196	193	183	172	178	171	155	179	175	190
Women	6	10	15	18	29	30	40	38	51	46	50	59	51	53	51	54	58	65
Total	36	82	106	134	173	164	198	216	247	239	239	231	229	224	206	233	233	255

Resources have a challenging curriculum composed of agricultural science courses and courses in business. Students are required to take 128 credit hours to receive a degree in agribusiness. Thirty-four hours are required in agricultural science, with courses ranging from Farm and Ranch Management to Agricultural Marketing to Agricultural Finance. Students are required to take 24 hours from the College of Business Administration, choosing courses from accounting, management, and marketing. The requirements of the Agribusiness Program provide students with the basic understanding of agriculture and business skills. The program requirements are flexible enough to allow students to specialize in a certain area or receive a minor from another academic discipline. Students who are interested in adding another dimension to their resume may pursue a minor in leadership and communication or agronomy or may wish to take additional courses to specialize in finance or political science. Agribusiness students are required to take courses that provide the students with basic skills in agriculture and business while remaining flexible enough to allow each student the opportunity to design a program that fits their interests and goals.

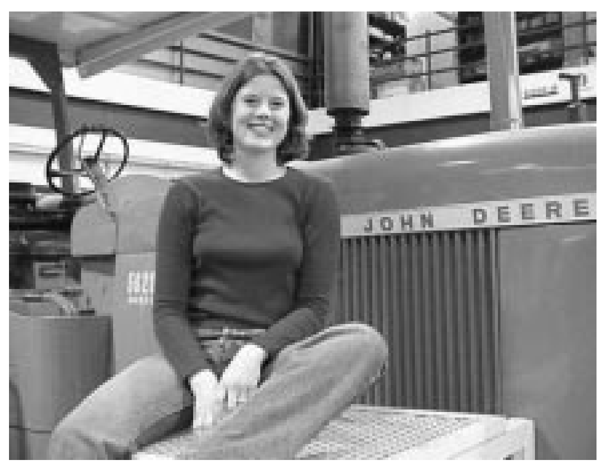
Internship and Career Opportunities

According to Dr. Ron Hanson, program director, "The underlying success of the Agribusiness Program has been the outstanding students that this major has attracted over the years." Students majoring in agribusiness are highly sought after for internship and career employment positions by various agribusiness firms. Agribusiness students have generated a high placement rate for both internship and career opportunities for the college.

UNL agribusiness students have quickly realized the importance of internship experiences to their career development. Each year over 40 percent of agribusiness majors take internships with agribusiness companies, some as early as the summer following their freshman year. Several students have graduated with experience from three internships on their resumes. Those students have gotten several job offers, all with top companies and organizations. Misti Kuenning, a junior Agribusiness major from Imperial, Neb., says, "Going into my internship, I wasn't sure of my exact career path, but after my internship I knew exactly where I wanted to go. The experience I gained is invaluable and I can't wait to go back." Misti was a marketing intern with Deere and Company in Dallas, Tex., last summer and will return for a similar internship again this summer.

With a well-rounded background in business and agriculture, graduating students find employment opportunities with a diverse range of businesses and organizations, from management positions at local cooperatives and flour mills to trading on a grain exchange floor to sales in chemicals, pharmaceuticals, seed, feed, and equipment. A number of graduates from the agribusiness program have gone on to obtain a master's degree in agricultural economics or a master's of business administration in agribusiness. Several others have gone on to law school as well as medical school.

Nearly 1,000 students have graduated from UNL with a major in agribusiness. A past survey indicated that 72 percent of these graduates had taken employment within Nebraska.



Misti Kuenning's marketing internship with Deere and Company provided valuable professional experience.

Future Opportunities for Students

As students leave UNL for international opportunities, internships and careers, they continue to see the importance of the agribusiness program at UNL. Students realize the benefits they receive from having a faculty member take a personal interest in their academic career. They also realize the importance and uniqueness of a program like UNL's, that offers personal advising and activities that promote beneficial experiences outside of the classroom.

Brady Fritz, a senior agribusiness major from Crete, Neb., learned of the emphasis placed on agribusiness last summer while studying at Oxford University. Brady said, "Regardless of the class or context, 'agriculture as a global industry' kept emerging as a topic to consider. One of the world's most challenging institutions finds value in knowing and understanding agriculture intimately. Surely, this is even further evidence of the importance of a career in agribusiness."

For more information, please e-mail Ron Hanson, rhanson1@unl.edu or Jessica McKillip, jmckillip2@unl.edu

Focus on teaching

Recruiting Agricultural Economics Graduate Students

With the recent slowdown in the economy, agricultural economics and agribusiness students are facing a tighter job market upon graduation. As such, more of the undergraduates at the University of Nebraska and other land grant institutions may consider pursuing graduate degrees in agricultural economics. Because graduate students contribute substantially to departments' research programs, it is crucial in this time of increasing supply of potential graduate students to identify those most qualified and likely to succeed in graduate school. Understanding what factors are most influential in a student's decision to enroll in an agricultural economics graduate program at a particular university is important for administrators and faculty as they allocate limited resources amongst graduate students.

To address these issues, we surveyed students in M.S. and Ph.D. agricultural and resource economics graduate programs in 41 universities and colleges across the United States. Results of the study indicate that graduate students' primary reason for pursuing graduate agricultural economics degrees is for career advancement opportunities. Analysis of students' preferences reveals that they value graduate program reputation above financial assistance, location of the university, or departmental resources. These results imply that top-ranked agricultural economics graduate programs could rely more on their strong reputation to attract and retain quality graduate students and provide less financial assistance and other resources. To be competitive in gaining high-quality graduate students, lower-ranked graduate programs must provide more financial incentives and benefits.

***Darrell R. Mark**, M. Scott Daniel, and Jayson L. Lusk*

For more information, please e-mail Darrell Mark, dmark2@unl.edu.

Faculty Exchange Program expands to Kazakhstan

This year the Department of Agricultural Economics hosted five exchange faculty from three countries. In the past the exchange faculty have been from Russia and the Ukraine, but this last fall it expanded to include one faculty member from Kazakhstan.

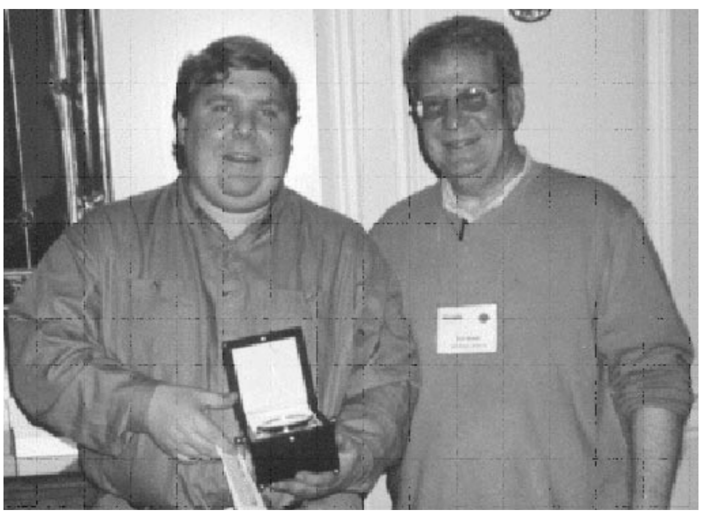
As in the past, the exchange faculty took classes and developed new course outlines during their five-month stay in Nebraska, which they will implement when they return home. They also wrote articles that they will use upon returning home. They also work with the Panhandle Station and the Scottsbluff Extension Service, leaning about extension and distance education.

The participants this year were: Kryna Davydova from Kharkiv State Academy in the Ukriane, Berik Kenzhebayev from the Technological University in Almaty, Kazakhstan. Olga Arkhipova from Omsk, Russia, Oleksiy Krasnorutskyy form the Ukraine, and Natalia Vasileva from Saratov State Social-Economic University in Russia.

Oleksiy Krasnorutskyy, The Kharkiv State Technical University of Agriculture; Berik Kenzhebayev, Almaty Technological University; Iryna Davydova, Kharkiv State Academy of Food Technology and Management; Olga Arkhipova, Omsk State Agrarian University; Natalia Vasileva, Saratov Social-Economic University; Lynn Lutgen, University of Nebraska.

Agribusiness MBA student wins case study competition

Chris Luchs, a University of Nebraska agribusiness MBA student, recently won the Ewing Marion Kauffman Foundation Social Entrepreneurship Case Study Competition and was awarded a $5,000 prize at Wake Forest University in Wake Forest, North Carolina. Luchs competed against students from Wake Forest University, the University of Chicago, and San Diego State University. His case study was titled “When Great Minds Don’t Think Alike” and concerned the challenges faced by a new nonprofit organization developed collaboratively by three established nonprofit organizations. The case study featured the balanced scorecard accounting concept, which can be used as a strategic management tool to help organizations define their goals and measure their progress toward achieving them.



Chris Luchs accepts the top award in the Ewing Marion Kauffman Foundation Social Entrepreneurship Case Study Competition from Stan Mandel, director of the Angell Center for Entrepreneurship at Wake Forest University.

Iowa State publishes Peterson book

A textbook on agricultural and natural resource policy analysis written by **E. Wesley F. Peterson,** professor, has been published by Iowa State University Press. *The Political Economy of Agricultural, Natural Resource and Environmental Policy Analysis* is targeted at advanced undergraduate students in public policy courses and was published in October 2001. The book presents a theory of public policy that demonstrates when public intervention is justified and draws attention to the political and ethical aspects of public policy decisions. It also describes the principal methods used in policy analysis, including benefit-cost analysis and various statistical and mathematical market models. Application of these methods to real-world issues is illustrated by case studies that include a development project in West Africa, groundwater contamination in the United States, U.S. sugar policy, NAFTA, and United States–European Union conflicts over hormones and GMOs.

Focus on research

Information Asymmetries and Consumption Decisions in Organic Food Product Markets

Organic agriculture is a rapidly growing segment of most developed agricultural economies around the world. To stimulate growth and circumvent supply-side market failures that emerge when organic products are not segregated, governments have introduced regulations concerning the certification and labeling of organic food. While certification and labeling satisfy market demand for information, they create an incentive for mislabeling conventional food as organic. Despite the incentives for, and the incidence of, mislabeling in organic food product markets, this issue has not been analyzed systematically. In fact, the possibility of mislabeling has been customarily neglected by economic studies of markets for credence goods in general. This study addresses the issue of product misrepresentation in organic food product markets and develops a model of heterogeneous consumers that examines the effect of mislabeling on consumer purchasing decisions and welfare. Analytical results show that, contrary to what is traditionally believed, while certification and labeling are necessary, they are not sufficient for alleviating failures in organic food product markets. The effectiveness of labeling depends on the level of product misrepresentation. Consumer deception through mislabeling affects consumer trust in the labeling process and can have detrimental consequences for the market acceptance of organic products. When extensive mislabeling occurs, the value of labeling is undermined and the organic food market fails.

Konstantinos Giannakas

For more information, please e-mail Konstantinos Giannakas, kgiannakas@unl.edu.

Nebraska To Host Midwest/Great Plains and Western Outlook Conference

Nebraska will host the Midwest/Great Plains and Western Outlook Conference Aug. 13 and 14 at the Double Tree in Omaha, Neb. The conference brings together approximately 100 specialists from over 30 states to discuss the agricultural outlook for the coming year. This conference is held annually and is hosted by different universities and government agencies.

At the conference there will be speakers on most of the commodities that are raised in the Midwest, including an aqua specialist and possibly an ethanol specialist which will be new to this years conference.

For more information, please e-mail Lynn Lutgun, llutgen@unl.edu. or phone (402) 472-3406.

Effects of Weather Conditions on Cattle Feeding

Performance of feedlot steers and heifers varies seasonally as cattle react to weather conditions. Because cattle's response to environmental conditions differs by weight, time of year, and other factors, cattle feeders routinely make management decisions conditional on how particular pens of cattle are expected to respond to a complex combination of multiple weather conditions. To aid in making these decisions, this ongoing study identifies the weather conditions that have the greatest impact on feeding performance and profitability. The marginal effects of several interrelated weather conditions on performance and profits are quantified for steers and heifers of various placement weights and placement months. Initial results indicate that cattle feeding profits are most influenced by temperature, temperature variability, heat stress, and precipitation at the end of the feeding period. The impact of these weather conditions on profits was smaller for cattle placed on feed at heavier weights. Quantifying the effect of various weather conditions on feedlot cattle performance and profitability may be a first step in insuring against weather risk associated with cattle feeding.

Darrell R. Mark and Ted C. Schroeder

For more information contact Darrell Mark by e-mail dmark2@unl.edu.

Department home to new center

The Department of Agricultural Economics is now home to the Center for Agricultural and Food Industrial Organization (CAFIO). CAFIO was created in June 2001 to promote research, teaching, and outreach directed toward understanding the economic causes and consequences of the industrialization of the agricultural and food sector. CAFIO's specific objectives are to conduct impartial and timely economic analyses of agricultural and food industrial organization issues important to farmers and ranchers in Nebraska, provide undergraduate and graduate (M.S. and Ph.D.) training in agricultural and food industrial organization, and to serve as a point of contact for the public and researchers working in the agricultural and food industrial organization area.

CAIOP currently has a core faculty of five—**Azzeddine Azzam, Konstantinos "Dinos" Giannakas,** and **Jeffrey Royer** of the Department of Agricultural Economics, **David Rosenbaum** of the Department of Economics, and **Bettina Klaus,** who holds a joint appointment between the two departments. Professors Azzam and Giannakas respectively serve as director and associate director of the center. Examples of research conducted by CAFIO core faculty members include economic analyses of the gains and losses to the livestock industry of the Livestock Mandatory Reporting Act, the competitive effects of the Tyson-IBP merger, the impacts of vertical coordination on agricultural raw product markets, and issues relating to the labeling of genetically modified products.

CAFIO has also established the *Journal of Agricultural and Food Industrial Organization,* the first academic journal in the world dedicated exclusively to the study of competitiveness in the agricultural and food sector. Professor Azzam serves as editor of the journal. He is assisted by associate editors and an advisory board consisting of leading scholars from a dozen countries.

To learn more about CAFIO, visit its Web site at http://agecon.unl.edu/cafio/homepage.html.

Professor Klaus straightens out Opie

The film A Beautiful Mind *recently received four Academy Awards, including awards for best picture and best adapted screenplay. It also earned director Ron Howard his first Oscar for best director.* A Beautiful Mind *portrays John Forbes Nash, Jr., and his triumph over mental illness. Nash is a Princeton University mathematician who shared the 1994 Nobel Prize in Economics for his pioneering work in game theory. Nash is well known among economists for the concept of Nash equilibrium. Although popular among moviegoers and members of the Academy of Motion Picture Arts and Sciences,* A Beautiful Mind *has been criticized by economists and mathematicians for its inaccuracies and the extent to which it strayed from Nash's real life story as chronicled by Sylvia Nasar in her best-selling biography of the same title. We have asked one of our resident experts on game theory,* ***Bettina Klaus,*** *to set the record straight regarding a memorable scene from the movie. Professor Klaus admits to being irritated by the "bar scene" because "this 'example' of how people get important ideas for their research is so misleading." Here are her thoughts:*

I do not want to write a movie review, but many people saw *A Beautiful Mind* and therefore may have some conceptions, or rather misconceptions, about game theory and game theorists. I would like to emphasize that the bar scene, the scene in which Nash and his colleagues encounter a group of women and in which he gets the idea for a solution concept, *does not* refer to the Nash equilibrium concept. In a Nash equilibrium, each player chooses an optimal response to all other players' strategies. In fact, the solution depicted in this scene — nobody should approach the most beautiful woman in the group because if all of them approach her, they will all lose — is an example of a cooperative bargaining solution in which cooperation pays off. It clearly is not a Nash equilibrium because, after agreeing that no player should approach the most beautiful woman, one deviating player may ask her out and, therefore, if she goes out with him, be better off. Thus sticking to the agreed strategy would not be an optimal response for this player and the described strategies do not represent a Nash equilibrium.

Focus on outreach

The Nebraska Ranch Practicum

The Nebraska Ranch Practicum was first offered in 1999 to strengthen the profitability and sustainability of range-beef cattle operations. Cow-calf producers, veterinarians, extension educators, natural resource agency personnel, and other advisors to the industry are all part of the targeted audience. Specific objectives are: 1) improve decision-making skills needed to manage more efficiently; 2) enhance stewardship of natural resources; 3) improve skills in critical evaluation of alternative production enterprises; and 4) enhance ranch sustainability.

To achieve these objectives a team of two economists, two range scientists and one animal scientist, developed concepts and teaching materials during 1998. The team goal was to integrate the three disciplines as much as possible. An integrated workshop that begins in June of one year and finishes in January of the following year was developed. We meet with class participants (limited to about 35 per year) eight full days over that time. Pre- and post-tests are administered to help determine knowledge gains and to adjust teaching to student knowledge levels. Students are exposed to concepts in a classroom followed by demonstrations of the concepts via ongoing research and planned demonstrations in the field. Economists integrate management and marketing concepts for the appropriate time of year and for the biological and physical processes being taught by the range and animal scientists. The registration fee for the eight days is $600/participant. We have worked with interested groups to develop scholarships for producers who cannot afford the fee. Academic credit for the practicum is also available through the University of Nebraska system.

Over three years of the practicum, more than 100 individuals have participated. The interaction and learning between participants and scientists have been excellent. Participants have estimated an average improvement in net returns of about $30/head of cattle due to the practicum.

For more information contact either Richard Clark by e-mail, rclark3@unl.edu, or phone (308) 532-3611 Ext. 134; or Dillon Feuz by e-mail, dfeuz1@unl.edu, or phone, (308) 632-1232.

June versus March calving for the Nebraska Sandhills: Economic comparisons

Based on five years of biological research, calving in June better matches nutrient requirements of mature cows with nutrient output of Sandhill forages. Profitability for June born calves sold near weaning (early February) was greater than for March born calves sold near weaning (early November). If ownership on calves is retained, March born calves offer more profit potential when finished as calf feds compared to June-born calves finished as calf feds. June-born calves finished as yearlings following a summer of growth on range grass offer the most profit potential of these retained ownership options. Pregnancy rates of second calf heifers appears to be a larger problem for the June-born system compared to the March-born system. Research is continuing on the latter issue.

For more information, contact Richard Clark by e-mail, rclark3@unl.edu, or phone (308) 532-3611 Ext. 134.

Windrow grazing and baled-hay feeding strategies for wintering beef calves

Production and economic data for calves grazing windrowed hay in winter were compared to similar calves fed the same hay in the form of large round bales. Both strategies were profitable under most price situations; however, calves grazing the windrowed hay gained as well or better than those being fed hay. Windrow feeding required less labor both for harvesting of hay and feeding and lower overall costs. Even considering the greater forage losses due to windrow feeding the profit potential was greater for the windrow fed calves. Income variability was also lower for windrow fed calves when prices over the most recent seven years were allowed to vary. This research was conducted on the grass hay meadows of the University of Nebraska's Gudmundsen Sandhills Laboratory near Whitman, Neb. over a two-year period.

For more information, please e-mail Richard Clark, rclark3@unl.edu.

North Central Risk Management Education Center

The North Central Risk Management Education Center has been established by the University of Nebraska Cooperative Extension and is located in the Agricultural Economics Department. The Center is a part of a national risk management education initiative that is funded through a grant from the USDA.

The goal of the center is to facilitate and coordinate risk management educational programs in the North Central Region. The programs will provide producers and their families with the knowledge, skills and tools needed to make informed risk management decisions for their operation.

The North Central Region includes Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota and Wisconsin. The collaborators in the educational programs include land grant and other educational institutions, rural organizations, farm commodity groups, and private sector agencies. The grant the center received with FY 2001 funds was $963,000. The major funding activities for this year include $143,000 to support educational programs at the 13 land grant institutions; $353,000 through a competitive grants program and $125,000 to support Web site applications of risk management tools and information. The Web site is: http://www.farmdoc.uiuc.edu/.

The Center has a six member advisory council. The council has the responsibility of setting the funding priorities, selecting the projects funded in the competitive grants program and evaluating the outcomes of the projects.

H. Douglas Jose, professor and extension farm management specialist in the Agricultural Economics Department is the director for the North Central Region.

For more information you may contact Jose by e-mail, hjose1@unl.edu, or phone, (402) 472-1749.

Nebraska Cooperative Council Fund for Excellence

The Department of Agricultural Economics recently received the first funds from the Nebraska Cooperative Council Fund for Excellence under a five-year agreement between the Council and the University of Nebraska Foundation. The Fund for Excellence was established in 1999 when the Council began a three-year fund-raising drive that raised over a half million dollars in membership pledges. Interest earnings from the fund are to be used to support educational programs focusing on agricultural cooperatives. A six-person committee will select projects for funding from proposals submitted by UNL faculty members and others. Members of the selection committee include Robert Andersen, Nebraska Cooperative Council president, Roland From, vice chair of the board of United Farmers Co-op of Shelby, and Marlin Luebbe, former chair of the board of Dorchester Farmers Co-op. **Jeffrey Royer, Dennis Conley,** and **Darrell Mark** represent the department. Possible applications of the fund include research grants, graduate student support, faculty development, and the organization of conferences and workshops.

For more information, please e-mail Jeffrey Royer, jroyer1@unl.edu; Dennis Conley, dconley1@unl.edu; or Darrell Mark, dmark2@unl.edu.

Focus on people

Two new faculty members join department

Dr. Cheryl Burkhart-Kriesel joined the department in July 2001 as an assistant professor and extension specialist in community and economic development. She is located at the Panhandle Research and Extension Center in Scottsbluff. Burkhart-Kriesel holds a Ph.D. in community and human resources from the University of Nebraska. She also holds a B.S. in consumer sciences from the University of Nebraska–Lincoln and an M.S. in applied human resources from Colorado State University. Her previous work experience includes serving as an extension educator in both North Dakota and Nebraska and as coordinator of the Panhandle Learning Center. She also has experience as a grant coordinator, group facilitator, market researcher, and business owner. In her new position, Burkhart-Kriesel provides support for small business development, focusing on value-added agricultural opportunities, community strategic planning, small group facilitation, and board training.

Dr. Darrell R. Mark joined the department in January 2002 as an assistant professor in agribusiness management. Mark earned both an M.S. and a Ph.D. in agricultural economics from Kansas State University. He also holds a B.S. in agribusiness from South Dakota State University. His extension and research interests include livestock production and marketing, agricultural cooperative management, and value-added marketing. His current research focuses on identifying and reducing feedlot cattle performance and profit losses caused by adverse weather conditions. A native of South Dakota, Mark maintains an interest in his family's grain and livestock farm in the southeastern part of the state.

Bitney retires after 41 years of service to state

Dr. Larry L. Bitney and his wife Linda at retirement ceremony April 5.

Larry L. Bitney, professor, retired on January 31, 2002, after 41 years of service to University of Nebraska Cooperative Extension. Bitney received a B.S. in agricultural economics from the University of Nebraska in 1958 and served as a county extension agent in Dodge County until 1963. He received an M.S. from the University of Nebraska in 1965 and a Ph.D. from Oklahoma State University in 1969, both in agricultural economics. In 1968, he joined the agricultural economics faculty at the University of Nebraska as an associate professor. He was promoted to professor in 1974. During his career, he developed several nationally recognized programs, including the "Managing for Tomorrow," "Returning to the Farm," "Women in Agriculture," and "Beginning Farmer" programs. He also was instrumental in establishing the Nebraska Farm Business Association and Pork Central and was author of many popular and professional articles on farm management topics. Bitney and his wife will continue to live in Lincoln where they plan to enjoy their children and grandchildren.

Governor's trade mission includes Cordes

Sam M. Cordes, professor and senior fellow in International Programs, participated in Governor Mike Johanns's trade mission to Brazil and Chile last fall. **Lucia Bond,** an agribusiness MBA student in the department, was also among those who participated in the mission. In February, Cordes traveled to San Jose, Costa Rica, to meet with officials of the Inter-American Institute for Cooperation in Agriculture and to participate in the International Conference on Impacts of Agricultural Research and Development.

Klaus accepts Spanish fellowship

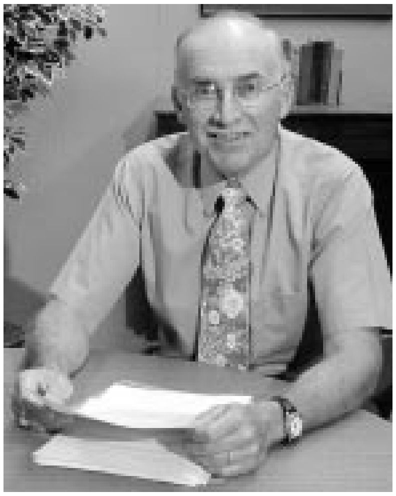
On June 1, **Bettina Klaus,** assistant professor, will begin a one-year leave of absence from the University of Nebraska–Lincoln to work at the Universitat Autònoma de Barcelona in Barcelona, Spain. Klaus has been awarded a Ramon Y. Cajal Research Fellowship from the Spanish Ministry of Science and Technology, which will give her the opportunity to work with leading researchers in the fields of game theory and social choice theory. Klaus, who teaches microeconomics at UNL and whose research concentrates on game theory and social choice, holds a joint appointment in the Department of Agricultural Economics and the Department of Economics.

Peterson serves as election supervisor in Kosovo

In November 2001, **E. Wesley Peterson,** professor, volunteered personal leave to serve as an international polling station supervisor in Kosovo during elections organized by the Organization for Security and Cooperation in Europe (OSCE). The elections were organized by OSCE to elect members of a newly formed Kosovo Assembly, which has since selected a president and will select a prime minister to form a government to run Kosovo in collaboration with the United Nations. Kosovo is nominally still part of the Federal Republic of Yugoslavia, which includes Serbia and Montenegro. Peterson was one of about 1,600 polling station supervisors drawn from other European countries and the United States. One supervisor was assigned to each polling station and charged with ensuring that the election rules established by OSCE were followed. Polling station supervisors received training in Greece before undertaking additional training in the municipalities to which they were assigned. Peterson's polling station was in the rural village of Bilusa, located near the historic city of Prizren in southern Kosovo.

Faculty members receive awards

Professor **H. Douglas Jose** received the American Agricultural Economics Association (AAEA) Group Distinguished Extension Award, which was presented on August 11, 2001, at the AAEA annual meeting in Chicago, Ill. The award was presented to the Extension Risk Management Education Coordinating Team, which includes Jose and five colleagues from other universities. The group organized a national risk management conference in June 2000 to discuss the development and delivery of risk management educational programs and has conducted regional workshops to initiate and coordinate risk management programming and to establish collaboration between public institutions and private sector firms and organizations involved in risk management services. The award also recognizes the group for its work in securing $25 million in federal funding for risk management education activities over a five-year period.



Konstantinos "Dinos" Giannakas, assistant professor, recently received two major university awards. In November, Giannakas received the Dinsdale Family Faculty Award, which recognizes outstanding teaching, research, and outreach by faculty members in the Institute of Agriculture and Natural Resources. In December, he received the Agricultural Research Division Junior Faculty Excellence in Research Award in recognition of his outstanding contributions in research and his potential as a scientist.

The Nebraska FFA Association awarded the Honorary State FFA Degree to **Ronald J. Hanson,** professor, at its April awards session in Lincoln. The Honorary State Degree recognizes those individuals who have contributed to the success of FFA on a local, district, or state level and expresses appreciation for assistance provided FFA students and teachers.

Iowa State professor collaborates with department faculty members

John R. Schroeter, professor of economics at Iowa State University, is currently spending part of his sabbatical leave in the department where he has been collaborating with Professors **Azzeddine M. Azzam** and **J. David Aiken** on a research project investigating the effects of Initiative 300 on the structure of the feedlot industry in Nebraska. The project, titled "State Corporate Restrictions and Industry Structure" is financed by a grant from the National Research Initiative.

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