The ARDC has a storied history that began in April of 1962 when the University of Nebraska acquired most of what we know as the ARDC from the Federal government. Since its inception, the ARDC has been in a constant state of change. We have seen the demolition of over 150 former Nebraska Ordinance plant buildings, movement of ordinance plant buildings to new locations, and most importantly new facilities have been erected to further our mission. Each year new research projects change the look and face of the ARDC. Each year new Extension programs are developed to serve constantly changing needs. The ARDC is all about change. We drive and embrace change to fulfill our mission and serve the citizens of Nebraska.

While many things have changed at the ARDC, there has been one area that has remained remarkably unchanged. In April, the ARDC will be 46 years old. During this time, only two people have had the title of “Director.” Warren Sahs held the Director position for close to 30 years. I have held this position for slightly more than 16 years. It amazes me how quickly 16 years has gone by… I never dreamed I would be at the ARDC this long. I cannot speak for Warren, but I think one of the reasons for our longevity is the fact that the ARDC never gets boring. There are always challenges and opportunities that warrant boredom. But most of all I think the reason we stayed is the ARDC offered the opportunity to see into the future through the eyes of hundreds of extremely talented faculty and staff. What they have accomplished with the resources available at the ARDC is really unbelievable. It makes coming to work fun and exciting…it makes you want to stay.

Recently, we engaged a group of talented colleagues from across the country to perform a review of the ARDC management structure and suggest changes needed to meet future needs. One of the recommendations made was the ARDC needed a full-time Director. I have been a part-time Director for a few years, splitting my time with other duties within the Agricultural Research Division. After much reflection and discussion with IANR Administration, we have concluded it was best if I stepped down as Director of the ARDC. This was a very hard thing to do. It is hard to let go of something that has been a big part of your life for 16 years, but it is time.

I have moved my office to Lincoln and look forward to being able to see the ARDC from a much farther perspective. I am committed to lead the ARDC in a new direction, but it is time.

ARDC Feature Unit: Forestry

Forestry Activities at ARDC

Forestry projects at ARDC have a key goal of defining and quantifying the role of woody plants in agricultural landscapes. A primary focus on the influence of field windbreaks on crop production has produced over 30 years of positive yield data from fields on the shelterbelt area. A standard corn, soybean, winter wheat rotation is utilized. Manure is added in July following wheat harvest. The rotation includes 3 to 4 years of alfalfa every four or five years. The success of the shelterbelt program is due in no small part to the dedicated support staff that operate the shelterbelt area. Bruce Bolander is the unit manager and has been with UNL since 1977. Mike Cieslik is the technician at the forestry research area and has been with us since 1985.

More recently studies have focused on the relationships between non-crop areas, particularly windbreaks and forested riparian buffers, and associated predator-prey dynamics. Understanding these relationships facilitates management options to boost conservation of birds and other beneficial species, which in turn serve to suppress insect crop pests. Heidi Puckett, a graduate student in Natural Resources, completed a study on foraging behavior of insect-eating birds and invertebrates, and would contribute to better biological control of crop pests. The shelterbelt area is an important part of 60 foot strip conservation of birds and other beneficial species, which in turn serve to suppress insect crop pests. Heidi Puckett, a graduate student in Natural Resources, completed a study on foraging behavior of insect-eating birds and invertebrates, and would contribute to better biological control of crop pests and a reduced need for insecticide applications.
Organic Cropping Systems at ARDC

In 2005 a team of seven researchers at UNL representing Agronomy and Horticulture, Entomology, and the School of Natural Resources received a grant from USDA to establish four certified organic research sites around the State. One of those sites is located on 44 acres within the shelterbelt systems at ARDC. We will be focusing on problems encountered during the transition period from a conventional production system to an organic system. One of the main problems is nutrient management. We are following the same rotation (corn, beans, winter wheat) used for our other studies with the added goal of using green manures as a nitrogen source. Weed control is carried out with tillage and cultivation. Timing of early rotary hoe operations is critical.

We are planting several legumes (Borrego clover, Al Green Fix, a vetch, and soybean) immediately following wheat harvest. In addition, we are using dairy manure as a control. Nitrogen levels are determined and the impact of the three treatments on subsequent corn yields are record. The first year (summer 2006) we were short of moisture until August and our stands got a late start but by late October we had a decent stand of our cover crops. Nitrogen analysis at the time of corn planting showed that the manure gave the most available nitrogen but while the clover gave yields comparable to the manure, corn yields on the vetch plots were slightly lower. Last summer we dropped the vetch and added soybean as a cover crop following wheat. Corn will be planted on these plots this spring and nitrogen levels and corn yields will be determined. A variety trial of potential organic varieties of winter wheat was planted last fall by Steve Bauer. This spring we will be seeking certification of our wheat and soybean crops.

As part of the study, each site has a local citizen advisory group composed of organic farmers in the area. We have received excellent input from our group of advisors and have held several field days over the last two growing seasons. A third field day will be held in August. If you would like to attend this field day we need to hear from you so that we can be sure to send you an announcement. Send your name and email to Liz Sarno at esarno2@unl.edu or Jim Brandle at jbrandle@unl.edu.

Windbreaks and Climate Change

Issues related to global climate change remain in the news as we approach another election season. While other issues may dominate the various discussions, how society will address increasing levels of carbon dioxide remain a serious issue. From our agricultural point of view, the increasing use of ethanol from corn and the impacts of increased corn production on farm operations remain of interest to many Nebraskans. But Nebraska farmers have many other options as well.

Windbreaks have been a part of the Nebraska landscape since the early 1940s. While many were removed to make way for irrigation systems, many new single or double row field windbreaks have been planted. Research at the ARDC clearly demonstrates the economic advantages of field windbreaks in corn, soybean, and wheat production systems. Over the last 10 years, researchers at ARDC have been evaluating the ability of field and farmstead windbreaks to store carbon in agricultural landscapes and reduce carbon dioxide emissions from reductions in fuel, fertilizers and pesticides while maintaining or increasing profitability. In cooperation with the National Agroforestry Center bio-mass estimates of many of Nebraska’s tree species have been determined. Emphasis has been on trees grown in shelterbelts rather than under typical forest conditions. Our early research indicated that the amount of biomass per hectare was being underestimated by traditional forest based equations for biomass. Sampling of shelterbelt trees indicated that more biomass was located in the canopy of the trees due to their being grown under different light conditions. In a forest situation, many of the lower branches are lost due to low light. This is a plus if you are trying to grow timber where long straight trunks are desirable to produce quality lumber. In a shelterbelt we would like to retain as much of the lower portions of the canopy to provide additional density to the windbreak.

This winter, forestry research is concentrating on common shrubs grown in Nebraska and used in many farmstead windbreaks. Shrubs are being harvested, measured for diameter and height and then weighed. Data will be used to develop better estimates of shrub biomass for use in carbon storage projects.

Table 1: Carbon storage and carbon dioxide emission reductions by typical field and farmstead windbreaks in Eastern Nebraska.

<table>
<thead>
<tr>
<th>Type of windbreak</th>
<th>carbon stored (tons)</th>
<th>carbon dioxide equivalent (tons)</th>
<th>Reduction in emissions (tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field windbreaks</td>
<td>8.7 to 14.7</td>
<td>31.6 to 53.6</td>
<td>10</td>
</tr>
<tr>
<td>Farmstead windbreaks</td>
<td>5.9</td>
<td>21.3</td>
<td>48.66</td>
</tr>
</tbody>
</table>

1. To convert tons of carbon to equivalent tons of carbon dioxide multiply tons of carbon by 3.65.
2. Reductions in carbon dioxide emissions flow from reductions in fuel use over the 50 year life of the windbreak.
3. A single row eastern red cedar or single row hardwood windbreak, windbreak width = 20 feet.
4. To fully protect a 160 acre field requires 2.5 miles of single row windbreaks occupying approximately 4.8 acres or 3% of the land area. Removing 4.8 acres from crop production sources between 2 and 3 gallons per acre of fuel depending on crop. Average annual fuel savings in a corn/soybean/wheat rotation would be 17.7 gallons of fuel, reducing carbon dioxide emissions by 400 pounds of carbon per year for 50 years.
5. Four row windbreak: 25% hardwoods; 50 conifers; 25 shrubs, with a length of 800 feet.
6. Based on a 15% savings in fuel (natural gas or propane) use for the protection of the farmstead.

Download Under Visitor Works at ARDC

During 2007, the School of Natural Resources hosted Dr. Rob Sudmeyer, an agroforester from Esperance, Western Australia. Rob’s work in Australia focused on tree/crop interactions and particularly on the competition of windbreaks and crops for soil moisture. He spent much of the summer at ARDC working on a project to determine just how much water trees in a field windbreak use. The first step was to determine water use by the individual species found in the windbreak. In this case, three species were measured, green ash, eastern red cedar and Austrian pine. (Figure 2 - inside view of the windbreak) The windbreak is a mix of all three species and was planted in 1968 by Walt Bagley and has been used for the past 40 years to assess crop benefits from field windbreaks. The study clearly indicated that Austrian pine used the most water and green ash the least with eastern red cedar slightly more than green ash. While Rob has returned to Australia, he is continuing to assist us in analyzing the data to determine total water use by the ARDC windbreaks.

Preliminary analysis indicated that on average, the windbreaks at ARDC were using approximately 3800 gallons of water per mile per day. Combined with data on crop water use we hope to develop a total water budget for ARDC windbreak systems.

The study indicates that in terms of the amount of water used, both green ash and eastern red cedar are excellent choices for field windbreaks. Unfortunately green ash is susceptible to Emerald Ash Borers, a new pest making its way toward Nebraska from the east, but eastern red cedar remains one of the best choices for field windbreaks in much of Nebraska. Black cherry and bur oak are good deciduous species for inclusion in windbreaks in eastern Nebraska.
Eating For a Healthy Heart

by Casey Campbell, RD

ow that Valentine’s Day has passed you may look around the room and see remnants of pink and red wrapped chocolates and candy hearts. You may smile when you think of the romantic dinner you shared with your someone special. However, how many of you really took the time to think of your own heart? How many of you truly love YOUR own heart, too?

This question may seem strange, but according to the Center for Disease Control, heart disease is the number one cause of death and disability in the United States. In fact, almost 700,000 Americans die of heart disease every year! The scary thing is that most of us don’t have any idea about the condition of our own hearts. Furthermore, most of us have no clue when it comes to eating for a healthy heart. However, our hearts are truly in our own hands, and it seems imperative that we do something before we become part of this devastating trend.

With all the confusing medical and nutrition advice, it can seem overwhelming and impossible to make positive choices. For instance, how many times do you hear the way to go is to eat a low carbohydrate, high protein diet? Or, none, it is actually important to eat plenty of grains, but fat is what is really important. Or, you cannot eat after seven pm or nope, you have to eat every two to three hours! All of these messages seem to contradict themselves and can leave our heads spinning! Below are a few easy tips that I have put together to help you care for your heart.

1. Consume a diet rich in fruits, vegetables and whole grains: According to the recommendations set forth by MyPyramid, the average adult should aim to consume at least 2 cups of fruit and 3 cups of vegetables every day. This may seem like a lot at first; however, by visiting www.mypyramid.gov you can access a lot of easy tips and ideas for increasing your daily consumption.

2. Know your fats: Fat is another topic that can be extremely confusing; however, there are a few things that you need to know. First, there are two main types of fats (for simplicity) saturated and unsaturated. When you think of the word saturated look at the first three letters. If you “saturated” all day long that would be bad, so this is your bad fat. Saturated fat is found in foods source like beef, chicken, whole milk and butter. Unsaturated fat, on the other hand, is our good fat. This is found in olive oil, salmon and walnuts. Another great resource for more information is www.americanheart.com.

3. Watch your salt intake: Even if you don’t touch the salt shaker, you may still be consuming too much salt due to your food EATING FOR A HEALTHY HEART - Cont. on P. 4

4-H BEST WEIGHS IN APRIL 1-7: 9:30-3:30 p.m. in the Wahoo Sale Barn

March
10 5-H Shooting Sports Training 6:30-8:00 p.m.
10 4-H Project Fair 6:30-8:00 p.m.
11 NSP/GPP Annual Meeting/Program 9:00-3:00.
11 4-H District Tour 2:00-5:00.
11 Train the Trainer 7:00-9:00 p.m.
12 Unit Managers Meeting 1:00-3:00.
15 4-H Public Speaking Clinic 8:30-11:30.
17 Field Scout Training for Pest Managers 8:00-5:00.
17 4-H Shooting Sports Training 6:30-8:00 p.m.
18 NE Forage Service True Care Workshop 9:00-3:30.
18 Sub District Conference Meeting 12:00-5:00.
20 Nitrogen Management Training 7:00-9:00 p.m.

April
1 Private Pesticide Applicator Training 1:00-4:00.
1 Youth Entrepreneur Seminar 8:00-12:00.
12 UNL Bull Sale - East Campus 1:00.
24 Nebraska Federal Women's Council 8:00-3:30.
28 4-H Public Speaking Contest 6:30-10:00 p.m.

May
13 Field Scout Training for Pest Managers 8:00-5:00.
14 15 Co-Product Storage and Utilization 9:00-6:00.
20 Co-Product Storage and Utilization 8:00-10:00.

4-H SUMMER WORKSHOPS - Cont. on P. 4

4-H Speech Contest Clinic on Saturday, March 15th. The clinic will be held at the ARDC near Mead and will be from 8:30 m. – 11:30 a.m. This clinic is open to any 4-H member who would like to improve their speaking skills. Participants will learn about selecting a topic for their speech and basic fundamentals of a good speech. They will also learn techniques in delivery and tips on preparing for the contest. Each participant will have the opportunity to go home with at least an outline for a speech. This will be an excellent opportunity for new or inexperienced speakers to gain confidence before the contest which will be held on Monday, April 28th.

Exciting things are happening in Saunders County. Kicking off the workshop schedule this year will be the 4-H Beef Weigh In. The 4-H Speech Contest Clinic on Saturday, March 15th. The clinic will be held at the ARDC near Mead and will be from 8:30 m. – 11:30 a.m. This clinic is open to any 4-H member who would like to improve their speaking skills. Participants will learn about selecting a topic for their speech and basic fundamentals of a good speech. They will also learn techniques in delivery and tips on preparing for the contest. Each participant will have the opportunity to go home with at least an outline for a speech. This will be an excellent opportunity for new or inexperienced speakers to gain confidence before the contest which will be held on Monday, April 28th.

4-H Summer Workshops Taking Shape – A Sneak Peak!

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the basic usage of a GPS Garmin, and part in an exploration and scavenger hunt. The entire day is full of hands-on activities to strengthen the lessons taught. Each participant will have their own compass and GPS unit to use during the activities. Lessons are built for maximum learning and for FUN!”

Ready, Set, SEW! will provide hands-on opportunities for those boys and girls that want to learn sewing skills. June 18 is designed for the beginning sewer in Sewing for Fun. This is a two-part workshop where participants may pick and choose if they want to attend the morning session (9:00 – 12:00 noon) and make a pillowcase or if they want to attend the afternoon session (1:00 – 3:00) and sew a Delta skirt. Participants are welcome to participate in both sessions. For the more advanced members, a Clothing Level I workshop is set for June 19 and will be held from 9:00 – 3:00. Participants will be able to make a simple top and a simple bottom. All items made at the workshop will be eligible to be entered at the Saunders County Fair.

On June 25th, those who want to improve their modeling skills will want to attend this day-long workshop. Participants will learn about color, hair care, make-up, and face care, nails and general personal care. Former Saunders County 4-H Jerrica Smet will be helping the participants learn what to do when they are modeling in front of the judge and how to prepare and practice. This is a fun day that helps young people gain confidence and poise. Watch for more details and registration information in the near future.

4-H Reaches BEYOND

Students in Valparaiso and Cresco recently had the opportunity to experience a “taste” of 4-H. Both schools conduct a BEYOND (Being Enriched Yields Opportunities in New Directions) after-school program. The PTW works to invite programs of enrichment for students in their K-6 program.

In February, Karna Dam, Extension Educator in Saunders County took 4-H to BEYOND. Using materials from the Road to Good Cooking curriculum, students learned about the name and purpose of kitchen utensils. Learning about the different items found in the kitchen helps them to see the need for the different tools. Reading recipes, learning about the measurements and their abbreviations, and having hands-on opportunities to practice and implement their knowledge was all part of the program. Each child learned about measuring dry and liquid ingredients the correct way. After learning, they were able to apply that knowledge directly to making a batch of Eskimo Snowball cookies. “It is always fun working with young people and watching them learn. I was pleased that so many of the kids already spend time in the kitchen cooking. Hopefully, they can take this experience home and share it with their families.” Dam said.

4-H will be returning to BEYOND again this spring with programs scheduled at Valparaiso March 18 and May 6, and at Cresco on March 27 and May 13. During March participants will be learning about the 4-H Aerospace project and will be building mini-rockets. In May, we will be gearing up for planting season with a program on Gardening.

Ag Science Courses Gear Up For Spring

Several courses at Mead High School have been gearing up for spring. Students in several courses including Horticulture, Landscape Design, Ag Literacy, Advanced Ag and Ag Exploratory have been busy both in the classroom and the greenhouse preparing plants for a number of projects. Some of the activities include hydroponic vegetables, annual and perennial plant production, propagation, plant growth trials, along with interior and exterior landscaping projects just to name a few.

The greenhouse serves as an extension of the classroom and is an awesome opportunity for students to gain a host of life long skills along with the exposure of horticulture careers, science and business applications, and fulfills a past time family hobby for many too.

Get Your Green Thumb Ready! Creating a Horticulture Paradise Series

March 12 - Diseases of Trees, Laurie Stepanek
March 18 - Small Fruit Selections for Eastern Nebraska, Vaughn Hammond
Time: 7-9 p.m.
Location: UNL Extension, 1206 W. 23rd Street, Lincoln, NE 68508
Pre-registration requested for these free programs, but is not required. For more information contact Sarah Browning, (402) 830-4855.