

July 2010

News from the High Plains Ag Lab

UNIVERSITY OF
Nebraska
Lincoln

Highlights of 40th Anniversary Celebration



The Ag Lab Field Day combined with the 40th Anniversary Celebration proved to be a great time with over 200 in attendance. Harold Tremain, the only survivor of the Ag Lab's original advisory board, was honored as the field marshal for the day. In addition, Charlie Fenster was also honored as a field marshal. Charlie was instrumental in initiating the research program at the Ag Lab which continues today. Both men were presented with plaques thanking them for their services.

The Nebraska Wheat Board provided a steer and pig roast for an evening meal, during which time Dr. John Oades, Vice President of US Wheat Associates, spoke to the group about marketing of wheat in other countries. Then the evening ended with a rainfall simulator demonstration by Kathy Buttle. In addition, the Nebraska Wheat Growers Association brought their mobile baking lab and distributed freshly baked rolls made with flour milled from wheat grown right here in the Panhandle. A special highlight was an equipment display of air seeders, sprayers and tractors provided by 3 implement dealers.

There are several young farmers in the area who have a vital interest in the future of agriculture. Some of these young farmers could make excellent advisory board members. If you know of any young farmers in

your community, please feel free to plant a seed of encouragement about having them serve on our advisory board. As current members get older, we need some younger members with fresh ideas who are enthusiastic about the future of agriculture and can continue giving advice to the work that was begun 40 years ago.

Please remember that there will be no August Field Day this year due to the big event we had in June. At the High Plains Ag Lab Advisory Board annual meeting in January, we decided to have only one field day this year and then make a determination for having a June or August Field Day each year after that.

Please continue to give your input on new or continued research to Drew Lyon or Tom Nightengale. Thank you for your continued service.

*Respectfully,
Don Cruise, Chairman
High Plains Ag Lab Advisory Board*

EDITOR'S NOTE: Photos from the Field Day are on the HPAL web site at panhandle.unl.edu/hpal. Look for the link near the top of the home page.

Contact the High Plains Ag Lab:
Phone: 308-254-3918
On the Web: panhandle.unl.edu/hpal



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Update from the manager:

July 16, 2010: Wheat is upon us in a big way as I write this. So far things are moving along well, and the crop looks like a fairly good one. I know that some of you got a visit from the big white combine recently, and that is never an easy pill to swallow, especially close to harvest. Like a Broncos fan, we can only look forward to next year, and hope things will be better.



Our 40th anniversary has come and gone, and the feeling that I got from most of you and from University personnel was that it went over very well. Jerry and Randy did an excellent job with the meal with help from Carmen of Farm Credit, and an enthusiastic Bun-

ker Hillbillies 4-H Club. Kathy and her rainfall demo was a hit as always, and the Wheat Growers mobile baking lab was a big success also. Thank you all for attending, and for your help in getting everything done.

So far, with the good rains, our summer crops are looking excellent, with the promise of some good yields this fall. Hopefully that outlook will continue through the rest of the summer and fall. Now comes a time of maintaining summer fallow, preparing for wheat seeding in a couple of months, knowing that it will turn into a bumper crop next year.

Stay safe, stay cool, and may the rest of the year go great for all of you.

*Tom Nightingale, Manager
High Plains Ag Lab*

Survey under way of moths that attack sunflower

Jeff Bradshaw, Entomologist

UNL Panhandle Research and Extension Center

A survey is underway, funded by the National Sunflower Association, to monitor moth pests of sunflower and the HPAL is one of the sampling sites. The sunflower moth, banded sunflower moth, and Arthur's sunflower moth are all being monitored throughout the high plains to determine the extent of their range. The sunflower moth has been known as an occasional pest of sunflowers in the panhandle of Nebraska for years, migrating North through the southern High Plains every year. The banded sunflower moth and Arthur's sunflower moth are winter residents; however, we are still working to understand the full extent of their range. The insects are being sampled with pheromone traps that are specific for each species. Traps are being collected weekly and the presence and number of insects are be-

ing recorded. The distribution maps and counts for moth samples can be tracked throughout the season at: <http://www.sunflowernsa.com/growers/>

To date no substantial moth flights have been recorded for any of these moths in our traps. Stay tuned and visit the above website for up-to-date information on moth captures.



Sunflower moth (Homoeosoma electellum)



Banded sunflower moth (Cochylis hospes)



Arthur's sunflower moth (Cochylis arthuri)
(Photo credits: North Dakota State Univ.)

Nitrogen management for irrigated winter wheat

Gary W. Hergert

Soil and Nutrient Management Specialist

UNL Panhandle Research and Extension Center

Irrigated wheat acreage has increased significantly in the past 10 years in the High Plains. The objective of this experiment was to determine optimum N rate and timing to produce high yields and protein content and to determine N rate and timing effects on selected crop parameters. N rates ranged from a check to 140 lbs N/acre with three timing regimes: either all preplant, 1/4 preplant, 1/2 at jointing, then 1/4 at boot or 1/3 preplant and 2/3 at jointing. We have conducted 20 site-years of work the past 5 years with several plots at HPAL at Sidney.

Winter wheat acreage in Nebraska has declined the past few years; however, irrigated winter wheat acreage has tripled since 1987 (Fig. 1). The current acreage of irrigated wheat is significant, although still small compared to all wheat (86,600 acres versus 591,000 acres). Irrigated wheat acreage has increased because as water supplies have declined, producers look for crops that require less water that will still produce a profit.

The research was funded by the Nebraska Wheat Board and started in 2005 to help provide information about N rate and timing effects on yield and protein of irrigated hard white wheat. The N response of irrigated hard red winter wheat is expected to be similar. Nebraska state average yields of irrigated wheat during the last decade have ranged from 55 to 70 bushels per acre; however, yields of 90 to 110 bushels per acre are possible in the High Plains under irrigation. Many production factors (seeding rate, variety, planting date, row spacing, irrigation timing, weed, disease and insect management) require close management for attaining consistently high irrigated winter wheat yields.

RESULTS

The 2006 data are an example for the study. A slight N response at Alliance and Scottsbluff under a 12-inch irrigation level were attained (Table 1, on following page). Yield levels were very good at Alliance and Scottsbluff, but were lower than expected at Sidney, due to the later planting date, poor emergence and stand.

The significant information from the research is

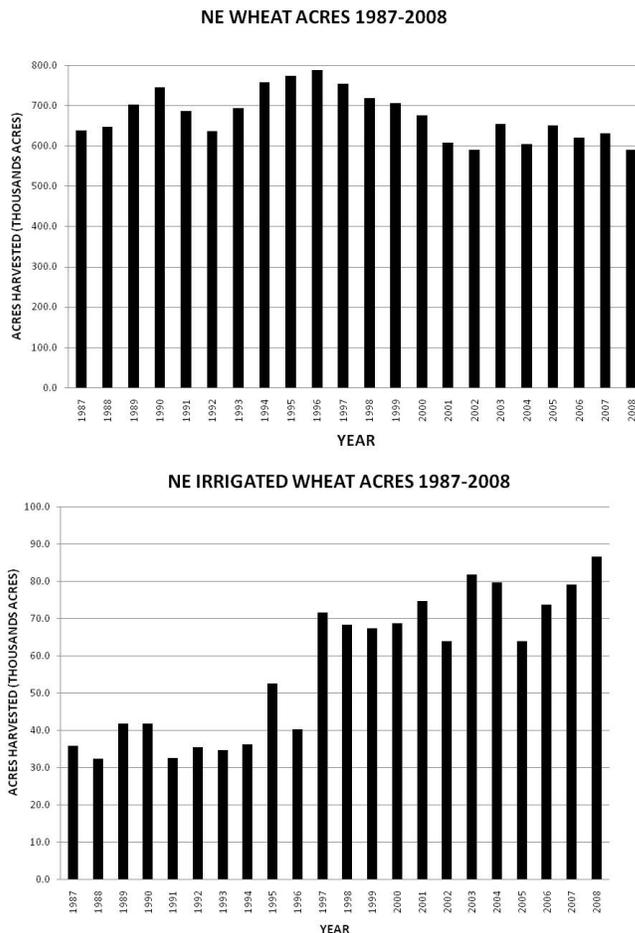


Figure 1. Total winter wheat acreage and irrigated winter wheat acreage in Nebraska.

the importance of soil testing to determine residual soil nitrate-N. Yield levels were high at some locations, but usually a total of fertilizer N plus residual soil nitrate-N in 4 feet equal to 180 to 200 pounds N maximized yield. Too much N can cause problems in wheat. When all N was applied preplant, yields tended to be reduced at the higher N rates. As N rates increased, regardless of application method, yields often decreased. There was no advantage to a three-way N split versus a two-way split. High yields and protein were obtained with usually less than 100 lbs N/acre.

REFERENCE

Hergert, G.W. and T. M. Shaver. *Fertilizing Winter Wheat*. 2009. EC143.

Please see table on next page

Nitrogen management for irrigated wheat, continued

Table 1: 2006 irrigated white wheat grain yields

		Alliance	Alliance	PREC-4"	PREC-8"	PREC-12"	Sidney
Variety		Antelope	Lakin	Antelope	Antelope	Antelope	Antelope
N Rate and Timing		-----Bushels/acre -----					
0		83	85	77	88	90	66
30	Preplant*	--	--	81	--	--	--
60	Preplant	91	90	82	83	87	72
100	Preplant	90	90	85	88	97	69
140	Preplant	76	75	--	80	100	66
30	1/4p-1/2j-1/4b	--	--	83	--	--	--
60	1/4p-1/2j-1/4b	82	93	85	94	99	66
100	1/4p-1/2j-1/4b	82	89	85	83	100	67
140	1/4p-1/2j-1/4b	78	90	--	77	98	65
30	1/3p-2/3b	--	--	84	--	--	--
60	1/3p-2/3b	81	92	85	90	99	68
100	1/3p-2/3b	83	80	87	90	96	66
140	1/3p-2/3b	69	85	--	95	95	67

*Preplant = all N applied broadcast preplant; 1/4p-1/2j-1/4b = N application with one-fourth preplant, one half at jointing and the remaining one-fourth at boot stage; 1/3p-2/3b = one-third preplant and 2/3 at jointing.

Alternative crops research at HPAL in 2010

Dipak K. Santra

Alternative Crops Breeding Specialist

UNL Panhandle Research and Extension Center

The following trials were planted in 2010 for developing alternative crops for western Nebraska:

Proso millet: There are proso variety testing trials under organic and conventional (dryland and irrigated) production systems. In addition, there is also an early generation breeding nursery trial.

Sunflower: There are three sunflower trials to evaluate commercial sunflower varieties (oil and confection types) in the region. Oil type sunflower varieties were planted under dryland and irrigated conditions; whereas confection sunflower varieties were planted only under irrigation.

Camelina: Fourteen camelina varieties were planted to test their potential for commercial production in western Nebraska.

Fenugreek: Twelve fenugreek varieties were planted both under dryland and irrigated conditions to test their production potential in the region. There are also 172 additional lines, which were planted as an observation nursery.

Lentil: Eight lentil varieties (4 small seeded and 4 large seeded) were planted under irrigation to test if lentil can be a potential crop in western Nebraska.

Proso millet and sunflower trials have been conducted at the High Plains Ag Lab (HPAL) for many years. However, camelina, fenugreek and lentil variety trials are new at this location. Unusual wet weather has created some challenges as well as opportunities to the crops research trials at HPAL in 2010. Nevertheless, I hope to obtain some encouraging results at the end of the season, which will be useful for future research at HPAL.

Grad student from Mexico spends summer at HPAL

Hello everybody,

My name is Juan Jose Miceli. I am 24, the oldest of three kids. I am a grad student from Mexico doing my master's here at UNL. I will share with you a little about my history, background, what brought me here to Nebraska, and my research.

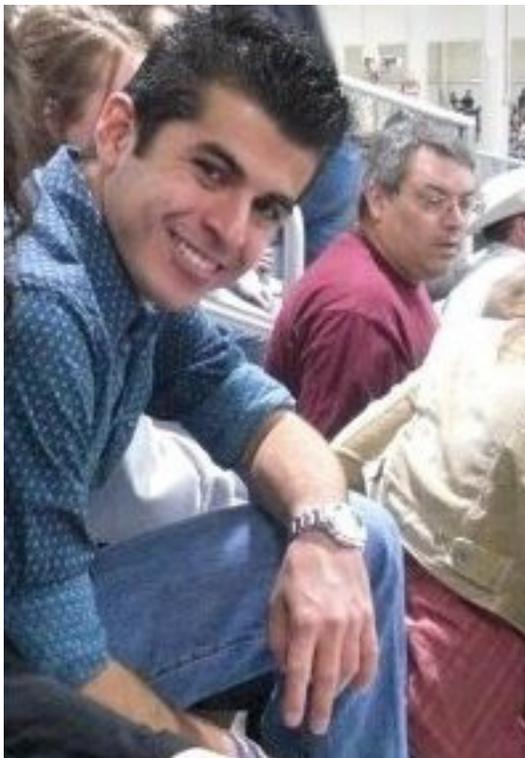
I was born in southern Mexico in a state called Chiapas. In this state my grandfather owns a farm that used to have corn, sorghum and cattle. Right now, the main crop is Papaya Maradol (*Carica papaya*), a tropical semi-perennial fruit tree. Since I was young, I had been involved in this farming environment, and that is

what made me realize that working in the Agronomy field is my passion. My background is mainly with tropical crops, especially with papaya, the crop that I have worked with the most.

I went to college in the state

of Queretaro, 160 miles northwest of Mexico City. I graduated as an Agronomy Engineer from Monterrey Institute of Technology and Higher Education (ITEMS in Spanish). This university has 33 campuses, basically one in each state of Mexico. In Mexico, I had the opportunity to be involved with AGROMOD, the biggest papaya producer company in Mexico. The fact that they are a leader in their area, and that people are always trying to follow in their path, helped me to learn a lot not only from an agronomic aspect, but also about leadership.

One of the biggest strengths of ITEMS is that



they always try to give their students a global vision, and encourage them to go into exchange programs and internships with universities, businesses, and institutions all over the world. Agronomy is no exception. In the summer of 2007, I had an internship with Washington State University, in the Center for Precision Agricultural Systems. I worked with GPS and GIS, remote systems in apple, cherry, and grape crops. Further, I also generated accurate maps, trying to generate tools that will help to predict the impact of cold wind on crop yields.

In the spring semester of 2009, I came to UNL as an exchange student for one semester, and then I had a summer job with Crop Production in the Agronomy and Horticulture Department of UNL. I enjoyed Nebraska so much that I decided to take a summer job. There, I worked helping grad students and professors with their field research and data collection. Principally, I worked with cover crop influence in weed suppression in organic production and the effects on yield in corn of single and twin row configurations. All of these experiences, and the people here in Nebraska, made me realize that this is the place where I would like to do my masters. In the future, I would even like to continue with a career in a place like Nebraska.

After the summer of 2009, I returned to Mexico to do all my graduation paper work during the fall semester of 2009, and then I applied for my masters program here at UNL. I got accepted and received a really good and interesting offer from Dr. Drew Lyon working with a Flexible Fallow System experiment.

I came back to Lincoln for the spring semester of 2010, and finished my first semester of master courses. Since May, I have had been at HPAL working with an excellent crew of people, Rob, Vernon, Paul and Tom. Here, my principal activities consist of taking care of the experiment that will help me to write my thesis.

In Nebraska, dryland producers are looking to diversify their cropping systems by adding summer crops to their traditional winter wheat-fallow rotation. Summer fallow is typically used to transition from summer crops to winter wheat; attempting to seed wheat immediately after a full-season summer crop frequently results in poor yields. Winter wheat frequently

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Grad student from Mexico, continued

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performs best after summer fallow. Summer fallow frequently results in soil organic matter decline, soil erosion, and low profitability. Studies suggest the use of short-duration, early seeded spring crops (particularly forage crops) as a summer fallow replacement in years when good soil moisture is present in the spring. This concept is known as “Flexible Fallow”.

The objective of the experiment that I am working with is to compare two fixed wheat rotations (winter wheat-corn-fallow vs. winter wheat-corn-spring triticale) and collect the data that will be necessary to perform subsequent crop simulation modeling using historical weather data for the past 40 to 50 years.

Some of the activities that I am involved in here, that help me to collect data, include measuring water content with a neutron probe, leaf area index measurement, biomass samples, staging crops, soil samples, quality harvest samples, grain and forage yield samples, etc.

Once every other week, I go to Akron, CO. Dr. David Nielsen with the USDA-ARS is conducting a

replication of the experiment that is being conducted here. Other people who complement the research team are Dr. Arkebauer, who helps me work with data management and analysis, and Paul Burgener, who is conducting an economic analysis of the various systems being studied.

The project involves many areas (production, environmental, economical and social) making this a multidiscipline and complete project that will bring benefits to many sectors in the region.

My goal in the future is to work with a company that works with grains and/or is related with plant protection. Further, I want to use the knowledge I am learning now to continue working in the research field, improve production systems, and share some of my knowledge that I have with other producers and students.

If you have any questions or comments, feel free to contact me. My email is: j.miceli@live.com.mx.

*Sincerely,
Juan Jose Miceli*

Distillers grains and peas in cubes studied

Karla Jenkins

*Cow-Calf and Range Management Specialist
UNL Panhandle Research and Extension Center*

Dried distillers grains (DDG), a byproduct of the ethanol industry, are a good source of protein and energy for cattle. They have been demonstrated to increase gains on native range and improved pastures.

To prevent overgrazing and deterioration of range and pasture, producers often feed protein supplements in the form of a cube on the ground in various locations across a pasture rather than in bunks. However, DDG alone form a very soft cube and often crumble to the point of being wasted if not fed in bunks. Field peas, on the other hand, have been determined to have very acceptable binding qualities as well as high levels of energy (87% TDN) and protein (25%). Field peas are high in ruminally degradable protein while DDG are high ruminally undegradable protein, making the two commodities very complementary.

Combining field peas and DDG in a cube could create a nutrient-dense supplement with minimal waste. Field peas are also becoming increasingly popular in the more southern areas of the Northern Great Plains Region as an alternative to fallow in wheat rotations. Although the benefits of nitrogen fixation on the soil are improving wheat yields, the region does not have a strong market for the pea crop. If beef cattle producers could realize the benefit of feeding the peas then synergist benefits exist for the wheat farmer and the livestock producer alike.

Currently a study is being conducted at the High Plains Ag Lab to determine daily gain of yearling heifers grazing mature crested wheatgrass pasture while being supplemented loose DDG on the ground or in a bunk, or DDG and field peas in cube form on the ground. Supplements are provided such that each treatment receives the same amount of protein.