

2010

## Nebraska Green Scene: Centennial pt2

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This special center pull-out section includes historical stories about Keim Hall and the Department, a timeline of notable events/achievements and a schedule of events for the Department Centennial Celebration, to be held September 17–18, 2010.

# Department History

## Keim Hall Remembrances

By Robert C. Sorensen



I first came to Ag College as a new freshman in September, 1951. At that time, there was no Keim Hall, or as it was called for many years, Agronomy Building. In my first semester, I took Agronomy 1, which was offered in the “Crops Lab”, more recently called Kiesselbach Crops Lab. Dr. Homer Goodding taught the class. I met my permanent advisor, Prof. R. A. Olson, in the Agricultural Chemistry Building, now called Ag Communications, since that was the location of the Soil Science faculty.

To place this time period in perspective, Holdrege Street past campus was a brick street. Vine Street beyond 48th Street was not paved. Holdrege Street from about 54th Street to Bethany was also not paved. Large orchards were present east of the campus proper. However, the campus ice cream store and the Tastee Inn (with carhops) were already in business. A grocery market was located at the present site of Valentinos. I believe it was operated by Val who originated Valentinos.

I met Prof. Olson the second time in the new Agronomy Building (later called Keim Hall). Since he offered me part-time employment, I spent a lot of time around the building. I took introductory soils (Agronomy 53) and the remainder of my agronomy courses in the new building.

At the time of the completion of the Agronomy Building, located to the east was the Dairy Barn. To the north was a large graveled parking lot, which was never completely full. To the northeast, were the greenhouses. To the south was a cultivated area where trees, bushes, and shrubs for the campus were propagated. There was also an elevated water tower here. Further south there was a beautifully landscaped area containing an astronomical observatory.

Dr. F. D. Keim was the department chairman  
*“Remembrances” continued on next page...*

“The stairway in the east wing had a banister that was great for sliding down.”







*“Remembrances” continued from previous page*

at that time. He was also my genetics instructor. He was very energetic and supportive of students. When one needed a recommendation, he or she went to Dr. Keim. He had a very large Sunday school class of college-age students at Warren Methodist Church southeast of campus. I have heard that he was in the Agronomy Building every Saturday morning and went around to all the offices to see if everyone was present and to make sure that no one was smoking. On a personal note, I was told he was an important force in getting me into Iowa State College for my Ph.D. program, since my grades were not as high as they might have been.

At the time of its completion, the Agronomy Building had the finest array of classrooms on the campus. This became apparent to me when I returned to campus in September, 1964, as a Professor of Soil Science. Many departments used those classrooms. They were all light and cheery and were fitted with everything the instructor of that time needed. Room 244 (I believe this is the right number), later 210, was the best large classroom on campus. It remained so for many years until it was damaged by a hall that was put through it to access the new Plant Science building. The final chapter in its use as a fine general classroom was written when it was turned into a techie toy room, forcing large classes into the Plant Science lecture hall, a poor substitute, in my opinion.

Many excellent undergraduate teachers spent a good deal of their career in this building. I mention only a few old-timers: Homer Goodding, Donald Hanway, Franklin Keim, William Colville, Robert Olson, and Don Burzlaff. A little later were David McGill, Orvin Burnside and Dale Flowerday. I’m sure I have missed some. Then there are those of my own generation. We were a proud lot and I believe we did good work. Keim Hall was instrumental in helping us do our job in a fine fashion.

Thousands of students

spent their time in one way or another in Keim Hall. It was the home of the Agronomy Club for many years. I’m sure many of those students have fond recollections of Keim Hall and some have stories to tell.

Keim Hall had several notable features. It was not air-conditioned for many years. It had a perfectly flat roof which never leaked. The one elevator was often out of order. The plant and soil grinding room were a constant source of dust on the lower floor. The building was very quiet since most walls were made of hollow tile. The rain shaft, passing through all three floors, allowed Dr. Mazurak to measure the effects of rainfall on soil. We did thousands of plant material digestions with perchloric acid which was hazardous at best. The Auto-tutorial method of instruction was instituted in Agronomy 1. The stairway in the east wing had a banister that was great for sliding down.

Some claims and facts given here may not be totally correct. Memories sometimes are not precise after fifty or sixty years and sometimes the stories get enriched; but for better or worse, these are some of my thoughts. *g*





# Department of Agronomy & Horticulture Timeline

Compiled by Lowell Moser & Paul Read  
Designed by Aaron Franco



1899

Experiment Station Hall erected (currently Agriculture Communications Building)



1884

Charles E. Bessey joins University of Nebraska as chair of Botany & Horticulture and Dean of the Industrial College

1881

Horticulture established as an identifiable area

Harvey Culbertson, first Professor of Horticulture

June, 1872

Agricultural College established



January, 1871

University Hall constructed

1873

First experimental farm established at today's Innovation Park location

Sugarbeet experiments started

1887

Nebraska Agricultural Experiment Station developed

1889

B.S. in Agriculture offered in the Industrial College



1895

R.A. Emerson joins Horticulture faculty

February 15, 1869

University of Nebraska established

1873-74

First Farmers' Institute held

1860

1870

1880

1890

September, 1871

Samuel Thompson, first Professor of Agriculture

1874

Small grains experiments started

Moses Culver farm purchased (East Campus)

1877

Industrial College formed, includes agriculture

1874-75

Experiments in small grains, variety testing, cultivation of grasses, corn begin

Experiments conducted with fruits and vegetables

1891

T.L. Lyon joins University of Nebraska as instructor of agricultural chemistry and later as the first agronomist and soil scientist

1895

Fred Carver first corn work in

1892

Horticulture Dept. f

F.W. Taylor, first separate professor of Horticulture



1922

New Agronomy Club formed; M.D. Weldon, President; George Beadle, Vice President; F.D. Keim, Secretary-Treasurer

1937

Outstate Testing Program begins



1933

Crops Laboratory constructed (now Kiesselbach Hall)



1926

First student grain judging team organized

1929

Northwest Agricultural laboratory established at Alliance

1913

Agriculture Practice Group established (2-year course)

Plant Industry Building erected

1914

F.D. Keim joins Univ. of Nebraska

1915

Cooperative Extension Service started



1916

W.W. Burr becomes Head of a single Agronomy Department



1917

Homer Goodding joins Agronomy Department

Fruit Farm established at Union

1912

First County Agent, Merrick County

First Grain Trains promote good seed corn selection

1903

North Platte Station established

1904

Old Horticulture Building and greenhouses constructed

USDA association with University of Nebraska begins

1905-06

Agronomy first appears in departmental names

1900

The term "Agronomy" is beginning to be used

1900

1910

1920

1930

1908-09

T.A. Kiesselbach hired as an assistant in Agronomy (Crops)



1911

Agronomy Department and Department of Experimental Agronomy

(High) School of Agriculture formed at Curtis

1920

First Agronomy Club formed

1919

T.A. Kiesselbach receives first Ph.D. identified with Agronomy

1932

F.D. Keim becomes Department Chair

Agronomy Club reformed to become a student organization



1909

Agricultural College re-established

Scottsbluff and Valentine Stations established

1918

Agronomy Farm at Lincoln established

Nebraska 60: first wheat variety released

...d initiates comprehensive vegetable

...formed

...rate  
...ture





1942-1945  
WWII – College  
has few male students

1953  
Back Yard Farmer program begins



1952  
Agronomy Hall opens

1951  
Valentine Station closed

1950  
Hornung State Farm  
acquired (Forestry)

1949  
Foundation Seed  
Division established

1966  
Nebraska Mission in Colombia begins

1964  
Turfgrass Research initiated

1962  
Title to Mead Ordnance  
Plant obtained by the  
University (ARDC)  
Agricultural Climatology  
Teaching Program started

1961  
Nebraska students  
compete in first  
regional soils  
judging contest  
Union Fruit  
Farm closed

1959  
Name changed  
to Department  
of Horticulture  
and Forestry  
Wheat quality  
laboratory  
established

1967  
High Plains Agricultural Lab established

1968  
Nebraska redistricted and outstate  
stations referred to as Research and  
Extension Centers

South Central Research and Extension  
Center established at Clay Center

1969  
Southeast Extension Head-  
quarters established at Lincoln



1978  
Plant Sciences Hall and  
greenhouses open

1970  
High Plains Ag  
Lab established

1940

1950

1960

1970

1980

s Agronomy  
man  
organizes to  
chapter of ASA



1946  
University Soil Testing  
Laboratory established

1948  
Outstate Testing  
program greatly  
expanded

1955  
Ataturk University  
program begins  
(Turkey)

1956  
Northeast Station established

1957  
Ornamental Horticulture  
research initiated  
Agronomy Hall  
renamed as Keim Hall

1974  
Name changed back to  
Department of Horticulture  
Institute of Agriculture and  
Natural Resources formed

1975  
Horticulture Club started



1980  
University of Nebraska support  
of MIAC/Morocco Project begins

1981  
Research programs begin  
at Gudmundsen Sandhills  
Laboratory at Whitman

1996  
Barta Brothers Ranch established



1995  
Beadle Center opens

1994  
Center for Grassland  
Studies established

1997  
Plant Science Initiative begins

1999  
Grazing Livestock  
Systems major initiated

2007  
Plant Biology  
major and Doctor  
of Plant Health  
program initiated

2006  
Center for  
Energy Science  
Research formed

2008  
University Soil Testing  
Service closed

2009  
Brule Water Lab formed  
  
Innovation Park established  
at former State Fairgrounds  
(site of first University farm)



2010  
Renovated Keim  
Hall rededicated  
and occupied



1984  
Range Science  
major initiated

2000  
Department of Agronomy  
and Department of Horti-  
culture merge forming the  
Department of Agronomy  
& Horticulture

2004  
Professional Golf Management  
major initiated

1979  
Center for Agricultural Meteorology  
and Climatology formed

University of Nebraska chosen as  
lead management institution for  
INTSORMIL program

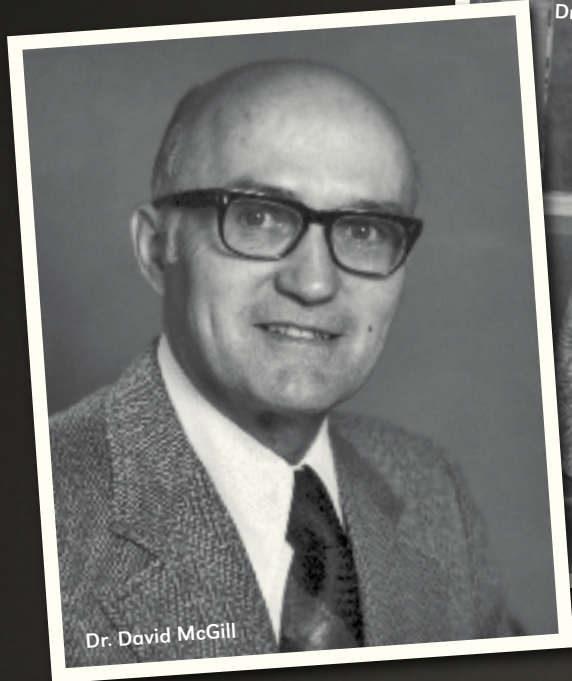
2002  
South Central Research and  
Extension Center closed





# Dr. David P. McGill: Teaching Visionary

By Don Lee



When I walked into the office of Dr. David McGill, in April of 1989, I did not realize that this would be the most important hour of my job interview. I certainly did not recognize that the warm smile and measured but enthusiastic conversation style were already legendary throughout Nebraska. It would take me several years to appreciate the wisdom in Dr. McGill's answer to my question about the students who would be taking the Agronomy 315 Genetics course. "The students are not perfect genetics students, but you will like them." Dr. David McGill had an enduring impact as a teacher because he focused on his students and had a strong desire to see them succeed in learning. This impact is evident in the stories his former students tell about his teaching style and in the current teaching program in Agronomy & Horticulture.

## Thinking on your Feet: The Oral Quiz

When I have the chance to meet former students of David McGill, they almost always share a story about his oral quizzes. Invariably, it is a war story of their struggles to think on their feet. McGill would put on his poker player face and lead about ten students at a time through a conversation about genetics principles and their application to genetics problems. The oral quizzes were intense and they were not necessarily about getting the right answer. "Do you agree with that answer?" was a common question McGill would direct at a student. As a result, the oral quiz was a learning experience. Students learned the status of their own understanding and benefitted from hearing their classmate's explanations. Along the way, they gained experience and confidence in their ability to think and communicate on the spot.

Oral questions are still an integral part of student learning in both the Genetics and Plant Science classes in Agronomy &

Horticulture. While no one on staff has the ability to conduct bona fide, McGill style oral quizzes, we appreciate the learning impact of asking oral questions as a part of the weekly work for our students. Traces of the McGill legend persist in our teaching program with these oral questions.

## Learning by Problem Solving

One of the changes David McGill implemented into the genetics course that he inherited from Franklin Keim was the implementation of a weekly lab. This lab featured genetics problem solving and genetics experiments. We continue to use the albino corn seedling and yellow soybean seedling mutants in the class along with new molecular genetics labs in DNA analysis and genetic engineering. These experiments provide the students with the chance to work and think like a geneticist. Dr. James Specht, professor in Agronomy & Horticulture, shares a story of remembering how he proceeded to conduct the corn experiment as one of McGill's students. He recognized that he was not paying enough attention to detail at that stage of his career and the experience helped set the stage for his future success as a research geneticist. Students tell us in course evaluations that the genetics problem solving they were able to do in the labs with the help from peers and from undergraduate teaching assistants, is the single biggest factor that helps them learn. We now have a similar problem-solving based lab in our 131 Plant Science course. Learning life science through application of principles to problem solving is strongly advocated in educational research today. This approach to teaching has a long history in the department and David McGill was instrumental in establishing this approach in our foundational science courses.

*"McGill" continued on next page...*






“McGill” continued from previous page

## You Are a Professional

A final contribution David McGill made to the department’s teaching program was the recognition that our undergraduates were important contributors when they were given the opportunity to be teaching assistants in our classes. Dr. Deon Stuthman, who had a career as a Plant Breeding faculty at the University of Minnesota, remembers how Dr. McGill treated him as a professional when he became an undergraduate genetics TA. One of the biggest favors David McGill did for me was to select and hire the first undergraduate TAs I would have a chance to work with. They included Dr. Justin Derner, now a faculty member at Oklahoma State University, and Dr. Deana Namuth-Covert, who currently leads our online genetics and plant genetic engineering teaching programs in Agronomy & Horticulture. As undergraduate TAs, they not only helped me improve my own genetics problem solving skills, they made creative suggestions about trying new teaching approaches to improve student learning. Today, as many as twenty undergraduates work in the department to serve important roles in teaching our students in courses such as plant science, horticulture, genetics and soils. David McGill’s confidence in the capacity of our undergraduates to work like professionals continues to be a key feature of our teaching program.

## Making a Difference

One of my colleagues once asked me how I knew that the work I put into teaching made a difference. My answer was simple and confident. I get to meet Dr. McGill’s former students. If I can work like McGill worked, I will have a chance to make the impact he made. The teaching culture of Dr. David McGill and his contemporaries in the department was to keep their focus on the students. They were not always perfect students, but the learning they experienced in their four short years of undergraduate work established lifelong growth in their professional careers. This student-focused approach continues today in Agronomy & Horticulture. Our students are still not perfect, but we like them. 

# Centennial Celebration

September 17–18, 2010

## After a century...

After a century of academic accomplishment, world-changing research, and teaching excellence, a proper celebration is in order. This fall, the Department of Agronomy & Horticulture of the University of Nebraska–Lincoln invites you to celebrate the past, embrace the present, and look to the future as the department turns 100.

## Schedule of Events

### Friday, September 17

**3 p.m.** Keim Hall Rededication, reception, tours

**6:30 p.m.** Heritage Banquet, East Campus Union (*cost \$20/person*)

### Saturday, September 18

**9 a.m.** Coffee & Rolls, East Campus Union

**10 a.m.** Panel Discussion, East Campus Union

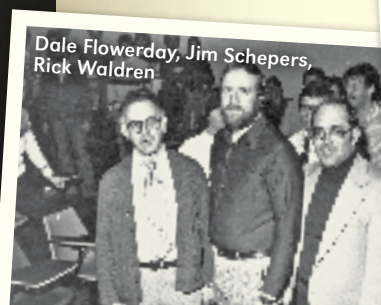
**11:30 a.m.** Western Barbecue, East Campus Union

**1:30 p.m.** Continued tours of Keim Hall & East Campus

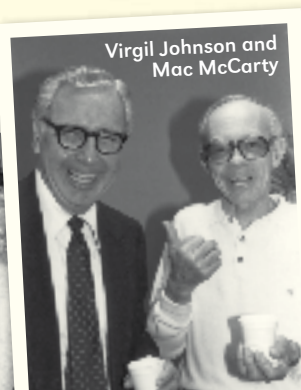
## Register now!

You are cordially invited to attend the Department of Agronomy & Horticulture Centennial Celebration and Keim Hall Rededication September 17–18, 2010 at the University of Nebraska–Lincoln East Campus. Visit [go.unl.edu/centennial](http://go.unl.edu/centennial) for our online registration (via CARI Registration Services). Please register by September 10, 2010.

*Note: If you have already sent your RSVP (notice sent out this past Spring), thank you. But we ask that you still register at the above web address to let us know which events you plan to attend.*



Dale Flowerday, Jim Schepers,  
Rick Waldren



Virgil Johnson and  
Mac McCarty



Charlie Fenster

# Meet Zac Reicher

By Zac Reicher

**A**s the latest faculty hire in the Turf Program at the University of Nebraska–Lincoln, I can't say enough how happy I am to join the program. The UNL Turf Program is recognized as one of the best in the country and I look forward to building on the already strong foundation.

I grew up the youngest of eight kids in the small eastern Iowa town of Dyersville where my parents introduced me to golf when I was old enough to walk and at 15, I realized that I would likely not make a living playing golf. Coincidentally, the Pro/Superintendent of our course was fired shortly thereafter and I took my first job at Dyersville Golf and Country Club in June of 1979. I was the so-called skilled labor and the new "superintendent" was the local veterinarian who was on the Board of Directors, played golf, and was mechanically inclined (what other qualifications are needed?). Big surprise, but it took less than two weeks for us to kill all ten greens and thus forged my curiosity in turf (and some would say why I teach it and not grow it). I went to Iowa State and received a B.S. in Horticulture specializing in turf and then a M.S. working with Nick Christians.

My best career decision came after graduation when I went to Purdue to work full-time as a research technician with the then brand new professor Clark

Throssell. At the time, the Purdue Program had about nine undergraduate students and very little activity in research and Extension. Through a little hard work (Clark and I were both young, naive, and single), a lot of luck, and great staff around us, we rebuilt the Purdue Turf Program to encompass 70+ undergraduate and graduate students, a brand new 26-acre research facility on the edge of campus and a very active Extension program. Despite the auspicious start at 15, red-green color blindness, and grass allergies, I graduated with a Ph.D. in 1992 from Purdue. I held a number of non-faculty and faculty positions at Purdue in the last 20 years, the last of which was Professor, Extension Specialist, and Lead of the Turf Program.

Somewhere in there, I met my best friend and eventual wife, Kim Wilson; acquired two dogs; renovated a 115-year-old farmstead; and took up (but not honed) deer and turkey hunting, fly-fishing, and finally bow hunting. As of March 1, I have made hopefully my newest best career decision to join the faculty at UNL.

I will be the principal teaching faculty for the turfgrass science students teaching the introductory turfgrass management course and then the senior capstone turf course. My primary focus, though, will be Extension, working primarily with the professional golf, sports, or lawn turf managers as well as the county Extension educators. Though we will continue to offer the traditional Extension events like the Turf Research Field Day (Aug. 11, 2010) and the Nebraska Green Expo, we will put most of our time and effort into expanding electronic outreach. Though electronic information will never replace personal communication, the cost, ease, and immediacy of electronic delivery is a "no-brainer". The most recent addition to our web page is called "Turf iNfo" where we regularly release one-paragraph to two-page summaries on current turf is-


“...it took less than two weeks for us to kill all ten greens, and thus forged my curiosity in turf.”



In his spare time, Zac Reicher enjoys outdoor activities, including trout fishing. This is one of his catches while on the Madison River in Montana this past summer.

sues. Automatic delivery via email is available by accessing our web page at <http://turf.unl.edu>. During the first half of June only, we already had close to 2,000 accesses to our 30 or so articles at Turf iNfo. However, the secondary distribution of information like this can be remarkable as readers are free to redistribute these where necessary and can even “cut-and-paste” information into their own newsletter (a 2003 survey we did at Purdue on a similar strategy revealed that secondary distribution was over 350,000 readers!).

Other additions to the web page will include reports on our current research, an expanded list of practical guides on all areas of turf management, and expanded pest control recommendations. Additionally, my turf research program will focus primarily on the practical aspects of weed and general turf management for the professionals and I currently have research on five golf courses in Lincoln and Omaha. I feel strongly that active turfgrass research from all facets of the Turf Program, constant communication with turf managers via email and other methods, and producing quality graduates are the keys to a successful turf program. Our goal for the UNL Turf Program is to expand our circle of influence and become the ultimate “go-to” program in the North Central US and beyond.

Please let me know if we can help or have suggestions for turfgrass research, teaching or Extension. I can be reached at [zreicher2@unl.edu](mailto:zreicher2@unl.edu) or (402) 472-2834. 

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# Turner Foundation and Blowout Penstemon Recovery

By Aaron Franco

Media magnate Ted Turner brought his extended family to Nebraska in July to learn about recovery work for the only federally endangered plant species in Nebraska, the blowout penstemon. Since 1996, grassland ecology professor Jim Stubbendieck and his graduate students have planted and studied the ecology of penstemon in blowouts on Turner's Spike Box Ranch 50 miles northwest of Mullen. UNL receives funding support for the research from the Turner Endangered Species Fund.

Turner and his children are trustees of his environmental philanthropy foundation, the Turner Foundation. Each year the family travels together to learn about the ecology and natural resources in different parts of the world. This year, the family decided to explore the Great Plains. As part of the 2010 tour, Stubbendieck and research technologist Cheryl Dunn gave presentations on July 1 about the ecology and local plant life of the Sandhills, with emphasis on blowout penstemon. Afterward, the family members, including several of Mr. Turner's grandchildren, planted penstemon seedlings.


"They were all very interested – not many people get to plant an endangered species," Stubbendieck said.

Blowout penstemon was once common in the Sandhills but by the 1940s was largely considered to be extinct. In 1981 when Stubbendieck began working with the species, the number of plants was estimated at 600. Today, after nearly 30 years of recovery work, it numbers more than 40,000, and about 15,000 grow on the Spike Box ranch. Although it continues to be listed as endangered, Stub-



bendieck said the future of the species is very bright.

Of the 300 penstemon species in the world, only two have a fragrance; blowout penstemon is one of those two. "It's a beautiful plant, helps to stabilize blowouts, and well worth saving," Stubbendieck said.

Stubbendieck gave Mr. Turner's grandchildren University of Nebraska t-shirts and presented the adults with red 'N' pins. "Ted immediately put his pin on and smiled," Stubbendieck said. 

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Far left: Jim Stubbendieck instructs Ted Turner and family members in blowout penstemon planting methods.

Above left: Jim Stubbendieck, right, poses for a photo with Ted Turner.

Above right: Blowout Penstemon

Left: Research Technologist Cheryl Dunn talks about blowouts in the Sandhills.



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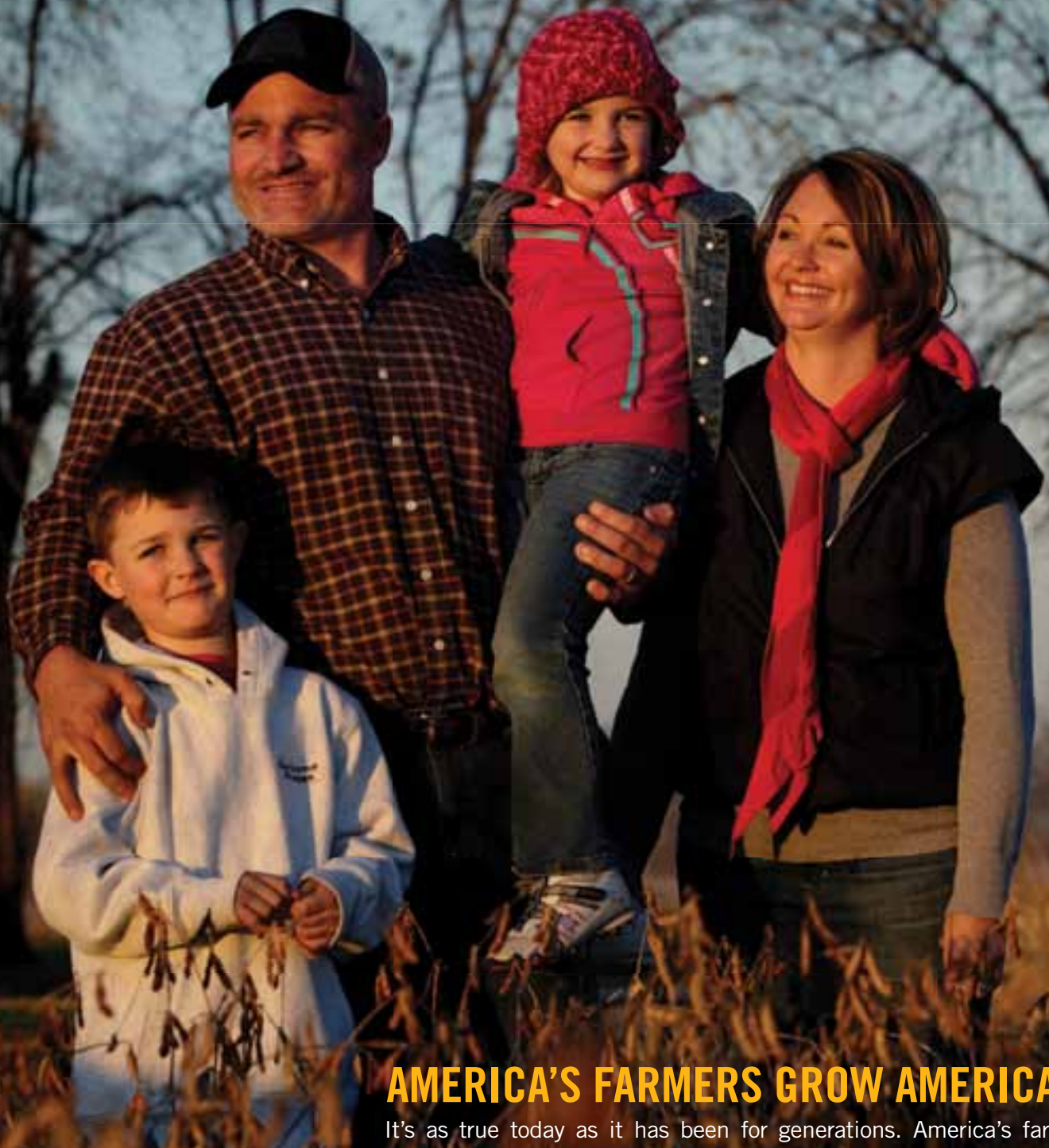
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# Grassland Systems Ecologist Studies Nutrient Cycling in Pastures

By Kathy Schindler

John Guretzky joined the Department of Agronomy & Horticulture as a Grassland Systems Ecologist in September 2009. His long-term goal is to serve the state of Nebraska through development of an internationally-recognized research program that models the variables and dynamics vital to ecosystem function, including energy flow, nutrient cycling, and water relations of managed grasslands. Along with his research appointment, John is developing a teaching program that emphasizes ecology and management of grasslands for ecosystem services including sustainable livestock production, climate change mitigation, and conservation of natural resources. John will be teaching Agronomy/Range 240: Forage Crop and Range Management and Agronomy/Horticulture 441/841 Perennial Plant Growth, Function, and Development.

John was born and raised in West Point, Neb., and attended the University of Nebraska–Lincoln as an undergraduate. During these years, John grew interested in environmental issues and natural resources. His reading of Aldo Leopold's *A Sand County Almanac* and works by Wes Jackson at the Land Institute in Kansas inspired John to study grasslands ecology. After completing his bachelor of science degree in Natural Resources at UNL in 1996, John worked in grasslands in Minnesota and Kansas before enrolling in a graduate studies program in Agronomy at Iowa State University. It was here John studied under Dr. Kenneth Moore and researched how landscape positions and grazing management affected plant species diversity in pastures. John completed his doctoral degree in Crop Production and Physiology at Iowa State University in 2002.

After graduation, John sought a university position, but the academic job market was limited. In the meantime, he worked for a U.S. Army Corps of Engineers research laboratory in Illinois that focused on ecological and natural resource management issues related to military lands. In 2006, John accepted a Research Agronomist position with the Samuel Roberts Noble Foundation in Ardmore, Oklahoma. It was here John strengthened his skills and experience as a scientist in forage agronomy and grasslands ecology. Despite success in his position and having made many good friends in Oklahoma, John longed for a research and teaching career at a



land-grant university. Timing could not have been better when the position of the retired, Dr. Lowell Moser, opened at UNL during the spring of 2009. This was a dream opportunity for John to get back closer to his roots and pursue the academic position he long sought.


In his current position, John is collaborating with Dr. Terry Klopfenstein, Animal Science, and Dr. Walter Schacht, Agronomy and Horticulture, to evaluate how ethanol co-product supplementation of beef cattle affects nitrogen (N) losses and greenhouse gas emissions from pastures. Previous research by Drs. Klopfenstein and Schacht has found that feeding of ethanol co-products on pastures improves beef cattle gains and is economically competitive relative to beef cattle grazing pastures managed conventionally with N fertilizer inputs. However, evaluation of the sustainability of feeding ethanol co-products and fertilizing pastures requires improved understanding of effects of these management practices on the environment. Up to this date, research has not addressed how supplementation of ethanol co-products to cattle affects pasture carbon and nitrogen processes. Increased sequestration of carbon and reduced losses of nitrogen are keys to sustaining pasture productivity, mitigating climate change and protecting environmental quality. These concerns are being addressed in smooth brome grass pastures at the Agri-



Above: John Guretzky at pastures at the ARDC near Mead.

Below: John prepares to measure greenhouse gas emissions from pasture.

cultural Research and Development Center near Mead. John's objectives are to quantify dynamics of carbon and nitrogen among pasture vegetation and soil pools. It is hypothesized that the more nitrogen supplied in fertilizer or with supplements to animals, the greater potential for improved pasture productivity and ecosystem carbon storage. This also means greater risks of nutrient losses to the environment. Unfertilized pastures are expected to have the lowest rates of nitrogen losses but also the lowest animal productivity.

Outcomes of this research will impact beef cattle producers in Nebraska by demonstrating how pasture management practices impact not only production but environmental quality. The research also will provide information to policymakers to help them make better decisions necessary to ensuring the nation can meet growing food and energy demands without constraining the ability of agricultural ecosystems to meet these needs through degradation of natural resources and adverse climatic impacts. 





## Being an Agronomy Grad Student: A Pleasure By Ana Wingeyer

I remember six years ago talking to my professors, Dr. Liliana Picone and Dr. Fernando Garcia in Argentina, about my plans to pursue a Master of Science degree at a US university. I explained to them that I wanted my research to be related to soil fertility, with an emphasis in soil organic matter studies. They commented on the different research options they knew at that time in Colorado, Kansas, Illinois, Nebraska and Iowa. The research project at UNL with Professor Dan Walters, which focused on understanding the effect of agricultural ecological intensification on the soil nitrogen supply capacity and soil organic matter dynamics, was the best project I could have dreamed of, and I am so grateful he agreed to have me as a master's student working in that project.


Study of soil organic matter dynamics was new to me. It was a big challenge to understand the concepts and the methodologies and to be able to carry out these by myself. I had a lot of encouragement and help from faculty, staff and fellow students to develop the skills needed for the project and to carry out the activities. Courses and facilities in the Agronomy and Horticulture Department were key aspects to the success of my project. The independent study on soil organic matter that Dr. Rhae Drijber taught back in 2005 helped (and challenged) me to put together concepts, ideas and hypotheses for my research project.

During my master's program I contributed to the Ecological Intensification Study by evaluating the nitrogen (N) supply capacity of soils under continuous corn and corn-soybean rotations. I carried out long-term soil incubation and measured the amount of nitrogen mineralized from these soils. The most significant result was the almost twice nitrogen supply from the continuous corn rotation compared to the corn-soybean rotation. For this study, I also analyzed short-, middle- and long-term storage pools of soil organic matter before and after incubation, and I had the privilege to use isotopes ( $^{15}\text{N}$  and  $^{13}\text{C}$ ) to complement the analysis of the nature of the pools responsible for soil N supply. In the process of analyzing the data, I reformulated the working hypothesis of the research group regarding the nature of the active Soil Organic Matter (SOM) fraction and the C and N flow. Being supported by the research group, I used radiocarbon ( $^{14}\text{C}$ ) measurements to prove that chemically protected and recalcitrant SOM fractions (middle to-long term storage pool) can constitute a source of C and N under conditions of high N demand. This finding carries an enormous significance to the understanding of why high N immobilization pressure under maize-soybean rotation leads to depletion of soil C and N.

After finishing my master's of science studies in 2007, I started

my doctoral program. I am working with the UNL Carbon Sequestration Program (CSP) at Mead under the advice of Professor Dan Walters. Currently, the UNL Carbon Sequestration Program measures the flux of C between crop-soil and atmosphere in three agricultural management scenarios at Mead, Neb. My Ph.D. adds to this program by examining C and N dynamics in soil over time as these contribute in C and N soil sequestration.

In order to study the different C sequestration mechanisms that occur in soil, I have reviewed and tested several soil organic matter fractionation procedures involving innovative adaptation of isotopic  $^{13}\text{C}$  and  $^{14}\text{C}$  aging techniques to monitor changes in C and N status in physical and chemical soil C pools over time. I am currently analyzing four years (2005–2008) of soil samples from two irrigated field sites of the CSP study. In the first field I am assessing the effect of changing from no till to conservation plow with the addition of nitrogen fertilizer to corn residues to enhance C stabilization. In the second field I am assessing the effect of no till corn and soybean rotation on the soil's C storage pools. In addition to the extraction of the different C storage pools, I am analyzing the C and N composition of these pools and I will be using isotopes ( $^{14}\text{C}$  and  $^{13}\text{C}$ ) as tracers for C dynamics. These analyses will allow me to evaluate the changes in the characteristics of these fractions and assess where the new C inputs are being stored.

The preliminary results of my analysis indicate a potential to increase middle- and long-term soil C storage pools size under continuous corn rotation by modifying the placement of crop residues and timing of N input to cropping system. Our results also suggest a close relationship between soil C and N storage mechanisms (and thus management) and will likely provide a key insight for developing potential soil C sequestration strategies for mitigating global warming potential. I am confident that during my studies at UNL, the integration of diverse soil areas as ecology, microbiology, physics, chemistry and fertility in understanding soil organic matter dynamics has established a solid foundation for my career in academic research. As a future soil scientist, I intend to pursue a thorough understanding of the protection mechanisms of C resident on soil storage pools and the transfer of energy and material among these pools over time. The gaps in our understanding of C stabilization dynamics make this topic an exciting frontier, rich in opportunities for scientific impact and practical benefits to agriculture. Inspired by the model of my academic mentors, I plan to engage undergraduate and graduate students in the passion for this knowledge. 



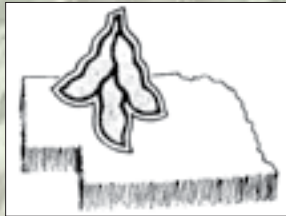
# FROM THE FARMERS' HANDS TO YOURS

# Soybeans in Nebraska

**T**he first mention of soybeans in Nebraska was in 1902 when they were first being tested by the Nebraska Agricultural Experiment Station to see if they could be grown in Nebraska soil and weather conditions. Soybeans were not taken seriously in Nebraska until 1939 when it was discovered that other Corn Belt states were profiting from soybeans as not just livestock feed and human food but for numerous industrial products. Farmers' interest and production continued to grow and in...

## 1969

Articles of Incorporation of the Nebraska Soybean Association were filed in Lincoln, Nebraska on March 14, 1969 – the Board of Directors consisted of seven members.



## 1975

Nebraska Soybean Development, Utilization and Marketing Board formed and administered by the Nebraska Department of Agriculture.



Nebraska Legislature passes LB 74 creating a half cent per bushel assessment on all soybeans sold in Nebraska.

## 1979

Nebraska farmers are harvesting soybeans from 1.6 million acres, up 350,000 from 1978.



## 1980

China's soybean purchases jumped from 5 million bushels in 1978-79 to 30 million bushels in 1979-1980.



## 1987

Nebraska SOYnews – Winter Quarter Issue was printed with soy ink for the first time. Soy Ink was developed in 1985 by the American Newspaper Publishers' Association.



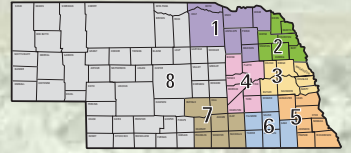
## 1990

The National Soybean Checkoff was created as part of the 1990 farm bill. This replaced LB 74 from 1975 creating a national checkoff where 50% of the funds were used by the national organization or United Soybean Board and the other 50% would be utilized by the Nebraska Soybean Development, Utilization and Marketing Board.



## 1991

Legislative bill 367 would increase the number of districts to eight with the at-large position making nine seats on the checkoff board.



Renowned artist, James Gurney's, paints "60 Uses of the Magical Soybean" which was used in advertising to make people aware of the many uses of the soybean.

## 1992

Soy Biodiesel introduced to Nebraska and marketing promotions begin.



## 1995

In the process of becoming a private, non-profit corporation, Nebraska Soybean Board (NSB) adopts its Article of Incorporation at an open meeting on June 19, 1995.



## 2007

The SoyTransportation Coalition was established to promote a cost effective, reliable, and competitive transportation system for the soybean industry.



## 2009

In continuing efforts to publicize the use of soybeans in our everyday life, NSB has sponsored soybean buses since 1994 working with StarTran of Lincoln – the buses run on an B-20 blend of soy biodiesel.



## Today

The uses for soybeans continues to grow, improving existing products and creating new ones that improve the quality of our lives.



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