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Fall 2009

Center for Grassland Studies, Fall 2009, Volume 15, No. 3

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"Center for Grassland Studies, Fall 2009, Volume 15, No. 3" (2009). *Center for Grassland Studies Newsletters*. 57.

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Volume 15, No. 3
 Fall 2009

UNIVERSITY OF
Nebraska
 Lincoln

New (and not so new) Post-emergence Herbicide Products

by Roch Gaussoin, Department of Agronomy and Horticulture, UNL

It is well documented and often suggested that the “best” weed management strategy for turf is a healthy, properly managed site. When turf is growing in an environment that provides water and nutrients when and in the quantity needed, is mowed at the correct height and frequency with a sharp blade, where disease and insects are controlled through the proper species and cultivar selection and judicious use of appropriate pesticides, that turf should have the density and growth potential to out-compete undesired weed species. Unfortunately, many turf stands are not firing on all cylinders and the opportunistic weed species can and will take advantage of shortcomings in the system that open up the turf for weedy invasion. Traffic stress and the mowing heights used on sports fields and golf courses are critical to playability and use, but are also instrumental in increasing weed establishment and persistence. A lawn care client who ignores the suggestions of the lawn care operator and mows too short, too infrequently and waters every day, opens the door for weedy species invasion. Choosing the right herbicide and applying it at the correct time and rate offers a viable solution to weed management due to required management for playability and client ignorance or inflexibility.



New and experimental herbicides are routinely evaluated in structured research trials such as this ground ivy test at the John Seaton Anderson Turfgrass Research Facility, Agricultural Research and Development Center near Mead, NE.

Advances in herbicide technology have resulted in the availability of new chemistries with reduced toxicity to non-target species and increased effectiveness, new formulations and creative new combination products for the turfgrass professional. Following is a brief overview of post-emergence products recently tested at UNL, comments on use, and if available, a website for more information. For additional information, check the referred company website or <http://turf.unl.edu> for efficacy information on some of the products mentioned, or contact me at rgaussoin1@unl.edu, 402-472-8619.

Revolver® and Monument™

(http://www.bayerprocentral.com/BAYER/CropScience/BackedByBayer.nsf/id/EN_LAWN_REVOLVER)

(<http://www.syngentaprofessionalproducts.com/prodrender/index.aspx?prodid=902&ProdNM=Monument%2075WG>)

I mention these first because they are confined to use on buffalograss in Nebraska. Revolver recently received expanded label use for buffalograss, and is an excellent tool to selectively remove cool-season grasses from buffalograss. We have also tested it on an array of broadleaf species with good to excellent results.

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The Center for Grassland Studies is a unit within the University of Nebraska–Lincoln Institute of Agriculture and Natural Resources. It receives guidance from a Policy Advisory Committee and a 50-member Citizens Advisory Council. This newsletter is published quarterly.

Note: Opinions expressed in this newsletter are those of the authors and do not necessarily represent the policy of the Center for Grassland Studies, the Institute of Agriculture and Natural Resources or the University of Nebraska.

Martin A. MassengaleCGS Director
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Anne MooreNewsletter Layout



FROM THE DIRECTOR

One of the nice things about living in the northern part of the United States is being able to observe all of the changes that occur through the seasons, especially those associated with plant activity. This geographic location provides a person the opportunity to watch life cycle changes through the plant's entire life span with annuals and the year-to-year changes with perennials.

Many species and cultivars of native grasses are found throughout eastern Nebraska, but tallgrasses such as the bluestems, Indiangrass and switchgrass are prominent. These tallgrasses provide shape, form and sound to the landscape. Native grasses are aesthetically pleasing to the eye as they change in height, breadth and color in their above-ground parts. Foliage colors include green, red, yellow, blue and brown. These colors change throughout the year depending on the state of maturity and environmental conditions. The color depends on the amount of and mixing of pigments in the leaves.

Fall is the time of year when native prairie grasses are mature and most impressive. I was reminded of the beauty that they add to the landscape recently when we held a celebration of Nine Mile Prairie (see related article in this newsletter). This occasion marked the 100th year of prairie research at this location and the 25th year of the University's management of this important piece of property.

Nine Mile Prairie is located west of the Lincoln airport and nine miles from downtown Lincoln. It is one of the largest tracts of native prairie left in eastern Nebraska. During World War II, this land was in possession of the Department of Defense, and part of it was used as an ammunition storage depot. After the war, it was turned over to the Lincoln Airport Authority, and with the help of many people and organizations, legislation was passed by the Nebraska legislature in 1981 to enable the University of Nebraska Foundation to purchase it from the Airport Authority. The purchase was made in 1983.

Even prior to World War II, the world-renowned prairie ecologist, Dr. John Weaver, had conducted research on this site for many years. Dr. Weaver and his students did many of the early studies on native prairie grasses and, especially, their root systems. Because of the size of the prairie and the wide diversity of plant species found there, many other professors, students and prairie enthusiasts have studied and conducted research on this site. Today, numerous professors and students are working at the Prairie, and it regularly hosts classes of students and other visitors from the United States and around the world. This unique piece of property is sometimes referred to as the place where prairie ecology was born.

An important component of prairie conservation and preservation today is working partnerships. Nebraska is fortunate to have a large number of individuals and organizations working together to strengthen those partnerships. Without the cooperation and hard work of many of these people and organizations, Nine Mile Prairie, the jewel that it is, would probably not be there today.

M. A. Massengale

New (and not so new) Post-emergence Herbicide Products (continued from page 1)

Monument is a product similar to Revolver (both are sulfonylureas). Monument has a greater susceptible weed list on its label, including sedges. Monument registration in Nebraska and for buffalograss is pending and should occur in the not too distant future.

Dismiss®

(<http://www.fmcprosolutions.com/LawnCare/Products/Herbicides/Dismissurfherbicide/tabid/1287/Default.aspx>)

In a previous article (see <http://turf.unl.edu>) I discussed the merits of the use of Dismiss (sulfentrazone) for nutsedge management strategies. In addition to both pre and post activity on yellow nutsedge, Dismiss is effective on a multitude of broad-leaf weeds, and while the testing was not done in Nebraska, also has good activity on goosegrass. Weeds susceptible to Dismiss show injury relatively quickly, often within 12-24 hours after application.

SpeedZone®, PowerZone®, Surge® and Q4®

(<http://www.pbigordon.com/professional/herbicides.php>)

PBI offers an array of combination products offering synergy for expanded and enhanced weed spectrum and flexibility. SpeedZone is what one of my colleagues calls “Trimec with an attitude.” The “attitude” comes from the addition of carfentrazone to the industry standard Trimec components. This addition results in faster activity on susceptible species. PowerZone, which does not contain 2,4-D, is an alternative to SpeedZone for use in areas where 2,4-D is not desired. Surge contains the components of the Trimec with the addition of sulfentrazone and is formulated to be safely used later in the season when temperatures are elevated. The addition of the sulfentrazone also will suppress yellow nutsedge. Q4 contains the components of Surge plus quinchlorac, increasing the spectrum to include many annual grassy weeds in addition to the weeds susceptible to Surge.

Certainty® and RoundUp® PROMAX

(<http://www.monsanto.com/ito/layout/turf/certainty.asp>)

(<http://www.rounduppromax.com/?&level1=TurfAndOrnamentalProducts&level2=TurfProductsOverview>)

Certainty is safe on all warm-season grasses, including buffalograss, and the cool-season grasses Kentucky bluegrass and Creeping Bentgrass. It is an excellent yellow nutsedge product and will also selectively remove rough bluegrass, tall fescue and quackgrass from Kentucky bluegrass. For those wishing to maintain pure stands of Kentucky bluegrass, Certainty offers refined selectivity for difficult-to-control perennial grasses to achieve this goal. We have also tested Certainty for selective removal of rough bluegrass in creeping bentgrass fairways with acceptable results.

RoundUp PROMAX offers the security and confidence of the industry standard non-selective herbicide glyphosate in a more concentrated formulation and smaller packaging decreasing storage and shipping requirements. Our testing has shown equal or better efficacy than RoundUp PRO.

Velocity®

(<http://www.valent.com/professional/products/velocity/index.cfm>)

Velocity offers a new tool to golf course superintendents for Poa control (both annual and rough bluegrass). We have not tested Velocity for annual bluegrass control in Nebraska, but colleagues report good to excellent results. The above mentioned website offers a multitude of research-based strategies for its use for this purpose. We have tested Velocity for selective removal of rough bluegrass in creeping bentgrass fairways with acceptable results.

Onetime® and Drive® XL8

(http://www.betterturf.com/New_News/13/3008.htm)

(<http://www.betterturf.com/folders.asp?uid=2908>)

Onetime is a new combination product containing dicamba, MCPP and quinchlorac – offering broad spectrum broadleaf and annual grass weed control. Tests in Nebraska have shown good to excellent activity on ground ivy as well as dandelion and, as expected, clover, crabgrass and foxtail. Onetime has become a favorite buffalograss product for many turf managers. The exclusion of 2,4-D results in excellent safety and broad spectrum weed control. Drive XLR8 is an improved formulation of Drive (quinchlorac) with quicker response and rainfastness in less than one hour.

Tenacity™

(<http://www.greencastonline.com/TenacityHerbicide/index.html>)

Tenacity is a new herbicide registered in 2008 for golf courses and sod farms, and federally registered for commercial applicator residential use in 2009. State registrations for residential use are pending. Tenacity is unique chemistry with unique selectivity. It is safe on all cool-season grasses when used as directed. Our trials have shown good to excellent control of creeping bentgrass, nimblewill and windmillgrass in Kentucky bluegrass, and good to excellent control of a laundry list of broadleaf and weeds and crabgrass and foxtail. Another unique property of Tenacity is safety at seeding. We have testing applications at planting for safety on Kentucky bluegrass, perennial ryegrass and tall fescue with excellent results. Work at other universities has shown control, albeit inconsistent depending on application timing, for annual bluegrass.

I hope this brief summary is helpful as you make choices for broadleaf weed management at your facility. This list is by no means comprehensive, but is simply a review of products we have evaluated in the last several years at the University of Nebraska.

Author Note: The mention of product names does not constitute an endorsement by the University of Nebraska or a non-endorsement of products not mentioned.

Remarks at the Nine-Mile Prairie 25th Anniversary Celebration (10/16/09)

By Dave Wedin, School of Natural Resources, UNL and Director of Nine-Mile Prairie

History

To many of us, Nine-Mile Prairie (9MP) symbolizes the birthplace of prairie ecology. It was added to the National Register of Historic Places in 1986. The state historic marker celebrates the University of Nebraska (NU) scientist John Weaver, the “father of prairie ecology.” Looking east toward the capitol in downtown Lincoln, and west to the 230-acre native prairie, I feel a connection to three big names in the history of science at NU.

John Weaver grew up in Iowa and came to Nebraska as an undergraduate to study under the famous botanist Charles Bessey. Bessey was installed in the Nebraska Hall of Fame in June 2009, and his bust is now in the capitol. Bessey came to NU in 1885, and led it to early prominence as one of the great public universities in the country. He died in 1915.

Today, we’re also celebrating a century of grassland research at the University of Nebraska. John Weaver received his bachelor’s degree from NU in 1909, and went on to receive a master’s here. Was this piece of land already known at that time as a beautiful prairie that had escaped the plow? Did Weaver and Bessey ever come here in those years? We don’t know, but I like to think they did. From Nebraska, Weaver went to the University of Minnesota where he finished his Ph.D. under Frederick Clements in 1916. Of these three biologists – Bessey, Weaver and Clements – Clements is probably the most famous. He was a Lincoln kid who went to NU in the 1890s, got caught under Bessey’s spell, and continued on for his Ph.D. here. Clements’ Ph.D. laid out a theory and framework that dominated the field of ecology throughout the 20th century. Every ecology textbook written in the last 50 years spends at least a page on Frederick Clements and his theory of succession. NU and the University of Chicago are known as the two birthplaces of ecology in North America.

John Weaver returned to NU as an assistant professor in 1915 and spent his career here, retiring in 1952. He is known for three things: 1) his detailed study of roots and below-ground ecology; 2) laying the foundations of grassland and rangeland ecology; and 3) promoting and defending Clements’ ecological theories until his death in 1966.

One standard that scientists use to measure their impact is the Science Citation Index, a computerized database of the entire scientific literature since 1990. Weaver is still one of the most cited NU scientists in the *current* scientific literature -- half a century after his retirement! His papers and books have been cited over 2300 times by other scientists since 1990. That count only includes works on which he was the lead author, not his papers co-authored with 40+ graduate students. Few scientists leave that kind of legacy and ongoing impact in their discipline.

Although 9MP was privately owned, Weaver recognized it in the 1920s as a unique native prairie remnant that became a research site for him and his students. A key paper describing the site’s vegetation, soils and climate was published in 1930 in the journal *Ecology* by Weaver’s student T. Steiger.

After WWII, 9MP and the land around it was taken over by the U.S. Air Force as part of the Lincoln Air Base. Lincoln had a fully operational SAC nuclear air base from 1952 to 1966. The bomb bunkers north of 9MP (visible from the entrance) are a tangible legacy of this cold war history. It’s an interesting twist that 9MP would probably never have been preserved if it had not been part of a nuclear air base and subsequently Lincoln Airport Authority (LAA) property for 40 years.

The LAA acquired 9MP as well as Air Park from the U.S. government in the 1970s. Throughout the 50s, 60s and 70s, this area was managed with annual haying. Sometime in the 1970s, NU biologists and members of the local Wachiska Audubon Society started drawing attention to 9MP as an area important for both conservation and history. Biology professor A.T. Harrison and Audubon member Ernie Rousek were the leaders of that effort. On behalf of the Audubon Society, Ernie personally leased 9MP from the LAA for several years. They began an effort to purchase 230 acres of the best remaining prairie from the Airport Authority as a nature reserve. Documents from that time are available on our website (<http://snr.unl.edu/9mp>).

In 1981, a legislative act was passed by the Nebraska Unicameral with the sole purpose of encouraging the LAA to protect 9MP and transfer it to either a conservation group or NU. Under the leadership of then-Chancellor Martin Massengale, the NU Foundation purchased it in 1983. Much of the purchase price was donated by Mrs. Marguerite Hall in honor of her late husband, Neil W. Hall. This wonderful picture of Mrs. Hall in front of the podium today was taken when she was here at 9MP for the dedication ceremony 25 years ago. She has since passed away. A family member told me one regret Mrs. Hall had was that she never got to see a prescribed fire. My only thought is that when we do burns today, the plume of smoke goes very high... perhaps Mrs. Hall can see it from where she is now.

Over the last 25 years, 9MP has been managed by NU faculty with help from the Wachiska Audubon Society. It has never had a regular budget. Instead, it has been managed by the passion and commitment of dozens of people. At NU, those people included



Martin Massengale, Director of the Center for Grassland Studies, welcomes the crowd of prairie enthusiasts.

Photo by Brett Hampton



Steve Waller, Dean of the College of Agricultural Sciences and Natural Resources, talks about the importance of Nine-Mile Prairie to the University of Nebraska, the state and the country.

Photo by Brett Hampton

Robert Kaul, Jim Stubbendieck, Rob Masters, Rob Mitchell and Jim Locklear. From Wachiska Audubon, Ernie Rousek and Carol Closter have been tireless in helping the prairie. Sadly and tragically, two of the prairie's greatest friends have died in recent months. If you're a regular visitor to 9MP, you've seen the color photos in the wooden information kiosk. Those photos were taken by George Schade, who died in May 2009. George was an NU faculty member in mechanical engineering. In the kiosk over the years were visitor register books. Those books were made by Curt Twedt, who died in September 2009. The register books remind us of Curt's efforts on behalf of conservation and prairies during his career with the Nebraska Game and Parks Commission.

Three other points round out Nine-Mile Prairie's recent history. In 2001, a U.S. postage stamp featuring a photo of 9MP by Michael Forsberg was released. In 2008, we made our contribution to the new electrical power grid for the 21st century when 9MP received a large Lincoln Electric System power line along its southern property line. And finally, in 2009 we expanded 9MP's entrance in cooperation with the Lincoln Airport Authority. It didn't even take an act of the legislature this time. The Airport Authority has been a wonderful neighbor and partner.

Stewardship, Science and Education

Nine-Mile Prairie also symbolizes NU's ongoing commitment to grasslands. NU manages over 25,000 acres of grassland. Most of this land is in the Sandhills at Gudmundsen Sandhills Laboratory, Barta Brothers Ranch, and Arapaho Prairie. We also have several areas near Lincoln including 9MP, Prairie Pines, Reller Prairie, and UNL Campus Recreation's 80 acres just south of us. The University of Nebraska-Omaha manages Allwine Prairie, a 160-acre preserve outside of Omaha. These grasslands are a tremendous resource, but also a tremendous responsibility. The different properties have diverse management goals including research, education, recreation, nature preservation, and beef production. However, regardless of the management goals, the public recognizes good (or bad) stewardship when they see it. Are we being good stewards? Are we teaching good land stewardship to our students by example?

These grasslands give NU a chance to do long-term research that would be difficult to do on other public or private land. Nine-Mile Prairie's current research portfolio includes studies of native thistles, nematodes, switchgrass, flickers, reptiles, orchids, and invasive plants. The unique role of 9MP as a university educa-



Grassland ecologist Dave Wedin, Director of Nine-Mile Prairie, provided historical background and context for the afternoon before the tours began.

tional resource complements the education/outreach mission and facilities at two other prairie areas: Lincoln Parks and Recreation's Pioneers Park and the Audubon's Spring Creek Prairie. More than 10 NU classes a year use 9MP. Although most are science classes, the list includes the occasional literature and art class.

A new education initiative is to certify more of our natural resources students in the federal "red card" wildland fire training system. The need for both wildland fire control and prescribed fire as a management tool has increased dramatically in the last decade. This effort is a partnership with the Nebraska Forest Service and its wildland fire educator Casey McCoy. The students trained by Casey or other state and federal agencies through summer fire fighting jobs now form the backbone of our student fire crew for prescribed burning at 9MP.

To maintain 9MP's unique legacy of prairie biodiversity, we need to continue to improve our management. In addition to prescribed burning on a roughly three-year rotation, our management includes cutting back encroaching woody vegetation and killing invasive species such as leafy spurge and sericea lespedeza. However, we still seem to be gradually losing species. One of our

two federally endangered species, a beautiful orchid, has not been seen in a decade. Species documented here in the 1920s are gone. Do we need new and creative approaches to managing for biodiversity? We may need to follow the lead of others in the southeast Nebraska prairie community and introduce grazing and haying into our management.

(continued on back page)



Tour participants saw how seed is harvested at Nine-Mile Prairie.



Photo by Brett Hampton

Nebraska Grazing Conference Just Keeps Getting Better

“Very nice array of speakers, diverse topics, engaged audience.” “Excellent conference covering all aspects of grazing systems management!” “I enjoy the challenging thoughts!!” “This was an excellent conference – best one I have attended yet!”

Those are some of the comments on the evaluation sheets from the ninth annual Nebraska Grazing Conference held August 11-12 in Kearney. We were just shy of the average number (250) of participants who have been attending the conference over the past few years.

Proceedings from the 2009 and previous conferences are still available for purchase; they contain the material submitted by most of the presenters prior to the conferences. The conference website (www.grassland.unl.edu/grazeconf.htm) contains the list of speakers and topics for each conference. To order proceedings, send a check payable to Nebraska Grazing Conference to the CGS office – note which year(s) you are ordering.



The education doesn't stop at the conference room door. Bob Budd with the Wyoming Wildlife and Natural Resource Trust continues to share his expertise with participants in the lobby after his talk on the impacts of grazing conservation practices on livestock and wildlife.



Allan Nation of Mississippi, long-time editor of *The Stockman Grass Farmer* and author of several grazing-related books, was a crowd pleaser as he gave the opening and closing presentations at the conference.



Many conference participants gathered around Allan Nation after the banquet to further tap his expertise.



Conference goers enjoy the opportunity to visit with vendors of useful products and services in the exhibit room.



Native Nebraskan Justin Derner, now a USDA rangeland management specialist in Wyoming, spurred a lively discussion after his presentation in which he reviewed research results from several studies that examined rotational versus continuous grazing systems.

If you have not attended previous conferences but would like to be on the mailing list to receive notice of next year's conference, to be held in the same location on August 10-11, simply send your name and address to the CGS office. Details of the 2010 program will be posted on the conference website (a link from the CGS site) as they become next year.



Banquet speaker R. P. Smith of Broken Bow caused chuckles and affirmative "been there, done that" nods among the audience members as they listened to his humorous stories and poems about a rancher's life.



Rancher and custom grazer Jim Carr discusses how he used cattle to control leafy spurge.

The Nebraska Grazing Conference has several sponsors including this year's conference underwriters: Center for Grassland Studies, Nebraska Game and Parks Commission, and Nebraska Grazing Lands Coalition.



An interesting perspective on passing on the legacy was provided by father/daughter ranchers A.B. and Scout Cox.



Moderator Julie Elliott oversees the Q&A portion of the session on becoming grass farmers given by Randy Jenkins (left) and John McGlynn.



After giving a brief description of the "100 Cow Program," Weldon Sleight, Dean of the Nebraska College of Technical Agriculture, turned the mic over to two former students who are participating in the program.

Nine-Mile Prairie (continued from page 5)

Regardless of how we manage *inside* Nine-Mile Prairie's fence, the major conservation issue for the next 25 years is what happens *outside* our fence. Today, 9MP lies at the center of over 1300 acres of grassland. Our neighbors are diverse with diverse goals, but all are concerned with stewardship of their land and their neighborhood. Our partners already include the LAA, Wachiska Audubon, the Nebraska Game and Parks Commission, the Natural Resources Conservation Service, Prairie Plains Resource Institute, the Nature Conservancy, and UNL's Campus Recreation Department. The key to Nine-Mile Prairie's future will be strengthening these existing partnerships and forming new partnerships based on shared goals for this unique open landscape.



Photo by Brett Hampton

Ernie Rousek (second from left), Dave Wedin and others aren't sure how badly they want to see the non-plant life of the prairie "up close and personal" as herpetologist Dennis Ferraro shows them a specimen.

Recent Accolades to CGS Associates

Steve Baenziger, Irv Omtvedt Innovation Award from UNL Institute of Agriculture and Natural Resources.

Chuck Francis, 2009 Educator's Award from the Sustainable Agriculture Education Association.

Roch Gaussoin, Cyril Bish Distinguished Professor of Horticulture Award.

Terry Klopfenstein, 2009 Morrison Award from the American Society of Animal Science.

Rick Rasby, 2009-2011 Wendell Burgher Beef Industry Award.

Richard Sutton, tapped as Fellow of the American Society of Landscape Architects.

Kim Todd and colleagues, 2009 Extension Materials Award from the American Society for Horticultural Sciences

Steve Waller, 2009 Distinguished Educator Award from the North American Colleges and Teachers of Agriculture.