

Central Grasslands Forum



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NDSU CENTRAL GRASSLANDS RESEARCH EXTENSION CENTER
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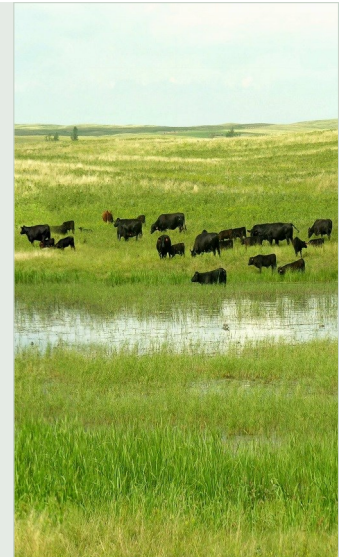
Bryan Neville, Director

Welcome to the first edition of the Central Grasslands Forum. The goal of this quarterly newsletter is to provide highlights of research projects conducted at the Central Grasslands Research Extension Center for producers and livestock/range managers in the Coteau region of North Dakota.

Our center is focused on improving beef production and range management through forage agronomy, range science and animal-related research. With future issues of this news-letter, we hope to continue expanding our abilities to fulfill our mission of helping the agricultural producers of our state.

Bryan Neville,

Director, Central Grasslands Research Extension Center



Located six miles northwest of Streeter, N.D., the Central Grasslands Research Extension Center serves 18 counties in the Missouri Coteau and the Coteau Slope. The Coteau is bounded by the Missouri River basin on the west and the James River basin on the east. The Coteau Slope contains streams that drain into the eastern side of the Missouri River.

The unique topography and soils of the region are due to the presence of glacial sediments. The combination of rolling hills and wetlands are ideal for livestock, forage and wildlife production.

The Central Grasslands REC is made up of 5,335 acres of mixed-grass prairie and cropland in Stutsman and Kidder counties.

The center began operation in 1981. The staff is composed of ten full-time employees, and ten or more part-time and summer employees.



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Central Grasslands Forum



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Forages and Cover Crops to Improve Grazing and Hay

The Central Grasslands Research Extension Center is on the Missouri Coteau, a region characterized by a mosaic of prairie potholes, natural prairies, haylands and croplands. For livestock and hay production in this region, several trends are emerging:

- Natural prairie and CRP (Conservation Reserve Program) lands are being converted to croplands.
- Livestock prices remain consistently high.
- The cost to produce high-quality and -quantity forage can be high due to increased fuel and fertilizer costs and land rent prices.
- Livestock feed costs can be high due to the long feeding period for most cow-calf operations, as well as the changing costs of winter feed.

Considering the specific Missouri Coteau region features and the livestock production trends in this region, we believe our forage program should focus on the following three themes:

- Forage production should be considered within the whole picture of the landscape and on a whole-farm planning level. A system of annual and perennial forages can add flexibility and stability to the whole-farm livestock production.
- The forage production system should be diversified based on the different forage species and their characteristics (growth habit, production timing and nutritional values).
- A production system can be used to extend the grazing season to reduce feed costs.

At the CGREC, we have three concurrent projects to address the forage concerns for the livestock producers in the Missouri Coteau region. The first of the three includes annual and perennial species.

“A system of annual and perennial forages can add flexibility and stability.”

Forage Species/Variety Test

Annuals: legumes - clover, vetch, pea, soybean
warm-season grasses - millet, proso, sorghum
cool-season grasses - barley, triticale, oat, wheat, annual ryegrass
brassicas - cabbage, kale, radish, rape, swede, turnip, a brassica hybrid

Perennial/biennials: legumes - alfalfa, trefoil, milkvetch, clover, sainfoin, sweetclover

Perennials: cool-season grasses - wheatgrass, brome, fescue, needlegrass, wildrye
warm-season grasses - bluestem, switchgrass, grama

We are monitoring the establishment success of these species and varieties, as well as their viability throughout the seasons. The other two projects will be discussed in the fall newsletter.

More information may be found on our website at: www.ag.ndsu.edu/CentralGrasslandsREC

Central Grasslands Forum



Bob Patton
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Grazing Study Targets Optimal Pasture Use

The grazing intensity study at the CGREC began in 1989, making it one of the longest-running grazing studies in the U.S. This project looks at the effect of season-long cattle grazing on the vegetation and soil water, as well as three aspects of livestock production:

- livestock performance
- livestock profitability
- sustainability of forage production for grazing livestock

In this study, four stocking rates are compared, with ungrazed exclosures serving as a control treatment. Stocking rates vary from year to year as they are dependent on forage production and desired use.

For 2013, the four stocking rates for the three-month grazing period were:

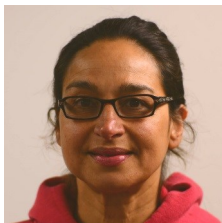
Low = 0.23 heifers/acre
Moderate = 0.43 heifers/acre
High = 0.67 heifers/acre
Extreme = 0.9 heifers/acre

In 2014, the cattle were stocked in mid-May and will be removed in approximately mid-October. Cattle are weighed to determine average daily gain. Local livestock auction prices are utilized for assigning cattle values. Changes in the plant communities, forage production and soil water also are monitored.

We have found an inverse relationship between the stocking rate and the cattle's average daily gain. As the stocking rate increases, the average daily gain decreases. Body condition scores also follow this pattern.



More information about this and other grazing studies at the CGREC is available on our website.



Fara Brummer has joined CGREC as the area Extension livestock systems specialist. Her work at the center will focus on integrating grazing systems and animal production. She will be covering the ten counties in the Missouri Coteau region of North Dakota.

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The Grass-Cow Connection

With an increase in daylight and soil temperatures, grasses respond by growing stem, leaf, flowers and, finally, seed heads. Cool-season grasses, such as smooth brome, Kentucky bluegrass and western wheatgrass, begin growth at soil temperatures between 40 and 45 F, with optimum growth at air temperatures between 65 and 75 F. Warm-season grasses, such as big bluestem and blue grama, begin growth at 60 to 65 F, with optimum growth at 90 to 95 F air temperature. The nutritive value of grasses change during their yearly cycle. At the leaf stage, the grass is highly palatable and nutritious to cattle, with nutrition value declining as the plant matures.

In a similar way, our cattle's nutritive needs change during the year. For example, a mature cow's maximum dietary needs occur immediately after calving, when the demands of lactation, as well as preparation for rebreeding, are occurring.

Here are some factors to keep in mind to maximize cattle and grass production:

- Total dry-matter consumption needs of cattle will change, depending on the cow's age,

weight and stage of production. The moderately framed lactating cow will require 20.2 pounds of dry-matter forage daily, whereas the cow in the second trimester will require less, 18.1 pounds. To meet these daily requirements of feed, pasture must be capable of producing that amount. A cow that has to forage harder to meet her minimum daily requirement of biomass is using more energy with less gain.

- Although a grass may look good in the field, whether the cow likes to eat it is the major deciding factor for maintaining cattle growth and health. Palatability is what influences cattle to eat the forage.
- As grasses mature from young stem and leaf to producing seed heads, their nutritive values decrease. Therefore, one way to extend the nutritive quality of our perennial grasses is by keeping them vegetative and healthy. In other words, with grazing management, perennial grasses can provide high-quality nutrition for a longer period of time by remaining in the leaf stage. Rotational grazing can accomplish this task within the growth window of a grass.

County Corner

100 Years of Area Extension Education

By Penny Nester

Agriculture and Natural Resources Agent
NDSU Extension – Kidder County

In 2014, we are celebrating the 100th anniversary of the Smith-Lever Act. This act created the Cooperative Extension Service, a state-by-state network of educators developed to extend university-based research and knowledge to the people.

In celebration of this event, I had the opportunity to look back through the early years of Extension in Kidder County and I'm sharing some interesting highlights of that time with you.

In the early years, programs and projects were developed chiefly by the county agent alone, while today the development of county programs is in the hands of a large local network.

Extension work began in Kidder County with the assignment of two county agents in late 1917, which was an emergency action during this period of World War I. Most important to the farm people of that time was the providing of wheat to win the war.

In late 1919, encouragement was begun to diversify Kidder County agriculture. One of the lasting influences was the introduction of brome grass into the area to encourage the re-establish-

ment of cropland devoted to wheat during the war. While this grass species was not specified, we can infer that it is now what we call smooth brome grass (*Bromus inermis* Leyss.), which is very common over much of our range ground. Sweet clover, alfalfa, corn and rye also were introduced to the area at this time through Extension during the '20s and early '30s in the hope of diversifying crop land, especially due to the low prices and market for wheat at that time.

County agent reports from these early years repeatedly enforced the need for livestock production to promote diversification for a steady source of food and fiber. Tuberculosis testing of all cattle herds in the county also was a major undertaking of the county agent in the early

years. This testing gave local livestock producers premiums at market for the testing efforts Extension initiated.

Extension work during the Depression and drought years of the 1940s was devoted to activities and programs to keep livestock on the farm and encourage producers to use conservation methods of farming to prevent wind erosion. Major agent responsibilities were administering emergency programs to the drought-stricken, financially depressed farmers during this period.

Early Extension work in Kidder County primarily was a responsibility of the county agent, along with very few organizations, individuals or government agencies. The county program consisted of personal farm visits to carry out Extension projects, which mainly consisted of demonstration work.

As Extension has developed through the years, so has its emphasis on the communities it serves. In the early years, programs and projects were developed chiefly by the county agent alone, while today the development of county programs is in the hands of a large local network. From this type of setup, one of the most outstanding benefits of Extension work has been the development of local leaders throughout the years.



Kidder County Extension staff (from left) Michelle Burkett (administrative assistant), Penny Nester (agriculture and natural resources agent) and Acacia Stuckle (family and consumer science agent) display Extension material.

Snapshot on Sainfoin

Sainfoin (pronounced san-foyn) (*Onobrychis viciifolia* Scop.) is a perennial forage legume species that is garnering some interest recently because of its potential use as a companion species in a grazing or haying system, whether fresh or baled. This plant prefers well-drained soils that are slightly alkaline and does not do well in acidic soils. In areas with low drainage capability, sainfoin's performance can be limited because of root rot.

Sainfoin performs well in low-phosphorus soils. It is drought-tolerant and winter-hardy. Growth occurs from a crown, and leaves are soft and palatable for grazing

animals. It is an upright plant 1 to 2 feet tall, with purple, pink or white flowers, hollow stems and a deep, well-branched root.

Sainfoin is an early emerger in the spring. It produces most of its yearly biomass before the time of flowering or first cutting, with a second smaller harvest expected if summer rains are adequate. The average yearly biomass production is approximately two-thirds of alfalfa. The expected average yield for sainfoin hay is 2 tons per acre.

As a forage, sainfoin has a nutritional profile similar to alfalfa, with slightly lower protein. Although it is a non-

bloating legume, grazing should be monitored because sainfoin does not tolerate close and continuous grazing.



Varieties include Eski, Remont and Shoshone, which have been field-tested at the CGREC (see our Annual Reports). All of these varieties have proven to be winter-hardy in our climate.

- Fara Brummer

Now for a recipe using North Dakota beef:

Sloppy Joes

From the kitchen of Sandi Dewald

2 lbs. ground beef, browned with onion, garlic, salt and pepper to taste

1 10¾-oz. can of tomato soup

1 10¾-oz. can of cream of celery soup

½ to ¾ can of water

Simmer on very low heat for 20 minutes or more. If it seems too thick, add one 6-oz. can of tomato sauce. Serve on buns.



Sandi Dewald
Administrative
Secretary



IN THE NEXT ISSUE :

Annual Forage Production System Study

Hayland Renovation and Diversification Research

Early Intensive Grazing to Control Kentucky Bluegrass

Managing Cattle with Different Genetic Potential

If you would like to be added to our mailing list (print or electronic), please contact us.

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www.ag.ndsu.edu/CentralGrasslandsREC

Editors: Fara Brummer and Janet Patton

To:

Welcome to
**Central Grasslands REC
Annual Field Day**

July 7, 2014

9 a.m. to 1 p.m.



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