Central Grasslands Forum

NDSU Central Grasslands Research Extension Center
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NDSU NORTH DAKOTA STATE UNIVERSITY

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Western Wheatgrass

Fara Brummer, Area Extension Livestock Systems Specialist, CGREC

If corn is the king of grains and alfalfa the queen of forages, then western wheatgrass is surely royalty on the northern prairie. A perennial cool-season grass, western wheatgrass is rhizomatous with a network of underground stems, and it is one of the most widespread of our native grasses. It is also a very palatable forage species for livestock and wildlife. Western wheatgrass is found on upland sites but also is known to be very tolerant of saline soils.

Western wheatgrass sometimes can be confused with quackgrass; however, the leaves and stems of western wheatgrass are waxy, often with a bluish tint. The leaf blades are usually stiff, rolled and narrow, and are strongly ridged on the upper side. The widest blades are normally less than 1/5 inch wide. Western wheatgrass has conspicuous, often reddish auricles (see above photo). Auricles are ear-shaped appendages found at the base of the leaf blade.

Western wheatgrass can be planted in late-spring at 7 to 10 pounds per acre.

Western wheatgrass can produce well, depending on moisture. In field trials at the CGREC, with planted cultivars, growing-season rainfall at less than 11 inches yielded 1.1 tons/acre, 14 inches of rain yielded 1.3 tons/acre, and greater than 16 inches of rain yielded 2.3 tons/acre.[1]

Increased moisture also will allow this grass to reach a height of 2 feet, depending on soil type.

Last year, western wheatgrass cultivar plot trials at the center yielded 2.1 tons/acre of the Flintlock variety and 2 tons/acre of the Recovery variety when harvested in the middle of June.[1] Because much of the growth of this plant occurs in June, grazing should be delayed until this time if possible so that its resources stay strong.

The length of time that western wheatgrass can meet cow needs depends on her total digestible nutrient (TDN) requirements. For a 1,200-pound lactating cow (10 pounds of milk production; requiring 56 percent TDN[2]), western wheatgrass will suffice until mid-July. For the same size cow at 30 pounds of milk production and a requirement of 63 percent TDN, western wheatgrass will meet her needs only until mid-May to mid-June.[3]

[1] Guojie Wang, CGREC, unpublished data.

[2] National Research Council. 2000. *Nutrient Requirements of Beef Cattle.* 7th revised edition: Update 2000.

[3] NDSU Extension/Natural Resources Conservation Service publication "Grasses for the Northern Plains" (R1323, 2nd edition).

Photos by Rick Bohn, Janet Patton and Bob Patton, CGREC

In This Issue

The Grazer's Stock Exchange

Fara Brummer, Area Extension Livestock Systems Specialist, CGREC

In this article, we hope to provide a refresher course on stocking rates in time for spring turnout. Just as with currency conversion from dollars to cents and back again, we can convert stocking rates from animal units per acre to acres per cow and back again.

The stocking rate is how many animals you can stock per acre for a fixed time period.

The most common form of stocking rate is an animal unit per month (AUM), which equals a 1,000-pound cow and calf (up to 6 months of age) for one month. This number is the foundation from which we adjust our numbers based on weights and types of grazing animals (Table 1). For 1,400-pound cows with calf, their animal unit equivalent is 1.29.

Table 1. Animal unit equivalents guide[1]

Kind/classes of Animals	Animal Unit Equivalent (AUE)	Forage Consumed (lbs, air-dry[2])	
		Day	Month
1,000-lb cow, dry	0.92	28	851
1,000-lb cow, with calf	1.00	30	913
1,200-lb cow, with calf	1.15	35	1,064
1,400-lb cow, with calf	1.29	39	1,186
600-lb beef, yearling	0.60	18	547
800-lb beef, yearling	0.80	24	730
Horse, mature	1.25	38	1,155
Sheep, mature	0.20	6	182

[1] Adapted from NDSU *Grassland Management IV*, 2014.
[2] Air-dry weights refer to forage dried under normal environmental conditions, that is 87 percent dry matter.

The next piece for determining the stocking rate is to figure out just how much forage we have out there. The gold standard is to clip and weigh forage from a frame, but you can also use Table 2 as a reference. Make sure you assess your pasture. For instance, if you have a lot of Kentucky bluegrass, that pasture will be considered to be in poor condition in a dry year.

Now for a working example using Table 2. In the Missouri Coteau region, a pasture of evenly mixed upland and lowland sites in good condition will average 0.79 AUMs per acre (1.00 + 0.57)/2, or 1.4 acres/AUM (1.00 + 1.75)/2 .

Table 2. Average stocking rates on native rangeland for 1,000-pound cows (1.00 AUE) for the Drift Prairie (A), the Missouri Coteau (B) and the West River (C) regions of the northern Plains.

	Stocking Rate in AUMs/Acre Range Condition Category											
	Excellent			Good			Fair			Poor		
Landscape Unit	A	B	C	A	B	C	A	B	C	A	B	C
Lowland	1.33	1.33	1.00	1.00	1.00	0.80	0.80	0.67	0.50	0.40	0.36	0.29
Upland	1.00	0.80	0.67	0.67	0.57	0.50	0.50	0.40	0.33	0.25	0.20	0.17
Xeric	0.57	0.44	0.33	0.44	0.33	0.25	0.29	0.24	0.17	0.14	0.13	0.09
	Stocking Rate in Acres/AUM Range Condition Category											
	Excellent			Good			Fair			Poor		
Landscape Unit	A	B	C	A	B	C	A	B	C	A	B	C
Lowland	0.75	0.75	1.00	1.00	1.00	1.25	1.25	1.50	2.00	2.50	2.75	3.50
Upland	1.00	1.25	1.50	1.50	1.75	2.00	2.00	2.50	3.00	4.00	5.00	6.00
Xeric	1.75	2.25	3.00	2.25	3.00	4.00	3.50	4.25	6.00	7.00	8.00	11.00

Source: NDSU Dickinson REC. 2014. *Methods for Development of Biologically Effective Management Strategies*, 3rd edition.

If I want to look at how many pairs I can run per acre, I have to adjust for my 1,400-pound cows. I take the stocking rate of 0.79 AUMs per acre and divide it by the cow equivalent (0.79/1.29), which equals 0.61 pairs. For bigger cows, I will naturally need more acres.

Photo by Fara Brummer, CGREC

Now, to look at how many acres per grazing season I will need, I multiply my monthly requirement (1.4 acres) by the cow equivalent to find that I need 1.8 acres every month for a cow/calf pair (1.4 x 1.29 = 1.8). If I am in a pasture for four months, I need to allocate 7.2 acres (1.8 x 4 = 7.2) per pair. For six months, I need to allocate 10.8 acres (1.8 x 6 = 10.8). If I am in there for two weeks, I will allocate 0.9 acre (1.8/2 = 0.9).

These guidelines can allow us a starting point for stocking rates in planning our grazing, assuming that pastures will be maintained in the same condition as when they started.

To make changes in our grass systems, we need to adjust our length of time and range stocking density. On the animal end, we should look at specifics such as the energy demands of our grazing animals and their calving season.

Understanding stocking rates is the first piece of the puzzle in managing our grazing systems.

Lessons From the Ground Up

Erin Gaugler, Graduate Student, Range Science Program, NDSU, Fargo
Fara Brummer, Area Extension Livestock Systems Specialist, CGREC

In the fall 2014 issue of the *Grasslands Forum*, we talked about cover crop grazing, livestock performance and soil health research at the Central Grasslands Research Extension Center. After a winter of analyzing data, Erin Gaugler has more information to share about her project.

Gaugler, under the leadership of Kevin Sedivec and Bryan Neville, studied forage production, beef heifer performance, soil health and economic efficiency for three years in a single-cover crop system and a dual-crop (cereal crop followed by cover crop in the same year) system. Peak forage production was sampled mid-September to early October. Cattle were turned out in mid-October to graze plots for six to eight weeks. Three grazing regimes were used: 1) full use, 2) 50 percent degree of forage disappearance and 3) no use. Heifers fed in a drylot served as the control.

The single-cover crop system, seeded in mid-July, provided consistently greater amounts of forage than the dual-crop system (Figure 1), likely related to greater available moisture.

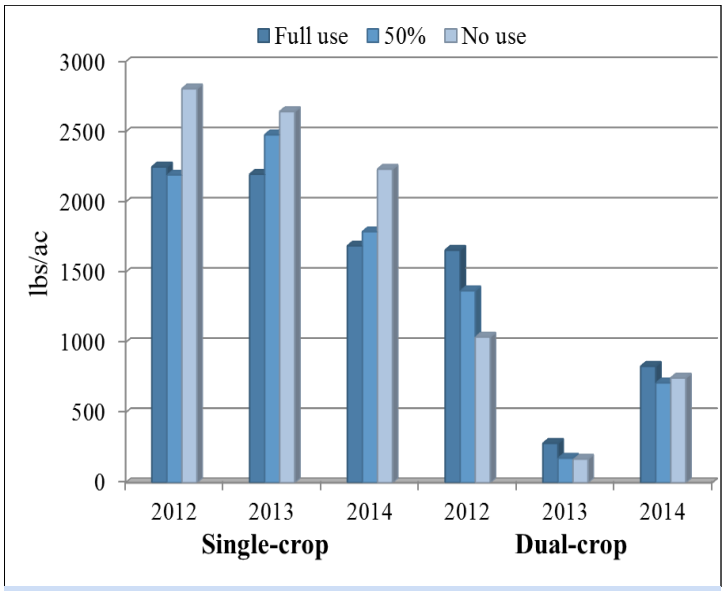

Figure 1. Production on the two cropping systems, 2012-2014.

Continued on page 4

In terms of soil health, 2014 measurements show better aggregate stability in both grazing systems over the no use treatment (Figure 2).

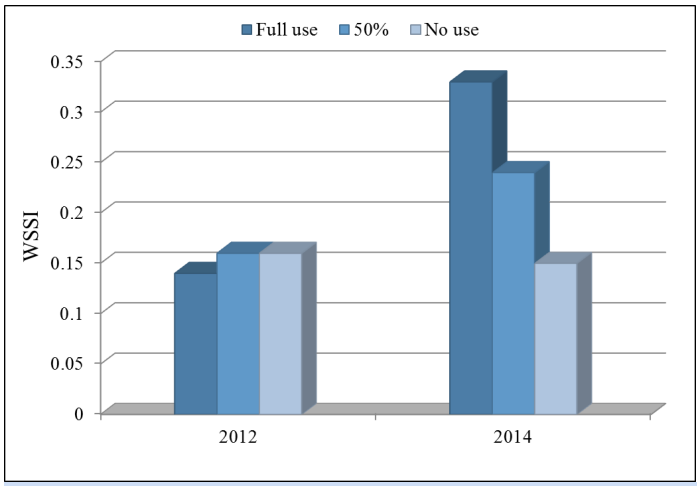

Figure 2. Whole soil stability index (WSSI) in 2012 and 2014.

Table 1. Heifer performance in three grazing treatments in 2012 through 2014.

Year		Full use	50% degree of disappearance	Drylot
2012	ADG (lb/d)	2.02a[1]	2.43ab	2.90b
	Initial BCS[2]	5.4	5.3	5.2
	Final BCS	5.4	5.6	5.6
2013	ADG (lb/d)	0.70a	1.30a	2.80b
	Initial BCS	5.3	5.3	5.2
	Final BCS	5.5	5.6	5.7
2014	ADG (lb/d)	0.48a	0.82ab	1.04b
	Initial BCS	5.2	5.3	5.3
	Final BCS	5.3	5.6	5.5

[1]ADGs within row followed by same letter are not statistically different at *P*>0.05.
[2]BCS = body condition score.

Heifer performance varied, but body condition was maintained in all grazing treatments and during all years of the study (Table 1), proving that grazing the cover crop met performance needs. Heifers in the drylot showed higher average daily gain (ADG) in all three years. However, issues of wind protection, and the difference in forage quality and energy expenditure of heifers on cover crop ground vs. heifers in the protected drylot were not looked at in this particular study.

Cover crop seed mixes included six to seven species at an average cost of $16.25 per acre.

Gaugler's study provides one more step in our research on utilizing cover crops and livestock in an integrated system for the objective of long-term soil health and overall profitability. Further details on this project can be found in the upcoming Central Grasslands 2014 Annual Report at www.ag.ndsu.edu/centralgrasslandsrec.

Erin Gaugler works in her test plots at CGREC.
(Photo by Rick Bohn, CGREC)

County Corner: Alfalfa Weevils

Kelsie Egeland, Emmons County Extension Agent

The weather is starting to look like spring, and that means everyone will be getting into the fields soon. This is a good time to be on the lookout for alfalfa weevils.

Alfalfa weevils have one complete generation per year. The adults (see photo) become active from May through June, and the females lay eggs in the stems of the plant.

After two weeks, the eggs hatch and the larvae emerge from the stem and begin feeding on the growing tips of the plant, creating pinholes in the leaves. As the larvae mature, they continue feeding on the leaf tissue, eventually causing skeletonized leaves.

Larvae are initially slate colored but turn bright green with a white stripe and black head when they mature at approximately 3/8 inch in length.

Scouting the field will allow you to know if alfalfa weevils are present and give you an estimate of how many plants are affected. Fields should be scouted weekly up through the first cutting. Choose five random sites and scout in an "M" pattern.

At each sampling site in the field, select a minimum of 30 stems and cut them off at the base. Invert the cut stems into a 5-gallon pail and vigorously beat the plants in the pail to dislodge the larvae. Larvae also will be feeding in the rolled leaf tips, so make sure to examine the leaf tips as well.

This process will allow you to count the larvae present, and dividing this number by the number of stems cut will give you an estimate of the number of larvae per stem for the entire field. Treatment is suggested at 1.5 to 2 larvae per stem or if you see 40 percent damage on the plant tips.

Alfalfa weevil collected in sweep net (V. Chapara, NCREC, Minot)

Alfalfa weevils also will feed on the regrowth underneath the windrows of the first cutting. Insecticides that control alfalfa weevils are available; if used, please read and follow label instructions.

Staying on top of this pest is better than letting it sneak up on you and reduce your hay yields. If you have questions, call your county Extension agent or me at (701) 254-4811.

Upcoming Field Days around the state:

- July 6 - Central Grasslands REC, Streeter
- July 7 - Hettinger Research Extension Center
- July 8 - Dickinson Research Extension Center
- July 9-10 - Williston Research Extension Center
- July 13 - Agronomy Seed Farm, Casselton
- July 14 - Carrington Research Extension Center
- July 15 - North Central REC, Minot
- July 16 - Langdon Research Extension Center

Cook's Corner - Using North Dakota products

Spicy Hamburger-Cheese Dip

Brown 1 pound hamburger; drain if necessary. Mix in 1 (1-ounce) package taco seasoning mix. Add 1 jar (15-ounce) of salsa *con queso* (with cheese), medium or hot.

Simmer over very low heat until ready to serve. If you would like it a little hotter, add a few diced jalapeno peppers.

Submitted by Sandi Dewald

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Please join us at the

Central Grasslands Research Extension Center Annual Field Day

July 6, 2015

Lunch provided. Check our website for upcoming information.

In this Issue:

One of the new additions at CGREC

Photos by Rick Bohn and Fara Brummer, CGREC