Cows grazing turnip foliage on the creep grazing trial at CGREC.

Table 1. Species composition (% of total DM) of café treatment pastures through time at Central Grasslands Research Extension Center, Streeter, N.D., in 2007.

	Date				
	7-Sept[1]	4-Oct[1]	16-Oct[2]	31-Oct[2]	11-Nov[2]
Cowpea (%)	1.8	1.5	0.3	0.0	0.1
Foxtail Millet (%)	45.0	52.5	45.8	57.0	30.0
Other Forbs (%)	13.5	3.8	2.0	1.0	0.0
Radish (%)	5.0	3.6	5.9	1.8	0.3
Soybean (%)	7.0	3.7	3.8	0.0	0.5
Sunflower (%)	13.7	8.3	6.4	10.8	5.6
Turnip Tops (%)	14.0	9.1	17.8	10.6	8.3
Turnip Bulbs (%)	-	17.5	18.1	18.8	55.3

[1]Samples collected prior to grazing (n=10/paddock).
[2]Samples collected during grazing study (n=3/paddock).

Utilizing Annual Forages to Extend Grazing

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The objective of this research was to determine the effects of annual forage type on beef cow performance under grazing conditions during the fall and early winter in North Dakota.

- Treatment forages at CGREC: foxtail millet, turnips, a forage mix (café) and standing dormant native range.
- The café mixture consisted of turnips, forage radish, cowpeas, soybeans, sunflowers and foxtail millet (Table 1).
- Forage production at the time stocking rates were calculated was 5,013, 5,225, 2,305 and 2,400 pounds/acre for foxtail millet, turnips, café and native range, respectively. Table 2 shows the forage quality.
- Desiccation and, to a lesser extent, grazing by wildlife decreased the amount of cowpeas, soybeans and sunflowers present in the café pastures as the grazing season progressed.
- Table 3 shows the cow performance. Cow body weight increased 2.0 ± 0.35 pound/head/day; however, these average daily gains did not differ (P = 0.29) between treatments. (P-values larger than 0.10 generally mean that the difference between the treatments is likely due to chance rather than a real treatment effect.)
- This data indicates that any of these annual forages would be an acceptable alternative to grazing native range during the early winter.
- Grazing costs were $0.75, $0.83, $1.80 and $1.27/head/day for foxtail millet, turnips, café and native range, respectively.
- Given that both the foxtail millet and turnips produced more forage than café and that no statistical differences were observed in cow performance, producers could benefit from increased stocking rates when utilizing these annual forage crops in their livestock production systems.

Further research is needed to find more cost-effective forage mixtures to make them more economically feasible.

For more information, visit the CGREC Web site at www.ag.ndsu.edu/streeter.

Table 2. Forage quality of annual forages and native range at the initiation of grazing (Oct. 16) at Central Grasslands Research Extension Center, Streeter, N.D., in 2007.

	Treatment			
	Café	Foxtail Millet	Native Range	Turnips
Crude Protein (%)	10.13	12.02	8.15	13.61
NDF (%)	41.92	61.74	65.26	21.58
ADF (%)	23.83	33.02	36.16	16.98
Calcium (%)	1.46	0.45	0.54	1.47
Phosphorus (%)	0.38	0.25	0.15	0.38

Table 3. Performance of beef cows grazing annual forages and native range at Central Grasslands Research Extension Center, Streeter, N.D., in 2007.

	Treatment					
	Café	Foxtail Millet	Native Range	Turnips	SE	*P*-value
Initial BW, lb	1176[ab]	1182[a]	1168[b]	1168[b]	2.22	0.005
Initial BCS	5.27	5.30	5.38	5.22	0.04	0.15
Final BW, lb	1258	1251	1255	1263	9.55	0.85
Final BCS	5.63	5.57	5.47	5.48	0.06	0.31
ADG, lb	1.94	1.65	2.07	2.27	0.22	0.29
ΔBCS	0.36	0.26	0.10	0.26	0.06	0.10

[a]Numbers in the same row followed by the same letter are not significantly different ($p < 0.05$).
[b]BW = body weight; BCS = body condition score; ADG = average daily gain; ΔBCS = change in body condition score.

Cows grazing the cafeteria treatment on the creep grazing study.

Cows grazing turnips: After consuming turnip tops the cows later returned to consume a portion of the bulbs.