



Western Beef
Development Centre

BACKGROUNDING CALVES ON GOLDEN GERMAN MILLET SWATHS

Foxtail millet (*Setaria italica*) or Siberian millet is used primarily as a forage crop. Forage varieties can be over 40 inches in height, and can be cut 75 to 90 days after seeding. Due to its shallow root system, foxtail millet is a poor pasture crop therefore it should be hayed or used for swath-grazing. For optimum quality, foxtail millet should be cut for hay in the late boot to early bloom stage. Varieties of foxtail millet include Butte, Golden German, Manta, White Wonder and “Common”.

In October of 2003, a grazing trial was conducted at the Termuende Research Farm to evaluate calf performance when grazing Golden German millet swaths during the fall period.

Field Management

Soil samples collected in the spring of 2003 indicated available N levels of 40 lb/acre, P₂O₅ at 65 lb/acre, K₂O at 1070 lb/acre, and S levels of 86 lb/acre. Subsequently no additional fertilizer was applied as this field had received heavy applications of livestock manure the previous year.

Golden German millet (cv. Common #1) was seeded on 44 acres where grazing corn had been grown the previous year. Field preparation included cultivating the area with harrow sweeps in late May of 2003. The field was then sprayed with glyphosate [(N-phosphono-methyl) glycine] at 0.75 L/acre on June 15th to control emerging weed populations. A second pre-emergence of Roundup was applied at 0.5 L/acre on June 27th. Following this, Avenge (1.42 L/acre) and Bucril M 44 (0.405 L/acre) were applied for further control of broadleaf weeds.

The crop was seeded June 17th with a Morris M-10 double disc press drill (6-inch row spacing). The drill had double disc openers with depth wings and steel packers. The millet was seeded at 20 lbs/acre or 35

to 45 seeds per linear foot of row due to the larger seed size of this species. The crop was swathed mid-September when the crop was at the 20% heading stage.

Crop Yield and Quality

The millet crop grew quite slowly in June due to limited rainfall of only 1.65 inches. However, yield estimates in August and September were 3446 and 4600 pounds per acre, respectively (Table 1). Millet dry matter yield increased 33% during the last month of the growing season. As millet is a warm season crop it typically produces the majority of its biomass late summer.

It is recommended that millet be checked for nitrate accumulation prior to feeding. Nitrate levels in the millet were quite high during August but reduced to manageable levels when the crop was swathed for grazing in September (Table 1). Protein levels in the crop averaged 14% in September and total digestible nutrients or energy content of the crop was 63 percent.



Figure 1. Clipping sample to estimate yield of Golden German millet (August 2003)

Table 1. Yield & Quality of Golden German Millet

DATE	Lb/acre	Ton/acre	CP ^z	TDN ^y	DE ^x	Nitrates
August 12	3446	1.75	18.2	62.2	2.73	2.30
September 2	4600	2.30	14.1	63.0	2.79	0.6

^zCP=crude protein (%); ^yTDN=total digestible nutrients (%); ^xDE=digestible energy (Mcal/kg)

Nutrient Requirements of Beef Calves

Growing cattle have energy requirements for both maintenance and gain. Energy and protein requirements for a 500 lb growing calf are 11.4% crude protein and 62.5% total digestible nutrients (TDN) to achieve an estimated 2.0 lbs/day of gain. Calves will consume 3.5% of their initial body weight on a high forage backgrounding diet over the feeding period. Therefore these calves should consume an average of 17.5 pounds/head/day over the backgrounding period.

Livestock Management and Costs

One hundred eighty-five (185) calves were fence-line weaned October 9th and assigned to the millet field on October 11th and grazed the swaths until November 6th. Animal access to swaths was controlled with electric fencing and only three to four acres were allocated each grazing period. During the trial the calves grazed an estimated 15 acres of the millet field. Average daily gain and gain per acre were used to evaluate the grazing potential of the millet. Over the twenty-six day period the calves gained 2.34 pounds per day and beef production per acre averaged 750 pounds.

Total project expenses for the backgrounding project are summarized in Table 2. Total pounds gained on 185 head for 26 days at 2.34 pounds per day equaled 11,255 pounds.

Table 2. Cost analysis of grazing Golden German millet

Expenses	Total \$	\$/Acre	\$/Lb Gained
Field preparation	60.00	4.00	
Seed (\$1.20/lb~20 lb/acre)	360.00	24.00	
Seeding	210.00	14.00	
Herbicide (3 applications)	753.60	50.24	
Swathing	150.00	10.00	
Land rent	375.00	25.00	
Total Crop Production Expenses (A)	1908.60	127.24	0.17
Other Expenses	Total \$	\$/Acre	\$/Lb Gained
Labor (checking and moving fence)	427.50		
Fence/water depreciation	37.50		
Supplemental feed	280.00		
Total Other Expenses (B)	742.00	49.47	0.07
TOTAL EXPENSES (A+B)	2650.60	176.71	0.24

Conclusions

This grazing study indicates the potential of Golden German millet to background calves. It is important to point out that veterinary or processing charges were not included in this project. Total cost per pound gained was estimated at 24 cents, which is very reasonable considering average cost of gain in a backgrounding lot was 65 cents per pound during the fall of 2003. Data from this forage crop suggests economic gains can be achieved; however, to better evaluate the production potential, calves need to be backgrounded for at least sixty days on a swathed field crop.