**Emergency Forage Plantings in Central Wisconsin: 2006 Results**

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For most dairy and beef cattle producers in Wisconsin, alfalfa is the primary forage crop used for winter feed supplies. In 2005, we experienced more winterkill which left producers faced with an immediate loss in the supply of high quality forage.

This was an event we faced in 2002-2003 as many alfalfa fields in the Upper Midwest were water-saturated going into winter, and had essentially no snow cover combined with some very cold temperatures. In 2004-2005, we had freezing rain with no snow cover in late December which resulted in a very thick ice formation on many fields. With the concerns about autotoxicity of alfalfa, the ability to replant alfalfa in winter killed alfalfa fields was not possible unless it was a fall new seeding in 2004. Even if producers risk attempting to re-seed alfalfa after alfalfa, the seeding year productivity always falls far short of an established stand's productivity.

In light of this situation, most producers were faced with a forage supply shortage and would generally need to plant an annual forage crop to fill the gap. Proper selection and management of the emergency forage can be a key to the farm's short- and long-term profitability and sustainability.

Central Sands of Wisconsin Trial - 2006:

For the past few years, researchers at the University of Wisconsin and the University of Minnesota have conducted trials on yield and feeding value of various annual crop alternatives. Since none of the Wisconsin and Minnesota trials were done on sandy soil, many producers were interested in what would be the best emergency crop in the Central Sands area. Using funds from a UW-Extension grant and the land of an Adams County farmer located north of Grand Marsh, a 13-acre parcel was chosen as a site for the trials. Land was tilled by disking on May 27 to control weeds. On June 1, the entire field was planted using the 10 ft no-till drill. Most seeds were planted into moist soil at a planting depth of 0.75 inch to 1.5 inch. All the crops tested were planted into one acre plots. From June 1 to July 25, the field received 2.0 inches of rain. From July 25 to August 10, the field received 4.5 inches of rain.

On April 1, two tons per acre of 80-89 lime were applied. On May 26, 35 pounds per acre of nitrogen and 100 pounds per acre of potassium were applied. On August 14, the plots were harvested using a pull-type windrower/conditioner at the 4-inch level. With

good drying conditions, the plots were ready to harvest in 48 hours and were round baled. Five sub-samples per harvested crop were randomly sampled from 10 ft by 10 ft sub-plots. The yield data, pounds milk per ton, percent crude protein, and pounds milk per acre in Table 1 are the means of these sub-samples.

Table 1. Emergency forage plots in the Central Sands of Wisconsin

| **Entry** | **Planting Date June 1, 2006** | | **Aug 14 Cutting** | | **Lab Analysis** | |
|---|---|---|---|---|---|---|
| Species | Rate/acre | Cost/acre | Ton DM/acre | lb Milk/ton | % CP | lb Milk/acre |
| Silage Corn | 20 lbs | $18.00 | 4.6 | 3,289 | 6.4 | 15,129 |
| UW Grazing Composite Corn | 20 lbs (25,000 plants) | | 4.1 | 3,392 | 8.7 | 13,907 |
| BMR Forage Sorghum | 30 lbs | $15.60 | 3.7 | 2,926 | 6.0 | 12,191 |
| Piper Sudangrass | 30 lbs | $27.00 | 4.8 | 3,227 | 5.9 | 14,045 |
| Manta Millet | 20 lbs | $8.40 | 3.4 | 3,094 | 5.3 | 10,520 |
| Japanese Millet | 30 lbs | $15.00 | 3.2 | 3,149 | 6.4 | 10,077 |
| German Millet | 20 lbs | $14.00 | 3.6 | 3,051 | 5.4 | 10,984 |
| Hybrid Pearl Millet | 25 lbs | $18.00 | 4.2 | 3,178 | 8.0 | 13,348 |

There were major differences in yield, pounds milk per ton, crude protein, and pounds milk per acre between the species in the trial. The piper sudangrass, silage corn, and hybrid pearl millet had the highest yields of the 8 species in the 2006 trial. The Japanese and Manta millets had the lowest yields. The UW grazing composite corn, silage corn, and piper sudangrass produced the highest pounds of milk per ton, whereas the German millet and BMR forage sorghum produced the lowest. The UW grazing composite corn, hybrid pearl millet, silage corn, and Japanese millet had the highest percent crude protein. The Manta and Japanese millets and the piper sudangrass had the lowest percent crude protein. The silage forage corn, piper sudangrass, UW grazing composite corn, and hybrid pearl millet produced the highest pounds of milk per acre. The Manta, German, and Japanese millets produced the lowest pounds of milk per acre.

Sudangrass has been a popular choice of area growers and appears to be the yield leader in total yield (4.8 tons DM/acre) and second in pounds milk per acre (14,095 lb milk per acre). These results were similar to 2005. The silage corn was a close second as it was in 2005.

The drier conditions during 2006 compared to 2005 had a large negative effect on the factors measured. For comparison purposes, the measured values for the species grown in 2005, but not 2006, were not included. The yield per acre decreased by 26 percent in 2006 compared to 2005. The pounds of milk per ton decreased slightly by 1 percent. The percent crude protein decreased by 45 percent. The pounds of milk per acre decreased by 22 percent. The rankings within the measured factors, however, were similar between 2005 and 2006.

Another way to look at the results is to calculate the costs per acre to produce one of the measured factors. For example, the cost per ton of dry matter per acre (Table 2) ranges

from $2.47 per acre for Manta millet to $5.63 for piper sudangrass. Although the piper sudangrass had the highest yield (4.8 tons DM/acre) in the trial, the seed cost of $27.00 per acre resulted in the highest cost per ton of dry matter per acre.

Table 2. Cost per acre to produce a ton of dry matter for the emergency forage plots in the Central Sands of Wisconsin

| Species | Cost/acre | Ton DM/acre | Cost per ton DM/acre |
|---|---|---|---|
| Manta Millet | $8.40 | 3.4 | $2.47 |
| German Millet | $14.00 | 3.6 | $3.89 |
| Silage Corn | $18.00 | 4.6 | $3.91 |
| BMR Forage Sorghum | $15.60 | 3.7 | $4.22 |
| Hybrid Pearl Millet | $18.00 | 4.2 | $4.29 |
| Japanese Millet | $15.00 | 3.2 | $4.69 |
| Piper Sudangrass | $27.00 | 4.8 | $5.63 |
| UW Grazing Composite Corn | No value | 4.1 | No value |

The cost per acre per percent crude protein ranges from $1.58 per acre for Manta millet to $4.58 for piper sudangrass. Although the Manta millet had the lowest percent crude protein (5.3%) in the trial, it also had the lowest seed cost of $8.40 per acre. This combination resulted in the lowest cost per acre to produce a percent of crude protein.

The cost per acre for pounds milk per ton ranged from $0.0008 for Manta millet to $0.0017 for piper sudangrass. The ranking within this category was similar to the cost per acre to produce a ton of dry matter. The cost per acre for pounds milk per acre ranged from $0.0008 for Manta millet to $0.0019 for piper sudangrass. The ranking within this category was similar to the cost per acre to produce a ton of dry matter.