

## Cool & Warm Season Forage Crops

By Lorne Klein, PAg  
Weyburn, SK

On cultivated land, forage producers can grow either annual or perennial crops. If the decision is made to grow annuals the crop can be baled for greenfeed, chopped for silage, or left windrowed in the field for swath grazing. Swath grazing saves the costs of baling or chopping, hauling, stacking or packing, and feeding. Swath grazing may also save the cost of manure removal.

When swath grazing, ideally the crop should be cut in late August or early September to minimize weathering in the windrow through fall and winter. With the traditional cool season crops (oats,barley), the seeding date then needs to be delayed to mid June. This delayed seeding normally causes a loss in yield. A rule of thumb for cool season crops in Saskatchewan is as follows: For each week that seeding is delayed beyond May 25, expect dry matter yield to drop by 10%. Therefore, a disadvantage of swath grazing cool season crops is the normally reduced yield due to delayed seeding date.

The ideal annual for swath grazing would be a cool season plant with a significant delayed maturity. This crop would be seeded in early spring to take advantage of the moisture. It would remain immature through the summer, and then be windrowed in September after a killing frost. Unfortunately, this type of crop does not exist.

Warm season annuals are crops that have potential for swath grazing. Warm season annuals are seeded later in spring after soils have warmed to at least 10°C. They thrive in the heat of summer, growing best at 32-35°C. When growing conditions are favourable, they are more water efficient than cool season crops. The later maturing species can be left standing until early September.

Forage trials with cool and warm season annuals were seeded 2002-2004 to compare forage yield and quality. The trial locations in each year were: 2002 – Redvers, Indian Head, Canora; 2003 – Redvers, Indian Head, Canora, Melfort, Swift Current, Scott; 2004 – Indian Head, Canora, Scott. The crops seeded in each year are listed below.

	2002	2003	2004
Pinnacle oats	X	X	X
Ranger Barley	X	X	X
Crown millet	X	X	X
Siberian Red millet	X	X	X
Golden German millet	X	X	X
Strain R German millet	X	X	
White Wonder foxtail millet	X	X	
Sorghum-Sudangrass	X	X	X
Pearl millet	X	X	X
Pioneer 39T71 corn – low input		X	X
Pioneer 39T71 corn – high input		X	X

The trial examined two seeding dates and two harvest times. The seeding dates were targeted for May 15 and June 10. In theory the May seeding date would favour the cool season crops, and the June seeding date would favour the warm season crops. The first harvest was milk stage for oats, soft dough stage for barley, 50% milk line for corn, and 2-3 weeks after heading for the millets and sorghum-sudangrass. The second harvest was 2 weeks after the first.

**Results – 2002** Precipitation was below average in April and May, average in June and July, and above average in August. This favoured the later maturing warm season crops, as they continued to grow through August. Golden German millet and White Wonder foxtail millet produced forage yields equal to or greater than Pinnacle oats and Ranger barley. In some cases the millet yields were 20-50% higher than oats and barley.

**Results – 2003** With the exception of Scott, moisture reserves in spring were good to excellent. Precipitation from April to August was below average at all sites. At all sites except Swift Current, the yield of later maturing millets was equal to or greater than oats and barley.

**Results – 2004** Moisture conditions were good, but temperatures were well below average, with an August 20 frost. Warm season crop yields were approximately half of oats and barley.

#### **Conclusions and Recommendations**

1. Later maturing millets have higher yield potential than early maturing millets.
2. When growing conditions are good, later harvest results in significantly higher dry matter yield with both cool and warm season crops.
3. Delayed seeding of cool season crops usually results in a yield reduction.
4. Delayed seeding of warm season crops does not have a consistent effect on yield.
5. Warm season crops are slow to establish and are vulnerable to weed pressure the first 5-6 weeks. Weed control is paramount. Some warm season plots had no crop due to wild oats.
6. Warm season crops require warm soils (preseeding tillage, low trash, summerfallow).
7. Corn has the highest yield potential of all crops.
8. When things do not go right, corn can be an expensive forage crop.
9. Pearl millet had poor yield in most cases.
10. Forage quality of the millets is similar to oats and barley. The stage of cutting has a greater effect than the species of plant.
11. Forage quality of the millets appears to hold quite well in the windrow from September to December.
12. If you are planning to bale or silage, seed oats or barley in early spring.
13. If you are planning to swath graze, consider a warm season crop – especially if you have had previous success.
14. If it is mid June you are needing to seed forage, consider a warm season crop.
15. Weather conditions can make you look like a genius or a fool.

The 3 years of data from this trial is currently being compiled and analysed. A final report of the project will be available in April 2005.