Annual Alternative Forage-Type Ceral/Grass Crops for Forage Production

Trial Site: Fairview Research Farm
Research Coordinator: Dr Akim Omokanye
Data from 2019

Annual forages are commonly used for hay, silage or pasture to compliment perennial forage production, or used as emergency feed. In addition to the traditional oats and barley crops used for forage for livestock production in the Peace River region, several other forage-type grasses and cereals are becoming popular. These alternatives are mostly new to us in the Peace Country. Some require warm soil to germinate and warm weather to thrive. Many of the alternative feeds vary widely in nutrient content, making an analysis or some assessment of the feed value necessary. PCBFA to evaluates alternative annual crop species and varieties for adaptation and forage potential. The evaluation will provide producers with more information about the growth, forage production and quality (energy, protein and major mineral levels) of these crops.

Grass Species - Varieties	Seeding Rates
Red Proso Millet (Warm Season Crop)	25lb/acre
White Proso Millet (Warm Season Crop)	25lb/acre
Japanese Millet (Warm Season Crop)	25lb/acre
Red Siberian Millet (Warm Season Crop)	25lb/acre
Sorghum Sudan Grass (Warm Season Crop)	30lb/acre
Paramount Soft White Wheat (Cool Season Crop)	34.3 plants/ft2
AC Andrew Soft White Wheat (Cool Season Crop)	34.3 plants/ft2
Htkor Festulolium (Cool Season Crop)	20lb/acre
Perun Festulolium (Cool Season Crop)	20 lb/acre
Barfest Festulolium (Cool Season Crop)	20 lb/acre
Firkin Italian Ryegrass (Cool Season Crop)	12lb/acre
Melquatro Italian Ryegrass (Cool Season Crop)	12lb/acre
Tetra Brand Annual Ryegrass (Cool Season Crop)	12lb/acre
Sabroso Annual Ryegrass (Cool Season Crop)	12lb/acre

Dry Matter

The forage DM yield of alternative forage-type cereal crops tested in this trial varied from 4,934 lbs/acre for Sorghum Sudan Grass to 9,770 lbs/acre for AAC Paramount soft white wheat (Table 2). Only soft white wheat produced more DM than CDC Maverick Barley, AC

Andrew produced ~1000lb more (9471lb.acre), and AAC Paramount produced ~1300lb more per acre (9770lb/acre). Of the warm-season crops tested, red proso millet significantly produced higher forage DM yield (8,180 lbs/acre) than other warm-season crops tested within this trial. The 3 Festulolium varieties produced similar forage DM yields (5466 – 6653lb/acre). The 4 annual/Italian ryegrasses produced 7,092-8,922 lbs/acre.

The most impressive forage DM yields came from red proso millet (8180lb/acre), AC Andrew soft white wheat (9471lb/acre) and AAC Paramount Soft white wheat (9770lb/acre), Firkin Italian Ryegrass (8911lb/acre) and Tetra Brand Annual Ryegrass (8922lb/acre). All of these were comparable to CDC Maverick barley forage DM yield this year (8473lb/acre).
It is important to note that the warm season crops require soil warmer temperature to germinate than cool-season crops. Caution is recommended when any of these crops are grown as monocultures. This year seemed to be colder than average, so a warm-season crop such as sorghum Sudan grass which would typically produce >3.5-4.0 tons DM yield/acre in the area as a monoculture, only produced about 2.5 tons/acre this year.
It should be noted that the Festulolium varieties and the 2 Italian ryegrasses showed great regrowth ability after harvest -a potential advantage for more cuts during summer/fall.

Forage Quality

Crude protein (CP) -The CP of all crops was above 10% this year, with Melquartro Italian ryegrass recording the highest CP (17.5% CP).
Apart from Sorghum Sudan grass (16.4%CP), Festulolium varieties and Italian ryegrasses seemed to have better forage CP than other crops. Only AAC Paramount Soft white wheat seemed to fall short of the required 11% for a lactating beef cow. All the other crops, including CDC Maverick barley, had sufficient protein for a lactating beef cow.

Melquartro Italian ryegrass consistently had higher TDN, digestibility and RFV (relative Feed Value) than other crops. All crops exceeded the TDN requirements of mature beef cattle and were well within the 65 -70% TDN required by young beef cattle.

The forage Ca varied from 0.27 to 0.57% for the alternative cereal/annual grass crops tested including CDC Maverick barley .

The forage P varied from 0.20 to 0.32% in this study. In most cases, CDC Maverick barley had lower for-age P and K than other crops. However, CDC Maverick barley did have higher forage Mg and Na than other crops tested. No crop that was able to completely meet the Ca, P, Mg and Na requirements of mature beef cattle. Mineral supplementation would be needed when any of these crops are feed to beef cattle.

For more information on PCBFAs Alternative Brassica and Forb research, contact us at info@pcbfa.ca or visit our website to view our project reports at peacecountrybeef.ca