"Annual Forage Variety Trial"

# FORAGE VARIETY YIELD AND QUALITY DIFFERENCES

**PROJECT NO.: 0008-016**
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**Background:** Each of Alberta's crop zones has agronomic and forage yield information for grasses and legume varieties. Grain yield data (but not forage yield data) is also reported for cereals, pulses, and oilseeds. Cattle producers making forage variety choices need more information. Firstly, forage yield is important, but varieties can also vary in feed quality (nutrient content and digestibility). Secondly, there is no forage yield or quality information available for annual crops. As a result, Alberta producers who are selecting forage varieties to seed for swath-grazing, silage or greenfeed do not have unbiased, third-party information regarding quality and yield.

**Objectives:** To determine which varieties of barley, oats and triticale have the highest whole-plant forage yields and produce the highest quality cattle feed in northeastern Alberta, and to determine if millet, peas, Italian ryegrass, fenugreek, or corn are economically feasible alternatives to conventional annual forage crops for whole-plant forage production and feed quality.

**What they did:** Researchers compared 13 varieties of barley, 12 varieties of oats, five varieties of triticale, millet, peas and fenugreek (two varieties each) as well as corn, oats and Italian ryegrass (one variety each). Yield and forage quality (based on near infrared spectroscopy) was compared among the varieties, along with production costs. The first year of the trial, 2008, focused on alternative forages, where the last two years compared more pulses and pulse mixtures, as well as late seeded crops such as millet. All of this information, along with weather data, was collected at three sites in northeastern Alberta: Lac La Biche, St. Paul and Fort Kent.

**What they learned:** Weather and other growing conditions varied between locations and years, as is common, which makes it tough to pinpoint a clear winner in terms of yield and quality. In addition, some varieties were removed and others added as the trial continued, making it difficult to compare varieties with one year of data to other varieties with three years of data. However, there were some varieties that performed consistently well over all locations and years. The triticale varieties consistently produced the top yields, but some varieties of both triticale and oats would not meet the nutritional needs of a cow in late gestation. It is important to match the forage grown to location and purpose.

There was no barley variety that clearly outshone the others in terms of having the most desirable yield, percent crude protein and percent total digestible nutrients, and the same held true for oats. Pronghorn was the top triticale variety in all categories. Corn varieties showed an increased yield and percent total digestible nutrients when compared to other alternative

forages, as well as traditional cereal forages, but fenugreek consistently cost the least to produce at $31.98 per dry matter ton in 2008 (cost to produce barley in 2008 was $38.77 per dry matter ton). A mixture of Canafen fenugreek and Sundre barley produced the best yields and percent total digestible nutrients of the fenugreek and fenugreek mixtures, but was slightly lower in crude protein than the Canagreen fenugreek alone. Pulse/cereal mixtures tended to have lower yields than cereal crops, but higher crude protein levels.

**What it means:** Producers generally use past experience, the advice of their neighbors, and various publications to make variety selection decisions, but whole plant forage production information can sometimes be lacking. Demonstration trials, such as this one, provide more complete information regarding forage yields, quality, and production costs, which can help them to identify the most appropriate forage variety to seed for greenfeed, silage, or swath grazing. It is important to consider the end use of the forage, as well as location, to choose the best forage for your needs. Previous experience with similar Regional Variety Trails has shown that there can be a 15% increase in production from selecting the best variety over an average variety, leading to an average increase of $25/acre. While barley, oats and triticale are the most commonly used species for forage production, other annuals may also provide cost-effective choices for producers, and should be considered. Data from this project and others like it are compiled into the Alberta Seed Guide (www.seed.ab.ca), a useful resource for producers looking to choose the best forage variety for their purpose.

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