



Comparison of Alfalfa Varieties in the Northern Peace Region

Background: The most productive and widely adapted forage species is alfalfa. Alfalfa is a perennial plant and has been known to live longer than five years or more. The Experimental Farm in Fort Vermilion recently sod seeded into an Anik alfalfa stand that was estimated at twenty years of age. Thus decision to produce alfalfa and choose an appropriate variety may have long-term consequences.

There are over 230 alfalfa varieties in North America and every year this number increases by 20-30. Varieties differ substantially in regards to winterkill. Varieties with resistance to diseases (bacterial wilt, Fusarium wilt and root rot) and high winter hardiness can reduce chances of winterkill. Planting high yielding and well-adapted varieties ensures good yields due to healthy, vigorous and long-lasting stands. Severe winter conditions in Mackenzie County make variety hardiness a primary consideration in variety selection.

Objective: To identify suitable varieties for Mackenzie County based on winter hardiness and yield.

Materials and Methods: A complete block design with four replicates was used. Seeds of the 10 alfalfa varieties were treated with commercially available inoculants. Direct seeding on barley stubble was done on June 09 in 2004, using a 4-row plot seeder, 0.5 inches seeding depth, and 20 lbs/ac seed rate. Plot size was 6.5 m by 2 m. Row length was cut back to 5 m at harvest.

Plant mortality was estimated on May 16, 2005, using a 0 to 99% scale. Odyssey herbicide was sprayed @ 17 g/ac and water volume of 40 L/ac on May 20. Before each forage harvest, on July 05 and August 16, plant samples were hand clipped from non-border rows of each plot. These samples were dried at 140 °F.

In 2006, Roundup herbicide was sprayed @ 670ml/ac and water volume of 40 L/ac on June 8. Alfalfa was harvested by forage harvester on June 30 and Aug. 29. Samples were taken from the harvest and dried at 100 °F.

Results and Discussion: In 2005, good moisture conditions and absence of any disease, insect, and weed problem throughout the growing season promoted excellent growth for all the varieties, with the exception of Anik. Thus it was possible to have a second cut for all varieties, except Anik. Algonquin had the highest (7.0 ton/ac) yield and Anik had the lowest (2.5 ton/ac) yield (Figure 1). Yield from 7 varieties (Peace, Rangelander, Matrix, Multi5301, Spredor 3, Magnum 3801, and Forecast) was in a narrow range of 4.9 to 5.4 tons/ac. Plant mortality was relatively low (6 to 10%) for the Algonquin, Multi 5301 and Spredor 4; medium (16 to 17%) for the Rangelander, Spredor 3 and Magnum 3801; and high (24 to 27%) for the Anik, Multi 5301, and Spredor 4 (Table 1).

Higher than average moisture conditions throughout the growing season of 2006 promoted excellent plant growth, and all the varieties had higher yields compared to the 2005 (Figure 1). Anik and Peace had the highest yield while Spredor 4 had lowest yield. There were no significant differences in the protein content among alfalfa varieties in 2006 (Table 1). In fresh alfalfa cut on June 30, the moisture content ranged from 61.3 to 73.0%, and dry matter ranged from 16.1 to 22.8% (Table 1).

Based on the yield in two years, Anik, Peace, Rangelander and Algonquin were high yielder (>20 tons/ac), Spredor 4 as low yielder (11.7 tons/ac), and other varieties were medium yielder (15.2 to 17.8 tons/ac).

Conclusions: A wide range in the mortality and yield of different varieties indicates that these parameters can be used to select a suitable variety. No differences were found in the protein content of varieties.

www.aginfont.com (Alfalfa Production in North America)

Acknowledgements: The 2005 and 2006 reports were written by MARA staff.

Literature Used: *www.agric.gov.ab.ca (Alfalfa Stands and Survival); www.gov.on.ca (Winterkill and Factors Affecting the Growth of Alfalfa);*

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Table 1. Alfalfa mortality in 2005; plants, protein content, moisture content, and dry matter in 2006; and total yield in the 2005 plus 2006 seasons.

Variety	2005 Mortality %	2006 Plants #/m	2006 Protein %	2006 Moisture %	2006 Dry matter %	2005+2006 Yield tons/ac
Anik	24	20	5.8	68.4	18.5	23.4
Peace	6	13	6.3	61.3	16.2	25.8
Rangelander	16	11	5.6	70.6	18.9	21.1
Algonquin	6	12	6.1	73.0	22.5	20.9
Matrix	9	22	6.7	70.7	22.8	17.8
Multi 5301	26	12	6.2	67.9	19.5	16.6
Spredor 3	17	5	5.7	70.8	19.6	15.5
Magnum 3801	17	17	6.4	68.2	20.2	15.2
Forecast	10	13	5.6	65.4	16.1	15.2
Spredor 4	27	5	5.3	69.0	17.2	11.7

