

MANITOBA GREEN GOLD - AN EXTENSION PROJECT LINKING HIGH QUALITY HAY WITH HIGH PROFITS

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INTRODUCTION

Improving the quality of harvested forage is seen as an important step in improving the productivity of Manitoba's beef, dairy and cash hay operations. One of the most important determinants of forage quality is stage of maturity when harvested. Timely cutting is particularly important during first cut because it represents a major portion of the total harvest, and forage quality drops rapidly during this period.

Challenges facing the adoption of timely cutting include work load conflicts with annual crop production in mid June, and a perception that reduced yields would not be offset by quality gains. Average forage quality of 3900 samples submitted to a Manitoba feed testing lab in 1994 was RFV 105.8, 14.8% protein and 57% TDN (Norwest Labs, 1995). A forage extension project, called Manitoba Green Gold, was initiated by the provincial extension service to promote timely cutting of first cut alfalfa hay by:

- monitoring forage quality of standing hay, and distributing results via extension staff and media
- calculating cost of forage production, and relating costs to the quality of harvested forage. A secondary goal of the project was to investigate the level of investment in forage machinery, and relate it to cost per unit output.

METHODS

Twenty seven forage growers participated in the study in 1995, and 35 in 1996. Each grower was selected by a supervisor, who was in most cases the district extension representative. The supervisor was responsible for collecting the forage samples and data required for the project. The project consisted of the following two major components;

Forage Quality Monitoring

Alfalfa samples were taken twice weekly during the month of June. The samples were taken prior to 9:00 am from a representative area of the field, by cutting the alfalfa at mower height. Any weeds or grass were removed from the sample. In 1996, two timothy stands were also sampled. Samples were then sent to Norwest Labs, Winnipeg MB and analyzed for forage quality. In 1995, samples were analyzed by wet chemistry; in 1996 near infrared spectroscopy (NIRS) was used, calibrated by wet chemistry against the samples taken in 1995. The results of the Manitoba Green Gold project were distributed using local extension offices, radio reports, and in some cases the printed media. Relative Feed Value (RFV) was used as the primary quality indicator, due to its simplicity, but ADF, NDF, and crude protein were also available. Producers interested in high quality hay were encouraged to aim for a RFV 150 (approximately 30% ADF, 40% NDF) by harvesting when the forage quality was approximately RFV 165 to account for losses during curing and harvesting (Undersander, pers com.). Results were made available to producers within 48 hrs of sampling in 1995. In 1996, results were available 24 hrs after harvest.

Cost of Production Study

Participants were asked to provide agronomic information for the forage stand included in the Manitoba Green Gold project, including year established, alfalfa variety, grass species (if used), soil type, and input usage. At each harvest, cutting dates, stage of maturity (of alfalfa), harvest date, and harvest method and yield were determined. Harvested forage was sampled and analyzed for quality using NIRS.

Forage machinery costs were calculated by asking the grower to complete a questionnaire regarding custom work (if any), machinery ownership (make, model, age, estimated current value, estimated annual repair costs), total hay and straw acreage harvested, and average life span of forage stands. Information relating to tractor costs was not collected, due to difficulties in allocating

costs to the forage portion of mixed farming enterprises. A spreadsheet was developed which calculated the cost of production on a per acre and per ton basis. Equipment capacity, power requirements, and field efficiency were taken from engineering reports provided by Prairie Agricultural Machinery Institute. Labour was charged at \$8/hr, interest at 6% per annum, and depreciation at 16% per annum (Friesen, 1995). Tractor costs were calculated at \$0.26 per horsepower hour (Friesen, 1995). Establishment cost was assumed to be \$67/acre (Gutheil and Campbell, 1995), and this cost was distributed over the average life of forage stands on the participant's farm. Results were expressed as cost per ton, not including land and management costs.

RESULTS AND DISCUSSION

Forage Quality Monitoring

Results are summarized in Figure 1. Forage quality of standing alfalfa declined rapidly during the sampling period in both years. Average quality decline for alfalfa during the sampling period was RFV 5.3/day in 1995 and RFV 4.4/day in 1996. Fields in the northern portion of Agro-Manitoba followed a similar pattern to southern fields, but averaged 20 RFV points higher (data not shown). There appeared to be little differences among cultivars in rate of quality change. Crops grown on soils identified as sandy were approximately 3 days earlier than stands grown on clay soils (data not shown).

Analysis of the harvested first cut hay revealed that quality declined following cutting. Quality differences between standing alfalfa and actual forage harvested can be attributed to a combination of several factors, including presence of grass and weeds not included in the quality monitoring samples, respiration and leaf loss after cutting, weathering, and sampling error. Differences in quality between standing alfalfa on the cutting date and the forage actually harvested ranged from 0-80%, averaging 25%. In 1996, two timothy stands were also sampled (Figure 1). Quality dropped at a rate of approximately 2 RFV points/day. Because most forage stands in Manitoba are seeded to a mix of alfalfa and grass, the grass stands were a useful guide for making a cutting date recommendation for mixed stands.

Producer interest in the quality monitoring project was excellent. Availability of current data during a pivotal decision making period was seen by extension staff as very effective tool for encouraging earlier cutting.

Cost of Production Study

Results are available for 1995 only. Yields ranged from 1.5 ton/acre, to 4.39 ton/acre, averaging 2.8 ton/acre. Average cost of production, not including land and management was \$42 /ton dry matter (DM), or \$103/acre, but individual costs varied widely. Costs per ton varied from \$19-106 /ton DM. Enterprises with less than 150 forage acres generally had higher production costs, due to increased machinery costs per ton. Producers harvesting feed in the range of RFV 145-180 still had first cut yields of approximately 1.5 ton/acre, which is generally considered acceptable in Manitoba (Figure 2). There was no relationship between cost of production and quality (data not shown), indicating that high quality hay does not necessarily cost more to produce.

The wide range in calculated production costs from farm to farm were useful in encouraging growers to evaluate their own costs of production, especially costs of machinery ownership.

REFERENCES

- Friesen, O.H.** 1995. Farm machinery rental and custom rate guide. Manitoba Agriculture - Farm Management
- Gutheil, C and D Campbell,** 1995. Guidelines for estimating alfalfa hay cost of production. Manitoba Agriculture - Farm Management

Figure 1
Manitoba Green Gold

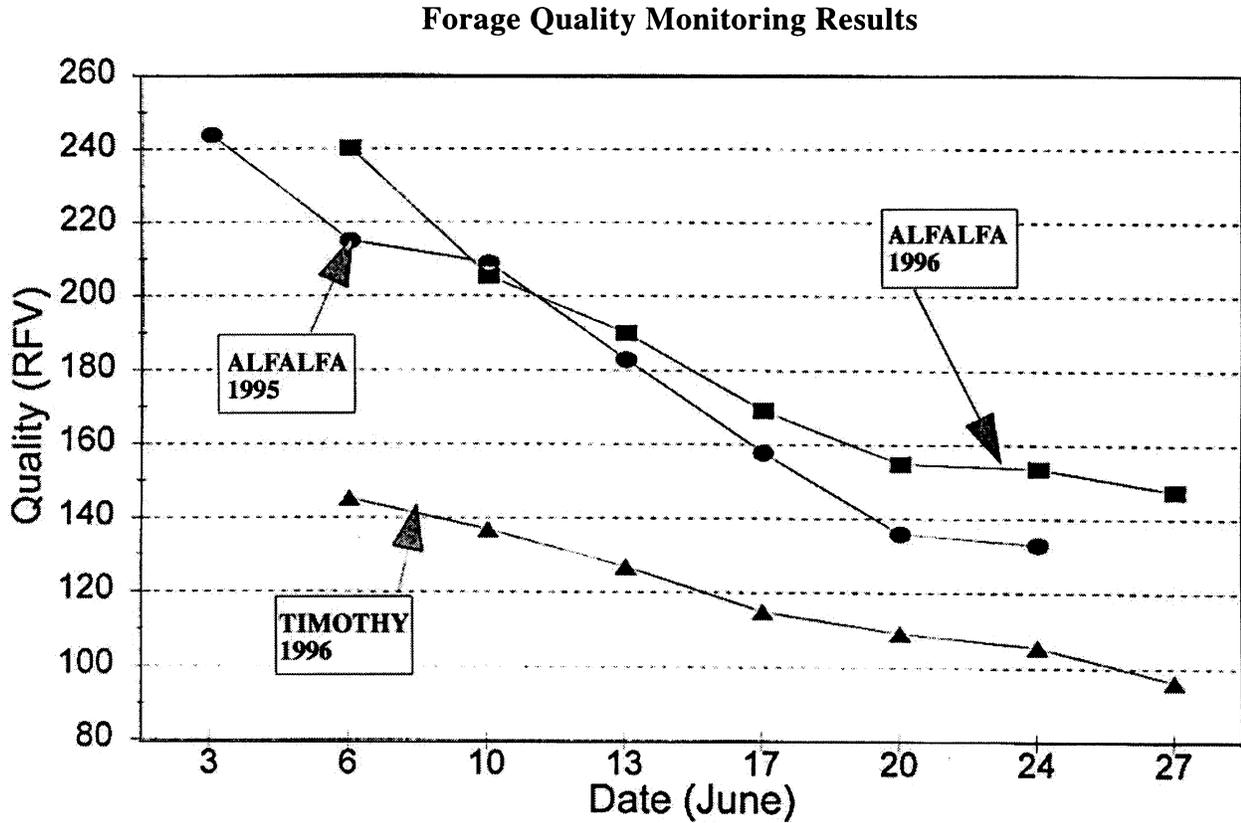


Figure 2
Manitoba Green Gold (1995)

