

SPECIFIC CROP MANAGEMENT RECOMMENDATIONS

TWELVE STEPS TO HIGH ALFALFA YIELDS

Alfalfa is the most important forage crop grown for hay in BC. It has the ability to produce palatable and nutritious forage under a wide variety of climatic and soil conditions.

The livestock industry requires a considerable supply of hay; therefore, it is essential that supplies are increased. This requirement and the increased revenue for the hay grower point out the desirability of increasing yields of alfalfa hay. A high legume content is also required to maintain high forage quality. This publication was prepared to provide specific detailed information giving TWELVE STEPS TO HIGH YIELDS of alfalfa hay in BC

Step 1. Selecting the Field

The best stands of alfalfa are obtained in well-drained, deep, loamy soils that have a high water holding capacity. The best soil pH range for optimum alfalfa production is between 6.5 and 8.0 (near neutral). However, this crop will grow on a wide variety of soil types from sand to fine textured clay. Stands on light, sandy soils require concentrated irrigations or good subsoil moisture for maximum yields.

Unsuitable areas are shallow or extremely compact soils, hardpans, soils with fluctuating water tables, or areas subject to periods of flooding. Saline soils can be used but seedlings are less tolerant to salinity than older plants. Therefore a heavy irrigation prior to planting may help to get a stand established on saline areas. Alfalfa should not be grown on soils with a pH less than 6.0 unless lime is added. Sufficient lime should be added to establish pH of 6.5 to 7.0.

Step 2. Preparing the Seedbed

The ideal seedbed is moist, mellow, and firm so seed that the soil particles are in close contact with the seed. It is free from excessive trash and vegetation, which would interfere with the seeding. A well-prepared seedbed will require

considerably less seed to establish a good stand. Many stand failures can be traced directly to poor seedbed preparation.

A good seedbed can be obtained by plowing in the fall, discing several times in the spring, and harrowing to control weeds until planting time. Minimum spring tillage must be practiced to maintain soil moisture for good establishment under dryland conditions.

If the spring plowing is necessary, extra harrowing may be necessary to settle the seedbed.

On most soil types a culti-packer can be of considerable assistance in preparing a good seedbed. On heavy clays and colder soils, however, the seedbed should be left more cloddy and less firm to avoid crusting. In this case, heavier seeding rates would be necessary.

Step 3. Fertilizing

A soil test before seeding and at two year intervals is highly recommended. If test information is not available, however, general information can be used. Refer to Soil and Fertility Management Section.

Step 4. Choosing a Variety

Refer to your seed dealer for the latest varieties. Things to look for when selecting a variety are winter hardiness, disease resistance, and yield.

Step 5. Inoculating the Seed

Alfalfa seed should always be inoculated with Alfalfa inoculum before seeding. Use pre-inoculated seed or follow the instructions on inoculant packages.

Most inoculants sold in BC contain at least 50 per cent of acid-tolerant strains of Rhizobium.

Step 6. Sowing Alfalfa

Seed should be sown in a moist seedbed one-quarter to one-half inch deep in fine-textured soils and one-half to one-inch deep in coarser soils. The best method for accuracy and minimum requirements is a culti-packer seeder (a Billion type seeder), which gives uniform distribution and good depth control. Alfalfa can be seeded with a drill (with grass-seed

attachment) or by a hand- operated cyclone seeder.

In dry soils, irrigation before seeding is preferred. It firms the seedbed and makes inoculation effective. Alfalfa seedlings have limited food reserves and cannot emerge if planted too deep or where the soil surface crusts.

Step 7. Rate of Seeding

Rates of seeding vary from 6 kg/ha on very dry-land sites up to 20 kg/ha for the coastal region. The rate needed will depend on soil moisture, method of planting, and climatic factors. .

The recommended rate for most areas of the interior is 10- 12 kg/ha. (9 to 10.5 lbs./acre). Less seed is required on a well-prepared seedbed

Step 8. Time of Seeding

Early spring seeding is recommended on both irrigated and dry hay land. This permits seedlings to develop good root systems by mid-summer to endure the hot, dry weather. It also helps considerably to reduce winterkill. Late summer up to mid-September seedings can be very successful, but there is some risk of seedling loss if hit by an early frost. You should have a minimum of 6 weeks of growth before a killing frost. Dormant seedings are generally not recommended as legume seed viability is affected over the winter.

Step 9. Companion Crops

All companion crops seeded with alfalfa will compete for moisture, light and fertility.

If extra yield or weed control is desired and moisture is not a limiting factor, a companion crop may be sown at 40 - 50 kg/ha. Cereal varieties will provide maximum feed value if cut at the soft-dough stage. Alfalfa re-growth before the end of the season will reduce the chance of winterkill.

If moisture is limited, a companion crop should not be grown or taken off early.

Step 10. Irrigating Alfalfa

Irrigation should be frequent enough so that no when stress is put on the plant by lack of moisture. A new stand needs more frequent irrigation because roots are shallower. Alfalfa is a deep-rooted perennial crop, which requires soil moisture to a depth of 4 feet or more for maximum production. This means that a properly designed irrigation system is essential. When a crop is harvested, the top soil should be dry. It is important that a minimum amount of time elapses from water shut-off, just before harvesting, to the resumption of irrigation just after harvesting. Under favorable conditions, the next hay crop will be ready in 30 to 40 days. Late- fall irrigation has proven beneficial in reducing winter losses. Moist soil going into winter helps winter survival.

Step 11. Controlling Weeds

For an alfalfa stand to remain productive it is important that perennial weeds are removed before seeding. Usually annual weeds are a problem when seeding alfalfa. Companion crops or herbicides can be helpful for reducing weed competition. Weeds can be controlled by early clipping or with herbicides. A fact sheet is available on alfalfa weed control for specific weed problems.

Step 12. Stand Management

If all the preceding steps are followed, one good cut of hay (2-3 tons per acre) can be expected during the seeding year. On any alfalfa stand, no cutting or grazing should be made during late August until mid-September. This allows for production and storage of food reserves in the crown and root, giving stronger plants to withstand stress. Cutting or grazing in October is less damaging to the crop than the mid- August to mid-September period. In Zone 3, the time to avoid cutting is somewhat earlier (early to mid-August) with cutting in mid to late September likely to cause less plant stress prior to winter.

Cutting management has a significant effect on winter survival and next year's growth; cutting

management is also site specific and needs to be adapted to your farm. A general rule is to avoid cutting in the period from 6 to 2 weeks prior to killing frost. Recent research has also suggested that the stage of plant growth at the time of 2nd cut is also important. If the second cut is delayed to at least 10 per cent bloom, the plants appear to be more vigorous the following spring.

It is generally recommended that hay be cut when the field is in 1/10th blossom. In the spring, when days are short, alfalfa is slow to bloom. In this season the correct cutting time can be determined by the new buds at the base of the plant. When these buds start to develop it is time to cut.

When plants have been weakened by winter injury it is best to delay the first spring cutting until full bloom. Many stands are plowed under too soon when they might have recovered. However, if the stand has been badly damaged, it may be advisable to plow and re-seed. Attempts to improve poor stands without complete renovation generally fail.

Refer to the alfalfa disease fact sheet for assistance in recognizing the causes of poor growth.

ALFALFA GRASS PRODUCTION

Alfalfa-grass mixes are more common than stands of pure alfalfa. Some of the advantages of a mix include the following:

Advantages:

- better grazing tolerance than pure alfalfa
- longer productive life

- good nutrient balance, usually better calcium to phosphorous ratio, higher TDN but lower protein; more closely meets the requirements of beef cows.
- may cure quicker in the swath
- alfalfa-grass mixes ensile better than pure alfalfa
- some studies have shown higher yield, but this is quite variable with cutting, grazing and fertilizer management.

Disadvantages:

- to obtain equal or higher yields than pure alfalfa, require more fertilizer, primarily nitrogen
- alfalfa-grass hay is normally priced lower when being sold
- need to select grass species and variety carefully to match with the maturity of your alfalfa variety, as grasses often mature earlier than alfalfa.
- seeding grasses with alfalfa may reduce the productive life of alfalfa, compared to straight seedings of alfalfa.

The major difference in management of alfalfa-grass mixes when compared to straight alfalfa is the fertilizer program. Pure stands of alfalfa require primarily phosphorous and boron fertilizers, while alfalfa-grass mixes will respond most economically to nitrogen fertilizers. In addition, more frequent applications are recommended because of the mobile nature of nitrogen and its rapid uptake by the plants. Broadcast applications in the spring and after first cut of nitrogen or nitrogen-phosphorous fertilizers may produce a yield response.

ALFALFA TROUBLESHOOTING GUIDE

General Symptoms	Possible Cause and Detailed Symptoms	Solution
Stand thin, plants disappearing.	<p><u>Verticillium Wilt</u>: Individual plants become infected and die. Temporary wilting of upper leaves on warm days followed by more general wilting and leaves that turn white or yellow. At first the stem remains green, later, starting at the base the stem turns grey then black.</p> <p><u>Witches Broom</u>: Individual plants infected produce a dwarf, clumped group of shoots. Plants are stunted with small yellowish leaves. Infected plants are more susceptible to winter injury.</p> <p><u>Bacterial Wilt</u>: Stunting and yellowing followed by wilting during warm dry weather. Leaves are small and cupped. Dark ring in cross section of root.</p>	<p>Plant resistant varieties.</p> <p>When reseeding destroy all volunteer plants. Maintain a vigorous stand.</p> <p>Plant resistant varieties.</p>
Slow or no growth in spring.	<p><u>Winterkill or injury</u>: Roots are soft, outer skin of root peels off easily. Injured buds are dry, discolored, and limp. Viable buds are white, firm, and may be pink tipped.</p> <p>Mature stands should have 5-6 plants per square foot.</p>	<p>Plant winter hardy varieties. Review harvest management.</p>
Plants dying in lower, wet areas. Grass taking over.	<p><u>Phytophthora Root Rot</u>: Occurs in a wet poorly drained soils during extended periods of rainfall or excessive irrigation. Causes yellowish-brown rotted areas on the roots extending up to the crown. Rotted areas later turn black.</p> <p><u>Potassium Deficiency</u>: Alfalfa leaves show oval to round yellow-white spots.</p>	<p>Monitor irrigation use. Correct drainage. Grow phytophthora resistant alfalfa varieties. Manage for grass in area not suited to alfalfa.</p> <p>Soil test, fertilize</p>
Under humid conditions leaves are twisted and rolled downwards.	<p><u>Downy Mildew</u>: Usually does not cause severe damage. Occurs in cool, wet, humid weather during the spring. Light green to yellow blotches appear on leaves. Greyish fungal growth often occurs on the underside of the leaflets.</p>	<p>Crop rotation using cereals if the problems become serious. Use resistant varieties.</p>
Short, yellow topped plants, low yield, especially on dry ridges.	<p><u>Boron Deficiency</u>: Occurs in areas or patches in the field due to a soil deficiency. Leaves at the growing point turn bronze to yellow. Symptoms more evident under dry conditions.</p>	<p>Soil test, fertilize</p>

CROP PESTS

The following is a brief description of crop pests that can be a problem in the Kamloops District. Infestations are seldom at levels that justify spraying. Spray recommendations for specific pests are available by contacting the District Agrologist.

Pest	Pest Description and Damage	Control
Aphids	Light to dark green soft bodied, about 3 mm long. High populations, which cover the stems and terminal buds, can occur in cool wet seasons. Damage is caused by sucking plant juices causing the plant to wilt.	Usually as drier and warmer weather develops populations are reduced. Under severe conditions prompt cutting or spraying may be required.
Cutworms and Armyworms	Thick, fleshy caterpillars up to 1½ inches long which curl up when disturbed. Feeding damage usually occurs at night. Patches or edges of fields which fail to 'greenup' indicate infestations. Damage usually occurs during the spring, but some species may appear later in the season.	If infestations are severe spraying may be required.
Alfalfa Looper	Pale to olive green caterpillars with a whitish stripe along each side and two light stripes along the back. Larvae move in a characteristic looping motion.	If infestations are severe spraying may be required.
Leafhoppers	Small elongated wedge-shaped insects that vary from 1/16 to 5/8 inch in length. They hop or fly when disturbed. Symptoms include stunting of the plant and yellowing or reddening of leaves in a V-shape form the center of the leaf outward.	Direct damage from feeding is rarely important, but hoppers can transmit viruses that affect alfalfa.
Grasshoppers	In hot dry seasons heavy infestations can occur. Uncultivated areas are preferred by grasshoppers however new seedings of alfalfa can be damaged starting from the field margins.	If infestations are severe spraying may be required.

ANNUAL FORAGES

Annual forage crops include a wide range of plant species, including: silage corn, sorghum-sudangrass, faba beans, peas, vetches, etc. as well as the cereals (barley, oat, wheat, rye) and annual ryegrass.

The major annual crops grown in the Kamloops District include the cereals, silage corn and annual ryegrass. As a separate publication for silage corn (Field Corn Variety Recommendations) is produced each year, corn production will not be included in this publication. Production details will be provided for barley and annual ryegrass combinations.

Annual crops provide a number of advantages in a forage crop system, including better weed and disease control, improved seedbed and establishment of subsequent alfalfa crops, an additional choice of feed quality, especially a higher yield of TDN (energy) as well as high quality fall pasture that is well suited to early weaning calves or finishing lambs. Annual ryegrass is also particularly useful for extending the grazing season in the fall.

(1) Double Crop Barley

Variety Selection

- Need to consider yield, maturity, lodging, resistance, disease resistance

Current recommendations

- Contact an Agrologist for current recommendations

Planting Dates

- 1) First Crop
- as early as possible
 - no later than end of April;
 - mid-April recommended
- (2) Second Crop
- immediately after harvest - not later than July 15.

Planting Rates

- 100 lb./acre
- Higher seeding rates may increase yields under

conditions of high fertility, but also increase the risk of lodging and fungus disease.

Tillage Requirements

First Crop

- plowing is recommended, especially if the previous crop was an old alfalfa field or at all soddy or weedy. After plowing, disc and pack to obtain a firm seed bed. A firm seedbed is required to obtain rapid and uniform germination.

Second Crop

- Disc stubble under, pack and seed. Keep tillage to minimum to reduce moisture loss and costs.
- Can be time consuming and difficult (hot, dry, dusty) to establish the second crop of barley in mid-summer. Refer to the barley/annual ryegrass system for an alternative.

Fertilizer Requirements

- (1) Soil test to determine need for P and K, etc.

- (2) Nitrogen - 75 lb./acre actual N for each crop, broadcast prior to planting.
(e.g. 160 lb./acre 46-0-0 or 220 lb./acre 34-0-0).

If broadcast after planting, 34-0-0 is recommended, especially for the second crop, as 46-0-0 is subject to volatile losses under warm, humid conditions.

Harvesting

The optimum time to harvest to obtain the greatest yield of TDN (energy) per acre occurs when the barley is in the late milk to soft dough stage.

Quality

At the soft dough stage for harvest the TDN level should be 62 per cent and a protein level of 10 per cent.

Ensiling

Barley ensiles quite well, but is difficult to pack because of the hollow straw.

- wilt only for a short time (aim for 65-70 per cent moisture)
- chop short (1")
- pack continually while filling pit - place wetter material (e.g. 75-80 per cent moisture) over top of pit to help seal
- cover entire pit with plastic and weight down securely

Losses in a bunker silo can exceed 20 per cent if it is not packed and covered tightly; the crop will not be economical to grow if 20 out of every 100 acres are lost due to spoilage.

(2) Barley-Annual Ryegrass

Variety Selection

Barley: Choose early maturing barley varieties for more ryegrass yield. Later maturing early varieties give higher barley yield.

Ryegrass: Choose only 'Italian type' ryegrasses, **not annuals or westerwold types which become weed problems.** Check with your local seed sales for current Italian ryegrass varieties.

Planting Date

As early as possible in the spring will help to obtain high yields; however, there is more flexibility in managing this crop, as compared to double crop barley, therefore planting dates are not as critical.

Planting Rates

Barley – 50 - 75 pounds per acre
Annual Ryegrass – 15 - 25 pounds per acre

Planting Methods

The barley and annual ryegrass are seeded at the same time in the spring. A number of methods have been tried with best results coming from seeding ryegrass at 90° to barley, or broadcasting ryegrass after barley is seeded.

Three seeding methods:

- (1) (Best Method) Broadcast seed after barley has been seeded; follow with roller.

- can seed near surface to obtain better germination

- can apply desired seed rate

Disadvantage

- this method requires another trip over the field

- (2) Annual ryegrass in grass seed box

- provides uniform seeding over entire field, seeded at more appropriate depth.

Disadvantage

- small capacity of most grass seed boxes- requires frequent filling

- maximum seed rate with most drills is around 17-18 lb./acre, recommended seed rate is 20-25 lb./acre

- (3) Mix the annual ryegrass in the grain box with the barley.

Disadvantages

- annual ryegrass is seeded too deep (i.e. 1 1/2" typical desired is 1/2")-ryegrass is not evenly seeded over entire field, difficult to maintain uniform mix.

Fertilizer Requirements

First Crop	- 75 pounds N per acre
Second Crop	- 75 pounds N per acre
Third Crop	- 75 pounds N per acre

Annual ryegrass grows best under cooler conditions, so a late N application (i.e. September) takes advantage of this growth characteristic and boosts late season yield.

Harvesting

First Crop Barley

- harvest at boot stage for hay (maximum quality)
- harvest at soft dough stage for silage (maximum yield)

Annual Ryegrass

- for Italian types harvest when 16" – 20" tall; this will usually occur about 5 weeks after barley crop is removed, therefore occurs at middle to end of August
- harvest again at end of September, or use for pasture beginning first week of September.

- can be used for late season grazing (November-December) as it maintains its quality. Soft leaves do not stand up under snow.

Harvest management of annual ryegrass is quite flexible, depending on your needs, however, as with any grass crop, maximum quality is obtained when harvested early (i.e. before head emergence)

Quality

August harvests of annual ryegrass are generally lower in quality (typically 12-14 per cent protein, 60-65 per cent TDN) as compared to growth obtained later in the season. September and October harvests, (if the crop has already been harvested in August) are of high quality, with analyses of 16-20 per cent Protein and 65-70 per cent TDN.

PASTURE MANAGEMENT

Pasture Mixes

Mixes are more common in pasture seedings, and are often more complex, with many species being included on the theory that given the variable conditions that often occur in pastures (e.g. wet areas, hilltops, etc.) the species most adapted to a particular part of the pasture will eventually dominate. Unfortunately, what usually happens is a great many species will try to grow initially, usually at the expense of the most productive species. The primary recommendation for pasture mixes is to keep it simple, with no more than 2- 4 species in the mix.

For irrigated pasture for sheep or cattle, orchardgrass with either white or red clover or alfalfa is recommended. Although alfalfa is initially more productive than the clovers, it is less tolerant of grazing and soon disappears from pastures. White or ladino clover, at 25 per cent (maximum) of the seed mix with orchardgrass is recommended for well drained soils.

On heavier more acidic soils, red clover may survive and produce better than white clover, but is shorter lived. In areas with good snow cover, where winterkill is not a problem, perennial ryegrass makes excellent pasture. However, for most parts of this district, it is not reliably winter-hardy.

Tall fescue is a newer grass species for the Kamloops area. Tall fescue is similar to orchardgrass in yield, but has the advantage of maintaining feed quality longer into the fall and winter, making it well suited for extended grazing systems.

One of the disadvantages of tall fescue is lower palatability during the growing season than orchardgrass. It is also important to use only forage variety tall fescue, and not turf varieties. Turf varieties have endophytes (a type of fungus), which increases hardiness and resistance to trampling, but can be toxic to livestock, especially horses.

Regar meadow brome grass, although not common in this area, has good potential as a pasture grass.

Its main attribute is early spring growth, but it has less late season production than orchardgrass.

For horse pasture, where rate of gain is not the major objective, Kentucky bluegrass/white clover should be considered. Although less productive orchardgrass, it is more tolerant of close grazing and can reduce chances of founder and obesity in horses. The low growth habit of white clover is also well adapted to close grazing.

Intensive Irrigated Pasture Management

Intensive management of irrigated pasture has the potential to provide a good economic return with minimal machinery investment

Intensive management of fertilizer, irrigation and grazing is required to obtain the best returns per unit of land area.

General principles of pasture management are presented below.

1. Orchardgrass seed at 15-20 pounds per acre (with 2-3 pounds of clover or alfalfa) is the main grass species recommended for irrigated pasture in the Kamloops District.
2. Initial fertilizer use should be determined by a soil test prior to seeding.
3. Subsequent fertilization will normally be nitrogen; it is recommended that approximately 50 pounds per acre of nitrogen fertilizer should be applied at monthly intervals throughout the grazing season.
4. Stocking rate varies depending on pasture productivity - productive irrigated pasture in this area should support 2-3 head of yearling cattle for 120- 150 days
5. Stock intensity (which is the number of animals per acre at any one time) should be 10 animals per acre or greater to ensure even

utilization of the forage, and to minimize selective grazing.

6. To achieve the recommended stock intensity, pasture subdivision (fencing) is required. Although opinions vary as to the number of pastures required, minimum number recommended to maintain high production is 8 pastures. Fewer than this results in the forage plants being re-grazed too soon, greater numbers of pastures increase fencing costs and require more labour, without necessarily increasing production.
7. Keep grazing management flexible - the grazing rotation time will vary from spring to

fall, depending upon the rate of forage growth (fast growth equals fast rotation).

8. Consider supplementary feeding (e.g. grain) when pasture growth slows in late summer, or include annual pastures in the rotation to provide increased grazing in late summer and fall.
9. Match your pasture management system to your livestock requirements - yearling cattle will have different nutritional requirements than cow-calf, therefore different grazing management is required.

EXTENDING THE GRAZING SEASON GRAZING CORN

Site preparation:

Fall plow if previous crop is perennial forage, or fall spray if planning to no-till. If previous crop was an annual, (e.g. barley, corn etc.), then a minimum amount of spring tillage is recommended, such as 1 or 2 passes with a disc. Time disking to occur just prior to planting for maximum weed control benefits.

Variety Selection:

Many varieties of corn may be used. Initial work in this area was done with Amaizing Graze, a blend of a number of different varieties from the US. The main characteristic of this corn appears to be late maturity. Similar results in yield and quality have been obtained with late maturing silage varieties, which are more readily available.

Planting Methods:

Corn planter, normal row spacing of 30". Modified seed drill, block off every other run for a row spacing of about 15". No-till planter, modified for corn as above; may also require a change in gears to keep corn plant population in the recommended range of about 30,000 plants/acre.

Fertility Management:

Corn has a high nitrogen demand compared to other crops, such as grass/legume mixes or barley. Manure is very beneficial to boost nutrient levels in the soil. Typical nitrogen recommendations call for 100+ lb./acre of actual N. (e.g. 220 lb./acre of 46 0 0). Soil test and fertilize accordingly for P and K.

Weed Control:

Weed control is one of the most critical aspects of corn management. Failure to plan a weed control program is one of the main causes of poor corn production. Ideally, weed control begins the year before by assessing the main weed species present: if perennial weeds, such as couch grass or Canada thistle are present, fall application of Roundup is effective. In the spring, walk your fields

before planting to assess weed species and quantity, and be prepared to spray or cultivate to control weed pressure.

Grazing Management and Results:

It is necessary to control livestock access to the corn to reduce waste by trampling. Electric fence can be used successfully. An alley for the electric fence can be made by driving a tractor over the corn to knock it down then placing the fence in the middle of this approximately 2 meter wide alley. This improves visibility of the fence and reduces electrical shorting by keeping corn from contacting the wire. Allow about one week's supply of feed. With good corn growth and management, corn can provide 300 – 400 cow grazing days per acre.

Economics:

A comparison was made of the costs of grazing corn to growing and feeding hay. When all costs are considered, including planting of the corn and feeding out of the hay, (no allowance was made for spreading manure), feeding costs per cow per day:

<u>Hay</u>	<u>Grazing Corn</u>
\$1.65	\$0.96

CEREAL CROPS FOR SWATH GRAZING

Most of the work on using cereal crops (barley and oats) has been done in Alberta. Locally, a number of producers have tried it, with generally good results. Waste is the primary concern. To minimize waste, some degree of controlled grazing is required, such as electric fence moved regularly. The more frequently moved, the more efficient is the grazing.

Management

As cereal crops require a shorter season than corn, planting date needs to be delayed (e.g. late June-early July) to have the crop at desired stage of growth for fall swathing. Generally, it is best to swath in October; earlier swathing can result in the swaths

spoiling if warm, wet weather occurs in early fall.

Check for nitrate levels any time you swath cereals late in the growing season. Swathed cereals retain nutrient quality quite well under dry, cool conditions, and are readily grazed through snow. Swathing retains quality better than a standing crop, and reduces waste caused by lodging if heavy rain or snow occurs.

SWATH GRAZING-ALFALFA/GRASS

Swath grazing of alfalfa/grass fits into existing production systems better than either corn or cereals, as it does not require annual planting, specialized equipment, etc.

Management

In order to swath graze alfalfa/grass most effectively, you need to start planning for swath grazing in the spring. How you manage the crop throughout the season has an impact on the potential for winter grazing.

As swath grazing eliminates one harvest, the cutting schedule needs to be adjusted. In areas where three crops are normally harvested, only two would be taken with machinery, with the last cut swathed much later, then harvested by the cows. This effectively pushes other harvests later in the season; it also opens up the possibility of spring grazing your hay fields to push the first cut later in the spring. In the Kamloops area, this could mean taking the first cut near the end of June, rather than late May or early June which is normal. The second cut would then be taken in early to mid-August, allowing the crop to grow until the end of the season, typically about mid-October in the southern interior. This allows for 8-10 weeks of growth for the crop that is to be swathed for winter grazing.

Swathing of this crop should be delayed until after the crop is dormant, but before any significant snowfalls are likely. In the Kamloops area, a target date for swathing would be early November. Earlier swathing runs the risk of mild, wet weather which can

result in considerable spoilage, while leaving swathing until late November risks snow, or considerable leaf loss due to freezing and thawing. A crop that is swathed around the beginning of November will hold its quality better than a standing crop.

A swathed crop can also reduce losses under snow, compared to a standing crop, which will usually lodge under snow and be less available to grazing livestock.

In the event of heavy snow, or crusting and ice formation, swathed forage will retain quality reasonably well until late winter, when the snow starts to disappear, and can be grazed at this time, providing that the ground is still frozen.

As with other grazed crops, controlling the amount of feed available with electric fence is recommended, as this will help to reduce waste.

Potential advantages of swath grazing

Reduce cost of harvesting (e.g. baling or silaging).

Reduces winter feeding costs and labour during the time the cows are grazing.

Reduces the potential loss of crop quality that often occurs with the typical late summer/early fall harvest due to weather conditions, dew etc. that makes it difficult to dry for hay.

Cattle may be healthier when grazing in a field situation, as compared to a confined winter feeding site.

Manure is spread over the field, reducing costs of spreading, or excess accumulation of manure on a feeding site that may become an environmental risk.

The cutting schedule for swath grazing tends to be “easier” on the perennial plants, as it allows for an extended growth period prior to

the end of the growing season, which generally improves winter hardiness.

Risks

Will reduce the amount of stored feed on hand, however, as the same amount of feed is produced, most or all will be available at some time during the feeding period.

In areas where winters may be mild enough that the ground does not freeze, or the swathed crop must be grazed under mild, wet conditions, damage may occur to the crop by punching or pugging caused by cattle hooves.

Crusted snow or ice can make the swaths difficult to access by stock; however this can be remedied in many cases by driving over the swaths to break the crust, and by having some horses grazing with the cows as they are more effective at pawing through crusted snow.

STOCKPILED FORAGES

Stockpiled forages are similar in management to swath grazing, but without the swathing; livestock graze the standing crop. The best results will come from crops that retain quality well into the winter. Species with good quality after the growing season include tall fescue, creeping red fescue, bluegrass and quack grass; medium quality is retained by orchardgrass, alfalfa and white clover. The brome-grasses (both smooth and meadow brome-grass) and the wheat-grasses tend to be low quality in late fall-winter.

As with swath grazing, to get the most efficient use of stockpiled forage, controlled grazing is recommended. Strip grazing on a daily basis results in the least amount of waste, but may not be practical in all cases. If more than a few days feed is available at one time, the benefits of controlled access diminish, to the point that there may not be enough gain to justify the labour for moving a fence if it is only moved less than once a week. One difference between stockpiled

grazing and grazing during the growing season is that there is no re-growth occurring, so no need to worry about re-grazing new growth too soon and stressing the plants, as they are dormant.

Stockpiled forages need to be managed through the grazing season so that they are at an appropriate stage of growth when they stop growing in the fall. Determine the quality of feed required by your livestock and manage the crop accordingly. If grazing is to be done by dry cows in early winter, their nutritional needs are relatively low, so crop quality can be lower, (e.g. more mature), with higher volume. If feeding calves or lactating animals (e.g. fall calvers) then a higher quality feed (less mature) is required. (Refer to the section on cutting management for swath grazing alfalfa/grass for suggestions on when to cut).

WINTER CEREALS

Some preliminary work was conducted in Kamloops on winter cereals (specifically triticale, a cross between winter wheat and fall rye), to assess their potential as forage crops, both as a silage crop during the growing season, and as crops for winter and early spring grazing. Trials included the following:

Spring triticale and winter triticale
Barley and winter triticale
Corn and winter triticale.

Barley alone was also grown as a control or check variety.

In addition, considerable previous information is available on barley and annual ryegrass inter-crop performance.

Results to date only include the silage yields from mid-summer, as well as visual assessment of the re-growth of the winter cereals in the cereal trial, and the growth of the triticale between the corn rows. At this time, the results of growing winter triticale between the corn rows looks promising.

Quality of the triticale in November was very high, (25% CP and 69% TDN), however, the nitrate level in the triticale was also high; some modification of the fertilizer program is necessary. The result of the winter triticale grown in conjunction with the barley or spring triticale was less promising, as late season growth was not sufficient to justify harvesting as silage, but would make high quality fall/winter grazing. These plots will be monitored through to next spring to assess their value for early spring use for just calved cows. Winter cereals probably have some potential for reducing winter feed costs, but more work is required to determine the management required for the best results.

VARIETY SELECTION

ALFALFA VARIETY SELECTION

All forage varieties (and especially alfalfa) change frequently, so specific alfalfa variety recommendations are not included in this

manual. For the latest on available varieties, contact your seed retailer and ask for comparative information on the varieties being sold. Another source of information on BC corn and forage variety trials is the website: www.farmwest.com. This site is supported by the Pacific Field Corn Association which is a non-profit society promoting research and education on intensive production systems for field corn and forages suitable for BC. Important considerations when selecting an alfalfa variety include winter hardiness, disease resistance and yield. This information is available for all certified varieties.

GRASS VARIETY RECOMMENDATIONS

Grass varieties do not change as quickly as alfalfa, so the following information is relevant, but may not include the most recent varieties.