

GRAZING MANAGEMENT

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Grazing, as an alternative to hay or silage production, has not been widely promoted in the United States until recent years. Generally, alfalfa does not persist well under continuous grazing conditions. Although using alfalfa as pasturage results in high gains per animal and per acre, owners feared animal losses due to bloat. Despite these disadvantages, alfalfa fits well in controlled grazing systems, providing a high-quality pasture with excellent drought tolerance. Widespread availability of the antibloat supplement poloxalene, electric fencing, increased harvest costs, and grazing management techniques capable of maintaining alfalfa stands have led to greater interest in grazing alfalfa. Recent plant-breeding efforts suggest that cultivars with low bloat potential and more persistence under grazing are possible and should further increase the use of alfalfa in pastures.

Effective grazing management requires some knowledge of how animals graze and make use of forage. Under pasture conditions, animals tend to select, of the plants available, those of higher nutritional quality. Chemical analysis of forage samples indicates that they choose mainly the soft leaves and stems as they graze. Voluntary intake of alfalfa is higher than that of other pasture species. Alfalfa is a highly digestible, nutritious forage whose dietary potential can be maximized by rotational grazing. Grazed alfalfa supplies all livestock



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protein needs. Much of the protein will be degraded to ammonia in the rumen and converted to amino acids by rumen microbes, which are then absorbed in the animal's hindgut. Dietary energy supplementation may help maximize gain. For example, high-producing dairy cows that graze alfalfa may benefit from rumen-degraded protein supplements.

In the Intermountain Region, options for grazing alfalfa include the following:

- dormant-season grazing of alfalfa stubble
- grazing as a substitute for an early- or late-season cutting
- rotational grazing of alfalfa during the growing season

This chapter will describe each of these options and outline grazing management strategies to optimize animal production without sacrificing alfalfa vigor and stand life. It will also discuss the health problems that are most often associated with alfalfa pasturage.

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DORMANT-SEASON GRAZING

Of the three alternatives listed, dormant-season grazing of alfalfa is the most widely used in California at present. This option utilizes, as cattle or sheep feed, the forage produced between the final harvest and the first killing frost. Dormant-season grazing—that is, grazing during the early winter months—often meshes well with the lambing season.

Recent studies have shown that dormant-season grazing may be an effective integrated pest management (IPM) strategy because it reduces weed and insect pests. In Oklahoma, cattle grazing during dormancy reduced the number of overwintering alfalfa weevil eggs by 60 percent and reduced the population of the weevil parasite *Bathyplectes curculionis* by less than 12 percent. New Zealand researchers reported that, during dormant-season grazing, the number of overwintering blue alfalfa aphids decreased from 220 to 2.5 per stem. Dormant-season grazing may reduce rodent populations because it decreases winter cover.

In many areas of California, dormant-season grazing occurs during periods of wet weather. This raises concerns about soil compaction from trampling, increased crown damage or disease, and reduced stand densities. Studies at the University of California, Davis, and in the southern San Joaquin Valley revealed that dormant-season grazing caused no change in either soil bulk densities or alfalfa stand density. Other researchers reported that trampling caused few detrimental effects. Animal holding areas apart from the alfalfa field can minimize damage, especially in areas with heavy clay soils and in wet weather.

Several management tactics can optimize dormant-season grazing. Nevada guidelines recommend initiating grazing soon after a killing frost, to maximize

forage quantity and quality before shattering and leaching losses occur. To avoid bloat, wait until leaves turn brown. (Bloat is discussed later in this chapter.) In areas where snow cover occurs, leave a 3-inch stubble to catch snow—this will decrease frost heaving and reduce cover for overwintering mice. In milder climates, hold animals in the field until they completely consume the old stems. Getting rid of these will improve the quality of the first cutting. Growers can expect that grazing animals will remove about 0.5 ton forage per acre during the winter period. To prevent yield loss, remove animals before spring growth begins.

GRAZING AS A SUBSTITUTE FOR CUTTING

This option is most often used in spring or fall, before the first or last cutting, when inclement weather threatens the ability to harvest a quality hay crop (Figure 14.1.). In general, spring grazing delays the next harvest by the approximate length of the grazing period. Spring grazing does not affect the yield of subsequent cuttings. With sound management, substituting grazing for harvesting has no detrimental impact on the alfalfa stand.

For early spring grazing, turn animals into the pasture when alfalfa is approximately 4 inches high. Use rotational grazing to manage animal pressure so that average plant height does not exceed 5 to 7 inches (this will help maintain some leaf area). If the pasture



Figure 14.1. Grazing often substitutes for a fourth cutting when weather conditions make it difficult to properly cure a hay crop.

will be cut later, for hay, allow a recovery period of at least 40 days before harvesting the crop.

If more than one grazing is substituted for cutting during the growing season, follow these guidelines:

- Make one or two cuttings between the grazing cycles.
- Allow regrowth to go into the bloom stage before animals are permitted to graze.
- Maintain a short grazing period.

With the onset of cold, wet fall weather, grazing may be an alternative to a fourth cutting. Grazing may allow you to retrieve an additional 0.5 to 1.0 ton per acre of fall growth. Allow the alfalfa to reach bloom stage before grazing begins. This enables plants to store adequate root carbohydrates prior to frost. This approach is similar to that for dormant-season grazing.

ROTATIONAL GRAZING DURING THE GROWING SEASON

Rotational grazing of alfalfa during the growing season offers much potential for high gain per animal and per acre. In humid regions, owners of beef steer and market lamb have realized liveweight gains of 1,000 and 900 pounds per acre, respectively. Rotational grazing is preferable to continuous grazing because it maintains stand vigor and maximizes production.

Do not allow animals to graze before alfalfa reaches early flowering stages. This ensures that root carbohydrate reserves are not depleted, and it decreases the potential for bloat. Grazing periods less than 2 weeks long prevent animals from grazing regrowth; sheep should have a shorter rotation schedule than cattle because they graze more closely. Most experts suggest a period of 28 to 42 days for recovery following grazing, or approximately the length of the usual hay harvest during the growing season. Divide the alfalfa field into a number of paddocks (generally four to nine), and rotate the animals through the paddocks as they graze the alfalfa. During periods of peak alfalfa production, some paddocks may be cut for hay instead of being grazed. Also establish a separate loafing area for watering and mineral supplementation.

Grazing management is the key to maximizing livestock gains without detriment to the alfalfa stand. Advances in electric fencing have made labor and



Figure 14.2. Advances in electric fencing have facilitated rotational grazing of alfalfa and other forages. Electric fences are a psychological barrier, not a physical barrier (like a barbed-wire fence). A few cattle may not adapt to electric fences and have to be removed from the herd so that producers can effectively manage the remainder of the cattle.

management aspects of rotational grazing of alfalfa and other forage crops simpler and more cost-effective (Figure 14.2). Different classes of livestock may require somewhat different rotational grazing schemes. To maintain a percentage of leaf in the diet that will maximize gains, allow market lambs a shorter grazing period than other animals.

To maintain high quality, graze alfalfa closely to remove older, lignified stems. Recommended stubble heights as animals leave the field range from 4 to 5 inches to 6 to 8 inches, or when new crown shoots appear. This may be accomplished by using a leader-follower system, whereby animals on a high-nutrition regime rotate into a new paddock several days ahead of “cleanup” animals, whose nutritional needs can be met with the lower-quality feed left behind. A leader-follower system might be used for stocker steers followed by dry mature cows, for example. Another alternative is creep grazing, whereby young calves are allowed into new paddocks through fence gaps. They are then followed by their dams, who rotate into the “creep” paddock after they graze down the present one.

Stocking rates on alfalfa should be based on the following factors:

- forage production (estimated from previous hay yields)
- nutrition needs and estimated intake of the class of livestock
- percentage of forage utilized (Use 50-percent utilization as a rule of thumb.)

Be conservative in your estimates and flexible in adjusting the stocking rate.

AGRONOMIC PRACTICES

Procedures for stand establishment (see chapter 2), irrigation (see chapter 4), and fertilization (see chapter 5) of alfalfa for pasturage are the same as those for alfalfa hay or silage. Schedule irrigation for periods when animals are not grazing the paddock. Since animals return some nutrients to the soil, via urine and fecal material, use soil or plant tissue tests to determine the need for fertilizers (see chapter 5).

ANIMAL MANAGEMENT CONCERNS

Frothy Bloat

The potential for livestock death due to frothy bloat has been a major obstacle to widespread use of alfalfa as pasturage. Bloat results when ruminant animals retain the gases produced during microbial fermentation of forage in the rumen. A stable foam develops, and it prevents the escape of gases through eructation. The rumen swells into the abdominal cavity, where it interferes with body processes and may cause death. Symptoms of bloat include frequent urination and defecation, arched back, labored breathing, and lolling of the tongue. Economic ramifications include reduced weight gains and feed efficiency, lower milk production, and increased veterinary and labor costs.

Occurrence of bloat is linked to periods of lush, rapid growth of certain forages, including alfalfa. Typical suspect species are high-nitrogen, easily digested forages with low dry-matter and fiber contents. Individual animals can be particularly susceptible to frothy bloat. Once identified, chronic bloaters should be permanently removed from the pasture.

Several management strategies can help decrease the incidence of bloat caused by grazing alfalfa. Beginning 5 to 7 days before alfalfa grazing starts, give animals a daily dose of 1 to 2 grams poloxalene per 100 pounds body weight. This antifoaming agent is available in block, liquid, or pellet form. If fed in

block form, it should be the only source of salt and minerals. To increase the likelihood of consumption by all animals, place the poloxalene near loafing and watering areas. Monensin and other ionophore supplements also appear to decrease bloat incidence.

Alfalfa is most likely to cause frothy bloat during vegetative growth. Do not let animals graze until after flowering begins. Prior to initial turnout, fill the animals up on grassy or stemmy hay, and, if possible, leave all animals on the alfalfa pasture continuously. When rotating between pastures, move cattle in late morning through the afternoon, after they have grazed. Never move very hungry animals to new pastures. Regular supplementation with dry hay may be necessary.

A compatible grass—such as ryegrass, orchardgrass, or brome grass—planted with alfalfa can decrease bloating. Animals tend to graze the grass first, which may decrease gains somewhat compared to those realized from a pure alfalfa pasture. Because the severity of bloat increases when alfalfa is irrigated while animals graze, do not irrigate when animals are present. Cool, wet, cloudy weather may also increase chances of bloat. By applying the management practices this section recommends, you can reduce losses due to bloat to less than 5 percent.

Plant breeders in Canada began trying to develop a bloat-safe alfalfa in 1970. They recognized that rapid initial digestion is a major contributor to bloat, so their efforts have included the attempt to produce an alfalfa cultivar that is digested slowly. Researchers caution that it may be some time before such a cultivar is commercially available.

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Estrogen Problems in Sheep

Sheep are especially susceptible to phytoestrogens, plant-produced compounds that mimic estrogen when ingested by ruminants. Alfalfa and certain *Trifolium* species (notably subterranean clover) can induce infertility in sheep because these plants contain phytoestrogenic compounds. To avoid fertility problems, do not allow sheep to graze alfalfa for 2 weeks prior to breeding and until 2 weeks after conception.

Other Health Problems

Enterotoxemia, overeating, and clostridium C & D are three causes of sudden death whose symptoms mimic those of frothy bloat. Minimize the potential for the spread of disease by ensuring that all animals on alfalfa pasture receive vaccinations for infectious diseases at intervals recommended by a veterinarian. Make adequate water and trace minerals (including salt) available on a free-choice basis. Check animals once or twice each day so that any appearing injured, bloated, or distressed can receive care promptly.

ADDITIONAL READING

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