



Nutrition

Grass-Legume

Mix Advantages

Research shows which grass-legume forage stands will last in the Northern Plains.

by Heather Smith Thomas

A number of research projects looking at the potential advantages of grass-legume mixtures for hay and pasture have been done over the years in various states. Kevin Sedivec, North Dakota State University professor of range science, has done several trials on grass-alfalfa mixes.

Certain grasses such as meadow brome and orchard grass grow well with alfalfa in the Northern Plains to allow for two crops or cuttings per season.

“What works here in the Northern Plains is sometimes different than other areas,” Sedivec says. “Meadow brome and orchard grass fit well in the Dakotas and western Minnesota but not as well for Montana and Wyoming.

These grasses require a fair amount of water, so when you get into drier climates they are more limited if you want multiple crops. In the West, if you have good soils with good water-holding capacity, you can use meadow brome but not the orchard grass because it doesn’t do well in dry situations and tends to winterkill in open winters without snow cover to protect it.”

Meadow brome and orchard grass will provide a good grass-alfalfa mix that will last many years, Sedivec says.

“We have a stand here at the Central Grasslands Research Extension Center that we seeded in 1988 and it’s still a good stand,” he says. “We’ve never broken it up, and it consistently produces two cuttings. It was planted more than 30 years ago as a 50-50 mix, and today, it’s about 60% meadow brome and 40% alfalfa.”

This shows the longevity of a 50-50 mix.

It does not need to be replanted often, which reduces planting costs. Customizing grass-legume mixes affects longevity and cost savings.

“Some producers want more alfalfa in their mix, such as a 75-25% alfalfa-grass mix, and use a seeding rate to achieve that objective,” Sedivec says. “That mix will still last quite a while, probably five to 10 years, then drops to a 50-50 mix due to alfalfa die-off. If you want a 50-50 mix you can be assured that it will last 10 years or longer.”

To fertilize or not?

Producers often wonder if they should fertilize a grass-legume stand.

Sedivec says “Yes, though most people don’t. If you want to maximize performance, especially with a 50-50 mix, it does pay to fertilize periodically.”

Even though the alfalfa adds nitrogen to the soil, it only benefits grass that grows within 1 to 3 feet of the alfalfa plant. If the alfalfa plants are 3 to 5 feet apart, grass in those spaces will lack nitrogen.

Nitrogen will increase fertility and biomass for the grass, usually by the fourth or fifth year after the mix is planted, and then fertilizing every other year thereafter.



The right forage mix can save on replanting costs, making a stand even more valuable.

Baling hay

Whether baling grass hay, alfalfa or a mix, it should be baled at an optimum moisture level, usually 14-16%.

“The difference in the two plants is that the grass tends to dry quicker than the alfalfa, especially on the first cutting. It can be a little trickier putting it up just right,” Sedivec says. “Second cutting is usually easier because in July our region tends to be a little drier and hotter with better drying conditions for hay. We might be able to put it up a day and a half after cutting, versus three to four days on the first crop.”

At the Central Grasslands Research Extension Center, Streeter, N.D., the first growth is cut as a hay crop in mid-June and again in late July if moisture is sufficient.

Grazing

The 50-50 mix can also be grazed.

“The advantage of a 50-50 mix or less is that cows rarely bloat on it,” Sedivec says. “They generally select the grass first, over the alfalfa, when grazing.

“You still have to deal with timing, being careful when you put the cattle on this type of pasture. Be sure the dew is off the alfalfa and that cattle have a full belly when they go out, so they don’t overload on alfalfa. The majority of the herd, however, will tend to graze grass first and alfalfa second, which keeps the belly full



of grass. I've rarely seen bloat in those scenarios, especially in late summer or fall. Spring can be trickier because there's a lot more dew in the mornings."

After the second cutting the regrowth is grazed, usually from mid-October until it is time for the cattle to come off.

"You don't want to graze it too short just before winter, so we graze it at a light to moderate rate, he adds. "This same management could also work for an alfalfa-orchard grass mix."

Sainfoin studies

Sainfoin is a legume sometimes used instead of alfalfa because it does not cause bloat.

"We've also done research on sainfoin, another popular legume used in drier climates on the Northern Plains," Sedivec says. "The main thing people need to understand is it's a one-cutting legume. Regrowth is extremely slow, with limited biomass. You cut it for hay later than you'd cut alfalfa, and there's insufficient regrowth for a second cutting."

Sainfoin is grown mainly in Wyoming, eastern Montana and some areas of the Dakotas that have less precipitation during the growing season.

"It works in areas where you know you can only get one crop," he explains. "In this situation it will be equal to or better than alfalfa."

Sainfoin is rarely planted with grass and does not compete well against grass or weeds.

"The main problem with sainfoin is that it doesn't compete with whatever broadleaf plants or grasses are present," he says. "The sainfoin isn't as persistent as alfalfa and is usually not a viable stand by the fourth or fifth year."

Sometimes sainfoin works better than alfalfa

Jack Holden, Holden Herefords, Valier, Mont., prefers sainfoin over alfalfa in pastures and hay.

"We've had sainfoin mixes with orchard grass and brome grass since 1965," Holden says. "My dad wrote his master's thesis on sainfoin and helped develop the seed when it first came from Turkey to Montana State University. We were one of the first ranches to use it."

Because of their soil, sainfoin lasts longer than alfalfa.

"We have some stands 40 years old that are still producing about 3 tons per acre on the first cutting, but we generally rotate them out every 12 to 18 years," Holden says.

Some people have trouble keeping sainfoin for more than a few years, but his ranch has gravelly, well-drained soil, with ideal conditions for this plant.

"Sainfoin works phenomenally well in the right conditions but dies out quicker in heavier soil," he says. "We have some 15-year-old stands that are still producing very well. Newer stands produce 4-plus tons in one cutting and we do second cuttings on some, but mostly we graze the regrowth for fall pasture and don't have to worry about bloat."

Holden also believes sainfoin is more palatable.

"Cows will walk away from alfalfa-grass mix hay to eat sainfoin hay," he says. "In winter sainfoin-grass hay creates more heat energy for cattle than alfalfa-grass hay. If it's very cold, cows have looser manure on the alfalfa mix, and calves get milk scours because cows produce too much milk with alfalfa."

"We have adequate protein with sainfoin-grass mixes, but it takes a little more digestion to break down, and creates more body heat. The cows are happier and healthier." **HW**

One advantage of sainfoin is that it is Roundup tolerant.

"You can use a light rate of Roundup and not kill the sainfoin.

The Roundup tends to stunt its growth for about a week, and then it takes off and really grows," Sedivec says. "Producers tend to spray weeds in late May or early June and the sainfoin will bounce back. This has been proven in research trials in Montana and Wyoming."

In many situations alfalfa is still the best choice if a person is looking for a high-quality, multiple-cutting plant.

"It's called the queen of forage for a reason because it is the best — especially for dairy cattle," he says. "For beef cattle that don't need straight alfalfa, the grass-alfalfa mix is ideal and very common in the West." **HW**