Grazing Cover Crops

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Find the right "cocktail" for the animals, soil and overall farming operation.

by ***Heather Smith Thomas***

Cover crops have traditionally been used by many farmers to hold the soil when transitioning between different types of cash crops. Cover crops are often plowed under before planting the next crop to add organic material and fertility to the soil. Farmers with livestock generally select cover crops that can be grazed, adding additional benefit in feed for the livestock to the farming operation, and the advantage of animal manure.

Shelby Filley, regional livestock and forage specialist for Oregon State University Extension Service assists livestock grazers with pasture management and productivity.

"We have different objectives with different cover crops. A person might choose deep-rooted species that help improve aeration of the soil and pull up more nutrients to the surface, or crops that improve tilth (soil condition) and decrease compaction," she says.

"Many farmers choose to turn the cover crop under — back into the soil — like a green manure crop, early in the year. In order to graze it, they might be doing it when the soil is too moist and vulnerable to compaction. The cover crop and grazing season for it needs to fit your climate and objectives," she explains. Don't defeat the purpose by grazing it at the wrong time.

Grazing benefits

Grazing a cover crop can be beneficial in accelerating breakdown of plant tissues to add more litter and manure to the soil. It speeds the whole process. Rather than just turning it under and letting it rot, running it through animals hastens the breakdown via microbes of the rumen, she explains.

►Above: Beef and Forage Specialist Barry Yaremcio, with Alberta Agriculture and Forestry, says some producers add different varieties of seed when planting a traditional crop to provide more forage.

"Traditionally, cover crops are a temporary covering so soil won't remain bare while it's fallow. Then these plants can be incorporated into the soil by tillage the next season before you plant another crop, or you can do intercropping in rows with the cover crop," she continues. "Nutritional value of cover crops is usually very high because they are generally young and growing when grazed. Just make sure grazing doesn't interfere with the purpose of the cover crop, and investigate its suitability for livestock. Which types of plants would be good for grazing, as well as a cover crop."

Grant Lastiwka, livestock and forage

CONTINUED ON PAGE **208**

PHOTO COURTESY OF BARRY YAREMCIO

►Shelby Filley advises that cover crop and grazing season fit your climate and objectives.

business specialist with Alberta Agriculture, says some alternative cover crops can be very beneficial for cattle producers as forage.

"In conventional grazing systems, we either have an annual that starts growing later in the spring and finishes growing sooner than perennial forages, or we use a perennial pasture, which generally lacks productivity. If you add nitrogen to a system, it improves soil fertility and water-use efficiency. Some cover-crop mixes include a legume. This contributes nitrogen that is beneficial to the soil and also to the quality of feed," he says.

Adding variety

Beef and Forage Specialist Barry Yaremcio, with Alberta Agriculture and Forestry, says some producers add different varieties of seed when planting a traditional crop to provide more forage.

"For instance, they might be seeding oats or barley for silage, but also plant clover, winter wheat or another crop that will keep growing and be available for grazing after the silage is harvested," he says. A person could also broadcast grazing turnips, kale or forage rape between the rows to provide a lot of biomass for grazing later.

"Grazing brassicas (turnips, kale, forage rape, forage radish), sorghum Sudangrass hybrids, winter wheat or fall rye, winter triticale, etc., can provide high-quality forage for livestock late in the growing season for fall and winter grazing. These species grow faster once the silage or green feed crop has been taken off," says Yaremico.

Winter wheat, fall rye or winter triticale can work nicely for grazing late in the year.

"Even if you seed them in May or June (when their spring counterparts are seeded for a grain crop), they won't grow much during early summer, but by August/September, there will be a lot of leaf and bottom growth. Most of the winter crop tillers won't put up a head and seed until the next year. All those leaves at the bottom of the plant are very high-quality feed, and when they have a chance to grow (after the main crop/competition has been removed), they can supply a lot of feed for cattle," says Yaremcio.

Nora Paulovich at the North Peace Applied Research Association has done a lot of work experimenting with various crop blends at the research farm near Manning, Alta., to determine what works and what doesn't work in that area. The goal is to increase total yields by adding cover crops. Her group has been using various cocktail mixes of different species.

►A mix of plants can often be a good diet for cattle, including a legume to increase protein and calcium content. Providing different species can help balance the ration, reduce supplement costs, and take advantage of moisture and growing conditions at different times of year.

A mix of plants can often be a good diet for cattle, including a legume to increase protein and calcium content. Providing different species can help balance the ration, reduce supplement costs, and take advantage of moisture and growing conditions at different times of year. This can produce a better yield, as well as a better-quality forage that will be available through the entire summer. If one type of plant doesn't do as well, some of the others might.

The advantage of cocktail mixes is their variety. You can include a species that can take the heat and withstand a drought if it's a dry year. Other plants have the ability to grow when it's cooler, with more moisture. A good mix can cut down the amount of risk and help assure good feed for the cattle, whatever the year might bring.

"Our work with cover crops is still in its infancy, to know what works here," says Paulovich. "We are still trying various things, and producers in our area are trying different combinations and species — and seeding rates. We know that we need to include species from warm- and cool-season grasses, as well as legumes. We try to have species from each category and hope to find the optimum seeding rate for all of them. We like to include a spring cereal. Oats or triticale are the cool-season grasses we've chosen. We're also trying different seeding dates — seeding again every two weeks. It's so dry some years that the more often you put seed in the ground, the greater the chance for one of those seedings to catch rain at the right time," she explains.

"Also, when you have a polyculture (multiple species) vs. a monoculture, the growth in the polyculture always exceeds that of the monoculture. There is more total mass, more nutrients, and it's a symbiotic relationship amongst those plants. We always include some warm-season plants — which are more efficient in photosynthesis than cool-season species — because they promote proliferation of the mycorrhizal fungi that colonize plant roots," she says.

These specialized fungi extend efficiency of root systems much deeper into the soil and help the roots dissolve and absorb soil nutrients.

"These fungi are important in sending out their hyphae (tiny filaments) far away from the root itself to gather nutrients and bring them back to the plants. This is a fantastic symbiotic relationship. We are just beginning

CONTINUED ON PAGE 210

PHOTOS COURTESY OF JOHN SNIDER

►Grazing brassicas can provide high-quality forage for livestock late in the growing season for fall and winter grazing.

PHOTO COURTESY OF BARRY YAREMCIO

►"When choosing what to seed, make sure there are no harmful alkaloids, nitrates, or other toxic properties or physical characteristics that might cause problems," says Shelby Filley, regional livestock and forage specialist for Oregon State University. "Consider things like bloat, or possible choke. Phytoestrogens — substances that mimic the animals' own estrogens — can be a problem with certain clovers as cover crops. Investigate their suitability for grazing," she says.

to understand this, and how multiple plant species work together for mutual benefit, more fertile soils, and healthier plants. We try to include species from all categories; the more the better. Some plants may not look like great producers, but we don't know what they are doing below ground. We are submitting soil samples to get an analysis of what the microflora might be, and if their diversity is increasing because of the different plant mixes," she says.

Cautions

"When choosing what to seed, make sure there are no harmful alkaloids, nitrates, or other toxic properties or physical characteristics that might cause problems," says Filley. "Consider things like bloat, or possible choke. Phytoestrogens — substances that mimic the animals' own estrogens — can be a problem with certain clovers as cover crops. Investigate their suitability for grazing," she says.

"When you start using the crop as feed, introduce the animals into it cautiously, as with any type of new feed." She suggests giving them a full feed of hay before moving them into that pasture, or move them in after they've already filled up with morning grazing in their previous pasture — so they don't go into the new crop hungry and eat too much at once the first day. This helps them adjust to the new feed.

Paulovich adds, "To get the most benefit from some types of cover crop, it pays to strip-graze, moving the animals across the field with portable electric fencing so they can use one portion efficiently before moving into the next.

Keeping a balanced diet and avoiding health problems in the cattle can be tricky sometimes with alternative crops.

"Test the feed to know if there are health risks, or to figure out what type of mineral or combination of products to add to the diet to make them work," Yaremcio says.

"Some of the problems we've seen are related to soil fertility/nutrient uptake. Producers who put in forage brassicas like turnips, kale (or late-germinating canola crops for grazing, silage or green feed) found that nitrogen content of their soils was quite high. The nitrogen may have come from commercial fertilizer or significant amounts of manure applied to the field. Nitrogen accumulation in some crops was sufficiently high that intake had to be restricted to prevent poisoning," he says.

If a crop is grown in fields with high sulfur levels, plants take it up with the soil moisture.

PHOTO COURTESY OF SHELBY FILLEY

►"Test the feed to know if there are health risks, or to figure out what type of mineral or combination of products to add to the diet to make them work," Yaremcio says.

"Brassica species are known to accumulate sulfur. We've received feed test results with sulfur levels in the 0.6% to 0.8% range. Sulfur content in a ration (including what's in the water) should not exceed 0.4% in the entire ration or it will reduce rumen pH. The bacteria responsible for producing thiamine are very sensitive to low pH and die off. A shortage of thiamine can cause polio. There have been some cows die this year because of this situation," Yaremcio says.

A couple years ago, in parts of Alberta and Saskatchewan, many canola crops didn't germinate until July and early August when it rained, he shares.

"It was in full bloom or early pod stage when producers cut it for silage and green feed. It was excellent feed, at 16% to 17% protein, with great energy and good levels of calcium, phosphorus and magnesium, but sulfur and nitrate levels were high," he says. That forage had to be blended to make it safe to feed.

"Electric fencing/strip grazing was needed to limit the amount of canola consumed daily. Alternative crops require awareness and, at times, more management compared to grazing conventional forages," he explains.

"If you are planting some crops to provide late-season grazing, feed testing is very important. With nitrates there may be no warning; you just suddenly find a dead animal," he warns. "Polio takes a bit longer, but the outcome can also be dead animals."

Also be aware that immature crops or crop regrowth contain low fiber levels, and a lot of the brassicas and other companion crops have very low fiber levels.

CONTINUED ON PAGE **212**

Grazing Cover Crops CONTINUED FROM PAGE 210

"Without sufficient fiber, manure becomes very loose due to high water content and rapid movement through the digestive tract. It helps to feed cattle some high-fiber roughage such as slough hay or straw to increase dry-matter content and reduce feed passage rate. Animals that consume 1 or 2 pounds a day of the high-fiber material have improved digestive efficiency of the high-quality feeds, and greater opportunity to extract the nutrients before they go out the back end," says Yaremcio.

"In some of these crops magnesium levels can be fairly low, such as 0.12% or 0.13%. You need about 0.2% magnesium in the ration for proper balance. A lack of magnesium, especially if potassium levels are high, could lead to tetany situations and downer cows," he explains.

Most of the time, alternate crops are grown on certain fields between other major crops. There's usually no problem with intake when grazing them, though it may take cattle a few days to adjust to the different taste or texture. Various crops may be different from year to year in palatability and length of time it takes cows to adjust to the new feed.

"Sometimes cows that are accustomed to really good pasture are fussy in what they want to eat. If you suddenly switch them to a cover crop, it may take them a few days — and a little bit of tough love — to get them to eat it," Yaremcio says. "If you don't see them really going after it by the second or third day, you need to re-evaluate whether they are actually going to eat it. Usually by then the cows are hungry, they get used to the taste and texture of the feed and start eating it more readily."

If you are trying an alternate crop for the first time, talk to someone else who has done this or knows about various forages to glean suggestions and guidelines.

Selecting a crop to graze

"In Oregon we often use annual ryegrass as a cover crop," says Filley. "It grows so quickly it can often be grazed within six weeks of planting. One producer put annual ryegrass on a field he had tilled, as something to put on quickly because he didn't have time to finish working up the field for a permanent pasture seeding. He was able to graze it six weeks after he planted because it was so well-rooted by then."

PHOTO COURTESY OF SHELBY FILLEY

►Grazing a cover crop can be beneficial in accelerating breakdown of plant tissues to add more litter and manure to the soil.

Conditions were perfect when he planted the seed.

"There was hard rain the night after he planted, pounding the seed into the soil. Then the weather turned warm, and it popped right up and grew quickly," says Filley.

"When people need a cover crop for erosion control, I usually suggest annual ryegrass just because it does come up so fast and the seed is less expensive than many other things you might plant. It works well in a moderate climate, if you don't live in an area with extremely cold fall weather. Even if it stops growing and dies in late fall, there would still be grazable plant material that would provide forage," she says.

"In this area people need to have the seed in the ground before October 10 or it won't have enough growing season to do any good before winter. In other climates you might need to plant earlier," she advises.

Find something that works well in your own climate. If you are trying something new or exotic, plant a small area at first rather than planting the whole farm to see how it does in your conditions.

Traditional cover crops include legumes like crimson clover, peas, vetch and oats.

"A number of good forage crops can extend summer grazing — either early (before the typical pasture is ready for grazing) or late into the fall/winter. If you need to renovate a field or change it to something else, this is the perfect time to try a cover crop that you could graze, to add extra forage to your grazing system," she explains.

"It may also be helpful in areas where you have to add lime to the soil. Here in Oregon, on my side of the state, soil is acidic. If you want to improve it for growing alfalfa, for instance, it takes at least a year to get the proper reaction from the lime you'd add. An annual cover crop can be an excellent interim situation, between permanent crops or pastures, with something you could graze," she says.

"If you plan to graze it, make sure the crop is well-rooted so the animals don't pull it up. Also be sure it is compatible with the type of livestock you plan to graze. If soils are fragile and there is risk for compaction, and you want to use it early in the year, it might be best used by lightweight cattle or with sheep," says Filley.

Editor's Note: *Heather Smith Thomas is a freelance writer and cattlewoman from Salmon, Idaho.*

Experimenting with alternative crops

Chad Lemke ranches in central Texas in the northwest hill country.

"We live where it seldom rains, the wind always blows, and, every now and then, we see some green grass. We've learned to adapt, and do whatever we need to do to survive," he says.

There are many ways to manage pastures for optimum production, and intensive grazing is improving the fertility and productivity of his soil.

"This is a long-term process. On our farms we are constantly experimenting with cover crops with no-till planting to improve pasture quality for our stocker and grass-finishing animals," he says.

"We have a combination of native and improved perennial grass base and are constantly adding alfalfas, clovers, and in winter we may plant vetch, wheat, rye, oats, triticale, barley, etc. We always try to have a mix that includes some legumes. People call these cocktail mixes, and these are what we've been no-till seeding for 12 years. We budget a certain dollar amount per year for planting and divide it among the various seeds we plant for that year. We may go into some pastures and plant sweet clover or turnips to break up the ground; we are constantly modifying and changing each year," says Lemke.

Lemke says his long-term goal is to build soil fertility without expensive inputs.

"Mob grazing and manure do an amazing job at very little cost," he explains. "This is the best 'fertilizer,' and we try to introduce things that will be beneficial. It's an ongoing challenge/adventure, and some years are better than others. Some years you put in a cover crop and it does really well and other years you wonder. Many of these are worth a try, however, and we learn more each year about the things that work."