



Integrating Cover Crops

For Livestock Grazing

Cover crops build soil health and provide ways to bolster winter and fall grazing.

by Heather Smith Thomas

Cover crops have traditionally been used to help hold the soil in place when transitioning between cash crops, such as corn and soybeans. Cover crops are often plowed under before planting the next cash crop to add organic material and fertility to the soil. Farmers with livestock often select cover crops that can be grazed, adding additional benefits — feed for the livestock and the advantage of animal manure. Sometimes non-traditional crops for livestock can augment forage supplies, extending grazing into the winter or stretching the production on a piece of land.

Grant Lastiwka, forage Extension specialist for Alberta Agriculture and Forestry, explains some specific benefits alternative cover crops offer cattle producers.

Cover crops help soils by adding nitrogen, which improves water use efficiency. The practice also increases root channels, which aid water infiltration and improve plants' ability to follow those channels, he says. Root crops can also get through the hardpan with root channels.

"Years ago, I worked with some fall rye, and some of the research in southern Alberta and the U.S. in the 1960s showed that if you add nitrogen, it improves water use efficiency," Lastiwka says. "The cover crop mixes that some people are now using include a legume, which contributes nitrogen to the system. With the mosaic of species in a mix of plants, grasses can derive nitrogen for themselves."

Keeping all of this in mind, people are now putting pastures together, looking at the ecology of systems.

"Grazing is part of that ecology. A lightly grazed plant does not look as productive as an ungrazed plant, but it has more roots," he says. "If we cover the landscape to prevent erosion and have more water infiltration from mass on the surface, it translates into better

water capture. A good grazing system or pasture must have litter; otherwise, the moisture runs off."

Lastiwka says covering the landscape has a sponge effect. Plants shade and cool the soil, preventing it from being exposed to the sun, and aid with infiltration to keep raindrops from hitting the soil surface so hard.

Covering ground

Kansas farmer Gail Fuller was plagued with erosion issues and experimented with no-till farming during the 1980s. He was not impressed with the results until he realized he was not changing crop rotations enough.

"I had tried to make our traditional rotation, corn and soybeans, fit our no-till," Fuller says. "Most of the corn was chopped for silage. We were following corn with soybeans so there was no residue, no carbon added to the soil. The erosion just got worse."

Then he attended a conference called No-Till on the Plains, in the late 1990s.

"They were talking about cover crops," he says. "I tried those for a couple of years, but there was no one that I knew [using cover crops] at that time. Then we had severe drought in 2000 and no income. The first thing that got cut was the cover crops."

"We stayed dry the next two or three years, and our yields slowly declined and erosion got worse again. That's when it dawned on me that we had been headed the right direction with the cover crops. Instead of taking things out of rotation, we needed to be adding things into it."

In 2003 and 2004, he went back to cover cropping.

"This time, instead of using a monoculture we used mixes — trying to imitate what Mother Nature does. It didn't take very long to realize there was a lot of good, cheap forage here. We traded some corn for some cows and started grazing those cover crops," he says.

At first, Fuller says he was apprehensive to plant unfamiliar crops and graze his cattle on them.

"We started grazing those cover crops and went to more conferences and listened to people like Dave Morell, Gabe Brown, Neil Dennis, Ken Miller, Doug Peterson, Jim Gerrish and Greg Judy," he says. "They were using mob grazing and talking holistically, and this really intrigued me. I thought I was doing intensive rotational grazing because we were moving the cows every two to four weeks, but I realized I needed to speed it up. Gabe became my mentor, and I started moving my cattle several times a day. They are almost always moved at least daily."

Now, most of Fuller's mixes have at least 15 different kinds of plants. Some of these plants stay green longer than others, and all of them can help augment forage supplies in late fall and into the winter.

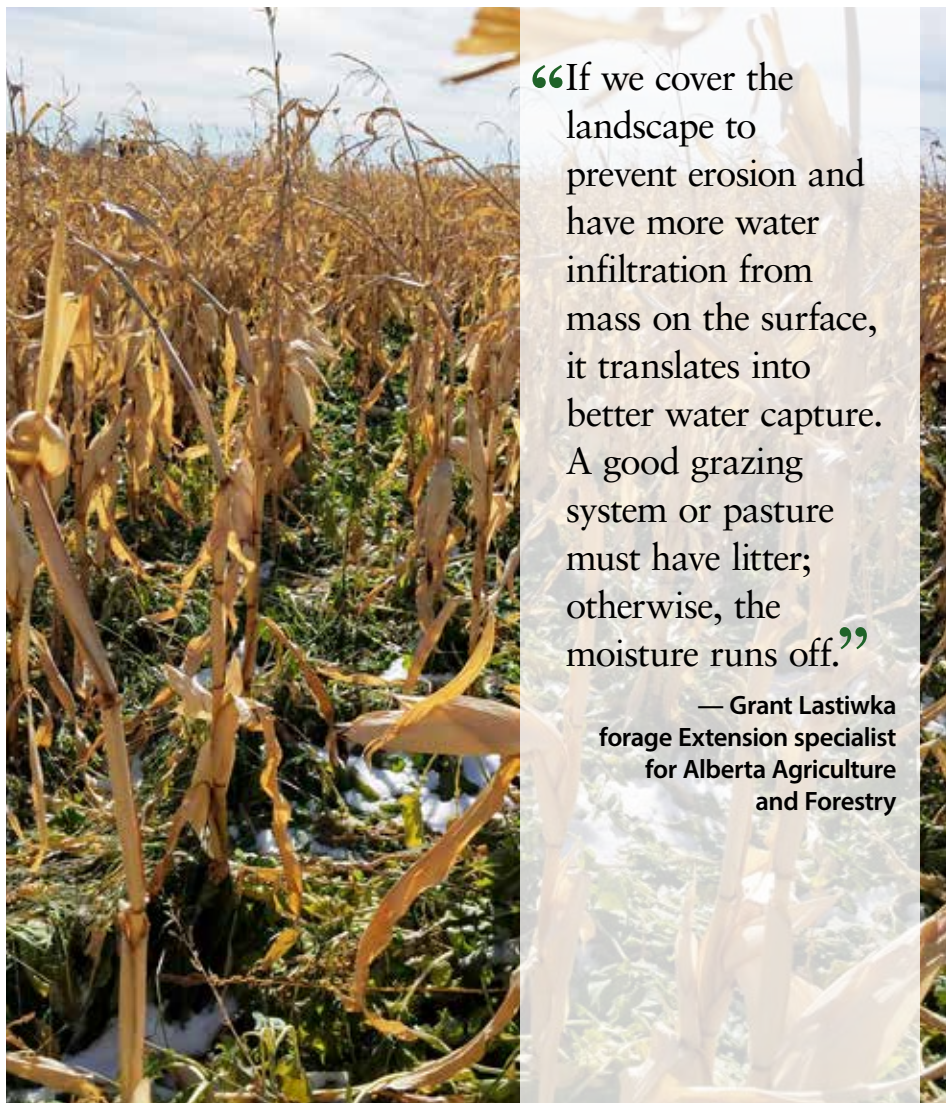
"We are trying to imitate the native system, and for us, it's the tall grass prairie," he says. "We want as many plants as we have on the prairie — forbs, legumes and grasses."

Fuller says in the past, before the use of chemical fertilizers, it was common for farmers to use cover crops to grow legumes and graze cattle to keep soil fertile and productive.

Forage turnips

Turnips are a good example of a root crop that can be grazed. Cattle readily eat them and do very well. Tom Larson, who now lives in Colorado, farmed for many years in Nebraska, managing certified organic crops and livestock.

"In the late 1960s, I was looking for high-value crops that might fit into the crop system we had. My dad grew corn, alfalfa, cattle and hogs," says Larson. "I did quite a bit of experimenting with alternative crops and various rotations. Then I put in a grazing system in the winter of 1989 and 1990, with 17 paddocks and water in every paddock. I moved the cattle every two days. Now I think it would have been better to move them about once every four days and have about 10 paddocks."



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“All I had was cool season pasture and no warm season grasses. To make up for the time in late summer when those cool season plants weren’t growing very well and there were no crop residues yet, I discovered that the biggest bang for the buck is turnips.”

Larson was one of the first to plant turnips in his area in 1986.

“I did a little research and found that during Colonial days, it was tough to get a cow through winter,” he says. “People had to cut hay with a scythe, and that’s hard work. Smart farmers would sow turnip seed in early summer, and the turnips would be big enough for a cow to eat by fall.”

In 1986 he planted a crop of oats on a small 8-acre field, and after harvesting the oats, he wanted to put in something that could be harvested in the fall.

“I had been reading about forage turnips and was able to find some purple top variety,” Larson says. “I planted the seed at about 4 pounds to the acre, and this was very cheap. I didn’t need to water them in my climate. I just waited for the first shower, since that region generally has about 22 inches of annual precipitation,” he says.

Larson has planted turnips from as early as the first of April to as late as the first of July. He has the best luck when turnips are planted the first part of June when it is warm enough for the seed to germinate.

“One acre of turnips, in my experience, is worth five acres of grass,” Larson says. “To give you an idea about the carrying capacity, my 8 acres of turnips after the oat harvest provided feed for 50 [cows, calves and yearlings] for 100 days. That’s a lot of cattle feed! Even though they were planted late, the turnips grew enough to provide plenty of forage.

Turnips can grow to more than a foot and half tall with bulbs ranging from the size of a tennis ball to a softball. Larson says cattle

enjoy eating turnips, and he has found turnips to be a good feed source when less forage is available.

“The leaves were about 16% protein, like alfalfa, and the bulbs were about 9% protein,” he says. “Unlike some other annual forage crops, there were no toxic alkaloids or prussic acid to worry about. I never had any problem with choking, and I tried many different varieties. The plain old purple-top turnips were probably the best.”

The turnips provide adequate nutrients for the cattle, but the rumen functions best with a fair amount of roughage. To balance the needs of the rumen, Larson puts out some low-quality round bales.

“The hay can be grass or alfalfa of poor quality. The cows just need roughage in the rumen to keep it working properly. Cattle balance their diet themselves, eating however much roughage they need,” he explains.

Using several crops on the same acreage can greatly increase output per acre, and the cattle grazing will spread the necessary fertilizer.

“In our cool season pastures, the grass goes through a mid-season slump. Nutrient levels drop, and the cows get tired of eating cardboard. At that time, we put them into the green turnips, and they love it,” he says. “If a person has pivot corners or feedlots that aren’t being used in the

summer, you can grow turnips. They are very good for odd corners and can provide great forage for several weeks.”

Seed depth is what determines the depth of turnip bulbs, Larson says. He plants the seeds an inch deep so the majority of the turnip bulb grows above ground. Larson grazes his cattle on turnips into February. Even though the ground is frozen, and the turnip leaves are brown and shriveled, there are still nutrients available. Although Larson supplements feed to cattle while they graze turnips in the winter, the turnips help stretch the feed supply into February. **HW**



Planting turnips can be a valuable option to add to crop rotations and to graze cattle during the fall and winter months.