

By [Heather Smith Thomas](#)

Published: June 22, 2021

Adding winter cereal crops to the annual forage mix

Dr. Vern Baron makes the case for winter cereals as cow chow



Cows grazing winter wheat and fall rye in September 2018. Photo: Supplied by Vern Baron

Spring barley and oats are typical annual forage choices for many beef producers, but winter cereals can add forage flexibility to beef cattle diets.

Dr. Vern S. Baron has worked with forage crops since the 1980s — with a master's and PhD in corn production and physiology. Much of that time has been with Agriculture and Agri-Food Canada in Lacombe, Alta.

“I worked with annual forages as silages, greenfeed and annual pastures, comparing them to perennial pastures, looking at the role of different crops. We spent a lot of time looking at winter grazing, swath grazing and stockpiled forages,” he says.

“Conventional annual forages — wheat, oats, barley, peas, etc., as well as corn silage — have been mainly for beef backgrounding and feedlot as well as dairy. About one-third of the winter-feeding ration of beef cows in Canada is still cereal silage. In the feedlot industry, it depends on the year and price of grain, regarding how much silage gets fed, but across the Canadian Prairies about two million acres of annual forage are harvested every year.”

In drought years, and when grain prices are low, more of the cereal acreage goes into silage. But winter cereals have not been as widely used.

“They have a rough time in Western Canada because the window for seeding comes the last week in August or first week in September. That's also when harvest of small grains is going full bore and it's hard for farmers to work it in,” says Baron.

“On the other hand, we've been seeing earlier springs and later falls, and drier weather in late summer and fall. Producers who harvest barley for silage can usually get the barley off fairly early and have time to plant a winter cereal.” Baron adds that it depends on the year, as weather is inconsistent.

Cover crops are now being promoted, Baron adds. But the farther west and north you are, the less a cover crop accomplishes because of the short growing season, he says.

“We also run into issues with soil moisture for a second crop. There is still interest, however, and beef producers need to determine if they can graze the cover crop and have it still function in a sustainability role.”



First-calf heifers grazing Brassetto hybrid rye in September 2018. photo: Supplied by Vern Baron

Producers have to decide what kind of cover crop to plant. “Despite interest in mixtures, fall rye is about as good as it gets. If you are looking for carbon sequestration, you need high yield — and rye usually gives the highest yield.”

Producers have a certain number of acres they can plant to annual forages. “We are seeing a decline in perennial forage acres as canola and grain prices go up. The better land that’s been in perennial forages is decreasing rapidly.”

This reduces the winter feed supply, and annual forages fill the void, especially in dry years. Traditionally, barley has been used as it can be planted late and is moderately drought-tolerant. But it’s not very heat- or disease-tolerant, he adds, and is seeing competition from short-season corn. Until high barley grain prices pushed up acreage last year, barley acres were in decline. Barley silage also has some drawbacks.

Cutting winter cereal risks

All these aspects are pushing people to look at winter cereals. The flexibility of an annual forage helps fill a niche for beef producers, who need more feed than can be supplied with perennial forages, especially in dry years.

Winter cereals carry some risk, however. “Planting date is important because it impacts probability of winterkill. Early September, plus or minus a week or two, is critical.”

Planting date affects forage production in both fall and spring if grazing is desired. Farmers need adequate viable plant density coming through to spring if they want to use winter cereal for silage, grain or as a cover crop.

“Winterkill and grazing may reduce plant numbers to a certain extent and we are not sure what the impacts are yet on hybrid rye. Preliminary results look promising, but the risks should not be underestimated.”

Winter temperatures have been warmer, but not consistent. “For instance, this past winter we had about a week of 40 below zero weather in January and not much snow. We lost a lot of alfalfa and some winter cereals,” says Baron.

Winter hardiness is still an issue. “Dormancy is part of the wheat survival strategy. We don’t get much forage production after planting winter wheat in early September on the Prairies. You might get three to four leaves before winter, but it’s a very small plant.”

For producers who want to graze a crop in the fall and either graze it the next spring or harvest it, open-pollinated rye usually has larger plants in the fall than winter wheat, Baron says. “Hybrid rye has even larger plants than the open-pollinated rye.”

A person could graze the rye in the fall. Some of the current research is testing those boundaries, to see how early the rye could be planted. “We want to know what impact different seeding dates might have on winter survival,” he says.



Pintail winter wheat, Progas hybrid rye and Bono hybrid rye, seeded in October 2018. photo: Supplied by Vern Baron

“We’ve done research on planting, and Lacombe is one of the cooler places on the Canadian Prairies for crop production. However, it also produces high yields. We have to plant by first of August to get enough forage to graze in the fall. The quality of all the winter cereals is very high, however.”

In years with good moisture, they’ve planted in mid-July. This gives them plenty of forage to graze in the fall. Winter cereals, including hybrid rye, winter triticale and open-pollinated rye, could be used as high-quality fall pasture, Baron says.

“In our limited research, we’ve seen that we can graze in the fall, and in most instances, it will come through and can be grazed again the following spring. We are not sure yet on grain yields but initial research indicates that silage production is viable. If you total the forage you get in the fall plus what you get in the spring, and then for silage, we get very high yields.”

As a cover crop, winter cereals can lengthen the grazing season. They can handle some frost in the fall, and if the temperature is warm enough, they keep growing.

The many uses of hybrid rye

“Hybrid vigour is evident in a higher growth rate than winter wheat and possibly higher than winter triticale,” he says. The hybrid rye does not go into fall dormancy with reduced growth compared to other winter species. The winterkill is about the same as wheat.

Hybrid rye, planted in the fall to harvest as forage or silage the next year, can come off three weeks earlier than a spring cereal planted first of May. “When we compare winter cereals with spring cereals, we compare yield harvest on spring cereals about three weeks to a month earlier than the yield on the winter cereals.”

A month can make a big difference in rainfall, Baron adds, and those different conditions make it difficult to compare yield.

Hybrid rye has the same yield or a little better than barley varieties. Quality is similar to the higher end of barley varieties.

“When looking at hybrid rye for silage there’s still a bit to learn regarding when to harvest. We can’t always use the same criteria as for barley harvest. Generally, we

harvest barley at the soft dough stage — about 35 per cent dry matter. The hybrid rye, like the triticales, are almost always drier at that stage and there is risk of over-drying. As with other ryes, there is a point at which the lower leaves start to go, so harvest should be prior to when you get into those dough stages. We don't have a definitive growth curve on hybrid rye, but it seems that when you start to see some dough in the kernel, this is when you should harvest — which may be before the yield is maximized. You have to harvest it then, however, or it will be over-dry for silage.”

If harvested at that point, yield will probably be comparable to what you'd get with barley, depending on the year, and slightly higher in quality. This would translate into a slightly higher rate of gain for backgrounding animals, Baron says. Seed costs are slightly higher for hybrid rye than barley or bin-run cereals, so that slight gain boost is important, he adds.

Despite higher seed costs, the flexibility and extended grazing season can make hybrid rye worthwhile. Producers can potentially graze it in the fall, if they're careful not to overgraze, after perennial pastures have dried up. They may then be able to graze it in the spring and follow with a silage harvest. Fall grazing may kill some of the plants, and all these uses means producers won't get the same type of yield they'd see if they'd planted it in early September and only harvested it for silage. But it can fill a niche when producers need something to graze.

“There are tradeoffs, and maybe eventually we will work out the actual dollar value of being able to do that, but we're still evaluating all of this.”

In irrigated areas in southern Alberta, such as around Lethbridge, there are about 2200 growing degree days (heat units). This is a weather-based indicator for assessing crop development used by crop producers to predict plant and pest development rates such as the date a crop reaches maturity.

“It takes about 1100 growing degree days to produce a barley silage crop to the stage of about 35 per cent dry matter.

“Then after your barley silage is off, that leaves you another 1000-plus growing degree days to plant another crop — almost enough to get two crops of barley silage if you did everything correctly. There is time, then, after taking the barley silage off, to spread

manure and get the land ready, and maybe plant a winter cereal before you start combining,” he says.

“At the Lacombe area, we don’t have that many heat units. We probably have enough to get a winter cereal planted after the barley silage but would not have enough growing degree days to get two crops of barley silage. The cropping system might have to change, to accommodate these sorts of things, and livestock might play a role in making use of the whole-season economic reality.”

Disease issues

Hybrid rye can have ergot problems, but it doesn’t have the same leaf disease and heat issues that barley faces on some parts of the Prairies.

“Leaf diseases in barley can have a significant effect on yield, reducing it by about 25 per cent and can reduce the quality of barley silage. We don’t see that problem with hybrid rye. If you put all your eggs in the barley basket you might have some problems, but if you bring hybrid rye into the mix, even though it costs a bit more to grow, it spreads the risk in terms of yield and quality.”

For backgrounding operations that depend on yield and quality, leaf diseases can have a serious impact on cost of production of barley for silage. They might have to use a fungicide. Depending on the year, a hybrid rye may reduce plant disease problems.

“Open-pollinated fall rye is probably cheapest. Winter triticale may be a good option, as well as hybrid rye. Seed costs vary, and that’s what influences some people’s decisions.

”Producers can evaluate the impacts of fall and spring grazing on cow feed and budget and the need for a reliable supply of cereal silage for backgrounding calves and wintering cows. Management systems may have to be adjusted.

“We are looking at the agronomic requirements and changes along with their implications to accommodate the adjustments.”