

Forage Options to Replace Silage Corn

In fields where Bt rootworm corn hybrids have been used for more than three consecutive years, resistance among corn rootworm populations is suspected. Growers can no longer rely solely on Bt rootworm hybrids for protection against rootworm injury. The best management practice to reduce the resistant rootworm population is to rotate out of corn for at least one year. Growers are encouraged to replace corn for a minimum of one year, but ideally for the next two to three years.

Silage corn is grown to provide energy and fibre in a ration. It has very high yield potential. In addition to breaking corn rootworm lifecycles, alternatives to silage corn need to offer similar yield and nutritional value (Table 1). Double cropping fall rye and sorghum-sudangrass can provide similar yield and quality to a silage corn crop. Grain may need to be added to rations to provide additional energy. **Producers should consult a livestock nutritionist to ensure rations are properly balanced.**

Table 1. Typical nutritional quality and yield of some annual forage crops

Crop	Protein (%)	NDFd (48 h)	TDN (%)	Yield Potential (tonnes DM/ha)
Silage Corn	6-8	55-68	66-72	12.4-15.6
Winter Cereal (late boot to early head)	16.1-16.5	57-73	60-64	5.0-9.0
Sorghum-sudangrass	8-17	50-60	56-70	8.0-12.0

Yield potential of fall rye is maximized when seeded 10-14 days before the optimum seeding date for winter wheat (<https://fieldcropnews.com/2019/08/optimum-planting-dates-for-winter-wheat-in-ontario/>). However, rye can be successfully established after silage corn harvest. Where available and conditions permit, apply manure ahead of seeding. Seed at a rate of 110 kg/ha (100 lbs/acre) and at 2.5 cm (1 in.) depth, or deeper to seed into moisture. For fertility guidelines, see [Chapter 4 of OMAFRA Publication 811: Agronomy Guide for Field Crops](#). Remember to account for nutrients from manure when calculating fertility requirements.

Apply 55-80 kg/ha (50-75 lbs/acre) of nitrogen at green-up in the spring to encourage tillering and increase forage yields. Rye should be harvested between flag-leaf and early boot stage for high-quality forage. In southern Ontario this typically occurs between May 10-20. Cut the crop at the optimum maturity stage and wilt to the target moisture for ensiling or baleage. If the rye shows signs of regrowth, a burn-down to terminate the crop will prepare the field for seeding sorghum-sudangrass.

Winter triticale can be substituted for fall rye. Seeding rates and fertility requirements are the same. Triticale is typically ready to harvest 10-14 days later than rye.

Sorghum-sudangrass requires soil temperatures above 12°C to germinate, so conditions to seed generally occur in the last week of May or early June in southern Ontario. Where available and conditions permit, apply manure ahead of seeding. Seed at a rate of 33-44 kg/ha (30-40 lbs/acre) and at 2-4 cm (0.75-1.5 in.) depth. Use the phosphorus and potassium guidelines for corn (see Chapter 1 of OMAFRA Publication 811: Agronomy Guide for Field Crops). Remember to account for nutrients from manure when calculating fertility requirements. Apply 80-100 kg/ha (90-110 lbs/acre) of actual nitrogen up front, and 50 kg/ha (45 lbs/acre) after first cut.

Sorghum-sudangrass is a two-cut crop. Sorghum-sudangrass should be harvested before heads emerge, which is typically about 60 days after planting. At cutting, the crop is about 70-75% moisture and requires wilting before ensiling or making baleage. It dries slower than alfalfa. To encourage regrowth, leave 10-18 cm (4-7 in.) of stubble when harvesting. A second cut is typically ready 30-35 days after the first cut. Ensure that the crop is at least 65 cm (26 in.) tall before cutting. Wait for some regrowth, then terminate the sorghum-sudangrass with glyphosate to prepare the field to go back into rye.

Cereals and sorghum-sudangrass lose quality and palatability very quickly if harvest is delayed. Where rye (or triticale) harvest conflicts with planting other crops in the spring, harvesting the cereal should take priority. Both cereals and sorghum-sudangrass can be seeded and harvested with conventional forage equipment.

For more information on growing fall rye and sorghum-sudangrass:

- Double Cropping Fall Rye for Extra Forage:
<https://fieldcropnews.com/2013/08/double-cropping-fall-rye-for-extra-forage/>
- The New Crop on the Block: Winter grains harvested for forage are good for cows and soils: <https://hoards.com/article-22964-the-new-crop-on-the-block.html>
- Forage Sorghum-Sudangrass:
<http://www.omafra.gov.on.ca/english/crops/facts/98-043.htm>
- Chapter 3 of OMAFRA Publication 811: Agronomy Guide for Field Crops:
<http://www.omafra.gov.on.ca/english/crops/pub811/pub811.pdf>