

# **Annual Forages for Grazing or Stored Feed**

Scott Banks, Emerging Crop Specialist  
OMAFRA

There are many reasons to look at using annual crops for forages. Winterkill looks likely this spring on forage stands in some parts of Ontario. Graziers also look for alternative forage crops to produce more forage during the typically expected mid-summer slump of traditional grass pastures.

Cereal crops, various forage mixtures, and warm season annual grasses (such as sorghum-sudan grass) can be used to produce quality forage for grazing or stored feed. The timing of production, quality, yield and growing costs of alternative forage crops need to be considered to determine which annual forage is best on your farm. Remember that feed is the number one cost on cow-calf and sheep farms. A well managed perennial forage stand can be productive and is still the lowest cost per tonne of any forage.

There are several annual crops that can be grazed or put up as stored feed. Potential annual forage crops include barley, oats, wheat, triticale, annual ryegrass (Italian and Westerwold), pea mixtures, corn silage, sorghum-sudangrass, sorghum hybrids, sudan hybrids, Japanese millet, pearl millet, forage soybeans and corn silage. To efficiently harvest these crops with livestock, strip grazing is a must in order to reduce wastage and to improve regrowth potential.

## **Cereal Regrowth**

The regrowth after cutting or grazing of spring cereals, such as barley and oats, is variable. Oats has better regrowth than barley. Regrowth will also vary with the maturity of the cereal at first-cut. The more mature the cereal crop is at first-cut, the less regrowth. Low cutting height or over-grazing also reduces the regrowth. As with any crop, rainfall impacts regrowth.

## **Cereal Mixtures**

Seeding in a mixture of species can provide a longer forage season and better forage quality than a spring cereal alone. A winter cereal crop seeded in the spring does not go through vernalization. Without vernalization, a winter cereal will not produce a seed-head during the first growing season. This vegetative growth has a greater leaf/stem ratio than a spring cereal. The other benefit of the intercrop system is it will give two to three harvests per year using the same tillage and seeding pass.

Research on seeding pure and intercropped mixtures was conducted in New Liskeard Agricultural Research Station. Table 1 outlines the seeding rates and Table 2 summarizes the dry matter yields of pure and intercropped mixtures. In pure stands, oats gave the best yield. The intercropped mixture yields were statistically the same, but indicate that Oats + annual ryegrass mixtures should be looked at for the best season-long forage production for grazing.

**Table 1 - Seeding Rates of Pure and Mixtures of Cereal**

<b>Crop</b>	<b>Pure Stands (lbs/ac)</b>	<b>Inter-cropped Seeding Rate (lbs/ac)</b>	<b>Inter-cropped Oat Seeding Rate (lbs/ac)</b>
<b>Oats</b>	63		63
<b>Fall Rye</b>	63	50	50
<b>Winter Triticale</b>	68	54	50
<b>Italian Ryegrass</b>	23	18	50
<b>Westerwold Ryegrass</b>	23	18	50

New Liskeard Agricultural Research Station

**Table 2 - Pure and Mixtures of Cereal Dry Matter Yield (tonnes/acre) - Pure Seeded**

<b>Crop</b>	<b>1st Cut July 20th (DM t/ac)</b>	<b>2nd Cut Sept 2nd (DM t/ac)</b>	<b>Total Yield (DM t/ac)</b>
<b>Oats</b>	2.40	0.97	3.36
<b>Winter Rye</b>	0.65	0.95	1.60
<b>Winter Triticale</b>	0.61	1.22	1.82
<b>Italian Ryegrass</b>	0.86	1.82	2.68
<b>Westerwold Ryegrass</b>	0.81	2.15	2.97

New Liskeard Agricultural Research Station

**Table 2 - Pure and Mixtures of Cereal Dry Matter Yield (tonnes/acre) - Intercrop with Oats**

<b>Crop</b>	<b>1st Cut July 20th (DM t/ac)</b>	<b>2nd Cut Sept 2nd (DM t/ac)</b>	<b>Total Yield (DM t/ac)</b>
<b>Oats + Fall Rye</b>	2.23	0.85	3.08
<b>Oats + Fall Triticale</b>	2.32	0.93	3.26
<b>Oats + Rye + Triticale</b>	2.04	0.85	2.89
<b>Oats + Italian Ryegrass</b>	2.41	0.97	3.38
<b>Oats + Westerwold Ryegrass</b>	2.39	1.11	3.50

New Liskeard Agricultural Research Station

## Pea Mixtures

Adding peas to a cereal mixture for forage has been shown to increase crude protein by 2 - 4%, and decrease NDF by 2 - 6%. To obtain this improved forage quality, a 50:50, peas:cereal mixtures needs to be seeded. Depending on pea seed price, this mixture can be costly.

## Warm Season Annuals

If forage seeding is delayed into late-May and June, warm season annual forages are more productive. Sorghum-sudan grass, hybrid pearl millet, hybrid sorghum, sudan grass and Japanese millet can be grown. These plants are frost sensitive and should be planted when the risk of frost has passed. Seed when soil temperatures have reached 12 to 15 °C. Warm soil temperatures are important for quick emergence to be competitive against emerging weeds. A first-cut is ready about 60-65 days after planting and a second-cut can be cut or grazed 30 - 35 days after 1st cutting or grazing. Pearl millet should be planted only on a sandy to sandy-loam soil type. On heavier soils, hybrid sorghum, sudan grass or sorghum-sudan grass are better suited.

## Livestock Needs & Feed Costs

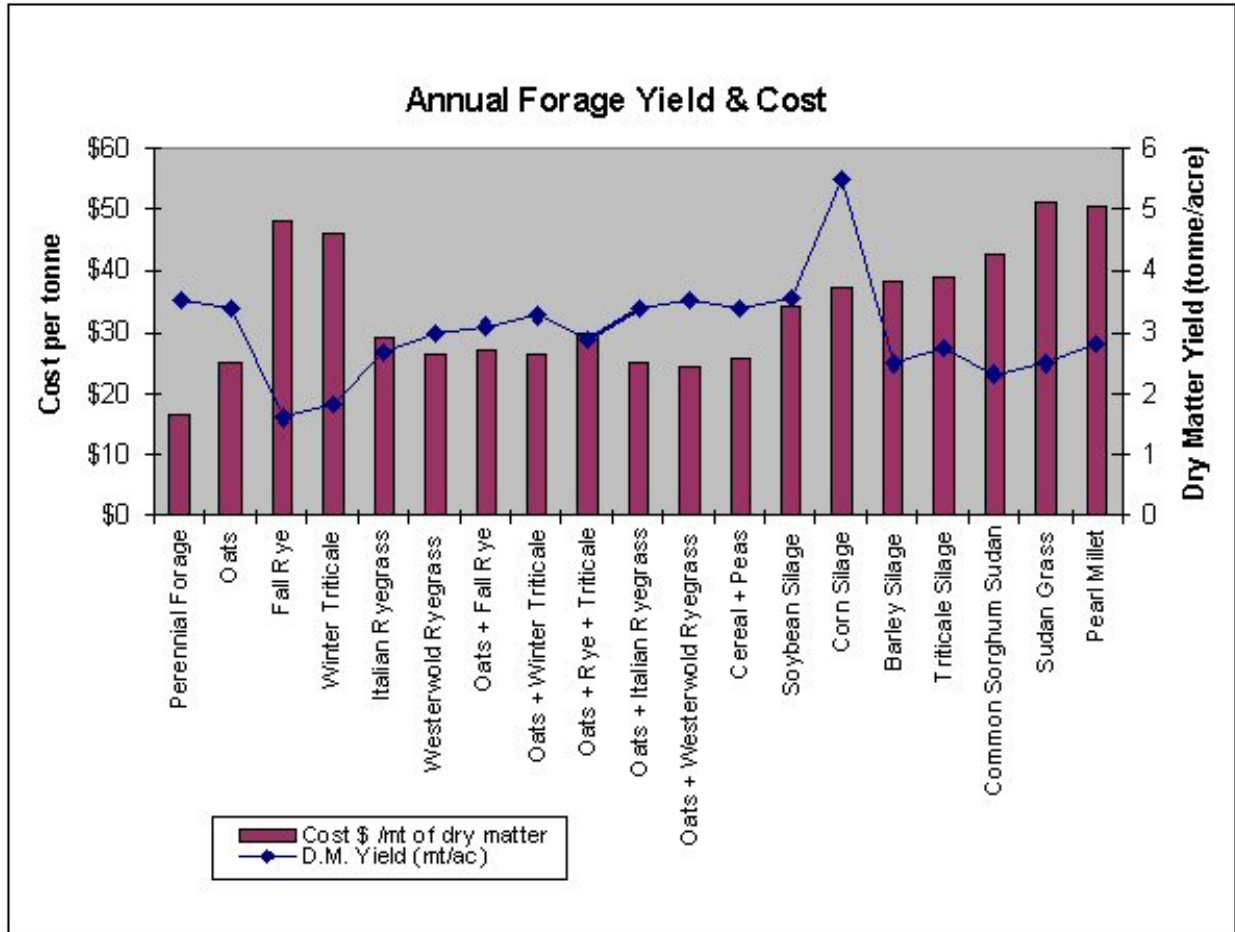
Livestock needs are also important in selecting the annual forage species that is best for your farm. Forage yield and quality varies between crop species as well as harvest management. Table 3 provides a comparison of the dry matter yield, crude protein and total digestible nutrients (TDN) of several forage species. Figure 1 provides a yield and cost comparison of several annual forages.

**Table 3 - A comparison of the Dry Matter Yield, Crude Protein and Total Digestible Nutrients (TDN)**

Species	Yield (Dry Matter tonne/acre)	Crude Protein %	TDN %
Corn Silage	5.5	8.0	68
Annual Ryegrass	2.7	14.6	66
Sorghum-Sudan <sup>2</sup> (Vegetative Stage)	2.3	17.0	70
Sorghum-Sudan <sup>1</sup> (Headed Stage)	4.1	8.0	56
Sudan Grass Hybrid <sup>2</sup>	2.5	14.2	66
Japanese Millet <sup>2,3</sup>	3.0	10.1	56
Pearl Millet Hybrid <sup>2</sup> (Vegetative Stage)	2.8	16.1	64
Soybean Silage <sup>1,3</sup>	3.6	13.5	71

- <sup>1</sup> - 1-cut harvest
- <sup>2</sup> - 2-cut harvest, good growing conditions
- <sup>3</sup> - Limited Data Available

**Figure 1 - Yield & Cost Comparison of Annual Forages**



**Use Your Own Assumptions & Costs**

Note: Costs are calculated using current seed costs, recommended seeding and fertilizer rates, herbicides where appropriate, and custom rates for tillage and planting. They do not include any harvesting costs such as labour, fencing or cutting, silage or baling costs or land costs. You should use your own assumptions to calculate your options for your operation.

The right forage species for your farm will depend on your livestock’s forage needs, the availability of equipment or custom operators, storage if required, how it compliments the other available feeds on your farm and the cost of each annual forage option. As illustrated in Figure 1, a well managed pasture or perennial forage stand is still the lowest cost forage.