



## Use of Brassica Crops in Grazing Systems

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Forage Brassicas, such as rape, kale, turnips, and swedes, are high yielding, high quality, fast growing crops. The above ground parts (stems and leaves) of rape and kale and all parts (stems, leaves, and roots) of turnips and swedes are utilized by livestock. Brassicas are high quality forage if harvested before heading. Above ground parts normally have 20-25% crude protein and 65-80% TDN. The roots of turnips and kale usually have 10-14% crude protein and 80-85% digestibility. Brassicas can provide grazing at any time during the summer or fall depending on seeding date. A promising use may be for late fall grazing. These crops maintain quality, if not heading, well into freezing temperatures and may be grazed into November.

Turnips grow fast and can be grazed as early as 70 days after planting. They reach near maximum production levels in 80 to 90 days. The proportion of top growth to roots can vary from 90 percent tops/10 percent roots to 15 percent tops/85 percent roots. Some hybrids have fibrous roots that are not readily grazed by livestock. Turnips can be seeded any time from when soil temperature reaches 50o until 70 days prior to a killing frost. Some of the most promising varieties are Green Globe, York Globe, and Sirius.

Swedes, like turnips, produce large edible roots. Swedes yield more than turnips but require 150 to 180 days to reach maximum production. Swedes usually produce a short stem but can have stems up to 2½ feet long when grown with tall crops which shade the swede. Swedes would generally be recommended for late summer seeding. Some of the most promising varieties are Calder and Sensation.

Rape is one of the best crops for fattening lambs and flushing ewes. Rape is a multi-stemmed crop with fibrous roots. Stem height, diameter, and palatability vary with variety. Yield is maximized with a 180 day growth period for many varieties while most hybrids, on the other hand, produce greatest yields when allowed to grow 60 days before first harvest and 30 days before the second harvest. The most promising varieties are Rangi (which retains its leaves longer than most varieties), Fora, Wairoa, and the hybrid, Tyfon.

Kale varieties vary greatly in establishment characteristics, stem development, and time required to reach maturity. Stemless types reach a height of about 25 inches; the narrow stem types reach a height of 60 inches with primary stems up to 2 inches in diameter. Stemless kale reaches maturity in about 90 days, allowing a second harvest, while varieties that develop stems reach maturity in 150 to 180 days. The most promising varieties are Marrow-stem and Gruner.

## Establishment

Brassicas require good soil drainage and a soil pH should be in the range of 5.3-6.8.

Brassicas can be no-tilled into a sod provided it has been killed with glyphosate. This reduces insect problems. They can also be seeded into wheat stubble. Clean till seedings work well but may have increased insect pressure. Use 1.5 to 2 lbs/a of seed for turnips and swedes and 3.5 to 4 lbs/a for rape and kale. Drill the seed on 6-8" row spacing and place seed no more than 0.5" deep.

Fertilizers should be applied at the time of seeding to give the brassicas a competitive edge on weeds.

Apply 75 lbs/a nitrogen. Fertilize with phosphorus and potassium similar to what would be applied for a small grain. Boron may also be needed.

## Grazing

Brassica crops can cause animal health disorders if not grazed properly. The main disorders are bloat, atypical pneumonia, nitrate poisoning, hemolytic anemia (mainly with kale), hypothyroidism, and polioencephalomalacia. The disorders can be avoided by the following two management practices:

1. Introduce grazing animals to Brassica pastures slowly (over 3 to 4 days). Avoid abrupt changes from dry summer pastures to lush Brassica pastures. Don't turn hungry animals that are not adapted to brassicas into a Brassica pasture.
2. Brassica crops should not constitute more than 75 percent of the animal's diet. Supplement with dry hay if continually grazing brassicas or allow grazing animals to access grass pastures while grazing brassicas.

Grazing can begin when the forage is about 12 inches tall (70 to 90 days after planting). The pasture should be grazed for a short time period and the livestock removed to allow the Brassica to regrow. Rape may be grazed to a 10 inch stubble and 1 to 4 grazing periods may occur, depending on planting date and growing conditions. Turnips may be grazed to the ground the first time and the both tops and beets grazed in the second grazing. It is usually not necessary to dig the beets unless the soil is very hard.

The forage quality of Brassica is so high that it should be considered similar to concentrate feeds and precautions should be taken accordingly. Livestock should not be hungry when be put on pasture the first time so they do not gorge themselves. A lower quality hay should be made available to provide some fiber in the animals' diet.

A last note, do not grow brassicas in the same field for more than two consecutive years as diseases will build up to reduce stand and yield.

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