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## No-tilling brassicas in pastures touch-and-go



Photo supplied

It can be difficult to get no-tilled brassicas to establish in existing pasture sod. This successful strip was first burned back with glyphosate.

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*Last in two-part series*

There is a lot of value in adding brassicas to pasture systems, according to A. Fay Benson, project manager for New York's Organic Dairy Initiative and small dairy support specialist with Cornell University's South Central New York Dairy Team.

For the last several years, he and cooperating farmers have been experimenting with no-tilling radishes into grazing swards with mixed results.

Benson has been working with grazing and organic dairy farmers for 10 years and also has a farm of his own.

Recently, he shared the ins and outs of brassicas in pastures during an Extension eOrganic

webinar. Dairy and livestock producers do not have to be organic to benefit from Benson's insights.

Calculating that cows can eat 1.3 percent of their bodyweight of neutral detergent fiber (NDF) from forage on a dry matter basis, changing NDF from 50 to 36 allows cows to eat 43 pounds of pasture with turnips versus 31 pounds of the usual pasture on a dry matter basis.

One 1,200-pound cow producing 50 pounds of milk requires 23 pounds of pasture and 8 pounds of corn meal or 43 pounds of pasture with turnips.

The cost different is \$1.60 per cow per day, he calculates as a rough estimate of the savings with the turnip.

Thus adding brassicas to pastures can make them more productive, Benson contends.

Benson says rape, turnips or turnip hybrids can be planted mid-July to mid-August for grazing from late October to the end of December.

Swede or kale can be planted in May for the same late-season grazing period. Rape, turnips and stemless kale should be planted in May or possibly into early June for grazing in August and September.

Benson says rape is mostly leaf and not much stem or tuber. Turnips are the fastest growing, first producing 8 to 10 inches of leaf before starting their tubers. The longer that they are allowed to grow, the larger the tubers get.

Swede or stem kale produces big tubers, according to Benson. Popular in Europe, they need to be planted during the spring and grow all season long.

He notes that rape, turnip and stemless kale planted in May for grazing in mid-August is typically grown with annual brown midrib (BMR) sorghum.

There are some feeding concerns with brassicas, Benson admits. But they can be controlled with management. He warns of cool season growth, along with nitrogen fertilization, can lead to nitrate poisoning. These crops' high protein content can cause bloat.

Benson also suggests increasing iodine in feed to alleviate thyroid condition, keeping brassicas away from cows for 4 hours before milking to avoid off flavors and avoid feeding to dry cows because the potassium level is too high.

Benson suggests introducing grazing animals to brassica pastures slowly.

"Avoid abrupt changes from dry summer pastures to lush brassica pastures," says Benson. "Don't turn hungry animals that are not adapted to brassicas into a brassica pasture."

Furthermore, brassica crops should not constitute more than 75 percent of the animals' diet. Producers should supplement with dry hay if they are continually grazing brassicas or allow grazing animals access to grass pastures while grazing brassicas. Be sure to feed kelp or another iodine source. Benson adds that no-till establishment into existing sod will reduce the risk of these disorders because of the existing grass in the brassica pasture.

He says turnips with a yield of two tons to the acre of tops and an additional ton of bulb is on par with corn silage in terms of feed value with a much shorter growing season.

So why are brassicas not used more in pastures?

They have a short growing season, they can have livestock health and flavor issues, they do not persist and do not tolerate drought; however, their benefits include rapid growth after planting, a mineral profile good for dairy, inexpensive seed, good as a nurse crop or catch crop and tillage is their preferred method of establishment, which makes them well-suited to pasture renovation.

Benson says no-till would solve many issues involved with brassicas. It would reduce the cost of establishment. Pastures would already have brassicas in them to balance the diet. They could

lengthen the grazing season.

Benson has been working with producers in New York for 6 years on no-tilling brassicas.

For instance, on one farm, he used an Atchison drill to no-till 5 pounds of clover and 3 pounds of Pasja turnips early August. Results were admittedly spotty.

The turnips grew well along cow paths and he theorized that competition was a problem; a wet August brought the grasses back in 30 days.

As it turned out the competition was the wrong theory. Fertility was more the issue.

Benson worked with three farms and an acetic acid burn back, i.e., organic, to suppress the pasture sward.

Two of the farms experienced a wet August. While there were some clumps of the brassica, most of the pasture plots went back to the original sward.

For this year's project, he switched to Daikon radish and decided that it was not competition of other pasture species so much as soil compaction in the pasture that was the problem.

He noticed fenceline sward differences such as cool season grasses remaining along the fencelines while sedges were invading the pasture due to lack of oxygen in the tighter soil.

Also the penetrometer measured 125 pounds at the fenceline and 250 pounds in the pasture, denoting looser soil along the fences.

In this year's project, Benson used 10 percent acetic acid with an additional organic burndown of salt in the solution. Despite seemingly better burndown at 4 weeks, grasses were overtaking the turnips and the turnips were turning yellow.

After 2 months his plots looked the same as the control. Conventional plots with a glyphosate burndown were better but they, too, struggled.

Benson, consulting with a Cornell agronomist, determined that disease was not the problem with the yellowing brassica.

It was probably starvation, he remarks.

Benson determined that pasture biology needs to be jump-started so that the soil would release nutrients, as he saw better results where an Atchison drill that disturbed the roots.

He stresses that this is a totally untested assumption at this point; however, he believes shoe-type openers result in more soil disturbance and more biological activity in the soil.

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