# Turnips & other Brassicas provide new forage

UNIVERSITY PARK — Conservation tillage has revitalized the use of turnips and some other related crops as new forage crops, according to a U.S. Department of Agriculture agronomist.

The use of this high-yielding, nutritious, and highly digestible new forage was reported by Gerald A. Jung this month in the Journal of Soil and Water Conservation's special issue on conservation tillage.

With conservation tillage, turnips are planted directly into the sod of an existing pasture. Since the roots of forage turnips grow mostly above the ground, it is easy for the animals to serve themselves, said Jung of USDA's Agricultural Research Service.

No new crop, turnips were brought to the U.S. by early settlers from Europe who knew the value of this crop as an animal feed. But the labor required for planting and hand-harvesting caused farmers of the early 1900's to replace turnips with less labor-intensive animal feed, like corn silage.

Shifting from pasture to row crops causes a significant increase in erosion. By improving the efficiency of pasture lands, this new forage may prevent future conversion of pasture lands into use for row crops like corn.

Forage turnips can be grazed in all kinds of weather, said Jung, since the sod remaining between the turnip rows prevents soil compaction. Also, turnips retain their nutritional value long after cool-season grasses have reached their peak. "Animals can graze turnips until December" Jung said.

Turnips are related to several other members of the Brassica family that are also under study at USDA's U.S. Regional Pasture Research Laboratory. The list includes rape, kale and rutabagas (also called swedes).

Brassica crops are about 85% to 95% digestible by farm animals, as predicted by standard laboratory tests. This compares favorably to the digestibility of good alfalfa at 70%, according to Jung.

Rutabagas and kale reach yields of over six tons of dry matter per acre in 180 days. Turnips and rape produce as much as four tons (dry weight) per acre in ninety days, and they can be harvested twice a year — in August and November. With good management, one acre of 90-day-old turnips will support 20 sheep for 50 days, Jung said.

Since Brassica crops do not compete well with grasses, an application of herbicide is necessary to make the sod dormant for a few weeks until the crop gets started. Herbicides, such as paraquat or glyphosate, used in early August for establishing turnips and rape for fall harvesting had no apparent carry-over effects on the growth of the sod the next spring. Fertilizer application is also necessary to produce high yields.

The high nutritional value of the Brassicas makes them desirable as an animal forage. Rape and kale leaves contain up to 25% protein, and the stems contain about 10%. Turnip and rutabagas have about 13% protein in the leaves, and up about 8% protein in the roots.

The mineral content of the Brassica crops is higher than most grasses. The leaves of Brassica plants have high concentrations of magnesium, sodium, iron, manganese, and zinc. One element that may be deficient is copper.

Further research at the U.S. Regional Pasture Research Laboratory by David Gustine, will determine if goitrogenic substances are present in Brassica crops.

Jung and his colleague Robert A. Byers, also with USDA's Pasture Laboratory, working with Willis L. McClellan and Lynn D. Hoffman of Penn State have successfully grown Brassica crops in the hill lands of Pennsylvania, West Virginia, Ohio and Illinois. These crops are also considered to have good potential for central Washington and northern Oregon, according to Jung.

# DVC holds research session

DOYLESTOWN — A joint meeting of the Northeast regions of the American Dairy Science Association and the American Society of animal Science was held recently at Delaware Valley College. The 200 members in attendance came from an area that stretched from Canada to West Virginia.

The members are all animal or dairy scientists who are actively engaged in research, extension or education in the animal and dairy science fields. Most of the two-day session was spent in listening to technical research papers and attending a symposium of metabolism.

Highlight of the meeting was the awards banquet. Members and their guests were welcomed to the college by Joshua Feldstein, President of DVC. Principal speaker was H. Louis Moore, Penn State Agricultural Economist.

In his remarks, Moore said, "We don't have all the answers in marketing." He mentioned the PIK program which has driven corn prices up in the last several months; said that he sees no downturn in the milk supply, and also said the Russians have only agreed to talk to the U.S. on grain sales.

"We don't know what's going to happen," he said. "Farmers are increasingly critical of the marketing system in this country, because their share of the consumer dollar is going down. In 1980, it was 38 percent, in March 1983, it was 31 percent."

Moore also said that the more highly processed a product is, the less the farmer is going to get. He said, "Farmers are reluctant to spend any money on marketing. Rather than invest heavily with their own money, they join co-ops, and then tend to expect the government and the processors to bail them out if the going gets tough."

He said very few people get involved in marketing changes unless there's something in it for them. "Farmers want to hold all the cards," he said.

In closing, Moore said, "Don't look for any big changes in marketing. In the long run, efficient production, advertising and promotion will help the farmer."

In the graduate student competition, first place went to Cathy Gust, PhD candidate in reproductive physiology from West Virginia University. Second place went to Ken Kephart, PhD in Animal Industry, Penn State, and third place to Chuck Curtis, PhD candidate in Veterinary Medicine and Epidemiology from Cornell-H.S.

# Dauphin Co. DHIA

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