

No-Till Vegetables Trap Soil Moisture, Stem Weeds, Keep Harvest Clean

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developed the technology.

Morse spoke about the no-till transplanting equipment that he helped develop and refine for the past five years. The device, which can adapt to any finger or carousel-type transplanter, is called the Sub-surface Tiller-Transplanter, or SST-T for short.

Morse, who wore a baseball cap with the inscription "Say Yes To No-Till," said that the no-till approach to transplanting vegetables began with a producer who wanted to grow cabbage in a county south of Blacksburg, Va., on a slope that was prone to severe erosion. Researchers started a hand-transplanting trial with a cover mulch, which worked fine, but a commercial, high-volume applicator was needed. This led to the development and refinement of SST-T for commercial use.

Steve Groff has about nine acres of no-till vegetables this year. They include one acre of broccoli and eight acres of tomatoes (three acres fresh market and five acres commercial). The tomatoes are grown using a hairy vetch cover, pioneered by Dr. Abdul-Baki, who developed the cropping system at the USDA-ARS Beltsville Agricultural Research Center.

Before using the transplanter system on broccoli, Groff uses a rolling stalk chopper to flatten and crimp the mulch cover (Groff uses a combination German millet and forage soybean mixture).

The two-component system, according to Morse, uses a subsurface tiller which works like a deep-tiller to loosen the ground underneath the mulch. Then a transplanter, finger or carousel type, can be used to insert the plug plants. Two shoes then roll over top of the soil, packing it around the plug.

While some of the millet/soybean cover may recover after rolling and crimping, the weeds are kept at a level that they don't affect potential yield. On the Groff farm, a demonstration made use of the stalk chopper and the transplanter. The broccoli was planted in rows 18 inches apart with 18 inches between plants.

The advantage to using broccoli with this method is the faster canopy, allowing the natural mulch to break down and retain moisture while stemming weed pressure.

The SST-T has been used successfully with 16 different crops, including most species of cabbage, in addition to broccoli, cauliflower, tomatoes, potatoes, cucumber, watermelons, and pumpkins. All vegetable crops seem to work well with this no-till approach, according to Morse.

Morse worked on a successful no-till trial using potatoes.

The only drawbacks to using the SST-T and no-till material are that there are some concerns, because of the potential for moisture retention, about slugs (not experienced at the Groff farm) and the fact that mulches cool the soil. As a result, according to Morse, no-till works well with late-planted vegetables.

The SST-T has been modified over the years so that it is a one-pass machine. In one pass over the field, the tiller breaks up the cover, deep tills, transplants, fertilizes, and even lays a drip irrigation line. This helps keep soil compaction down.

Also, using no-till reduces the amount of weed seed that can germinate in the soil. This produces what Morse refers to as a "stale seedbed," ideal for growing any type of vegetable crop.

"Pumpkins are a particularly good crop for no-till systems," said Morse.

Morse said that Virginia farmers have expressed interest in the technology mostly because it allows them to work the fields and harvest when they choose. He has seen good results, too — less early

blight with tomatoes (soil does not splash onto the leaves) and less late blight with tomatoes and potatoes.

"We encourage people to give it a try, even a little bit, say a half-acre or so," said Morse. "Work with county agents and growers such as Steve Groff."

Groff recently purchased the rolling stalk chopper for use on all the vegetable acres.

"The beauty of the machine is that it is fast and easy to use," said Groff. The transplanter was rented from the Keystone Soil and Water Conservation Society for \$10 per acre.

To rent the machine, for producers in Lancaster, contact the county conservation district at 299-5361; for York producers, contact the district at 755-2966; and for other counties, contact Ron Phelps at the Pocono RC&D at (717) 586-1019.

Also at the field day, trials included the advantages of narrow row corn, no-till soybeans, no-till tomatoes, early tomatoes, processing tomatoes, and no-till pumpkins.

* The Reporter got to the field day late and missed the 15" corn segment. Hence not much information