

Innovative Cultivating Tools – U of Connecticut, Joseph Sieczka

The old adage goes "The more things change, the more they stay the same." This applies to the new interest in **cultivating equipment**. With the availability of selective herbicides for many crops, cultivating equipment was not used as intensively in the last several decades as it was before then. That generalization does not apply to many "minor crops," which do not have a broad spectrum of registered herbicides or to organic vegetable crop production. New approaches and modification of some old style equipment are providing vegetable growers more opportunities for weed control.

Regardless of the equipment, the most effective time to control annual weeds is when they are small, often so small you don't see them. That is when they are just beginning to emerge. The term that is often used at this stage of growth is "white thread," because the germinating plants look like thin white threads just before emergence.

What is the best cultivating tool? There is no single answer to that question. The proper tool or tools vary with crops, weeds, soil type and soil condition. The following are some characteristics of new, and not so new, cultivating tools.

S-tine cultivators. In general, S-tine cultivators are variations of what were termed potato or corn weeders. The new models have S-shaped tines that are more flexible than the tines on the old style weeders. The tines typically can be adjusted to provide varying degrees of "aggressiveness." The tines can also be raised over the crop row to allow cultivation after emergence. Using this type of implement in large seeded crops like corn, peas, beans, etc in a "blind" cultivation mode before emergence will help control within-row weeds. As crops get to the three-inch stage, the tines immediately over the rows can be raised or intensity lessened. The use of this type of equipment may have application with small-seeded crops but care must be taken to minimize crop damage. Some manufactures of S-tine cultivators include Lely, Rabe Werk, Einboch, and Williams.

Brush Hoe. The brush hoe is an aggressive between-row cultivator. It is, in effect, a modification of a street sweeper. The stiff brushes are powered by the tractor PTO and "scrub" the surface soil destroying small- and relatively large-sized weeds. The unit has tunnel shields to protect the crop plants. If used early enough with competitive crop plants, the dust mulch that settles between crop plants helps reduce weed growth within rows. The unit is operated at slow speeds and requires an individual on the brush hoe to steer it. It is relatively expensive when compared to other cultivation equipment. The brush hoe evaluated in New York was made by Bartschi FOBRO AG.

Spider or rolling cultivators. These units are ground-driven and stir the soil as they are moved forward. They can be adjusted to be used as a cultivating tool or could be used for hilling crops. Stones can damage the spider tines or become lodged between them affecting the performance.

Between-row cultivators. Standard between-row cultivators can be equipped with a variety of weed controlling options. Straight teeth, narrow or wide sweeps, knives and discs are available for different tasks. When used for weed control, the units should be set no deeper than needed to

control weeds. Very deep cultivation often is not as effective as shallow cultivation and can damage crop roots and deplete soil moisture.

Other cultivating options. Buddingh makes several units that are adapted for vegetable production. The "**Basket Weeder**" is a combination of front-mounted ground-driven baskets that drive the rear baskets at higher speed churning the soil between rows. Basket weederers are generally mounted under the belly of the tractor and are used in crops that have three or more rows per bed.

Another Buddingh unit is called a "**Finger Weeder.**" It is also a "belly-mounted, ground-driven unit." It consists of spring-loaded finger cones that move soil within rows of crops like corn, beans and peas with minimal injury.

Torsion weederers are thin bars that are adjusted to be close to small plants in light soils. As these bars move through the soil, they lift and vibrate young weeds near crop plants. The operation is slow and must to be done with precision.

None of the above-mentioned tools will give perfect results all the time. The timing of cultivation is critical to achieving the desired results. Young weeds are easier to control than older established weeds. Conditions in the Northeast don't always allow a critical cultivation because of wet soils. With many crops, the use of a banded herbicide will control weeds in the row and provide more flexibility in controlling weeds between rows. The key is to get the weeds when they are small.

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