University machinery specialist outlines proper care for sprayers and no-till planters

NEWARK, DEL.—The planter is the basic unit in the no-till system. To insure success it must be equipped and operated properly, says Delaware Extension machinery specialist Thomas H. Williams.

A rolling coulter is mounted in front of the planting unit to cut through the mulch and till a narrow strip for seed placement. There are five types of coulters available: The serrated edge, ripple, 3/4, 1, and 2 inch fluted.

Tests at the University of Delaware show each type has its advantages and disadvantages. The serrated edge (plow coulter) cuts better and needs less weight for penetration but tills the least. The 2 inch fluted type needs more weight for penetration but gives more tillage. The other types fall somewhere in between.

Coulters can also be used in tandem combinations, says Williams. Coulters should be operated no more than one or two inches deeper than seeding depth. If the coulter is mounted close to the planter unit, it tracks better and a narrower coulter can be used.

Planting units should be equipped with double disk openers and depth bands or gage wheels to assure uniform seeding depth. Strive for one inch of soil covering soybean seed and 1.5 inches of soil covering corn seed. The recommended ribbed drive and covering wheel will leave a half-inch depression below the soil surface. Therefore, depth bands would be 1.5 to 2 inches for soybeans and 2 to 2.5 inches for corn. If there is a heavy mulch, this thickness must also be considered when selecting depth bands.

Another desirable accessory is a seed firming wheel. This is a one inch by seven inch diameter rubber tired wheel that runs directly behind the double-disc openers. This firming wheel assures good seed to soil contact necessary for germination. It is most effective when planting under dry soil conditions.

For uniform stands with no-till, do not operate the planter over 4.5 miles per hour. If the soil is wet, an even slower speed is desirable. If the soil is very wet, don't plant.

Other accessories can be added to the planter as required, such as granular insecticide, granular or liquid fertilizer and anhydrous ammonia applicators. No-till planters should be capable of planting soybeans in narrow rows, 20 inches or less.

Spraying equipment can also be added to the planter for a one trip operation or operated separately. In either case, no-till herbicides require a minimum of 40 gallons of water per acre to be effective. More water is even better. Sprayer nozzles should be mounted high enough to give complete coverage of existing vegetation with herbicides. If the sprayer is mounted on the planter, a ground driven positive displacement pump is desirable for accurate application rates with varying ground speeds. Centrifugal PTO driven pumps can be used for agitation.

Proper adjustment and accurate calibrations of both planting and spraying equipment prior to field use is absolutely essential to successful no-till farming, says Williams. Improperly adjusted equipment wastes pesticides by applying more than is needed or less than enough to do the job. Sprayer calibration is affected by sprayer line pressure, nozzle orifice size, and, most of all, tractor ground speed. For best wear use lower pressure and larger stainless steel nozzle tips.

Before calibrating a sprayer, make sure all nozzles are discharging at a uniform rate. Clean each nozzle thoroughly, then run the sprayer in a stationery position with clear water at normal spraying pressure. Place quart jars under nozzles to catch the discharge from each one. Water level in all jars should rise at the same rate. Replace any nozzle that has a discharge rate different than the others.

If the sprayer is clean, has new nozzle tips and a reliable pressure gauge, the charts and table furnished by manufacturers of nozzles may be used, after the tractor speed has been determined.

The best speed for spraying is two to three miles per hour, says Williams. To estimate a tractor's speed, measure off a distance of 300 feet and have someone time your tractor. At a speed of 2.5 miles per hour it takes 27 seconds to travel 100 feet; 55 seconds to travel 200 feet; and 82 seconds to travel 300 feet. Have the sprayer moving at a constant speed when crossing the beginning

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