NO-TILLAGE IN NORTH CAROLINA

W. M. LEWIS

No-Till Acreage in North Carolina

Crop	1977	1982
	- - - Acres - - -	
Corn	140,000	225,000
Soybeans	160,000	250,000
Grain sorghum	3,000	5,000
Forages	20	1,000

Prior to the 1982 and 1983 planting seasons, considerable educational effort was undertaken by the extension service, soil conservation service and agribusiness interests. There seemed to be an increased awareness of the conservation and labor-saving aspects of no-till and other reduced tillage systems among farmers. Fuel shortages also increased interest in no-till. Most of our no-till soybeans are double-cropped behind small grains, particularly wheat. One of our largest wheat crops was planted in the fall of 1981 culminating a three-fold increase in wheat acreage during the previous five years. Therefore, the acres of no-till soybeans planted in North Carolina directly relate to small grain plantings.

The acreage of no-till corn and probably soybeans will be down in 1983 due to the PIK program. In the Piedmont for 1983, no-till planted acres increased in percent of the total corn acreage planted. The johnsongrass-infested acres which require incorporated herbicides were set-aside. With present technology we expect only slight future increases in no-till corn acreage. No-till double-cropped soybean acreage should continue to increase in the future. A breakthrough such as preemergence or postemergence control of johnsongrass in corn or a vigorous legume cover crop which can be easily and economically established could provide a real boost to no-till corn production.

NO-TILL PRACTICES

General practices for no-til1 corn production in North Carolina

Planting time: when early morning soil temperature at seeding depth is 50°F
Variety selection: Similar to conventional planted corn
Seeding rate: 10% above that for conventional tillage

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Cover crop or residue: Majority of no-till planting in soybean or corn refuse of the previous year. On More sloping land it is planted into wheat or rye mulch.
Row width: 30 to 36-inch rows
Herbicides:
Control of existing vegetation: Paraquat for annual weeds and small grain cover crops. Roundup for control of annual grasses over 3 inches tall, legume cover crops, smartweed and horseweed and slight infestations of perennial weeds. 2,4-D for only broadleaf weeds.
Residual herbicides:
AAtrex + Princep
Lasso + Atrazine or Bladex
Dual + AAtrex
Planters: Fluted, serrated or notched coulter in front of double disk seed opener, ribbed press wheel common, increase in units with wheels firming soil from the side. In-row subsoiling practiced by a few farmers in the Coastal Plains on soils subject to hardpans. Not effective in Piedmont soils.
Fertilizer: Complete fertilizer applied broadcast is most common. Some applied as starter fertilizer in a band or within furrow. Additional nitrogen sidedressed.
Insecticides: Furadan or Counter in the furrow or Lorsban banded.

General practices for no-till soybean production in North Carolina

Planting time: Double cropped as soon as possible after small grain harvest
Variety selection: Medium to late maturing varieties
Row width: 18 to 20 inches
Seeding rate: 5 to 7 seeds per foot of row
Herbicides:
Control of existing vegetation: Paraquat or Roundup
Residual herbicides:
Dual + Lorox or Lexone or Sencor
Lasso + Lorox or Lexone or Sencor
Surflan + Lorox or Lexone or Sencor
Postemergence herbicides: Basagran, Blazer, Poast, and Fusilade
Fertilizer: P and K applied broadcast. If high soil test levels have been maintained in the preceding crops, usually no fertilizer is applied.

NO-TILL RESEARCH EMPHASIS

Weed scientists have gathered considerable evidence that Roundup at 1.5 to 2.0 qt/A has economically increased yields in no-till corn planted into a green small grain cover crop and in soybeans if planted into weeds. Work is currently being done on evaluating lower rates of Roundup with additional surfactant and reduced carrier volume. The allelopathic effects of wheat and rye straw on the germination of broadleaf weed seeds are being examined. Reduced germination of morningglory, prickly sida, pigweed and lambsquarters has been confirmed and

and several phytotoxic chemicals isolated and identified. The contribution of chemicals leaching from mulches and not disturbing the soil with tillage on suppression of certain broadleaf weeds in no-till crops is being closely examined. Weed population shifts are being evaluated in long term herbicide studies under no-till. New experimental herbicides are being evaluated for control of existing vegetation at planting time as well as the role of the new postemergence herbicides applied over-top for annual grass control and johnsongrass control in no-till soybeans. The potential and techniques of no-till flue-cured and burley tobacco production in a killed cover crop are being studied including effects on soil erosion and quality and yield of tobacco.

Legume cover crops and their establishment for nitrogen production in no-till corn are being studied by crop science extension specialists. Soil scientists are continuing their research on reduced tillage systems including in-row subsoiling and recently new research personnel will study soil structure, moisture, temperature, and various aspects of no-till systems. Entomologists are evaluating the importance of starter or pop-up fertilizer in corn to reduce the susceptibility to early postemergence insect damage. Plant pathologists are investigating nematode control in no-till corn and the effects of no-till on nematode populations.