

NO-TILLAGE REPORT FROM FLORIDA

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INTRODUCTION

No tillage or minimum tillage production of crops has become an excepted practice with many growers in Florida. Deep tillage or in row subsoiling has long been known to result in increased crop yields in the Southeast Coastal Plain. Most of the no-till planters that were on the market early, only opened up a slot for the seed and did no additional tillage. Since it was known that deep tillage was necessary for optimum yields in the Southeast, no-tillage was slow to be introduced. In the period around 1976 to 1977 a no-till planter plus in row subsoiler was developed for use in no-tillage conditions. This planter resulted in yields similar to what could be expected with deep tillage planting under conventional conditions. At that time only fifteen to twenty thousand acres of wheat were being grown in Florida to be doublecropped with. However, as much as 200,000 acres of rye was being grown for grazing. This opened up opportunities in Florida for no-till planting. In many cases, wheat was followed with row crops while rye had either row crops or summer pasture following it. No more than 2,000 to 5,000 acres were used as no-till mulch. By 1982, with the introduction of adapted wheat varieties, approximately 155,000 acres of land was planted to wheat for grain. Another 250,000 acres were planted to either oats or rye for grazing. This led to the use of more no-till planting. Improved no-till equipment with in row subsoiling resulted in an increased acreage planted no-till. About 300,000 acres are now in conservation tillage in Florida.

In Florida, corn, soybeans, and grain sorghum were planted into small grain stubble or grazed winter pasture. These cover crops could be killed with an application of Paraquat at planting time. Rye was often more difficult to kill than wheat with one Paraquat application early in the season. Therefore split applications of Paraquat at lower rates have often been used successfully since that time. Soybeans are normally planted after wheat or other small grains are harvested. The grain crops generally are not competitive with the soybeans. However, weeds are often emerging and must be killed with Paraquat or Roundup or other suitable material. Recent data has shown that use of legumes such as crimson clover and vetch make excellent cover crops to plant corn or grain sorghum into. Besides providing protection from water and wind, these legumes provide nitrogen for the following grain crop. Corn planted early in the season (late February or early March) will need an additional 100 pounds of nitrogen after the corn reaches about knee high. Grain sorghum may be grown in legumes under dryland conditions without any additional nitrogen. Killing legumes early in the season is often not an easy task with Paraquat alone. Best results with crimson clover has been to apply a mixture of 112 pint/A Banvel with 1 pint/A of Paraquat plus surfactant or Paraquat with Atrazine about 10 days before planting followed by a pint of Paraquat plus

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surfactant immediately after planting if necessary. However, an application of Paraquat plus Banvel just prior to planting or immediately after planting or Paraquat plus Atrazine gives adequate kill on crimson clover. The vetches may be killed with 2, 4-D, Banvel, Paraquat and other herbicides in a single application. Weed control from vetch residue has not been as good as with crimson clover residue.

Most of the herbicides used on corn such as Lasso, Aatrex and Dual are applied after emergence. This allows longer season control of weeds than if herbicides were put down at planting. Grain sorghum often needs Lasso or other grass type materials put down at planting since it is planted during a warmer season and grasses are emerging more readily. Herbicides are normally applied immediately after planting in no-till conditions with soybeans.

Fertilizers are either banded near the row or put down below the row on a subsoiler shank to prevent injury to the seedling but yet to get a "pop-up" affect from the fertilizer. Broadcasting fertilizers under no-till conditions generally increases weed pressures and results in about a weeks delay in maturity of corn and grain sorghum.

Several other crops not normally considered for no-till production have been researched to a limited extent. Peanuts have been planted no-till immediately after wheat harvest. Yields have been very similar to peanuts planted under conventional conditions. However, weed control is one of the main problems. New "over the top" herbicides are making no-till peanuts more practical.

Other crops planted no-till include wheat and other small grains immediately behind soybean harvest. Where soybeans were subsoiled, little yield difference may be noted between wheat planted under conventional conditions and no-till wheat. However, the root system of wheat is more restricted in the compacted surface layer where a tillage operation is not done. This may lead to lower yields in dry years. Wheat has also been planted into bermudagrass in the late fall resulting in 50-60 bushels of grain per acre. Much work still needs to be done in these areas to perfect the management necessary for high yields.

Research emphasis in Florida has been in trying to minimize production costs. This includes row placement of fertilizers under no-till conditions including anhydrous ammonia. Use of legumes for nitrogen fixation for such crops as corn and grain sorghum and possibly wheat, and also in the areas of overseeding permanent pastures with a grain crop such as wheat. Additional research still needs to be done on planting dates and crops that may be successful. Previous crop residue has been shown to delay maturity and harvest unless the planting date is moved up.

Cooperative research is being conducted between several southeast states along with no-till meetings and conferences that has spread the advancement of knowledge on management practices to growers. It is expected that in the next ten years, that over 50% of the row crop acreage in Florida will be planted under no-till conditions.