

No-Till Cotton Production in Southeast Arkansas

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No-till cotton acreage is increasing in southeast Arkansas. This is true no-till production, nothing but the double-disc openers on the planter disturb the soil surface. At present, 'all of the no-till cotton is following a previous cotton crop, and all of it is on bedded ground. No-till production in this area started in 1992, and in Desha County there are nine producers that I have had the pleasure of working with. It is through these growers that I have learned about successful no-till cotton production. This article is to describe how these growers have implemented no-till production on their farms.

Bill Teeter was the first in the area to try no-till. He started with a 40 acre field in 1992 and has dedicated over 700 acres to no-till in 1996. Bill starts by cutting the cotton stalks in the fall with a flail shredder, a requirement in Arkansas because of the pink bollworm regulations. Bill leaves the stalks about 8 to 12 inches tall. This allows for the double-disc openers on the planter to knock the stalks off at ground level as opposed to riding over the stalks if they are cut too close to the ground.

The next operation is the application of phosphorus and potassium fertilizer. This is usually done in late winter, and the fertilizer is applied to the soil surface. Most soil scientists tell us that P and K will stratify with surface applications and thus reduce yield potential. What these soil scientists are not considering is that these no-till fields are usually never plowed and root activity at the soil surface is high. After a heavy rain at mid-season you can brush back the residue on the soil surface and observe a mat of white roots. It is obvious that these roots can easily get the P and K that has stratified at the soil surface. Bill does not apply any pre-plant nitrogen. Nitrogen is applied as a side dress with a coultter rig prior to blooming.

After applying the P and K fertilizer the fields are scouted for winter weeds and burndown herbicide selections are made. We usually start scouting in early February and will start making applications in late February or early March. We are far enough south that by the middle of March ground cover is 100% with just native vegetation. Because of the need for early treatment we usually use a residual herbicide in our burndown program. The most common residual herbicide is cyanazine. This herbicide is relatively inexpensive and has exhibited good safety to cotton when applied several weeks before planting. A tank mix of cyanazine with paraquat is the most common treatment. This treatment has failed to

control large horseweed (maretail), however. If horseweed is present a very early application of 2,4-D followed by paraquat plus cyanazine works well. If the 2,4-D is not an option then we use glyphosate and add cyanazine if cutleaf eveningprimrose and ryegrass are not present.

The no-till producers in our area have used a variety of planters. Bill uses a 900 International, and others have used John Deere 7100 or 7300 planters. I like the disc-closure system with a single press wheel best, but several growers have used planters with a V-press wheel closure system without problems. Bill has purchased coultters for his planter, but has never needed them. In fact all the producers I have worked with have not had to make any planter modifications when switching to no-till.

There are several in-season weed control programs used in our area. Bill uses a tank-mix of fluometuron, norflurazon and pendimethalin broadcast behind the planter. Paraquat is added regardless of how clean the fields look. In addition a very low rate of pyrethroid insecticide is used for cutworm prevention. Other producers have used fluometuron plus clomazone for preemergence weed control with good results. We are starting to shift from broadcast preemergence herbicide applications to banded treatments because of cost. When using banded preemergence herbicides the row middles are treated later with a residual herbicide applied with a hooded sprayer.

Most of the no-till acreage in southeast Arkansas is row irrigated. We have not encountered any special difficulties in watering the no-till cotton. We thought that the water would run down the row middles too quickly and not soak in, but this has not occurred. Some fields have required the use of disc-bedders to pull out the soil left where the irrigation pipe has washed a hole and pushed up soil in the row middle. This is accomplished by backing in a few feet to pull the beds out to the top of the field. The no-till fields have needed watering about the same time our conventionally tilled fields, we thought they would last longer between irrigations, but they have not.

No-till fields have maintained adequate bed height for row watering for as long as three years, and may possibly last longer. We try to start with a relatively tall bed to begin with. Soil types have included clays and silt loams. Some growers have had problems with the picker tires making cleat marks on the beds, and thus making planting difficult. Bill has

addressed this problem by using narrow picker tires.

We have developed a yield history on these no-till fields and have observed no yield loss when converting to no-till. The expenses compare equally with conventionally tilled cotton, but we realize numerous benefits when changing to no-till. The advantages are both agronomic and economic in nature.

The agronomic advantages include an increase in early season plant vigor. The no-till fields exhibit less injury from soil applied herbicides and are usually have healthier foliage compared to conventional fields. We see a good improvement in soil tilth especially after two or more years, and we have observed improvements in areas with hard pans.

As previously mentioned yearly expenses are about equal comparing no-till and conventionally tilled fields. Higher herbicide costs are offset by reduced fuel consumption and labor costs. The real economic advantage to no-till has come in timeliness. The planting operation is much quicker and takes only one tractor which frees up labor and equipment to do other tasks. No-till production has reduced tractor hours substantially. Bill has reduced the number of tractor trips to produce a crop from eleven or more when he has conventionally farming, to 6 to 8 when no-tilling. Thad Freeland of Tillar has the record in our area for the least number of trips to grow a no-till crop. He had 160 acres of no-till with just five tractor trips in 1994 that picked over 1000 lbs of lint per acre.

No-till cotton production is well suited for southeast Arkansas. I believe we will see a steady increase in no-till acres in the near future, it is too easy of a way to grow cotton to ignore.