

# Doublecropping with the "One Pass Tillage/Plant System" in Georgia

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## Introduction

Doublecropping soybeans and wheat is a common cropping system in the southeast. In fact, the majority of soybeans in the southeast are doublecropped with wheat. This system can be very profitable if both crops are managed properly. As costs of production rise, it is critical to design more efficient means of producing both crops.

Research in Georgia and other states has shown a critical need for deep tillage and close row cultures to maintain top yields of both crops in the Coastal Plains of Georgia. The most popular production system for Georgia's summer crop acreage is in-row subsoil followed by planting in 30" to 38" rows. Attempts to plant in close rows either conventionally or no-till without disrupting compacted soil layers have usually resulted in reduced growth and yield.

Tillage and planting systems that permit disruption of compacted layers and allow close row planting with conservation tillage are needed for the Coastal Plains of Georgia. Such systems may increase profit by improving yield, reducing cost and increasing energy conservation.

Since Southeastern producers typically are involved in several commodities such as cotton and peanuts, low profitable crops such as soybean and wheat do not get intensive or timely management. Reducing the time between harvest and planting of the doublecrop could improve efficiency and increase yields.

## Procedure

A one-pass tillage/plant system designed by Clemson University (Hood et al., 1992) was used to determine its effectiveness in increasing yield and profit of doublecrop soybeans and wheat in Georgia. The system consist of a Gandy Orbit - Air Seeder set on a tool bar with Yetter No-till seeder coulters pulled behind a Terra-Max Worksaver deep tillage winged-plow. The seeder was attached with a bridge hitch. Proponents of the system suggest and have shown that the system both increases yield, profits and improves soil conservation over more conventional methods (Hood et al., 1991; Khalilian et al., 1990; Palmer et al., 1993).

Farm studies in Georgia were begun in 1995 to compare the one-pass tillage/plant system with a conventional method. Six farms in east-central Georgia were chosen that were currently using some form of minimum or conservation tillage. Each farm had a history of successful soybean production. Soybeans in the one-pass system were planted in 8" rows. The comparison method was a KMC four-row rip-strip tillage unit with either KMC planters or John Deere Flex 71 planter units. Soybeans in the conventional methods were planted in 36" rows. Fields were planted doublecrop behind wheat in late May to mid-June as dryland production. Group VII or Group VIII maturity soybeans were used. Varieties were consistent across comparisons of methods. All fields were fertilized according to University of Georgia Cooperative Extension Service soil test recommendations. Pre-emerge broadcast applications of pendimethalin and metribuzin were used for weed control. Two applications of insecticides were made to control velvetbean caterpillars and stinkbugs.

## Results

Results of the first year soybean trials are listed in table one. On three of the six farms, the one-pass system was more profitable than the strip tillage method. Fields in which the one-pass system was used averaged 37.3 bu/A as compared to 31.9 bu/A for the strip tillage production. Average cost (fixed and variable) per bushel was \$3.73 and \$4.83, respectively. The one-pass system was equal to or better in yield to the strip tillage method on five of six farms.

The cost of production was slightly higher per acre on the Lowndes farm due to greater variable cost of seed, chemical and machinery costs. However as a whole, the total cost per acre for the one-pass system was \$15.00 per acre less than the comparison method.

The initial start to this study indicates that the one-pass tillage/plant system is a promising method for improving yield and efficiency of double cropping systems in Georgia.

Wheat and canola trials were begun in the fall of 1995 to compare winter production with a conventional drill system followed by doublecrop soybeans either interseeded into standing wheat (prior to harvest) or after harvest.

**Table 1. Summary of Production Costs, yield and Costs/Bu of Producers Comparing One-Pass Plant and Strip or No tillage.**

Producer	One pass Plant			Strip Tillage		
	Yield (bu/A)	Total Cost (\$)	Cost/Bu (\$)	Yield	Total Cost (\$)	Cost/Bu (\$)
Malone	44.3	126.97	2.87	27.5	133.48	4.85
Green	42.0	131.51	3.07	26.8	133.29	4.97
Lowndes	21.7	152.06	7.01	26.4	128.94	4.90
Powell	32.0	147.77	4.61	28.0	142.79	4.73
Waller	41.8	130.20	3.11	41.4	112.17	2.71
Black	41.8	146.68	3.51	41.3	119.96	2.90
Average	32.27	139.09	3.73	31.9	154.13	4.83

#### References

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