

HERBICIDE PROGRAMS IN MINIMUM-TILL COTTON

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Experiments were conducted from 1981 through 1983 at the Tennessee Valley Substation, Belle Mina, Ala., to evaluate 11 herbicide systems for cotton planted no till in crimson clover, hairy vetch, rye and "no cover," and for conventionally tilled cotton (fall moldboard plow, spring disk, smooth). Each treatment was applied to the same plot for three consecutive years.

Cover crop desiccation, cotton stands and annual weed control were among the factors affecting cotton yields. Clover, which winter killed completely in 1981 and partially in 1982, was effectively controlled by all treatments except Paraquat CL alone (1 qt./acre) in 1982 and Roundup (1 qt./acre) in 1983. Vetch, the most difficult of the covers to desiccate, was not effectively controlled by any treatments in 2 of 3 years. Vetch desiccation may have been related to maturity. Subsequent research has indicated that vetch nearing the bloom stage is easier to control. All treatments effectively desiccated rye each year.

Cotton stand reductions following some herbicide/cover systems limited cotton yields. Cotton stands were reduced in the vetch cover each year, which may have been due to lower soil temperatures, ammonia release and/or soil insects. In 1982, stands were reduced following preemergence Bladex (1.5 or 2.0 lb. ai/acre) for no-till plantings in clover, vetch and no cover. In 1983, stands were marginal for most treatments and were particularly poor in legumes.

Control of annual weeds declined over the 3-year period with most herbicide systems. In 1981, all residual treatments provided better than 80% control of large crabgrass, morningglories, prickly sida and redroot pigweed. In subsequent years as annual weed pressure increased, only Cotoran (2.0 lb. ai/acre) provided acceptable control, particularly in systems that included a postemergence directed application of Caparol + MSMA (1.5 + 2.0 lb. ai/acre). Counts of annual weeds were very low in 1981. However, weed counts in 1983 indicated extreme buildup of grasses in systems that had not provided effective season long control in previous years (Table 1).

Seed cotton yields from selected treatments are listed in Table 2. In 1981, highest cotton yields were obtained in the rye cover. Yields were lowest following vetch due to poor cover desiccation, reduced

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stands and slighter poorer weed control. In 1982, yields approaching 3,000 lb./acre seed cotton were obtained from most treatments. Yields were reduced in vetch/Bladex plots due to severely reduced stands and in plots where weed control was poor. In 1983, cotton yields were limited by drought. In no-till treatments where season long weed control had not been obtained in prior years, yields were essentially zero due to annual weed pressure.

Table 1. Annual grass counts 10 weeks after planting from selected herbicide systems in 1983.

Herbicide System PREI/PDS	Cover				
	Clover	Vetch	Rye	No Cover	Conven.
	(no./67 ft. ²)				
Bladex	530	457	490	1070	50
Bladex + Prowl	245	400	195	55	2
Cotoran	197	150	255	62	2
Cotoran + Prowl	95	95	18	0	1
Cotoran/Caparol + MSMA	85	17	1	0	0
Cotoran + Surflan/Caparol + MSMA	0	1	0	0	0
Control	620	970	255	490	200

Grasses included large crabgrass, fall panicum, goosegrass.

'Preemergence applications for all herbicide systems included Paraquat CL or Roundup.

Table 2. Seed cotton yields from selected treatments in 1981 and 1982.

Herbicide System PREI/PDS	1981			1982		
	Vetch	Rye	Conventional	Vetch	Rye	Conventional
	(lb./acre)					
Bladex	1800	2470	2120	10	460	2450
Bladex Prowl	2460	2890	2370	820	1900	3290
Cotoran	2120	2470	2580	3600	3120	3450
Cotoran+Prowl	2080	2470	2520	3700	3040	3490
Cotoran/ Caparol + MSMA	2260	3050	2360	3450	3460	3590
Cotoran+Surflan/ Caparol+MSMA	2450	2890	2510	3120	3250	3040
Control	690	1800	1930	0	0	0

'Preemergence applications included Paraquat CL or Roundup,