PLANTING CORN INTO STRIP KILLED CLOVER

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Using winter legumes as a N source and mulch for no-tillage planted summer crops is increasing in popularity. Even in a fairly good growing season, the values of the N in the legume tissue can be greater than the production cost of the legume. Using reseeding winter legumes eliminates seed and seeding cost in subsequent years and is by far the most economical approach to cropping systems which include winter legumes grown as a N source for summer crops.

Grain sorghum works well with reseeded clover systems primarily because the clover will generally set seed prior to the expiration of the optimum planting period for sorghum. Unfortunately, optimum corn planting dates in most areas of the state occur prior to maximum N accumulation in the legume and prior to seed set.

During the past couple of years, some innovative cropping systems have been developed which permit corn to be planted during the optimum period without losing the reseeding potential of the legume. Strip killing narrow bands of clover for the corn row at planting is one of these systems. With this system, clover in the row middles will continue to grow, accumulate N, and produce seed. In 1983 a study with Autauga crimson clover was initiated at the Sand Mountain Substation to evaluate the feasibility of planting corn into immature clover. The clover was drilled into a prepared seedbed on 18 October 1982 at a seeding rate of 20 pounds per acre. The corn 'RA 1502' was planted in 36-inch row widths on 10 May 1983 when the clover was in the early bloom stage. Treatments at planting included paraquat kill strips 0, 9, 18, and 36 inches wide in the corn row. The 36-inch kill strip was a complete kill across the entire plot. Each strip plot was divided into two subplots; one received no sidedress N and the other received 60 pounds per acre of sidedress N, 3 weeks after planting. All plots were replicated four times and each one, regardless of the sidedress N rate, received 10 pounds per acre of N as a starter fertilizer at planting.

Oven-dry weight of the clover tissue at corn planting was 6,000 pounds per acre. Nitrogen in the above-ground tissue averaged 140 pounds per acre, which should be adequate to produce an acceptable corn yield. Higher corn yield with than without fertilizer N (Table 1) clearly indicates that a sufficient quantity of N was not released from the clover material, even when the clover was completely killed at corn planting. Inadequate release of N from the clover may have been partially due to extended droughts in July and August. Average rainfall for May, June, July, and August was 7.1, 4.4, 2.9, and 0.4 inches, respectively.

Higher yields when the clover was completely killed (36-inch kill strip) than when either 9 or 18-inch strips were killed illustrates that strip killing can severely reduce corn yields. Lower yields with the strip killed treatments than the complete kill treatment may have been due to slower or less N release from the clover tissue, but were most likely due to soil moisture depletion by the clover.

Table 1. Yield of no-till corn as affected by sidedress nitrogen and width of killed clover strips in the corn row at planting.

Sidedress Nitrogen	Killed strip widths, inches[1]			
	0	9	18	36
lb./acre	bu./acre			
0	18	34	32	50
60	65	75	76	91

[1]Row width was 36 inches and the 36-inch width was a complete kill.