Weed Flaming Studies

In 2001, we initiated studies using flaming methods as part of an overall management system to control weeds in corn and soybeans. The objective of these studies is to determine the ability of flaming to control weeds in both conventional and ridge-till. To date, ridge-till has been superior to conventional tillage in regard to weed control; however, many growers who are interested in pesticide-free farming want to use conventional tillage. Flaming has the potential to eliminate small weeds close to corn and in the row of crops where conventional cultivators cannot reach. Also, in wet weather, flaming can be used if the ground is too moist for cultivation.

Corn can be flamed early when its growing point is still below ground and will not be injured, or later after its stem thickens. We conducted several experiments in

Experiment 3: Flaming in Ridge-Till and Conventionally Tilled Corn

This was a complex experiment where flaming treatments were replicated in both ridge-till corn and in conventionally tilled corn. Note: The ridges were built just less than 2 months before planting instead of the previous season. Due to this spring activity, weed pressure was heavy on the ridges and required an immediate emergency cultivation after planting. The corn was planted on 5/30/01 and rotary hoed on 6/11. On 6/28 the crop was cultivated, and on 7/06 the fields were cultivated or ridged. Fields were flamed on 7/12 at different treatment speeds while the propane pressure was maintained at 60 psi. Weeds were scored on 7/30/01 and on 11/3 just before harvest. Yields were obtained by hand harvesting and shelling the ears of a 10 foot representative section from each plot. Treatments were replicated four times. The total number of treatments in this experiment was 16, Table 3.

The yields reflect the influence of weed control in the plots that were not cultivated. Yields were significantly less in both, ridge-till and conventional tillage, if the plots were not cultivated and weed control relied solely on flaming. Yields ranged from 73-81 Bu/ac and weed scores were mostly in the 94-100 % range if plots were only flamed for weed control.

Weed control for all treatments was generally better in ridged than in conventional plots; however, yields for comparable treatments were often greater in the conventionally tilled plots than in the ridged-tilled plots. It should be noted that the ridged corn was generally more pale than the conventional corn during the early part of the growing season; which indicates nutrient stress. The ridged corn treatment yielded 117 Bu/ac, while its conventionally tilled counterpart yielded 129 Bu/ac. This is particularly interesting since the weeds in the conventionally tilled plots were 3 times greater than the weeds in the ridge-tilled counterpart, Table 3. Consequently, weed control was not the only factor determining yields in these plots.

Variation between reps of treatments was great, so the least significant

Ridge-Tillage			
Cultivated and ridged	117	17	5
Cultivated Once (6/28/01)	111	46	53
Cultivated, Ridged, Flamed at 3 mph	106	61	15
Cultivated, Ridged, Flamed at 1.5 mph	121	43	9
Not Cultivated, Flamed at 3 mph	81	84	100
Not Cultivated, Flamed at 1.5 mph	74	68	94
Cultivated (6/28/01), Flamed at 3 mph	104	68	50
Cultivated (6/28/01), Flamed at 1.5 mph	110	24	15
LS	SD= 21	LSD = 44	LSD = 38