WINTER COVER CROPS FOLLOWED BY COTTON

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Objectives: Covercrops have been used for many years to improve soil quality, as a source of nutrients, improve water infiltration, suppress weeds, harbor beneficial insects, control nematodes, etc. Little work however has been directed towards their use in a cotton rotation. This study was initiated to investigate four fall-planted covercrop species on subsequent cotton growth.

Procedures: Fescue, annual rye, hairy vetch, and subterranean clover were planted on beds on November 14, 1989. The field was irrigated to encourage optimal growth. In March the cover crops were chemically killed. In late March, half the plots were incorporated using a Howard rototiller. The other half of the plots were flail chopped approximately six inches above the top of the beds. The flailed plots were treated with herbicides to terminate growth.

GC-510 was planted in early April using a modified minimum tillage planter (described in another report). The field was sprinkle irrigated to obtain a stand. Weeds were managed with caporal (for morning glory) and hand hoeing. The incorporated plots were cultivated as necessary. One application of sulfur dust was the only insecticide applied. Water run UN-32 was applied during five irrigations.

Results: This is the first year of this study so results are tentative. Based on visual observations, the annual rye grass produced the most dry matter and was best at winter weed suppression. The vetch and subterranean clover did not fully cover the ground until March and winter annual weeds were a problem. The fescue stands were overall the weakest.

Cotton seedling emergence was significantly better in the flailed plots as compared to the rototilled plots (Fig. 1). The cover crop species did not have an affect on emergence. After emergence, however, the seedlings in the flailed plots tended to develop more slowly due to shading caused by the surface residue.

Lint yields averaged 2.1 bales per acre across all treatments. Unfortunately, caporal damage to the cotton plants probably reduce lint yields. There was a tendency towards slightly reduced lint yields in the rye plots (Fig. 2). Though not statistically different, the vetch plots produce the most lint in both the rototilled and flailed plots. There was no significant difference in yield between the average of the flailed verses rototilled treatments.

Future Plans: The cover crop treatments were re-established on the same plots in the Fall of 1990. The study will be repeated. The penetrometer will be used to study soil compaction and plant mapping will be used to study cotton growth and development.

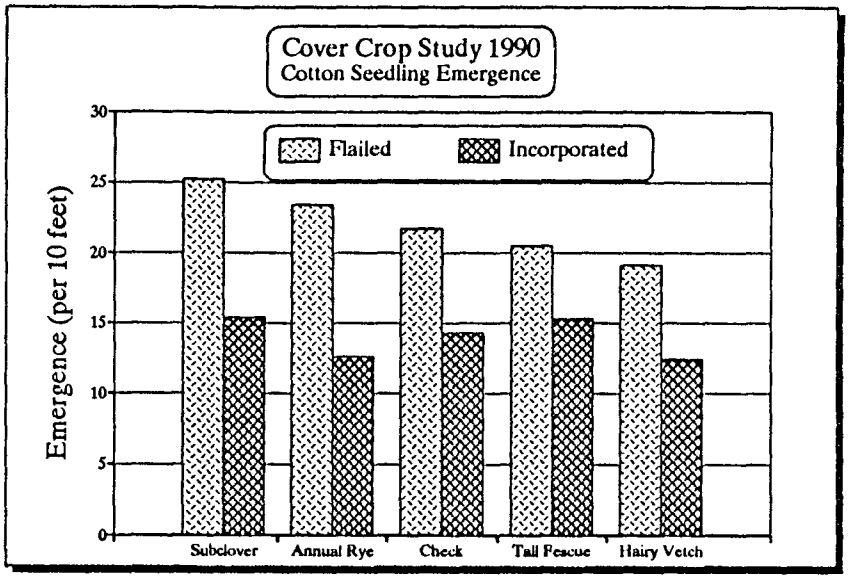

Figure 1. Cotton seedling emergence (per 10 feet of row) in the flailed and rototilled cover crop treatments. Shafter, CA. 1990.

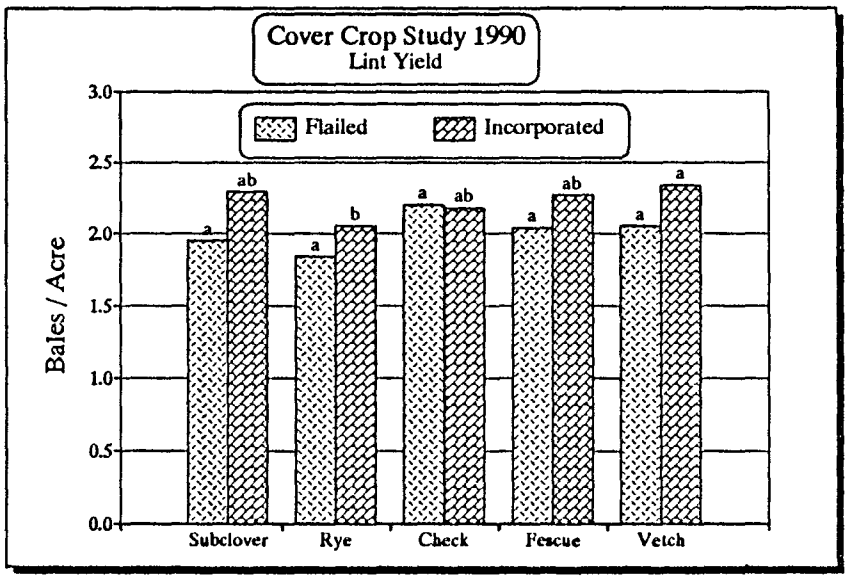

Figure 2. Cotton lint yields (bales / acre) in the flailed and rototilled cover crop treatments. Shafter, CA. 1990.