RED MORNINGGLORY (*IPOMOEA COCCINEA*) EMERGENCE AND RESPONSE TO SHADE AND TILLAGE. C.A. Jones, J.L. Griffin, and J.S. Siebert. Louisiana State University AgCenter, Baton Rouge, LA 70803.

ABSTRACT

In 2001 and 2002, field studies were conducted in West Baton Rouge Parish, LA, to evaluate red morningglory (*Ipomoea coccinea* L.) emergence and growth in response to shade and tillage. In both studies, plots were tilled with a rotary tiller to a 4-inch depth in May, June, July, and August of each year. Data were collected 20 to 41 days after each tillage operation. In the shade study, shade boxes, a randomized complete block design with 4 replication was used and treatments included 0, 30, 50, 70, or 90% shade. Weed emergence, leaf area, and plant height data were collected just prior to each tillage operation. In the red morningglory tillage study, tilled and non-tilled treatments were included and initial and final seed population in soil for each treatment were determined each year. Additionally weed emergence 20 to 41 days after each tillage operation was determined. In non-tilled plots Liberty at 0.5 lbs ai/A was used to control weeds in lieu of tillage.

A response in red morningglory emergence to shade was observed in 2001 only for the June sampling date. As shade level increased red morningglory emergence decreased linearly. Under no shade (full sunlight) red morningglory emergence was 13.5 plants/ft² and under 90% shade 9.8 plants/ft² emerged. At the July, August, and September sampling dates in 2001 shade did not influence weed emergence and emergence ranged from 1.6 to 3.8 plants/ft². In full sunlight 3.8, 3.3, 1.8 plants/ft² emerged at the July, August, and September sampling dates, respectively.

In 2002, shade influenced red morningglory emergence at the June and July sampling dates. In June, red morningglory emergence under full sunlight was 4.7 plants/ft² while increasing shade to 90% decreased emergence by 2 plants/ft². In July, red morningglory emergence was reduced from 1.9 for full sunlight to 0.4 plants/ft² for 90% shade. At the August and September sampling dates, red morningglory emergence was not influenced by shade and weed emergence ranged from 1.4 to 0.5 plants/ft². As noted for the previous year, red morningglory emergence decreased as the season progressed.

Even though red morningglory emergence decreased for some of the sampling dates in response to shading, plant growth (leaf area and height) for individual dates both years was equivalent regardless of shade. The differences in red morningglory growth among sampling dates for the individual shade levels is probably a reflection of soil moisture. Data also indicate that environmental conditions were more conducive to red morningglory growth and development in 2002.

Soil samples collected at a 4-inch depth prior to initiation of the study contained between 100 and 450 red morningglory seeds/ft². On the July sampling date red morningglory emergence was equal whether soil was tilled or not tilled around 4 weeks earlier and emergence averaged 9.7 plants/ft². In August, weed emergence was 45% greater when plots had been tilled around 4 weeks earlier as compared with plots that had not been tilled (9.3 vs 6.4 plants/ft²). On the September sampling date only 2.1 plants/ft² emerged in the non-tilled plots compared with 8.0 plants/ft² where plots were tilled. The decrease in red morningglory emergence as the season progressed and the greater separation between tillage treatments for the August and September sampling dates is probably due to seed bank depletion. Soil samples taken in October clearly showed a decrease in the seed bank from the initial sampling, but no differences in seed population were noted between tilled and non-tilled treatments. This indicates that tillage redistributed seed in the soil profile and that soil aeration enhanced germination.