FIELD DAY REPORT - 1996

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OCCURRENCE OF THE CLOVER STEM BORER IN FORAGE LEGUMES

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Background. The clover stem borer (*Languria mozardi* Latr.) has been recognized as a clover pest for over 100 years. This beetle has been collected from alfalfa-producing areas across the South, including Texas. Eggs are laid in stems and larvae feed on the pith, weakening the stem, reducing hay quality, and providing an entry for pathogens.

In spring 1994, a spaced-plant nursery of arrowleaf clover (*Trifolium vesiculosum* Savi) suffered extensive damage by a borer-type insect. Stems were rotted inside and insect entry/exit holes were observed. A larva found inside a stem was identified as the clover stem borer. The objectives of this study were to determine the timing of clover stem borer egg-laying, adult emergence, and preference for certain clover species.

Research Findings. Six-week-old seedlings of one perennial and five annual clover species were transplanted to a prepared seed bed in the fall of 1994. A total of 840 plants were set out in 28 rows of 30 plants each. Beginning in mid-December, plants (n=4 to 10 per species) were collected every 2 to 4 weeks and examined for signs of insect damage. After March 20, plants were collected weekly. If insect holes were found, stems were cut open to check for eggs, larvae, pupae, and adults. The number of infested plants, insects per plant, insect developmental stage, and plant dry weight were determined at each sampling date.

Evidence of clover stem borer activity was first observed on March 27 and all subsequent collection dates through June 26. Small, pin-sized holes were found on stems, usually between 5 and 15 cm up from the base of the plant. When stems were cut open, a pale yellow egg was found inside. By early April, larvae of the borer were also found. Pupation was noted in mid-May, and adult borers emerged from stems the first week of June. Egg laying peaked from late April to early May. A second period of egg-laying was observed on red clover in mid-June.

Eggs and larvae were found in all six clover species in this study. Evidence of successful larval development was indicated by the presence of pupae. This was observed in ball, red, crimson, arrowleaf, and berseem clovers. The few larvae found in rose clover were relatively small and not thriving. Most clover plants exhibited virus disease symptoms by the end of the study, while arrowleaf clover was especially affected by root and crown rots, and many plants died prematurely.

Application. This study provided some insights about host plant preferences and reproductive behavior of the clover stem borer. Red and berseem clovers were preferred hosts,

but infestations were moderate to heavy on ball, arrowleaf, and crimson as well. Rose clover exhibited some tolerance to the borer, and has not been previously reported as a host. Because of the extended egg-laying period, regular insecticide application may be necessary but would limit grazing availability. Instead, periodic grazing or cutting may reduce the clover stem borer population by removal of eggs and larvae, but may be too late to prevent pathogen entry via egg-laying sites. Developing clover germplasm with resistance to crown and root rot diseases may be more important than controlling infestation by the clover stem borer.

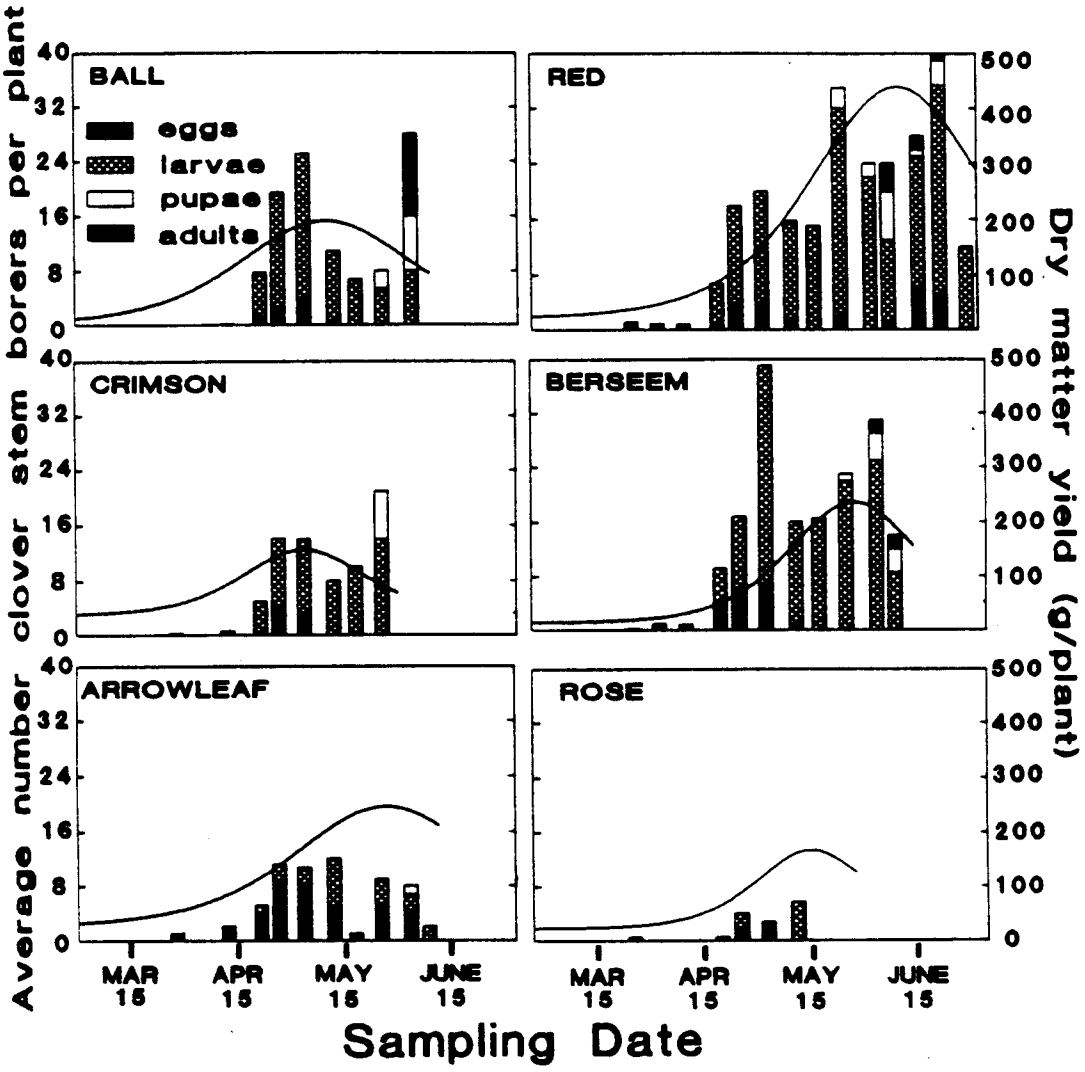

Figure 1. Appearance of four developmental stages of the clover stem borer during 1995 at Overton, TX. Bars indicate average insect number and developmental stage for six clover species (left y-axis). Growth curve indicates average dry matter yield per plant (right y-axis).