Section V
Cereal Crop Pests

1998 CEREAL LEAF BEETLE SURVEY IN UTAH
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This is a report of cereal leaf beetle survey activities in Utah during the summer of 1998. A grant from USDA, APHIS, PPQ supported a survey of the population levels, distribution and parasitism rates in the cereal leaf beetle pest established in northern Utah. An additional grant from the same source helps to fund the cost of introducing egg and larval parasites into the state and monitoring their establishment.

For purposes of quarantine and the shipment of various hay and grain products to California, it is necessary to have a complete survey of all counties in the state and the distribution of cereal leaf beetles in Utah. Funds have been provided by the Utah State Department of Agriculture and Food to complete the survey and extend the collection of data over the entire state in a uniform and consistent manner.

Training of field technicians began the second week of April after feeding damage and one adult beetle was observed in Box Elder County. The first fields with good populations of eggs or adults were surveyed on the 8 May in Cache County. One of the technicians from the previous years work assisted in this training of three new personnel. One additional technician from last year was rehired to help in the northern Utah survey and the companion project of parasites introductions. Close supervision and verification of specimens collected during the surveys by the project leader insured accurate and reliable data reported in the survey.

The survey of small grains continued during June and July covering all 29 counties in the state of Utah as indicated on the accompanying map. This period of time covers the peak infestation period of cereal leaf beetle as indicated by the observance of adult and larval feeding, and adult egg laying. As the pest spreads throughout the state a small number of adults and larvae are found in the fields in the fringe areas and counties where the beetle has more recently been introduced. Peak infestation occurred in Northern Utah early in June along the Wasatch front, later in June in the northern counties and in early July in some of the higher elevation fields of a counties. There was an abundance of feeding damage data and numerous specimens, adults, larvae and eggs, in all of the counties were the beetle has been established for several years.
The objective of the survey was to examine at least five fields in every county. A standard 20.5 inch stick was used at 5 sites in each field to determine levels of infestation. Specimens counted along the furrow next to the standard stick is equivalent to 1 square foot of planted grain in a field. In cases where no specimens were counted at any of the five survey spots of the field, or only feeding damage was observed, an insect sweep net was used to take a total of 100 sweeps in 3-5 spots in the field to detect the very low population levels. Feeding damage is an important indicator or the beetles presence or previous feeding on the young grain plants because the damage persists even on the dead and dying leaves quite late in the season.

Surveys are more successful where larger populations develop on irrigated crops of wheat, oats, and barley in each county, but dryland grain was sometimes used to make the survey more complete. In the past, the cereal leaf beetle has only become established on irrigated grain. Occasionally very low populations are observed in dryland grain but the populations usually die out or remain very small. For purposes of quarantine regulations it is necessary to indicate the presence of the beetle even in very small numbers. Consequently the survey of dry land grain was necessary only to the extent of determine the county distribution of any cereal leaf beetle life stage.

Some of the first fields surveyed were in Cache County on May 12 when an abundance (50-60/sq ft) of cereal leaf beetle eggs were observed on young barley leaves. The following week was wet and stormy so that surveys in the same fields on May 15 revealed a drastic reduction in eggs (10/sq ft) and a few larvae (3/sq ft). It is believed that eggs were washed off the leaves, some hatched and as eggs hatched many of the larvae were washed from the leaves and died. Additional fields were surveyed on May 16, 19, 22, and 29 in Cache County.

Other counties surveyed in May included Box Elder and Weber counties which all have had well established histories of cereal leaf beetle infestations. Fields throughout these counties continue to show heavy cereal leaf beetle populations and the fields were used to release the egg and larval parasites.

In late May it was decided to start the state survey in the more southern counties even though we have not found cereal leaf beetle there in the past. Starting in Washington County on May 23, surveys were conducted in Beaver, Iron, Washington, Garfield, and Kane Counties without finding any signs of the cereal leaf beetle or even any feeding damage. No evidence of the cereal leaf beetle presence was found in the southern counties of Grand and San Juan Counties although the survey was conducted several weeks later. Extensive survey work in Millard County (10 separates sites in all parts of the county) produced no cereal leaf beetles specimens or any sign of feeding damage.
In the past cereal leaf beetle populations were also known to be well established in Rich, Tooele, and Morgan Counties. Only two of five sites in Rich County had signs of the beetle with a low number of cereal leaf beetle eggs and some feeding damage. In Morgan we could find no eggs, larvae or adults but noticed some feeding damage. The county agent also reported seeing some isolated specimens of one or more life stages during the early part of the summer. Tooele had larvae, adults or feeding damage at all five survey sites.

Salt Lake, Davis, Summit, Wasatch, and Utah Counties are other localities were there has been well established beetle populations in the past. One larva was picked up in Salt Lake County. All five survey sites in Davis County had low numbers of one or more life stages or some feeding damage. Two of the five sites in Summit County had only some feeding damage. The four sites in Wasatch County had larvae, eggs, and/or adults. A sample of larvae at one site produced the parasite *Tetrasticus julius*. In the other counties listed above the larval populations were so small or absent that a determination of parasitism rate could not be made. The sites in Utah County had eggs, larvae or adults at each site but no parasites were detected. Some of the sites had economically damaging population that were sprayed by the growers.

Additional cereal leaf beetle specimens were found in Sanpete, Juab and Sevier Counties where very small numbers have been found in a few fields during the past two years. Larvae were found in one of five fields in Sanpete and Juab Counties and some feeding damage in the other fields. Larvae and adults were found in very low numbers in three of the five fields in Sevier County. Feeding damage was noted in one of the other fields. Two fields each contained larvae in Duchesne and Uintah Counties. Neither county has or has had damaging population of the cereal leaf beetle.

A total of 121 fields in all 29 counties of the state were surveyed for cereal leaf beetle including 18 sites in northern Utah used for egg parasite releases. There is a total of 347,000 (1996) acres of grain planted in Utah. The survey averaged one field examined for each 2,867 acres.

Summary

Counties with no cereal leaf beetles: Washington, Kane, San Juan, Garfield, Iron, Beaver, Piute, Wayne, Grand, Emery, Millard and Daggett. No cereal leaf beetle life stages were found in Carbon, Morgan, and Summit Counties this year although it was present in all three counties in 1997. It is quite likely that the beetles is still in these counties but at a very low population level. Some evidence of feeding was found in Carbon and Summit Counties. Well established population are widely distributed over most of the counties of Box Elder, Cache, Davis, Utah, Wasatch, Salt Lake and Weber. Populations seem to be expanding slowly, but becoming more well established in Carbon, Duchesne, Juab, Rich, Sanpete, Sevier, Tooele, and Uintah Counties.