COMPLETED PROJECT REPORT

Project Title: Repellents for bird control in sprouting crops (lettuce).

Research Agency: National Wildlife Research Center

Principal Investigator: Cummings

Budget: $72,300.00

Background:

November 1999: Lettuce is an important economic crop in California, with approximately 189,000 acres in production and a value of $735 million in 1996. Bird damage to sprouting crops is a major problem in several of California's lettuce producing areas, including the San Joaquin, the central coast, and southern California. Annual losses attributed to bird damage are estimated at $4.6 million; which is based only on the amount invested at the time of seedling emergence. In FY98 and FY99, NWRC researchers focused on the development and evaluation of Mesurol (methiocarb) and Flight Control (anthraquinone) as potential bird repellents. In FY98, December and January, field tests evaluating the repellency of Mesurol and Flight Control at application rates of 4 lb/ac and 1 gal/ac, respectively, sprayed on emerging lettuce seedlings was conducted for 5 days. Testing was conducted in large enclosures (1.8m x 3m x 7.6 m) placed over emerging lettuce seedlings with 6 horned larks per enclosure. Damage to lettuce seedlings treated with Mesurol and Flight Control were 14.4% and 8.5%, respectively. Untreated lettuce seedlings were completely (?) damaged.

In FY99, January, an evaluation of Mesurol and Flight Control was conducted at half the previously tested application rate (Mesurol - 2 lb/ac and Flight Control - 0.5 gal/acre). Field testing procedures were similar to those used in FY98, six portable enclosures were placed in lettuce fields following planting to test each compound. For each compound, lettuce seedlings in 3 enclosures were treated and the remaining 3 were left untreated as controls. After spraying, 6 horned larks were released into each enclosure for 6 days. Seedling counts were conducted each day until the conclusion of the test. Horned larks damaged 22% of the seedlings treated with Mesurol and 59% of the seedlings treated with Flight Control. Residue analysis of lettuce seedlings treated with Flight Control showed a substantial drop in residues from 314 ppm at treatment to 98 ppm at 6 days post-treatment; and non-detectable in the mature lettuce head. Residue analysis of Mesurol samples will be completed in December 1999.

NWRC researchers are planning a small scale field test with Flight Control at an application rate of 1 gal/ac on six 3-acre lettuce fields in the San Joaquin Valley from December 1999 to January 2000. The treated fields will be crop destruct.

In January 2000, NWRC researchers conducted a small scale field test with Flight Control at an application rate of 1 gal/ac on six 2-4 acre lettuce fields on Dressick Farms near Huron in the San Joaquin Valley. The test was conducted under EPA guidelines of <10 acres treated and crop destruct. The purpose of the field trial was to evaluate aerial application of Flight Control, efficacy of Flight Control to reduce horned lark damage to lettuce and to collect residue samples. The test was completed January 24, 2000. Damage assessment data and lettuce residue samples are being analyzed.

Summary:

From December 1999 to March 2000 NWRC researchers conducted a study to evaluate the efficacy of Flight Control a 1 gal/ac in repelling horned larks from sprouting lettuce and to collect residue data up to 50 days post treatment. Unfortunately, horned lark numbers on test fields were too low to detect significant differences between treated and control fields. Residues were about 1 ppm at 50 days post treatment. NWRC believes Flight Control should receive further consideration in field trials based on results from 2 residue analyses combined with the proven efficacy as a bird repellent. However, it is very difficult to predict the lettuce fields larks will target for feeding. This pattern of scattered and irregular bird damage requires a flexible approach in testing repellents. NWRC believes that identifying lettuce fields while they are undergoing bird damage, applying the repellent at the time of damage, and then monitoring subsequent bird feeding would be a more productive approach.

Last Updated:

02/23/09