

Evaluation of Lorsban®-4E Aerially Sprayed on Sunflower Plots for Bird Repellency

George M. Linz, Anthony A. Slowik, Linda B. Penry, and H. Jeffrey Homan

USDA, Wildlife Services, National Wildlife Research Center, Bismarck, ND

Introduction

Ripening sunflower fields in the northern Great Plains provide blackbirds with easily accessible sources of high-energy food. As many growers can attest, blackbirds can be nearly impossible to discourage from foraging in favored fields. To date, no single management method has been especially effective at consistently discouraging blackbirds.



Background

Repellents sometimes can be effective feeding deterrents, especially if alternative foraging sites are readily available. During late-summer 2003, we screened five insecticide formulations for feeding repellency using individually caged red-winged blackbirds (RWBL). Lorsban®-4E (a.i., chlorpyrifos) showed the best potential as a bird repellent (Fig. 1). Further testing of Lorsban revealed that compared to the untreated group, which ate an average of 10.1 g of achenes per 3 hr, birds fed Lorsban-treated achenes at the 50% rate (0.57 ml/kg) ate 58% (\bar{x} = 4.2 g) less. All other treatment groups had reductions of about 40% (\bar{x} = 6.0 g) (Fig. 2). Our next research step was to determine if field applications of Lorsban under controlled conditions would repel blackbirds from removing and eating sunflower achenes.



Figure 1. Percent consumption of insecticide-treated sunflower achenes compared to consumption of untreated achenes. Birds fed untreated achenes ate 6.2 g/3 hr.

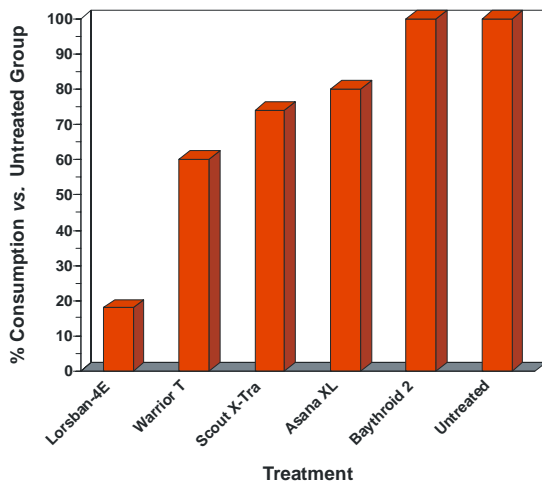
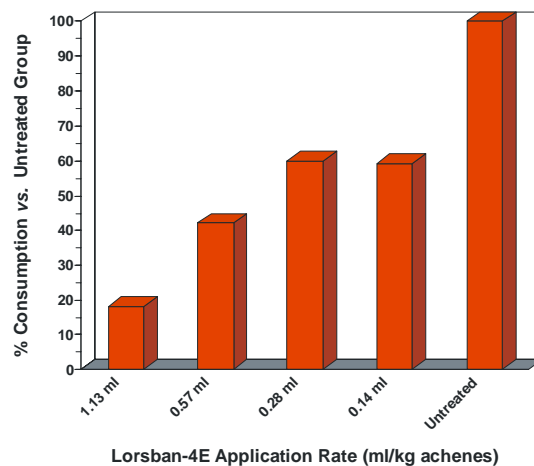


Figure 2. Percent consumption of Lorsban-treated sunflower achenes compared to consumption of untreated achenes. Birds fed untreated achenes ate 10.1 g/3 hr.



Methods

In September 2004, two 1-acre plots of planted oilseed sunflower were purchased from a local grower. One plot was randomly assigned to treatment with Lorsban. The other plot received no treatment. Six 8 ft (W) x 8 ft (L) x 8 ft (H) aluminum-framed cages, covered with black plastic-coated netting, were placed in each treated and untreated plot. All weeds within each cage were removed. An average of 27 sunflower heads was maintained in each cage.



On a clear, calm day in early September, the cage frames in the treated plot were removed. The treated plot was then aerially sprayed by a fixed-wing agricultural spray plane with Lorsban[®]-4E at 1.5 pints/acre. The cage frames were reassembled 2 hr after the pesticide application.



Two hours after the spray and each day thereafter of the experiment, 2 heads adjacent to the cages in the treated and untreated plots were selected and placed in a plastic bag for residue tests. Two RWBLs previously captured and held for at least 2 weeks were placed in the cages with water and an aluminum tray containing 200 g of food mix of cracked corn and milo.

Each morning after the Lorsban application, the amount of damage to the sunflower heads in the treated and untreated cages was measured and the food mix was replaced with a fresh supply. The recovered food mix was later weighed. This cycle was repeated for four days.

Results and Discussion

Total mean damage (Fig. 3) and number of damaged heads (Fig. 4) were slightly greater in the untreated cages than in the treated cages. The amount of food mix eaten was slightly greater in the treated plots (Fig. 5). The 95% confidence limits overlap, however, indicating no statistical difference between treatments. Even so, the consistency of the data suggesting that Lorsban might have some repellency was intriguing and thus, warrants additional testing. We suspect that the differences between treatments would have been greater, especially early in the trial, had the birds been trained to eat from intact sunflower heads prior to being released in the cages. In 2005, we plan to repeat this trial with 5 male red-winged blackbirds/cage that have been trained to eat sunflower from intact heads. This should increase the magnitude of damage and provide more definitive results.

Figure 3. Sunflower damage (cm²) in Lorsban-treated (*n*=6) and untreated (*n*=6) cages.

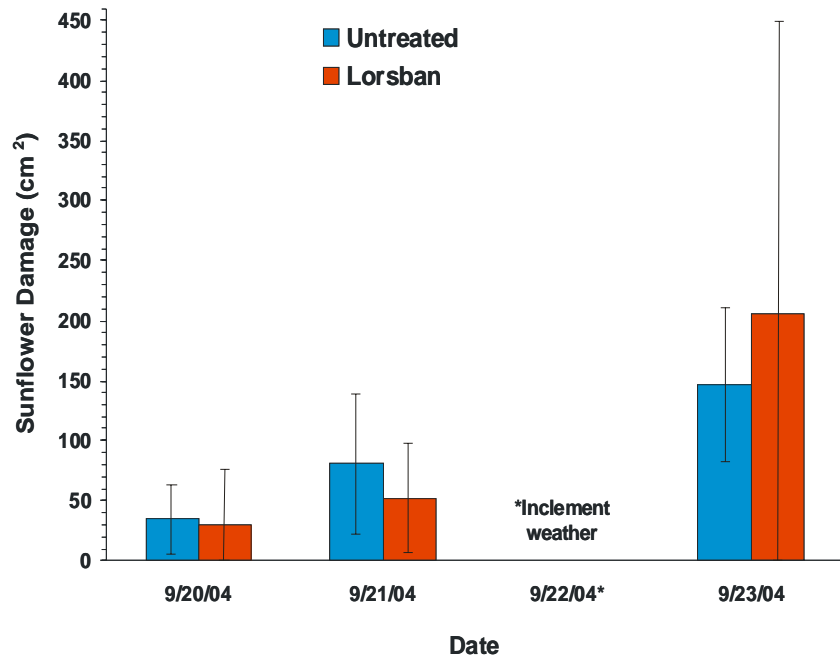


Figure 4. Number of sunflower heads damaged by red-winged blackbirds in Lorsban-treated and untreated cages.

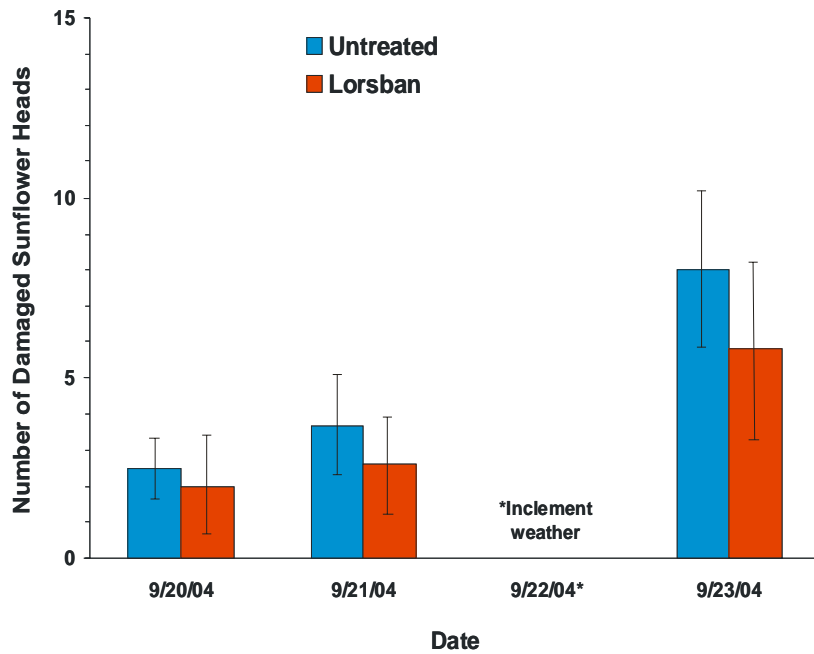


Figure 5. Amount (g) of alternative food eaten by red-winged blackbirds placed in Lorsban-treated and untreated cages.

