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EVALUATION OF A DRC-1347 (CPT) AERIAL SPRAY APPLICATION FOR REDUCING A ROOSTING BLACKBIRD POPULATION

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In North Dakota, South Dakota, and Minnesota, blackbirds cause extensive damage to ripening sunflower. In the most recent statewide damage survey, conducted in 1980, sunflower losses in the tri-state area amounted to $7.9 million (Hothem et al. 1988). Several techniques are available to sunflower growers for alleviating blackbird damage. These include habitat manipulation, mechanical and pyrotechnic devices, decoy plantings, and a chemical frightening agent (Avitrol) (Besser 1985 and Cummings et al. 1987). Each of these techniques, however, has limitations because of cost, logistics, or limited effectiveness. These concerns have stimulated efforts toward the development of an environmentally safe roost toxicant for reducing blackbird populations in areas where damage occurs.

One potential compound is DRC-1347 (CPT: 3-chloro-4-methylbenzenamine), which causes uremic poisoning in blackbirds but is much less toxic to raptors and most mammals (Schafer 1979). Laboratory studies at application rates as low as 6.5 lbs/a in various carriers can produce 100% mortality in blackbirds and starlings (Lefebvre et al. 1987). These results suggest that CPT has the potential to be an effective tool for managing problem blackbird populations. The purpose of this study was to obtain preliminary information regarding the potential environmental and nontarget hazards associated with DRC-1347 field spray applications, obtain preliminary estimates of CPT residues from treated water, soil and vegetation, and evaluate the methodology for measuring the effectiveness of a DRC-1347 spray formulation to reduce roosting blackbird populations.

On 5 September 1986 near Churchs Ferry, North Dakota, a 50-gallon application of 10% CPT, 23% propylene glycol, 31% methanol, and 36% water, was aerially sprayed over an 8.4-acre confined cattail pothole marsh site containing 7000 roosting blackbirds. A Cessna 188 Ag-Truck fitted with a liquid dispersal spray system was used to make the application. Bird concentrations were sprayed from a height of 25 to 50 feet between 2000 and 2028. Spray deposits and application rates at the roost were monitored by evenly distributing four groups of three silica gel thin-layer chromatography plates and water sensitive spray cards along each of three linear transects that extended the length of the marsh. Four individually caged male red-winged blackbirds were also placed above and at the bottom of roosting vegetation as an indicator of the effects of the treatment. The marsh was searched for dead blackbirds and nontarget animals 2 days prior to treatment and for 7 consecutive days starting the morning after treatment. To obtain an estimate of the initial roost population and any subsequent reduction in numbers of birds due to treatment, morning counts were conducted daily, beginning 3 days before spray and continuing for 7 days after spray.

Spray cards showed CPT application rates varied from 0 to 5.7 lbs/a, with an average of 1.21 lbs/a. Three of 4 caged redwings placed above marsh vegetation during spray application died within 12 hours after treatment but caged birds at the bottom of the vegetation survived. The dead birds were located in areas that received a CPT rate of 1.2 to 5.6 lbs/a. Composite analysis of the three dead caged birds showed they contained 4.6 ppm CPT residues (dermal LD50 = 4.6 ppm [Schafer 1979]). Searches for target and nontarget animals on transects within the roost produced one possible treatment-related kill, a sora (*Porzana carolina*), which contained 11.2 ppm CPT; no dead blackbirds were found. Roost counts pre- and post-treatment, indicated a 94% reduction in roosting-bird numbers 7 days after treatment (Fig. 1). Of 730 blackbirds collected within 10 miles of the treated roost during the 14-day period after spraying, only 3 were marked with a fluorescent marker contained in the CPT formulation. These birds were collected at 2 days post-treatment and contained 5.9 ppm CPT. The median level of CPT on vegetation after treatment was 1.5 ppm and remained relatively constant for the 21-day test period. Median CPT residues in sediment (0.04 ppm) suggested that the chemical degraded or volatilized before reaching the sediment. Median CPT residues in water decreased from 23.3 ppb at one day post-treatment to 7.4 ppb 21 days after treatment. CPT residues were detected in most pre-treatment samples, indicating that a background level of residues is naturally present, probably from the degradation of herbicides containing CPT.

The aircraft used to deliver CPT roosting blackbirds was able to make multiple passes over bird concentrations without roost abandonment by the birds on the night of treatment. Only 200 birds were observed departing the roost during the application. Roosting blackbird populations remained constant for 2 days post-treatment, but then fell rapidly, suggesting that the CPT treatment may have been responsible for the significant decrease in the roosting population, correlating well with the 2-3 day time period for mortality to occur from CPT treatments at the median lethal level. The time to mortality, dense cattail and phragmites stands, poor lighting at the base of the vegetation, and the disappearance of birds from scavenging or sinking beneath the water were factors that could have contributed to difficulties in locating dead target birds in the marsh. Further evaluations are needed to develop methods to estimate the mortality of target and nontarget animals under field conditions.

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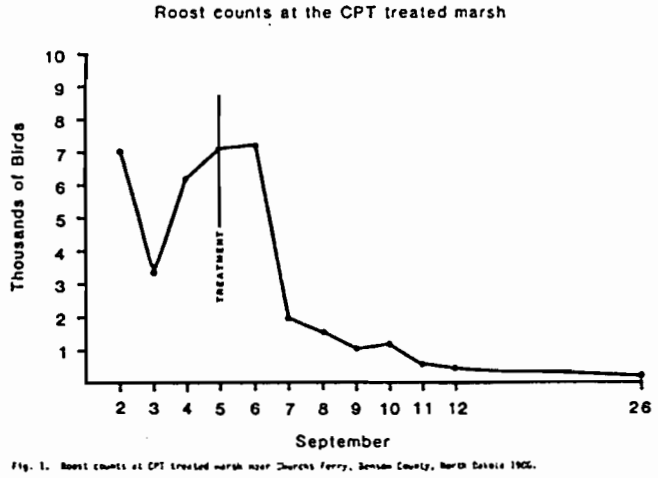

Fig. 1. Roost counts at CPT treated marsh near Churchs Ferry, Benson County, North Dakota 1986.