

## CHEMICALS FOR BIRD CONTROL

By Joe E. Brooks and Iftikhar Hussain

### A. Lethal Control

#### 1. Poison Baits

Starlicide (3-chloro-p-toluidine hydrochloride) is a slow-acting, highly toxic (to starlings, blackbirds, and crows) avicide, used in grain baits for lethal control of starlings, blackbirds and crows. It has been used to reduce starling damage at cattle feeding areas in the United States of America (USA) and to reduce crow and raven damages at sheep lambing areas in the Western USA.

Starlicide is highly toxic to starlings, blackbirds, crows and ravens, is generally much less toxic to other birds (such as house sparrows and hawks) and relatively non-toxic to mammals.

The toxic nature of starlicide is slow-acting and apparently painless to the birds. In starlings, the time between eating the poisoned bait and death is between 3 to 50 hours, depending on the amount ingested. It is not possible to reduce this latency period even by giving 25 times the lethal dose level. Toxic symptoms include listlessness, inactivity, and slightly increased and difficult breathing.

Death occurs without convulsions or spasms. At death, the dead birds usually have their feathers fluffed and feet tucked inside the feathers of the lower breast.

Starlings metabolize the compound completely within 2.5 hours and the metabolites are excreted completely by this time. These metabolites are non-toxic. All are excreted while the bird is still alive and there is no secondary toxicity to scavengers eating dead birds.

Starlicide is used at a 1% concentration on grain or pelletized poultry feed baits. The treated baits are generally mixed with untreated baits in the ratio of 1 part treated to 9 parts untreated before applying. Crows and ravens were killed using 200 cubes of 1.5 cm raw mutton dusted with 1 g of starlicide (75% concentrate) mixed with 5 g of powdered sugar. This gave an approximate amount of 3.75 mg of starlicide on each cubed bait. Baiting should be continued for about 6 weeks to achieve a 99% kill.

#### 2. Contact Poisons

Typically, a bird will not fly directly to a nest, perch, or food source but will perch briefly at a convenient peripheral point to survey the situation. Control with contact chemicals take advantage of this behavior. The contact, toxic wick perch was developed to provide temporary perches.

The wicked perches are essentially hollow metal tubes with a permeable wick that contacts the perching bird's foot and permits transfer of the toxic solution to the foot surface. The chemical is absorbed through the skin, enters the bird's body and causes death some hours later.

Two insecticides have been used as contact toxicants to poison birds. These are endrin and fenthion. They are used in perches that contain wicks soaked with a solution containing one or the other of the two materials. Both are readily absorbed through the skin. Since endrin is a chlorinated hydrocarbon and fenthion is an organophosphate material, fenthion is less hazardous to humans and other non-target animals and is much less persistent in the environment. Endrin is used at a 9.4%

concentration and fenthion at 11% concentration. The artificial perches are made to take 1 oz. (30 ml) of the toxic insecticidal solution.

## B. Frightening Agents and Repellents

### 1. Frightening Chemicals

Avitrol (also known as 4-aminopyridine) is a highly toxic bird management chemical for use as a frightening repellent in social birds that feed in flocks (such as parakeets and crows). It is usually made up as a grain bait. Treated bait is generally diluted with untreated bait so that only a few birds in a flock eat a treated bait.

Birds eating the treated baits become disoriented, give out distress calls, exhibit erratic flights, tremors and convulsions before death. Affected birds generally die. Distress usually begins in about 15 minutes and lasts 20 to 30 minutes. The affected bird's erratic behavior and distress calls frighten the other birds in the flock, causing them to leave the area.

Avitrol is used at a 3% concentration on the treated grain (cracked corn) and the treated grains are then diluted with 99 parts of untreated cracked corn. In the field, this material is broadcast at the rate of 1.1 kg/ha.

Avitrol is highly toxic, both to birds and mammals. The LD<sub>50</sub> values generally are less than 10 mg/kg. All precautions used when handling a highly toxic poison should be followed; wear gloves when placing the treated baits, do not smoke or eat after handling poison baits until washing thoroughly, store poisons in a locked room or cabinet, dispose of used baits by burning or burying in the soil.

### 2. Repellent Chemicals

#### a) Methiocarb

Methiocarb (3,5-Dimethyl-4-(methylthio) phenyl methylcarbamate) is a chemical repellent used to reduce bird damage to certain fruits and to treat certain seeds (wheat, rice, maize) prior to planting. Methiocarb, when eaten by birds, apparently causes physiological distress which results in avoidance of the treated food by some bird species. Methiocarb is a carbamate insecticide that is fairly highly toxic for both birds and mammals. The LD<sub>50</sub> values for rats has been reported variously as 15-35, 60, 100 and 130-135 mg/kg; for mice it is 34 mg/kg; and for pigeons and ducks is given as 13 mg/kg.

Methiocarb is applied as a seed dressing to wheat, rice and maize at 0.25% concentration to prevent bird damage to these crops as they sprout. It is applied to certain ripening fruits, such as cherries and grapes, just before harvest to reduce bird damage.

Methiocarb is poisonous if eaten, inhaled or absorbed through skin, so all precautions, such as gloves and dust mask, should be used and worn when handling the 50% or 75% concentrates.

#### b) Other Materials

Other chemicals have been used as bird repellent materials on seeds of cereal grains. These are fungicides, such as copper oxalate and copper oxychloride. Refined coal tar is used also to protect sprouting maize seedlings. Copper oxalate and copper oxychloride are used at 0.5 to 1.0% concentrations when used to protect wheat or maize seedlings from damage. Trimethacarb, a chemical relative of methiocarb, was shown to be an effective repellent but was not registered by the manufacturer for this use.

C. Chemosterilants

A product named Ornitol<sup>(R)</sup> has been used as a reproductive inhibitor or chemosterilant for pigeons. It is used at a 0.1% concentration on treated maize. It causes a temporary sterility in the pigeons. The effects of one good baiting may last for six months or longer so treatment twice per year is adequate to give best results. Scatter the treated baits daily for 10 days in areas frequented by pigeons. Best results may be obtained when as many pigeons as possible are treated at the same time. Avoid unnecessary exposure to rain since Ornitol is water soluble. Estimate the number of pigeons to be treated, then for each 100 pigeons, scatter 7 1/2 lbs. of Ornitol daily for 10 days.