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9-16-1968

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DeGrazio, John W. and Spear, Philip J., "NEW MATERIALS FOR BIRD CONTROL" (1968). *Bird Control Seminars Proceedings*. Paper 179.

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## NEW MATERIALS FOR BIRD CONTROL

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A variety of methods is necessary to solve the many bird damage problems that occur in agriculture and other fields of interest. It is apparent that no one method can be used to provide answers for all damage situations; each problem and problem area is unique and requires thorough knowledge and investigation before intelligent measures of bird control can be applied. Thus, basic research in the laboratory and initial field studies are necessary to arrive at the most safe, efficient, and economical method of bird damage control possible for each situation.

The use of chemicals for damage control is one of the major approaches in solving bird damage problems, and personnel of the Denver Wildlife Research Center rely heavily on this line of attack. The following is a resume of the various chemical agents that (1) are in the initial phases of investigation and show promise, and (2) are nearing the final stages of research and hopefully will become operational.

### RESEARCH IN THE INITIAL STAGES

#### 1. *DRC-736 as a Frightening Agent for Use in Standing Sorghum*

Recent field studies with DRC-736 [4-(methylthio)-3,5-xylyl N-methylcarbamate] have been conducted in Oklahoma on red-winged blackbirds (*Agelaius phoeniceus*) and brown-headed cowbirds (*Molothrus ater*) feeding in standing grain sorghum. The results of broadcasting cracked corn treated with DRC-736 and diluted with untreated corn indicated that damage can be reduced considerably. Flocks of blackbirds ranging from 20,000 to 75,000 were frightened from fields 1 or 2 days after they were baited and these birds were never a problem in these fields thereafter. Birds that fed on treated bait became affected within 30 minutes and remained immobilized for several hours. Hawks were the chief cause of mortality and frequently fed on immobilized birds, greatly aiding the frightening properties of the chemical. Additional field tests in sorghum are being planned to determine fully the value of DRC-736 as a control agent.

## 2. DRC-1347 as a Contact Perch Toxicant

Several field trials in the Denver area have provided information on the utility of DRC-1347 (3-chloro-*p*-toluidine) as a perch toxicant for starlings (*Sturnus vulgaris*). In one test where a bead formulation of DRC-1347 was applied in a barn cupola where about 100 starlings were roosting, only 3 birds remained after 3 days. In another test about 70 percent of 1,200 starlings were killed from coming into contact with DRC-1347 when entering an outdoor advertising sign to roost. Although initial field trials with DRC-1347 as a perch toxicant show promise, more research needs to be done on the effects of light and temperature on the compound and its formulation. No field tests have been conducted on large concentrations of roosting birds.

## 3. DRC-736 as a Seed Repellent

As a seed repellent on newly planted corn, DRC-736 was evaluated in several geographical areas on common grackles (*Quiscalus quiscula*), boat-tailed grackles (*Cassidix mexicanus*), common crows (*Corvus brachyrhynchos*), and pheasants (*Phasianus colchicus*). In both 1967 and 1968, pheasant damage to sprouting corn in test fields in South Dakota was reduced more than 90 percent by DRC-736 treatments. Similar treatments in south Texas also reduced feeding by boat-tailed grackles on sprouting corn. Studies were also initiated on crows in Tennessee and common grackles in South Carolina. More field testing is planned in these different geographical areas.

## RESEARCH APPROACHING COMPLETION

### 1. DRC-1339 for Baiting Preroosting Areas

DRC-1339 (3-chloro-*p*-toluidine hydrochloride) was developed as a starling toxicant at the Denver Wildlife Research Center. It is now being extensively used under the trade name of Starlicide<sup>1</sup> as an agent for controlling starlings at animal feedlots. It has also been used to reduce a wintering starling population causing damage to cattle feedlots near Denver by baiting preroosting areas with treated poultry pellets. A population of about a quarter million birds that occupied a single roost was reduced more than 60 percent by baiting two congregating areas, a feedlot and a pasture adjacent to the roost. Baiting preroosting areas with DRC-1339-treated rolled barley has also been successful in control starlings that caused damage to holly orchards in Oregon.

### 2. DRC-736 as an Area Repellent in Feedlots

Extensive field testing in cattle feedlots north of Denver has shown that baiting with DRC-736-treated cracked corn is a safe and effective method of discouraging redwings from frequenting feedlots. The treated bait was diluted with untreated bait and broadcast in alleys and pens. One feedlot was protected for an entire winter with only four baitings.

<sup>1</sup>Reference to trade names in this publication does not imply endorsement of commercial products by the Federal Government.

### 3. *DRC-1327 as a Frightening Agent in Field Corn*

Many methods have been tested to alleviate blackbird damage to ripening field corn near Sand Lake National Wildlife Refuge, South Dakota: blackbird-resistant varieties of grain sorghum and tight-husked hybrid corn, marsh vegetation control, mechanical frightening devices, contact toxicants used in roosts, and various chemical agents applied to grain baits and standing crops. The most successful results have been obtained with DRC-1327 (4-amino-pyridine).

DRC-1327 is a fright-inducing chemical that causes affected birds to fly erratically and emit distress cries. Flocks have been cleared from fields when less than 1 percent of the population was affected. In our field tests, cracked corn bait diluted with untreated corn has been broadcast at the rates of 1 pound of treated corn per 30 acres or 1 pound per 100 acres. In 1965, damage was reduced by about 85 percent on more than 1,100 acres of corn. In 1966 and 1967, the study area was enlarged to 508 sections surrounding Sand Lake, and landowners were allowed to purchase treated baits and have them applied by operators of high-clearance tractors equipped with electric seeders. Damage was reduced by about 52 percent in 1966 and by about 73 percent in 1967. It is worthy of note that the higher effectiveness attained in 1967 was achieved at the lower treatment rate, 1 pound per 100 acres. A similar study is being conducted this year.

#### DISCUSSION:

FITZWATER: John, how long does it take for DRC-736 to take effect?

DE GRAZIO: About 15 minutes.

FITZWATER: What is the psychological background on acting as a frightening device when it immobilizes the birds? We "immobilized" with TEPP.

DE GRAZIO: Yes, well, the same thing as TEPP, only it's a lot safer than TEPP. You're getting this reaction of birds. They don't go into violent convulsions, but they do go into mild convulsions and sometimes utter distress cries. We feel it's a real good chemical for redwings in feedlots.

OCHS: John, I missed what your application of 736 is. How do you use it?

DE GRAZIO: 736 is a carbamate. It was 1% on cracked corn.

JACKSON: John, maybe you might answer one other question. Some of your tests are coming to completion on some of these materials; then what?

DE GRAZIO: Then, I guess is when the problem begins-with registration and 3.11 those other things that I'm not too familiar with. I guess the people in Washington have to go to work.

JACKSON: Are the Denver Lab and the Fish and Wildlife people going to proceed through the registration mill with these materials?

DE GRAZIO: I can speak for one chemical, 1327, Avitrol. I mentioned this the other day in the pre-session, that we have just recently hired a chemist in Denver (by the way, we only have two chemists) specifically to come up with a microanalytical technique for 1327 which is required for registration. I don't know how long this is going to take; it may take a long time.

OCHS: I have a comment. I noticed some strange looks in the audience: Is Avitrol registered? Yes, Avitrol is registered, but not for use on growing crops. This registration has not been obtained yet.

## NEW MATERIALS FOR BIRD CONTROL

Dr. Philip J. Spear  
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SPEAR: It's obvious that Dr. Jackson is an optimist for having left me for the tail end of the program to talk under the heading, "New Materials." I can't tell you about any new materials; I was amazed that John had so much interesting and potentially useful information to provide for us. My concern for the moment is that we keep what we've got.

I think the pendulum is still swinging and swinging towards conservative view of uses that we may want to make of any pesticide. Some recent rumblings from Washington raising questions about new limitations on products that we've been using for ten years or more seem to support this concern. I think these problems underline the mention that's just been made by Dan about the necessity of having a great deal of data, and data which is much more specific and comprehensive than we have realized in the past. If we're going to have these products, either we're going to have to lean entirely on government agencies to develop these things or else cooperate with private industry. Together we must work out the answers.

I think there are some other steps we can take to alter this rather dismal picture. First of all I think almost all of us here have some responsibilities to do a better job, or, at least, some job toward informing the public of the various problems related to needs for bird control. Dr. Kosmin here suggested that we start with first grade, and maybe this is the answer. There are some other publics, the medical profession, and I think some of the regulatory agencies who perhaps deserve special attention. Bob Weeks in his presentation referred to the limited knowledge that most physicians have concerning diseases such as histoplasmosis and cryptococcosis. As an example, the American Medical Association is on record as estimating that there are 1/2 million cases of histoplasmosis, new cases per year, that as many as 100,000 of these cases may be brought to the medical profession. By contrast the most recent issue of the annual morbidity and mortality report, US Public Health Service, listed 236 cases of histoplasmosis; only 19 states bothered to report.

What is the role of birds in the transmission of microbiological organisms? The presentation we had from a Food and Drug inspector is the first presentation I've heard from Food and Drug in two years in which there wasn't at least two-thirds of the presentation taken up with the concern with microbiological organisms.

Yet salmonella is found in gulls and pigeons; and gulls in particular are involved in carrying disease producing organisms from our dumps and sewage to our food.

We'd also stress the role of birds in the occurrence of mites and ectoparasites in the human environment. A number of insects which are only scavengers in birds' nests are important pests of fabrics and stored food. The coming current good manufacturing practices which Food and Drug has issued as a proposal requires a great improvement in sanitation and pest animal control. These things all offer opportunities for bringing further attention to the need for bird management.

Certainly we are challenged by the dynamic changes which occurred in the few years since Dr. Jackson instituted this useful conference. On the one hand there is continued concern for environmental contamination which was mentioned by several, particularly by Dr. Schwab. On the other hand there is the prospect of greatly increased sophistication in bird management as we've heard repeatedly today.

I already commented on the need for communication between officials responsible for bird control and the commercial operators seeking this new business. The commercial operator cannot sit and wait for business to fall in his lap; but he must not only seek out his customers, he must also seek out the various research, extension, and regulatory agencies responsible for providing information about legal, safe, and practical bird management. We have been assured (by "we" I mean the commercial bird control industry) that the Bureau of Sport Fisheries and Wildlife personnel will aid pest control operators to develop the necessary competence. But again I repeat, PCOs must make their needs and interests known. I believe their best channel for obtaining such information is through the local agents of the Bureau's Division of Wildlife Services. I urge PCOs to make the initial contacts, and I'm confident their sincere approach to Division personnel will be welcome.

At several of our bird management conferences there's been mention made of visiting over cups of coffee. We have seen that drinking coffee is a popular activity here, and I think this is an effective way of establishing communication. And hopefully the Bureau's mission can be effectively pursued, the businessman prospers, and the public is well served when we have this cooperation.