Food and Agriculture Organization

LOCUST BREEDING—A technician at the Anti-locust Research Centre in London breeds female locusts in sand in aluminum tubes. The Centre is aiding the Food and Agriculture Organization in its six-year program for locust control.

ENTOMOLOGY

New Insecticides Seen

More acceptable methods of killing insects, without harming animals and people, are now being explored by scientists with encouraging results.

➤ A WHOLE FAMILY of chemicals that do not poison people and animals like DDT is coming to the aid of farmers.

The chemicals are the organophosphates and carbamates, which have distinct biological advantages over chlorinated hydrocarbons in controlling insects, and yet are not toxic to animals.

Already 120 of these compounds are being used at the rate of several hundred million pounds each year, stated Dr. John E. Casida of the University of California, Berkeley, who predicts that they will soon be the major chemical weapons against insect pests that plague man's crops and endanger his health.

Organophospate insecticides have been tested for 30 years and have been found to have high insecticidal activity and low toxicity on mammals, reported Dr. Casida in Science 146:1011, 1964.

They work primarily by inhibiting the acetylcholinesterase in the central nervous system of the insect. This leads to the disruption of the nerve function. The afflicted insect goes through a process of tremors, hyperactivity, convulsions, paralysis and finally death.

Repeated use of insecticides, however, tends to single out for survival those insects which have appropriate gene constitutions and biochemical mechanisms needed to resist the poisons, Dr. Casida pointed out. The rapid selection of resistant strains could become a major threat to the continued efficient use of the organophosphate and carbamate insecticides, he said, even though the problem is not yet as serious as it is with the chlorinated hydrocarbons such as DDT, lindane and dieldrin.

The increasing concern over persisting residues of some of the chemical pesticides has caused scientists to reconsider seriously alternative approaches to insect control, Dr. Casida reported.

Tremendous progress has been made in using predators, parasites and pathogens against harmful insects. Scientists are able to keep certain insects in check by inducing dominant lethal mutations by radiation or chemicals. Attractants, repellents and other means to stimulate insects to approach or avoid an area are getting increased attention.

• Science News Letter, 87:71 January 30, 1965

ENTOMOLOGY

New Locust Swarms Threaten Asia, Africa

➤ SUPPLIES OF INSECT poisons are being prepared to halt a new widespread invasion of dread desert locusts in several Asian and African countries.

Swarms of locusts are starting to breed in three large groups in West Pakistan and one large group in Somalia, reported the Food and Agriculture Organization of the United Nations.

The swarming insects must be destroyed after hatching in order to prevent a destructive invasion, warned H. Bredo, FAO's specialist on desert locusts. Supplies of the modern insecticide, dieldrin, are needed for spraying over the crowded locusts before they begin to fly and eat all vegetation in their path.

Control measures must be undertaken on a regional basis, said Mr. Bredo. He pointed out that 35 countries from the locust-infested areas of the Middle East, North Africa, India and Pakistan have joined efforts to stamp out the devastating plagues of locusts that can destroy thousands of miles of fields and forests in their flights. For centuries, these swarms of locusts have gathered and started to swarm in vast numbers across the countries.

During the last two years, the locusts have not swarmed, Mr. Bredo said. This is the longest lull in 30 years.

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ZOOLOGY

Ultrasonic Clicks May Protect Moths From Bats

➤ BY EMITTING a series of ultrasonic clicks, certain moths may turn away an oncoming bat.

Captive bats, trained to catch mealworms tossed in midair, turned away from their target when they heard the "sounds" of certain moths, reported Dorothy C. Dunning and Kenneth D. Roeder, of Tufts University, Medford, Mass.

Ultrasonic pulses or sounds of the Arctiid moth were recorded on a machine and played back, with the loudspeaker aimed so the pulses would seem to come from the tossed mealworm, the researchers reported in Science, 147:173, 1965. Instead of catching the mealworm target, the bats would veer and dodge away from the worm.

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ENTOMOLOGY

Insects Can Be Sterilized By High Intensity Flash

➤ MALE FLIES and mosquitoes have been sterilized in a flash—by a flash.

By using a high-intensity flash from an photographer's ordinary photoflash equipment, Dr. D. F. Riordan of the Canada Department of Agriculture, Ontario, was able to sterilize 82% to 87% of a group of small chalcid male flies by a single flash. Two flashes from the apparatus either killed the flies or sterilized them. Dr. Riordan reported in Nature, 204:1332, 1965.

A single flash killed 26% of the male mosquitoes, and all survivors were sterile. A more precise flash apparatus was built later for further experimentation.

This method of using radiant energy to initiate chemical reactions in insects and thus sterilize them, offers another possibility of reducing or eliminating the numbers of insect pests by sterilizing them, pointed out Dr. Riordan.

Two methods already in use for sterilizing insects, gamma-radiation and chemo-sterilants, are known to have drawbacks in regard to safety measures.

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