

natural sciences

Gathered last week at the International Colloquium on Insect Pathology at the University of Maryland

COTTON PESTS

FDA to approve virus attack

The Food and Drug Administration is in the process of approving the use of a virus which is a specific pathogen for *Heliothis zea*, the insect known as the cotton bollworm or the corn earworm.

This will be the first approved use in the United States of such specific biological controls of crop pests on a large scale. The first experimental application will be on 10,000 acres of cotton in Southern states.

The virus is specific for the insect, and is not considered harmful to man or other organisms. It is sprayed on crops after being mixed with water.

VECTORS

Malaria carriers attacked by Nosema

Nosema stegomyiae, a microsporidium, may turn out to be an effective biological control for a major distributor of malaria, the Anopheles mosquito, report Drs. K. E. Savage and R. E. Lowe of USDA's Agricultural Research Service, Gainesville, Fla.

In experiments with *Nosema* infections, mortality of 40 to 50 percent was achieved at one larval stage of *Anopheles quadrimaculatus*, and there was a significant reduction in the longevity of adults which survived the larval exposure.

Dr. Savage says that more research is needed in the areas of optimal methods of infection, the effects on fecundity, the mass production of the spores and the effects on transmission of malaria, before *Nosema* can be used in a major anti-mosquito campaign.

PESTICIDES

Joint use possible

There is no apparent antagonism between DDT and a viral control for the variegated cutworm, a serious pest of various crops, says Dr. James D. Harper of Auburn University, Auburn, Ala. Thus, he says, it may be possible to use both agents against the cutworm and thereby reduce significantly the amounts of DDT required.

Except for probably insignificant exceptions, he found no evidence that use of a virus stimulated or reduced action of DDT, or vice versa.

VIRUS CONTROLS

Pathogenicity low

The effectiveness of a nuclear polyhedral virus against the eastern hemlock looper, a pest on the balsam fir in Newfoundland, was low in tests conducted by Dr. J. C. Cunningham of the Insect Pathology Research Institute, Sault Ste. Marie, Ontario, Canada.

The virus was further weakened by long storage in aqueous suspension, Dr. Cunningham says.

Virus examined under the electron microscope after such storage appeared to be honeycombed and "rotten."

Freeze-drying, however, did not affect the pathogenicity.

Mean times of 14 to 26 days were required for the virus to kill the looper. Dr. Cunningham suggests that pathogenicity might be increased by culturing the virus in alternate hosts that are more susceptible to the virus, and then transferring the infection to the looper.

DEFOLIATORS

Density gives clues

There are various relationships between the density of population of areas infested by the gypsy moth, a hardwood defoliator, and the infection of these pests by bacteria and virus, two researchers report.

Dr. John D. Podgwaite of the Forest Insect and Disease Laboratory, Hamden, Conn., says that infection of the larvae of the gypsy moth—by aerobic bacteria and by a polyhedral virus—were highest when gypsy moth population was dense.

Dr. Charles C. Doane of the Connecticut Agricultural Experiment Station in New Haven also reports that mortality was lowest on the fringes of a gypsy-moth infested area. The rate went up when he mixed gypsy-moth egg masses from different areas, and he believes that the mode of transmittal is through the egg masses rather than via the hatched larvae. He suggests that the introduction of infected eggs might be a device for spreading infections.

CODLING MOTH

Virus a major pathogen

A granulosis virus causes the most mortality among the codling moth larvae, report L. P. Pristavko, L. V. Yanishevskaja and O. I. Rezvatoeva of the Ukrainian Research Institution for Plant Protection in Kiev.

The larvae were raised on immature apples at various temperatures, then were triturated and examined to determine microfloral and viral infections. Of 128 dead and diseased larvae, 55.3 percent were found to have been infected with granulosis virus.

Only one bacterium, *Bacillus serius*, was found to be pathogenic to the insect; other bacteria, most of them enteric, are apparently useful to the insect by providing vitamins or other necessary nutrients. Some fungi were also pathogenic.

CROSS INFECTIVITY

Virus is nonspecific

The virus that lives in and infects the alfalfa looper is not specific for this insect and can also infect a number of other insects, reports Dr. P. V. Vail of USDA's Agricultural Research Service in Mesa, Ariz. Several lepidoptera species, including the diamond back moth, the beet army worm, the cotton leaf perforator, the corn earworm and the cabbage looper were exposed to the alfalfa looper virus. The virus was highly infectious to all of them except the corn earworm, Dr. Vail says.