



Trees in foreground were stripped of foliage by gypsy moth. Trees in background were treated with microbial insecticide Thuricide.

Biological Control For Gypsy Moth

RESULTS of a major cooperative research program by state, Federal, university and private industry researchers indicate that a biological insecticide can be used to prevent gypsy moth damage to foliage in forests.

Field trials in Pennsylvania and three other northeastern states, coordinated by Dr. Frank Lewis of the U. S. Forest Service, provided field results which may open the way to giving arborists and insecticide applicators an effective alternative to carbamate chemicals for prevention of gypsy moth defoliation.

The gypsy moth was responsible for medium to heavy defoliation of more than 1.5 million acres of trees and shrubs last year, but applicators ran into increasing criticism on the use of effective but ecologically questioned chemical pesticides.

Subsequent analysis of field data confirms the efficacy of the biological insecticide. This offers an un-

usually high degree of safety to all but susceptible leaf-chewing worms. The test results give promise of solving the problem facing the applicator.

"The gypsy moth problem has become so complex that multi-agency, multi-disciplinary approaches are required for an adequate solution," according to one entomologist who has followed the pest's growth in recent years.

Last winter in the face of the pressing demand for a safer, selective, reliable method for controlling the gypsy moth a decision was made to accelerate the field studies needed to document the effectiveness of the biological pesticide called Thuricide.

Impetus for the biological tests was a growing attack against the chemical insecticide (carbaryl) most frequently used in gypsy moth spray programs. Critics had cited potential safety hazards and threats to the environment in opposing spraying

chemicals for control of the pest by state and municipal agencies.

At the same time more exotic control approaches such as sex attractants were admitted to require years before achieving commercial status.

As a result chemical spray programs in many communities were delayed or dropped.

Researchers at International Minerals & Chemical Corporation worked with state, Federal and university scientists to carry out the cooperative field study program. The purpose was to demonstrate that the biological pesticide could afford the combination of effectiveness and safety sought by homeowners, government agencies and conservationists.

IMC recently received Federal registration of its newest, most potent form of the insecticide Thuricide HPC. While it is still too early to determine just how many acres of forests will be treated with the

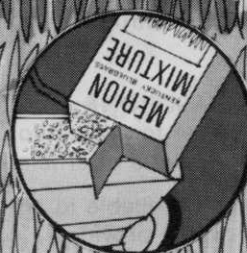
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BIOLOGICAL (from page 57)

product, IMC told WEEDS TREES and TURF that predictions are "that more than 2 million acres will be hit to some significant degree by the gypsy moth in 1972 . . . with perhaps half of that acreage receiving

some type of control program."

The Environmental Protection (EPA) registration also permits the use of Thuricide on other major forest pests. Included are the fruit tree leaf-roller, spring and fall canker-

worm (inchworm), fall webworm, red humped caterpillar, tent caterpillar and California oakmoth larvae.

The first step to testing the efficacy of this biological compound was a midwinter laboratory test

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conducted by Normand Dubois of the U.S.D.A. Forest Service at Hamden, Conn.

Dubois simulated aerial spray conditions to demonstrate the potency of the active biological ingredient required to control the gypsy moth.

In this carefully-controlled test, the product at the proposed field use rate, 8 Billion International Units per acre, killed 100 percent of the worms.

"Armed with that data, we moved to the next step which was to arrange field tests in three states where the gypsy moth was a leading pest problem" says Dr. Martin Rogoff, manager of microbiology for IMC.

The states involved were New Jersey, Pennsylvania, Connecticut and Massachusetts.

All four states had experienced widespread and severe forest damage from the gypsy moth in 1970 . . . and predictions of even greater infestations were being made for 1971.

The large scale tests of the biological pesticide were successful.

At Burkesville, N. J., trials conducted in replicated plots by William Metterhouse of the state's department of agriculture showed Thuricide HP reduced defoliation of leaves by more than 83 percent . . . indicating a direct correlation between worm kill and foliage protection.

Dr. W. G. Yendol and R. A. Hamlen of Penn State University obtained similar evidence. Foliage protection on treated trees in Berks County (a major gypsy moth area) ranged from 80 to 100 per cent. Worm populations tripled in the untreated control plots during the test period but not in the treated plots.

In Connecticut trials at Hamden and Bethany, Dr. Harry Kaya and Dr. D. M. Dunbar of the state agricultural experimental station at New Haven reported significant worm reduction of two major pests, the gypsy moth and the elm spanworm (which often appears a few days before the more publicized gypsy moth).

At Hamden, reductions of 60 per cent of original populations of both pests was observed in plots tested with Thuricide while worm populations doubled in the untreated plots.

Preliminary results of the Hamden trials led observers to claim a "major breakthrough" in the biological control of the gypsy moth.

Kaya reported "excellent results" against the elm spanworm . . . 95 to 100 per cent control after 14 days.

According to IMC, the effectiveness of Thuricide HPC in its newer

form is no longer in question. "We have reached the 100 per cent control mark in repeated laboratory tests. The primary direction of current and future development effort will be to achieve maximum control in large-scale commercial uses and to refine application techniques to insure even more economical and practical use," says an IMC spokesman.

Field tests were performed with ground application equipment, but IMC also carried out independent trials using aerial application tech-

niques to obtain needed data on how the product works under those conditions.

"IMC's aerial application test last summer produced "very good data for future work because foliage coverage was excellent," Dr. Rogoff said.

Dubois also was involved in a test at Whately, Mass., where he worked with Dr. William Becker of the University of Massachusetts. That study, confirming similar replicated trials, resulted in a 62 per cent reduction in defoliation.

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