WHAT'S NEW IN NURSERY INSECT CONTROL?

Loyd Drake, Tom Flavell and Larry Abrahamson1/

After reviewing the literature and talking with various nurserymen and others, we realized that very little was new with respect to pesticides registered for insect control since the last nurserymen's conference. Basically, we are still using the same materials and methods we were using two years ago. However, one very significant milestone that has passed since the 1972 meeting was the passage of the "Federal Environmental Pesticide Control Act of 1972." We think a brief discussion of the provisions of this Act as we understand them and their impact on foresters and nurserymen may be of interest to this group. As most of you probably know, this Act amended the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) of 1947. The purpose of the new Act is to institute stronger, more extensive mechanisms to prevent pesticides from harming human health and the environment. It does so by extending federal controls to the actual application of pesticides by the user and by regulating intrastate as well as interstate marketing of pesticide products.

Before we take a look at some of the provisions in this Act which we think are most important to us as foresters and nurserymen we need to define some terms so that you will have a better understanding of this Pesticide-Use Act.

A. PEST - The term "Pest" means: (1) Any insect, rodent, namatode, fungus, weed, or; (2) any other form of terrestrial or aquatic plant or animal life or virus, bacteria or other micro-organism (except virus, bacteria, or other micro-organisms on or in living man or other living animals) which is injurious to health or the environment.

B. PESTICIDE - The term "Pesticide" means any substance or mixture of substances intended for preventing, destroying, repelling, attracting, or mitigating any pest, and any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant. The following are examples of classes of pesticides: (1) Amphibian and reptile poisons or repellents; (2) Attractants; (3) Bird poisons or repellents; (4) Disinfectants; (5) Fish poisons or repellents; (6) Fungicides; (7) Herbicides; (8) Insecticides; (9) Invertebrate animal poisons or repellents; (10) Mammal poisons or repellents; (11) Nematicides; (12) Plant regulators; (13) Rodenticides.

C. ACUTE ORAL LD_{50} - The term "Acute Oral LD_{50}" means a single orally administered dose of a substance, expressed as milligrams per kilogram (mg/kg) of body weight, that would be lethal to 50% of the test population of animals within a specified time period and under specified test conditions.

1/ Entomologist, Forest Pest Management, Alexandria, Louisiana; Entomologist, Forest Pest Management, Asheville, North Carolina; and Entomologist-Pesticide Specialist, Environmental Quality Evaluation, Atlanta, Georgia: All of S&PF, U.S.F.S.

TABLE 1

LISTING OF EPA TOXICITY CATEGORIES FOR REGISTERED PESTICIDES

EFFECTS	TOXICITY CATEGORY I	II	III	IV
(1) Oral LD_{50}	< 50 mg/kg	50-500 mg/kg	500-5000 mg/kg	>5000 mg/kg
(2) Dermal LD_{50}	< 200 mg/kg	200-2000 mg/kg	2000-20,000 mg/kg	>20,000 mg/kg
(3) Inhalation LC_{50}				
a) Dust or Mist	< 2.0 mg/liter	2-20 mg/liter	80-200 mg/liter	>200 mg/liter
b) Gas or Vapor	< 200 ppm	200-2000 ppm	2000-20,000 ppm	>20,000 ppm
(4) Eye Effects	Irreversible Corneal opacity at 7 days	Corneal opacity reversible within 7 days or irritation persisting for 7 days	No corneal opacity or irritation reversible within 7 days	No irritation
(5) Skin Irritation	Severe irritation or damage at 72 hrs.	Moderate irritation at 72 hours	Mild or light irritation at 72 hrs.	No irritation at 72 hours

The latest draft of this section of the Act dealing with classification was very extensive and complicated. Basically, this section states that classification of a pesticide as general use or restricted use will depend on where the pesticide is used (residential, non-residential, or outdoor use); on the acute dermal and oral LD_{50} of the formulation (toxicity category); on the bird, fish and wildlife toxicity effects; on established use patterns for previously registered products; and whether the product has any potential for teratogenicity, oncogenicity, or mutagenicity effects.

A pesticide may be classified for general use outdoors while, at the same time be classified for restricted use in residential, or non-residential applications; or a pesticide may be classified for general use for some outdoor uses but be classified for restricted use for other outdoor uses which would have more adverse effects on fish, birds, or wildlife. What it amounts to is that each pesticide and each use of this pesticide will have to be separately evaluated and if EPA considers this particular formulation, or use, to cause "unreasonable adverse effects on the environment including injury to the applicator" it will be classified as a restricted use pesticide.

3. Certification of Applicators – The Act provides for the certification of pesticide applicators for the application, supervision of application, and/or the recommendation of restricted-use pesticides. The pesticide users will be certified as either a private applicator or as a commercial applicator. A private applicator will generally be a farmer, forester, nurseryman, or others who apply restricted use pesticides on their own land or their employer's land. A commercial applicator will generally apply to those who use or recommend the use of restricted use pesticides on other people's land for a fee. Federal and State pesticide applicators will also be certified under the commercial certification. Certified applicators will be given oral or written tests to insure their competence in pesticide use. Applicators must demonstrate: (1) A full comprehension of principles and practices of pest control; (2) a practical knowledge of pesticides and pesticide application techniques and problems; (3) a practical knowledge of pests and pest problems; (4) a practical knowledge of environmental concerns, and of safety and health concern, and; (5) have the ability to read and understand labels.

Specific categories have been proposed where the commercial applicator could be certified in 1 or up to 10 special categories. These categories include Forest Pest Control (which includes seed orchards and tree nurseries) and seed treatment categories which will be most pertinent to you nurserymen. Some of the other categories that may be of interest to you are: Agriculture Pest Control; Ornamental and turf pest control; aquatic pest control; right-of-way pest control; and demonstration and research pest control. A certified applicator in one of these categories will have to demonstrate a specific knowledge of pest problems in his particular category. Each state will be responsible for certification of applicators within their state and will have their own training and testing programs. The full implementation of this certification of applicators must be completed by October, 1976.

4. Experimental Use Permits. Section 5 of the Act requires, that any person wishing to accumulate information necessary to register a pesticide under this Act or to broaden the registration of an already registered pesticide will need an Experimental Use Permit issued by EPA or by an "EPA approved" state agency. Permits will not be needed for substances being tested for efficacy against a pest, or tests smaller than 10 total land acres, or 1 aquatic acre in size. Any person conducting a study and is uncertain as to whether the testing may be conducted without a permit, should submit a request for determination to EPA. Applicants for an experimental use permit can be a third party, that is, persons other than the manufacturer can receive an experimental use permit. The company producing or formulating the product does not have to be the one applying for the permit. The implementation of this section of the Act will go into effect within a short time after this section has been published in the Federal Register, which may be the middle of November.

5. Enforcement of the Act. Enforcement of the various section of this Act will be by both EPA and the States. Fines for wilful misuse of pesticides may be charged to you, the user, for use of a pesticide inconsistent with its labeling. A private applicator may be fined up to $1,000 and 30 days in prison, while a commercial applicator may be fined up to $25,000 and 5 years in prison. The enforcement provision of the Act went into effect October, 1972.

6. One of the other provisions of the Act that may have some effect on us is the re-registration of state registrations starting in October, 1974. All state pesticide registrations will be cancelled if they can not be re-registered following EPA guidelines. This may cause us to lose some of our state registered pesticide uses for local problems for which adequate environmental and efficacy data were never collected.

7. Another provision of the Act that may be of help to us in getting minor pesticide uses registered is that pesticide producers can no longer add uses to their labels without either their own research data or paying the original registrant for use of their data. This adding of uses to a label without having the original data is sometimes referred to as the "Me Too Policy." In the past, this practice has resulted in various companies' disinterest in getting some minor pesticide uses registered. The initial registration applicant went to considerable expense to get a registration, and then other producers of the pesticide simply a led the registration to their labels with little expense to them. Hopefully, stopping this "Me Too Policy" will result in getting more minor use registrations such as those needed for forest nurseries and seed orchards.

Basically, these are some major provisions of the Federal Environmental Pesticide Control Act of 1972 that will affect you, the user of pesticides (as of July, 1974). Since changes occur almost daily in the interpretation and implementation of this Act, and since the States are implementing their own Pesticide Laws at the present time, we recommend contacting the state lead agency (see listing of lead agencies for the Southeastern Area) for pesticide activity in your State and/or

our Pesticide Specialist1/ located in the Environmental Quality Evaluation Group of S&PF, Atlanta, Georgia, for specific details of these pesticide laws.

STATE LEAD AGENCIES FOR PESTICIDE-USE LAWS

ALABAMA - John Kirkpatrick, Director
Division of Agricultural Chemistry
Alabama Department of Agriculture and Industries
P.O. Box 33356
Montgomery, Alabama 36109

ARKANSAS - Robert W. Anderson, Director
Arkansas State Plant Board
(A Division of the Department of Commerce)
421-1/2 West Capitol
P.O. Box 1069
Little Rock, Arkansas 72203

FLORIDA - Vincent Giglio, Director
Division of Inspection
Florida Department of Agriculture
and Consumer Service
Mayo Building
Tallahassee, Florida 32304

GEORGIA - Ron Conley
Pesticides Division
Georgia Department of Agriculture
19 Hunter Street, S. W.
Atlanta, Georgia 30334

KENTUCKY - Fred Waters
Pesticide Program
Natural Resources & Environmental Protection
5th Floor, Capitol Plaza Tower
Frankfort, Kentucky 40601

LOUISIANA - Dave L. Pearce, Commissioner
Louisiana Department of Agriculture
Agricultural Pesticide Applicators Division
P.O. Box 44303, Capitol Station
Baton Rouge, Louisiana 70804

1/ Dr. Lawrence P. Abrahamson, Pesticide Specialist, U.S. Forest Service, 1720 Peachtree Road, N.W., Atlanta, Georgia 30309.

MISSISSIPPI — 0. T. Guice
Division of Plant Industry
Mississippi Dept. of Agriculture & Commerce
P.O. Box 5207
State College, Mississippi 39762

NORTH CAROLINA - William Buffaloe
Department of Agriculture
Pesticide Branch
State Agriculture Building
Raleigh, North Carolina 27611

OKLAHOMA — Billy Ray Gowdy, Commissioner
Oklahoma State Department of Agriculture
State Capitol Building
Room 122
Oklahoma City, Oklahoma 73105

SOUTH CAROLINA - Dr. Lamar Priester
State Health Officer for Environmental Health
South Carolina State Board of Health
2600 Bull Street
Columbia, South Carolina 29201

TENNESSEE — Jimmy White, Assistant Director
Plant Industries
Department of Agriculture
Box 40627, Melrose Station
Nashville, Tennessee 37204

TEXAS - John C. White, Commissioner
Texas Department of Agriculture
P.O. Box 12847
Austin, Texas 78711

VIRGINIA — S. Mason Carbaugh, Commissioner
Virginia Department of Agriculture
and Commerce
203 Governor Street
Richmond, Virginia 23209

Now that we've covered the new Pesticide Act, you are probably wondering what the present status is for insecticide registrations. The following list gives the current (as of July, 1974) status of some insecticides1/ registered to control insect pests commonly found in southern forest tree nurseries.

1/ This is a partial list and does not include all registered insecticides for each insect pest, but does cover most of the commonly used insecticides.

Since Federal registrations are constantly changing and some states also have pesticide restrictions, check your state and local regulations for up-to-date information. Here again our Pesticide Specialist, Atlanta, Georgia, is available for further pesticide information.

INSECT	INSECTICIDE	HOST REGISTERED ON
Aphids	Azinophos-methyl (GuthionR) [1]	Nursery Plants, Trees
	Carbophenothion (TrithionR)	Ornamental Trees
	Diazinon	Ornamental Trees
	Malathion	Ornamental Trees
	Oxydemeton-methyl (Meta-Systox-RR)	Nursery Trees
Mites	Azinophos-methyl (GuthionR)	Nursery Plant, Trees
(Spider)	Carbophenothion (TrithionR)	Ornamental Trees
	Chlorpyrifos (DursbanR)	Ornamental Trees
(Spider)	Diazinon	Ornamental Trees
	Dormant Oil	Trees, Evergreens
	Fenthion (BaytexR)	Ornamental Trees
	Kelthane	Nursery Stock
(Spider)	Malathion	Ornamental Trees
Mealybugs	Carbaryl (Sevin^{R})	Ornamental Trees
	Carbophenothion (TrithionR)	Ornamental Trees
	Chlorpyrifos (DursbanR)	Ornamental Trees
	Demeton (Systox^{R})	Trees
	Malathion	Ornamental Trees
Scales	Carbaryl (SevinR)	Ornamental Trees
	Carbophenothion (TrithionR)	Ornamental Trees
	Dormant Oil	Trees, Evergreens
(Scale Crawlers)	Diazinon	Ornamental Trees
(Scale Crawlers)	Malathion	Ornamental Trees
White Grubs	Chlordane	Soil Application
	Diazinon	Grass Areas
Cutworms	Chlordane	Soil Application
	Chlorpyrifos (DursbanR)	Ornamental Trees
	Diazinon	Grass Areas
(Climbing)	Trichlorfon (Dylox^{R})	Trees
Wireworms	Chlordane	Soil Application
Armyworms	Fenthion (Baytex^{R})	Ornamental Trees
	Trichlorfon (DyloxR)	Trees
Whiteflies	Chlorpyrifos (DursbanR)	Ornamental Trees
	Demeton (SystoxR)	Trees
	Diazinon	Ornamental Trees
	Malathion	Ornamental Trees
	Oxydemeton-methyl(Meta-Systox-R^{R})	Nursery Trees

1/ The Symbol ^{R} signifies trademark registration of the material's name and has no connection with its registration by the U.S.D.A.

INSECT	INSECTICIDE	HOST REGISTERED ON
Leafhoppers	Azinophos-methyl (GuthionR)	Nursery Plants, Trees
	Carbaryl (Sevin^{R})	Ornamental Trees
	Chlorpyrifos (Dursban^{R})	Ornamental Trees
	Diazinon	Ornamental Trees
	Malathion	Ornamental Trees
	Oxydemeton-methyl (Meta-Systox-RR)	Nursery Trees
Grasshoppers	Carbaryl	Non-Crop Areas
	Chlorpyrifos (DursbanR)	Ornamental Trees
	Diazinon	Non-Crop Areas
	Malathion	Non-Crop Areas
Flea Beetles	Carbaryl	Ornamental Trees
	Diazinon	Ornamental Trees
Webworms	Diazinon	Ornamental Trees
	Trichlorfon (Dylox^{R})	Trees
Nantucket Pine Tipmoth	Azinophos-methyl (GuthionR)	Nursery Plants, Trees
	Carbophenothion (Trithion^{R})	Forest Plantings
	Dimethate (Cygon^{R})	Ornamental Pine
	Trichlorfon (DyloxR)	Trees
Pine Sawflies	Carbaryl (Sevimo1-4R)	Ornamental Pines
	Malathion + Methoxychlor + Kelthane (Pratt 505KR)	Ornamental Pines
	Malathion + Lindane + Kelthane (Pratt 202KR)	Ornamental Pines
	Methoxychlor	Ornamental Pines
Reproduction Weevils	Carbofuran (FuradanR)	Pine Seedlings
	Chlorpyrifos (DursbanR)	Pine Seedlings
Thrips (exposed)	Azinophos-methyl (Guthion^{R})	Nursery Plants, Trees
	Carbaryl (SevinR)	Ornamental Trees
	Chlorpyrifos (Dursban^{R})	Ornamental Trees
	Diazinon	Ornamental Trees
	Malathion	Ornamental Trees
	Oxydometon-methyl (Meta-Systox-R^{R})	Nursery Trees
Pine Needle Scale	Malathion + Methoxychlor + Kelthane (Pratt 505K^{R})	Ornamental Pines
	Malathion + Lindane + Kelthane (Pratt 202K^{R})	Ornamental Pines
	Malathion	Ornamental Pines
	Oxydemeton-methyl (Meta-Systox-R^{R})	Nursery Trees

INSECT	INSECTICIDE	HOST REGISTERED ON
Cottonwood Leaf Beetle (Willow Leaf Beetle)	Carbofuran (FuradanR)	Cottonwood Nurseries
	Carbaryl (SevinR)	Ornamental Trees
Cottonwood Twig Borer	Carbofuran (Furadan®)	Cottonwood Nurseries
Cottonwood Clearwing Borer (Borers)	Carbofuran (Furadan®)	Cottonwood Nurseries
	Lindane	Poplar & Willow Trees
Eriophyid Mites	Carbaryl (Sevimo1-4®)	Ornamental Trees
Lacebugs	Azinophos-methyl (Guthion®)	Nursery Plants, Trees
	Carbaryl (SevinR)	Ornamental Trees
	Demeton-(Systox®)	Trees
	Malathion	Ornamental Trees
Tuliptree Scale	Dormant Oil (Also see listing under scales)	Tulip Trees
Yellow-Poplar Weevil	Carbaryl (Sevimo1-4R)	Yellow-Poplar
Oak Loopers	Diazinon	Oaks
Oak Leaf Miner	Carbaryl (Sevin®)	Oaks, Ornamental Trees
Leaf Miners	Naled (DibromR)	Broadleaf Trees
Leaf Rollers	Carbaryl (Sevin®)	Ornamental Trees
Orange-Striped Oakworm	Carbaryl (Sevimo1-4®)	Ornamental Trees, Oaks
Cankerworms	Bt (Dipel®, ThuricideR)	Ornamental Trees
	Carbaryl (Sevin®)	Trees
	Malathion	Ornamental Trees
	Methoxychlor	Deciduous Trees
	Naled (Dibrom®)	Broad Leaf Trees
Elm Spanworm	Bt (Dipel®)	Ornamental Trees
	Carbaryl (Sevimo1-4R)	Ornamental Trees