UC DAVIS ENVIRONMENTAL HORTICULTURE DEPARTMENT ESTABLISHES IR-4 CENTER

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The Department of Environmental Horticulture at the University of California Davis recently began developing a program to develop data needed for registration of crop protection materials that are of interest to growers of specialty crops in the Western United States. This activity will result in a center for ornamentals that is part of the the USDA Interregional Research Project #4 (IR-4). The latter is the only publicly funded program in the U.S. that conducts research and submits petitions to the Environmental Protection Agency (EPA) for registration of pest control agents on specialty crops. Specialty crops include, nursery and landscape plants as well as cut flowers and potted plants (in addition to most vegetable, fruit, nut, herb, and spice crops).

The crop protection industry lacks incentive to pursue registrations on specialty crops for many materials because the low acreage involved means relatively low return on investment. Recognizing this, the state land grant universities and the U.S. Department of Agriculture (USDA) organized the Interregional Research Project #4 in 1963 to address the shortage of pest control options for minor crops. A separate Ornamentals Program was created in 1977 and, since then, over 9000 registrations have been processed for ornamentals. The Biopesticide Program to support research and registration activities on biological pest control agents began in 1982, and 1998 saw the establishment of a Methyl Bromide Alternatives Program.

The IR-4 Program has evolved as a bridge to registration by generating and supplying independent, high-quality research data needed by EPA in order to register compounds for use on specialty crops. Collaborations are the strength of the IR-4 program. Input is sought continually from the commodity production side of agriculture as well as from the crop protection industry, USDA and federal and state regulators.

The Environmental Horticulture Department at UC Davis has made a commitment to develop an IR-4 Center at the Department and we have begun to set up researchable projects. In order to make the program most effective, we need industry input to identify labeling issues that will provide the greatest benefit to growers. Some examples of projects that would be considered for funding include:

- Registering a material for a particular application where there is currently no effective, registered product.
- Registering a material to provide a different class of chemical to use in a spray rotation.
- Registering a material that provides a shorter reentry interval.
- Registering a material that is currently registered, but does not contain provisions for commonly used application equipment such as ultra-low volume or electrostatic sprayers.

(Note that "material" refers to insecticides, miticides, fungicides, plant growth regulators, insect growth regulators, as well as various biological pest control agents.)

Our highest priority is to respond to the needs of the California ornamentals industry. Initially our work will focus primarily on plant growth regulators, for which we are equipped to determine both efficacy and phytotoxicity data. As our program progresses we also intend to work with other pesticides, including herbicides, but these projects will primarily focus on collecting phytotoxicity data.

Initially we identified a set of experiments to carry out during our start-up by selecting a set of projects identified as important in the National IR-4 database. We further screened these projects to assure that they would be of importance to growers in California. Once this set was identified, we worked with an IR-4 coordinator verify that the selected projects were indeed relevant to the various manufacturers or vendors of the chemicals.

The table below shows the experiments that have been carried out as of Dec 2003.

Plant	Material	Control Objective	Experimental conditions	Results
Lily (Lilium)	Bacillus Subtilis	Botrytis cinerea	Growth Chamber	No disease detected (even on controls)
Angelonia (Angelonia angustifolia)	Cycocel	Growth	Greenhouse	not yet available
Umbrella Tree (Schefflera)	Cycocel	Growth	Greenhouse	variable
Arborvitae (Thuja)	Ethephon	seed prevention	Outdoor Nursery	No effect
Coleus, Flamenettle (Coleus)	Ethephon	Growth	Outdoor Nursery	Results varied with cultivar
Japanese rose, Turkestan rose (Rosa rugosa)	Ethephon	defoliation	Outdoor Nursery	No effect
Sweet potato vine (Ipomoea batatas)	Ethephon	Growth	Greenhouse	not yet available
Egyptian-Star-Cluster (Pentas lanceolata)	Uniconazole P	Growth	Greenhouse	Results not significant
Feather reed grass (Calamagrostis acutifloria)	Uniconazole P	Growth	Greenhouse	Results significant only in first two weeks
Sage, Mexican bush (Salvia leucantha)	Uniconazole P	Height	Greenhouse	Results significant only in first two weeks
Sweet potato vine (Ipomoea batatas)	Uniconazole P	Growth	Greenhouse	Results significant

The table shows the plant that is being "protected" or "controlled" (note that none of these are herbicide studies); the material that is being evaluated, the desired control objective and the specified experimental conditions. The last column provides a brief synopsis of the outcome of the experiments.

As can be seen, some of the results are not conclusive and some are counter to what was supposed to happen. As a result of these studies we are now aware that some proposed experiments were foolishly proposed to the IR-4 program without knowledge as to what is the outcome would be. This appears due to an inadequate understanding by some users of the IR-4 program as to what the program is supposed to do. We are

currently working with National IR-4 program staff to improve understanding of the program among the various segments of the ornamentals industry that use this program.