

THE IR-4 PROGRAM— HOW IT CAN BENEFIT NURSERIES

J. RAY FRANK

J. Ray Frank is Research Horticulturist for Interregional Research Project 4 at the Center for Minor Crop Pest Management, 6916 Boyers Mill Road, New Market, Maryland, 21774; (301) 898-5332.

Frank, J.R. 2002. The IR-4 Program—How It Can Benefit Nurseries. In: Dumroese, R.K.; Riley, L.E.; Landis, T.D., technical coordinators. National Proceedings: Forest and Conservation Nursery Associations—1999, 2000, and 2001. Proceedings RMRS-P-24. Ogden, UT: USDA Forest Service, Rocky Mountain Research Station: 44-47. Available at: <http://www.fcnet.org/proceedings/1999/frank.pdf>

Key Words

Pesticides, pesticide label, pesticide registration

The Interregional Research Project 4 (IR-4) was initiated in 1963 to obtain national pesticide label registrations for use on food and fiber. This program has an emphasis on minor uses or specialty crops. In this arena in the United States today it includes 600 crops.

This national program includes the U.S. Department of Agriculture, Agricultural Research Service (USDA/ARS), and the U.S. Department of Agriculture Cooperative State Research Education and Extension Service (USDA/CSREES) as the major funding organizations. IR-4 also has a cooperative partnership with the Environmental Protection Agency (US EPA), the State Agricultural Experiment Stations (SAES), agricultural chemical companies, commodity organizations, and individual growers.

The IR-4 program, which was expanded in 1977 to include ornamentals research for nursery and floral crops for label expansion, now includes floral, forestry, nursery, turf, and Christmas tree

production. Research is also conducted to develop data for pesticide registrations for commercial landscape, interior plantscape, and tissue culture. Since 1982, national registration was initiated to include biological pest control agents such as microbials and biopesticides.

The IR-4 national headquarters staff is based as part of the New Jersey Agricultural Experiment Station (NJAES) at Rutgers University. It provides the leadership and coordination for this diverse program.

The IR-4 is divided into 4 regions, each led by a regional coordinator. Each state has a representative to provide input for future research needs. A companion minor use program is administered by USDA/ARS. The USDA/ARS minor use program operates in concert with the IR-4 in the clearance of minor uses.

Since the IR-4 ornamental pesticide program was initiated in 1977, we have had requests for over 18,000 researchable projects.

Table 1. IR-4 Ornamental Research 1977-1998

	Total Researchable Projects	Total Registrants
Fungicides	5954	1979
Herbicides	5326	1600
Insecticides	6659	1800
Molluscicides	99	4
Nematicides	350	80
PGRs	224	64
Rodenticides	4	3
Total	18,616	5,530

IR-4 ornamental research during this same period (1997 to 1998) developed data that led to over 5,500 national label registrations (Table 1). During the last 3 years (1996 through 1998) we conducted 1,444 research trials for an average of 481 per year (Table 2). During this same period 1,539 new registrations were obtained (Table 2). This includes 513 new registrations in 1998.

Table 2. IR-4 Ornamental Research

	1996	1997	1998
Research Trials	445	539	460
New Registrants	891	135	513

Appendix 1

During 1998, data were collected for these 13 fungicides, 20 herbicides, and 15 insecticides.

FUNGICIDES	HERBICIDES	INSECTICIDES
Ampelomyces quisqualis (AQ-10 Biofungicide)	Atrazine (Atrex)	Acephate (Orthene/Turf, Tree and Ornamental Spray)
Bordeaux Mixture (13.3%)	Clethodim (Envoy 12.6%)	Carbofuran (Furadan)
Captan (Captan 50W)	2,4-D Amine (Amine 4)	Clofentazine (Ovation)
Chlorothalonil (Daconil Ultrex 82.5%)	2,4-D LV Ester (Weedone LV-4)	Permethrin (Astro)
Etridazole (Ethazole)	Dicamba (Vanquish)	Chlorpyrifos (Dursban 50W)
Flutolanil (Prostar 50 WP)	Dithiopyr (Dimension 1EC)	Diazinon (Knox Out 2FM)
Fosetyl-Al (Chipco Aliette WDG 80)	Diuron (Direx 80 DF)	Diflubenzuron (Dimilin)
Mefenoxam + Mancozeb (Ridomil-Gold MZ)	Fluazifop-butyl (Fusilade)	Dimethoate (Cygon)
Oxytetracycline (Mycoshield)	Halosulfuron Methyl (Permit)	Fenitrothion (Pestroy 4EC)
Physan 20	Isoxaben (Gallery 75DF)	Fipronil (Chipco Choice)
Streptomycin (Agrimycin 17)	Napropamide (Devrinol 5G, 50 DF)	Formetanate Hydrochloride (Carzol SP)
Tebuconazole (Lynx 25)	Oryzalin (Surflan 40.4%, XL, 2G)	Pirimicarb (Pirimor 50 DF)
Thiophanate Methyl (Clearys 3336 4.5F)	Oxadiazon (Chipco Ronstar G, 50WP)	Pyridaben (Sanmite 75 DF)
	Oxyfluorfen (Goal T/O 2XL)	Tefluthrin (Fireban 1.5G)
	Pendimethalin (Pendulum 60 WG)	Trichlorfon (Dylox 80)
	Pendimethalin G (Ornamental Weed Grass)	
	Prodiamine (Barricade 65 WG, Factor 65)	
	Trifluralin (Trifluralin 10G)	

Appendix 2
1998 pesticide registrations supported by IR-4 Data

FUNGICIDES			
<i>Chlorothalonil</i> (Bravo, Daconil)	<i>Etridazole</i> (Ethazole)	<i>Mefenoxam</i> (Subdue Maxx)	Moss Rose
African Violet	Marigold	Bleeding heart	Nicotiana
Ageratum	Petunia	Snapdragon	Ornamental Cabbage
Fir (Abies)	Scarlet Sage	StoneCrop	Ornamental Kale
Fuchsia	Shrub Verbena (Lantana)		Petunia
Gloxinia		<i>Oxythioquinox</i> (Morestan)	Phlox
Larkspur	<i>Flutolanil</i> (Prostar)	Japanese Spurge	Austrian Pine
Nasturtium	Azalea	(<i>Pachysandra</i>)	Pinks
Periwinkle (Vinca)	Balsam		Pocketbook Flower
Persian Violet (Cyclamen)	Begonia	<i>Thiophanate methyl</i> (Clearys 3336)	Primrose
Pinks (Dianthus)	<i>Fosetyl-al</i> (Chipco Aliette)	Agertum	Rose Periwinkle
Primrose	Arrowwood (<i>Viburnum</i>)	Babysbreath	(<i>Catharanthus</i>)
Snapdragon		Begonias	Scarlet Sage
Vervain (<i>Verbena</i>)	<i>Gliocladium virens</i> (Soil Gard)	Blanket Flower	Shasta Daisy
	Balsam (<i>Impatiens</i>)	Bougainvillea	Snapdragon
<i>Chlorothalonil</i> (Exotherm)	Begonia	Carnation	Statice
Poinsettia	Cockscomb	Chrysanthemum	Stock
	Marigold	Coleus	Tickseed
<i>Copper hydroxide</i> (Kocide)	Petunia	Coneflower	Transvaal Daisy
Aglaonema	Scarlet Sage	Crossandra	Vervain (<i>Verbena</i>)
Elm	Snapdragon	Fuschia	Violet
Flag	Zinnia	Gazania	
Honey Locust		Geranium	<i>Vinclozolin</i> (Ornalin)
Honeysuckle	<i>Mancozeb</i> (Penncozeb, Protect T/O)	Globe amaranth	Hydrangea
Nephtytis	Frangipani (<i>Plumeria</i>)	Hibiscus	
Rose-of-Sharon	Gloxinia	Impatiens	
Snapdragon	Hackberry	Larkspur	
Umbrella Tree		Marigold	

HERBICIDES			
<i>Bentazon</i> (Basagran)	Tree Fern (<i>Asparagus</i>)	<i>Metolachlor + simazine</i> (Derby)	Sweet William
Crabapple (non-bearing)	Geranium	Birch	TickseedWhite Spruce
Holly	Hawthorn		
Marigold	Juniper	<i>Oryzalin</i> (Surflan)	<i>Oxyfluorfen + oryzalin</i> (Rout)
Oak	Lilac	Arrowwood (<i>Viburnum</i>)	Honeysuckle (<i>Lonicera</i>)
Petunia	Sugar Maple	White Ash	
Yew (<i>Taxus</i>)	Red Oak	Bellflower	<i>Pendimethalin</i> (Pendulum)
	Yew (<i>Taxus</i>)	River Birch	Avens (<i>Geum</i>)
<i>Clethodim</i> (Select)		Japanese Dogwood	Yarrow (<i>Achillea</i>)
Ageratum	Diuron	Redbud	
Snapdragon	Ash		<i>Pronamide</i> (Kerb)
			Maple
<i>Clopyralid</i> (Lontrel)	<i>Isoxaben</i>	<i>Oxadiazon</i> (Ronstar)	Oak
Arborvitae	Arrowwood (<i>viburnum</i>)	Baby's Breath	
Azalea	River Birch	Bald Cypress	<i>Sethoxydim</i> (Poast)
Bridal-Wreath	Blue Fescue	Blanket Flower	English Ivy (<i>Hedera</i>)
Christmas Trees	Chinese Pennisetum	Blazing-Star	
Crabapple (non-bearing)	False Spirea (<i>Astilbe</i>)	Cheddar Pink	<i>Simazine</i> (Princep)
Douglas-fir (<i>Pseudotsuga</i>)	Heath	Cleyera	Flowering Dogwood
Fir (Abies)	Heather	Dahlia	Holly
Flowering Dogwood	Blue Holly	Daylily	American Holly
Juniper	Japanese Flowering Cherry	Golden-Rain Tree	Blue Holly
Maple	Southern Magnolia	Hardy Ice Plant	Fosters Holly
Oak	Redbud	Hardy Mum	Honey Locust
Pine	Wax Myrtle	Lambs Ears	Japanese Dogwood
Mugo Pine		Lance Coreopsis	
Rhododendron	<i>Isoxaben + trifluralin</i> (Snapshot 2.5 TG)	Leopards Bane	<i>Trifluralin</i> (Treflan)
Spruce	Pygmy Date Palm (Phoenix)	Plantain Lily	Blue Fescue
Norway Spruce		Linden	Cheddar Pink
White Spruce		Mock Orange	Rose
Yew (<i>Taxus</i>)	<i>Metolachlor</i> (Pennant)	Statice (<i>Limonium</i>)	Speedwell (<i>Veronica</i>)
<i>Dithiopyr</i> (Dimension)	Snapdragon	Peony	Stoncrop (<i>Sedum</i>)
Arrowwood (<i>Viburnum</i>)			

INSECTICIDES			
<i>Acephate</i> (Orthene)	Crabapple (non-bearing)	<i>Prodiamine</i> (Barricade)	Cottonwood
Arborvitae	Crape Myrtle	Andromeda	Elm
Aster	Leyland Cypress	Arborvitae	Eucalyptus
	Flowering Dogwood	Arrowwood (<i>Viburnum</i>)	Flowering Dogwood
<i>Balsam</i> (Impatiens)	French Hydrangea	Aucuba	Freesia
Birch	Holly	Azalea	Hawthorn
Chrysanthemum	American Holly	Barberry	Hickory
	Blue Holly	Begonia	Honey Locust
<i>Bendiocarb</i> (Turcam, Dycarb)	Fosters Holly	Bellflower (<i>Campanula</i>)	Hop Hornbeam
Holly (<i>Ilex</i>)	Honey Locust	Bluespire (<i>Perovskia</i>)	Lilac
	Japanese Dogwood	Boltonia	Maple
<i>Carbofuran</i> (Furadan)	Japanese Flowering Cherry	Boxwood	Mountain Ash
Azalea	Foxglove	Bridal Wreath (<i>Spirea</i>)	Oak
Rhododendron	Lobelia	Butterfly Bush (<i>Buddleia</i>)	Peach (non-bearing)
Yew (<i>Taxus</i>)	Saucer Magnolia	Carpobrotus	Loblolly Pine
	Southern Magnolia	Chinese Pistachio	Pitch Pine
<i>Cyfluthrin</i> (Baythroid)	Star Magnolia	Cleyera	Red Pine
Balsam (Impatiens)	Amur Maple	Gazania	Scotch Pine
Calendula	Paperbark Maple	Japanese Spurge	Spruce Pine
Carnation	Red Maple	Scarlet Sage (<i>Salvia</i>)	Virginia Pine
Chrysanthemum	Sugar Maple	Velvet Plant	White Pine
Geranium	Trident Maple	Wax Vine (<i>Hoya</i>)	Poinsettia
Poinsettia	Bradford Pear		Rhododendron
Primrose	Rose-of-Sharon	<i>Isofenphos</i> (Oftanol)	Willow
	Scarlet Sage	Christmas Tree	
<i>Cyromazine</i> (Citation)	Sweet Gum	Japanese Holly	<i>Pyridaben</i> (Sanmite)
Calendula	Tulip Tree		Holly
	Wax Myrtle	<i>Permethrin</i> (Astro)	Juniper
<i>Diazinon</i> (Knox Out)	Weeping Willow	Ash	Rose
Ageratum	Western Magwort	Azalea	Winged Euonymus
River Birch	Yarrow (<i>Achillea</i>)	Beech	
Blazing-Star (<i>Liatris</i>)		Birch	Sunspray Ultra-Fine Spray Oil
Chrysanthemum		Black Locust	Agertum
		Cherry (non-bearing)	

PLANT GROWTH REGULATORS			
<i>Ancymidol</i> (A-Rest)	Gardenia	Lilyturf (<i>Liriope</i>)	Rhododendron
Angelonia	Geranium	Creeping Lilyturf	Rose-of-Sharon
Coleus	Heavenly Bamboo	Giant Lilyturf	Rodgersia
Coral Plant	(<i>Nandina</i>)	Lobelia	Southern Yew
Cotonester	Hemlock	Magnolia	
Crabapple (non-bearing)	Hardy Ice Plant	Saucer Magnolia	(<i>Podocarpus</i>)
Crape Myrtle	(<i>Delosperma</i>)	Star Magnolia	Spruce
Cypress	American Holly	Maple	Star Jasmine
Daffodil	Japanese Holly	Oak	Stone Crop (<i>Sedum</i>)
Daylily	Honeysuckle	Oleander	Trailing Lantana
Douglas-fir (<i>Pseudotsuga</i>)	Hopbush (<i>Dodonaea</i>)	Pampas Grass	Weigela
False Cypress	Japanese Flowering Cherry	Bradford Pear	Coral Porterweed
False Dragon Head	Japanese Pittosporum	Peony	Egyptian Star Cluster
(<i>Physotegia</i>)	Juniper	Periwinkle (<i>Vinca</i>)	Mexican Petunia (<i>Ruellia</i>)
Flowering Dogwood	Larkspur	Potentilla (<i>Cinquefoil</i>)	Sweet Potato Vine
Forsythia	Lily	Privet (<i>Ligustrum</i>)	Yellow Shrimp Plant
French Hydrangea	Plantain Lily (<i>Hosta</i>)	Purpleleaf-Wintercreeper	