IR-4 Environmental Horticulture Program Grower & Extension Survey Summary 2025

The intent of the Environmental Horticulture Survey is to poll growers, landscape care operators, researchers, extension personnel and others affiliated with the green industry on needs and issues related to disease, insect, and weed management. The responses from the survey feed directly into how IR-4 allocates its research budget for environmental horticulture projects.

Demographics of Survey Respondents

Table 1. Survey Respondents by Region

Region	Count	Percent
International	7	2%
Northcentral	78	23%
Northeastern	80	24%
Southern	108	32%
Western	62	19%
Grand Total	335	100%

Table 2. Respondent Affiliation

Segment	Count	Percent
Extension	19	5.7%
Government	2	0.6%
Grower	293	87.5%
Industry	9	2.7%
LCP/Interiorscape	3	0.9%
University or USDA-ARS researcher	9	2.7%

Table 3. Respondent Operations

Operation	Responses
Greenhouse	200
Nursery - Field Grown	155
Nursery - Container	128
Landscape	62
Christmas Tree Farm	51
Garden Center	36
Public Garden	23
Interiorscape	16
Sod Farm	6

Table 4. Respondent Pest Management Strategies

Management Strategy	Responses
Biological Control	188
Chemical Control	168
IPM	205
Organic	116
Standard weekly/monthly program	110
Spray program based on thresholds	139

Table 5. Participant Crop Category

Crop Category	Responses
Cut Flowers	196
Herbaceous Perennials	175
Shrubs	157
Foliage Plants	145
Ornamental Grasses	141
Trees	121
Bedding Plants	101
Christmas Trees	59
Seasonal Potted Plants	52
Palms	27
Turf	19

Type of Data Needed

A key question solicited information on the general direction of research and the type of data needed in the program. Respondents were asked whether crop safety data was needed more than efficacy, efficacy more than crop safety, or both equally (Table 6).

Table 6. Type of Data Requested

Data Type	Responses	Percent
Crop safety is needed more than efficacy	28	10%
Efficacy is needed more than crop safety	69	24%
Crop safety and efficacy needed equally	194	67%
Total responses	291	100%

Ranking of Issues by Discipline

Survey respondents were asked their top 3 pest problems per discipline. Pest #1 assigned a point ranking of 3; pest #2 assigned a point ranking of 2 and pest #3 assigned a point ranking of 1. Adding these up gives final weighted ranking.

Entomology

When all responses were grouped together the top five pests of concern were thrips, mites & spider mites, scale & mealybug, scarabs and aphids (Table 7). Note that the calculation for weighted ranking here removes any duplication for crop or production site.

When rankings were calculated for categories of crops, the top 5 pests were somewhat different for each crop type (Table 10). Thrips and mites & spider mites were in the top 5 for most all crop categories.

Table 7. Weighted Ranking of Insects/Mites

Insect/Mite	Weighted Ranking
Thrips	192
Mites & Spider Mites	117
Scale & Mealybugs	115
Scarabs	87
Aphids	84
Hemiptera	41
Flea beetle / RHFB	41
Diabrotica	36
Leafhopper	29
Lepidopterans	21
Whiteflies	20
Box Tree Moth	13
Symphylans	11
Grasshoppers	11
Ambrosia / Bark beetles	10
Root Aphid	9
Leaf beetle	9
Earwigs	6
Gall wasp	5
Fungus gnats	4
European corn borer	3
Chinch bugs	3
Snails & Slugs	3
Varroa mite	3
True Weevil	3
Springtails	2
Flatheaded borer	2
Spotted lantern fly	2
Adelgid	2
Wireworm	1
Deer	1
Grand Total	886

Plant Pathology

When all responses were grouped together, the top five diseases included Powdery Mildew, Fusarium, Botrytis, Bacterial diseases and Phytophthora (Table 8). Note that the calculation for weighted ranking here removes any duplication for crop or production site.

When the rankings were calculated based on the crop categories there were some differences among the groups (Table 11).

Table 8. Weighted Ranking of Pathogens

Pathogen	Weighted Ranking
Powdery Mildew	93
Fusarium	65
Botrytis	54
Bacterial Diseases	54
Phytophthora	49
Cercospora Leaf Spot	30
Fireblight	23
Aster Yellows	22
Nematodes	21
Pythium	16
Crown & Root Rots	15
Black Spot	14
Downy mildew	13
Anthracnose	13
Rust	11
Cankers	9
Beech Leaf Disease	9
Pythium / Phytophthora	7
Boxwood dieback	6
Fungal	6
Peony leaf blotch	6
Boxwood blight	6
Crown gall	5
Vascular streak dieback	5
Lethal Bronzing	5
Grand Total	600

Weed Science

When all responses were grouped together, the top five weeds included Ragweed (resistant), Runner and Vine weeds (bindweed, buttercup, etc), Grasses, Summer Annual Weeds (chickweed, clover, etc.) and Thistle (Table 9). Note that the calculation for weighted ranking here removes any duplication for crop or production site.

When separated by crop category, several resistant weeds are noted that are causing many issues in the Christmas Tree industry (Table 12).

Table 9. Weighted Ranking of Weeds

Weed	Weighted Ranking
Ragweed*	67
Runner / Vine weeds	67
Grasses	56
Summer annual weeds	53
Thistle	51
Nutsedge & Sedges	48
Horseweed* / Marestail*	46
Summer Annual Grasses	40
Lambsquarters*	39
Rhizomatous / Stoloniferous grass	25
Mugwort / Alligator weed / Wild chrysanthemum / Horsenettle / Nightshades	23
Liverwort	21
Winter Annual Broadleaf	21
Palmer amaranth	20

*Indicates specific mention of resistance found

Table 10. Top Insect / Mite Issues by Crop Category with Count of Times Mentioned in the Survey

Cut Flowers (191)	Shrubs (95)	Bedding Plants (63)	Herbaceous perennials (63)	Foliage Plants (61)
Thrips (49)	Mites & Spider Mites (17)	Thrips (20)	Thrips (12)	Mites & Spider Mites (12)
Scarabs (31)	Flea Beetle / RHFB (15)	Mites & Spider Mites (16)	Mites & Spider Mites (11)	Scale & Mealybugs (11)
Aphids (23)	Thrips (11)		Scarabs (9)	Thrips (11)
Hemiptera (20)	Scale & Mealybugs (10)		Flea Beetle / RHFB (7)	Scarabs (5)
Diabrotica (15)	Scarabs (9)		Scale & Mealybugs (6)	Aphids (5)

Trees (48)	Seasonal Potted Plants (37)	Christmas Trees (30)	Ornamental Grasses (14)
Scale & Mealybugs (13)	Thrips (12)	Scale & Mealybugs (14)	Mites & Spider Mites (4)
Mites & Spider Mites (10)	Mites & Spider Mites (11)	Aphids (8)	Thrips (4)
	Scale & Mealybugs (5)	Mites & Spider Mites (5)	

Table 11. Top Pathogen Issues by Crop Category with Count of Times Mentioned in the Survey

Cut Flowers (120)	Shrubs (55)	Trees (50)	Herbaceous perennials (47)	Bedding Plants (33)
Powdery Mildew (29)	Phytophthora (11)	Bacterial Diseases (6)	Powdery Mildew (11)	Bacterial Diseases (8)
Botrytis (20)	Cercospora Leaf Spot (6)	Fireblight (6)	Bacterial Diseases (6)	Powdery Mildew (6)
Fusarium (18)	Nematodes (4)	Phytophthora (4)	Phytophthora (5)	Pythium / Phytophthora (4)
Aster Yellows (7)	Powdery Mildew (4)			Botrytis (3)
	Bacterial Diseases (4)			

Foliage Plants (33)	Seasonal Potted Plants (22)	Ornamental Grasses (10)	Christmas Trees (7)
Bacterial Diseases (7)	Bacterial Diseases (8)	Pythium / Phytophthora (3)	Phytophthora (7)
Powdery Mildew (4)	Pythium / Phytophthora (3)		
Pythium / Phytophthora (3)	Fusarium (3)		
Botrytis (3)			

Table 12. Top Weed Issues by Crop Category with Count of Times Mentioned in the Survey

Cut Flowers (140)	Christmas Trees (81)	Herbaceous Perennials (67)	Shrubs (52)	Trees (52)
Runner / Vine Weeds (26)	Ragweed* (23)	Summer Annual Grasses (8)	Nutsedge & Sedges (7)	Marestail* (10)
Thistle (16)	Lambsquarters* (14)	Summer Annual Weeds (7)	Summer Annual Weeds (7)	Nutsedge & Sedges (9)
Summer Annual Weeds (15)	Marestail* (14)	Liverwort (7)	Thistle (6)	Summer Annual Weeds (5)
Grasses (14)	Palmer amaranth (6)	Runner/Vine Weeds (5)	Marestail* (5)	Grasses (4)
Summer Annual Grasses (13)		Thistle (5)	Lambsquarters* (4)	Ragweed* (3)

Foliage Plants (39)	Ornamental Grasses (23)	Bedding Plants (21)	Shrubs (15)
Runner / Vine Weeds (6)	Summer Annual Weeds (10)	Marestail* (3)	Runner / Vine Weeds (3)
Marestail* (4)	Grasses (2)	Summer Annual Weeds (3)	Grasses (2)
Summer Annual Weeds (4)	Liverwort (2)	Thistle (3)	Summer Annual Grasses (2)
Summer Annual Grasses (4)	Marestail* (2)	Liverwort (3)	Thistle (2)

*Indicates specific mention of resistance found

Table 13. Weighted Ranking of Pathogens by Region

Region	Pathogen	Weighted Ranking
Southern	Phytophthora	33
	Bacterial Diseases	16
	Powdery Mildew	13
	Nematodes	12
	Fusarium	10
Northcentral	Powdery Mildew	26
	Aster Yellows	22
	Botrytis	19
	Bacterial Diseases	13
	Fusarium	12
	Cercospora Leaf Spot	10
Northeastern	Powdery Mildew	35
	Fusarium	19
	Bacterial Diseases	18
	Botrytis	16
	Downy mildew	10
Western	Powdery Mildew	19
	Fusarium	18
	Botrytis	11
	Fireblight	8
	Bacterial Diseases	7

Table 14. Weighted Ranking of Insects/Mites by Region

Region	Insect/Mite	Weighted Ranking
Southern	Scale & Mealybugs	78
	Thrips	51
	Mites & Spider Mites	31
	Scarabs	29
	Aphids	18
	Flea beetle / RHFB	17
Northcentral	Thrips	44
	Mites & Spider Mites	35
	Scarabs	24
	Diabrotica	19
	Aphids	19
Northeastern	Thrips	53
	Scarabs	27
	Mites & Spider Mites	23
	Scale & Mealybugs	20
	Aphids	19
Western	Thrips	41
	Mites & Spider Mites	28
	Aphids	25
	Diabrotica	11
	Root Aphid	9

Table 15. Weighted Ranking of Weeds by Region

Region	Weed	Weighted Ranking
Southern	Ragweed*	63
	Lambsquarters*	33
	Horseweed* / Marestail*	30
	Runner / Vine weeds (mile-a-minute, buttercup, morning glory/bindweed, etc)	19
	Rhizomatous / Stoloniferous grass	19
Northcentral	Grasses	23
	Summer annual weeds (Velvetleaf, Spurges, Purslane)	20
	Nutsedge & Sedges	18
	Summer Annual Grasses (crabgrass/foxtail/japanese stiltgrass)	16
	Thistle	11
Northeastern	Runner / Vine weeds (mile-a-minute, buttercup, morning glory/bindweed, etc)	21
	Thistle	16
	Summer annual weeds (Velvetleaf, Spurges, Purslane)	14
	Liverwort	11
	Grasses	9
Western	Thistle	22
	Runner / Vine weeds (mile-a-minute, buttercup, creeping charlie, morning glory/bindweed, etc)	19
	Grasses	12
	Mugwort / Alligator weed / Wild chrysanthemum / Horsenettle / Nightshades	9
	Nutsedge & Sedges	8