

The Host Range of the Sugar Beet Nematode, *Heterodera schachtii* Schmidt¹

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The life cycle of the sugar beet nematode is essentially typical of all known species of the genus *Heterodera*. In the presence of growing host plants, eggs hatch and larvae escape from protective cysts and invade host-plant roots where they develop to maturity. Soon after fertilization the adult females can be observed as white lemon-shaped bodies attached to external surfaces of host roots (Figures 1 and 2). After a short period of growth the female dies and its cuticular remains forms a tough, sac-like cyst (Figure 3), which may enclose more than 500 eggs.

One of the most effective and economical means of controlling the sugar beet nematode is crop rotation. Host crops are not usually grown more often than once in 3 to 5 years, depending on the severity of the infestation and local conditions that determine the persistence of this pest. However, discriminant use of rotation systems is not possible without comprehensive information on the host range of the nematode.

Although much information has been published, most reports are not readily available to agriculturalists. Consequently, this study was undertaken to provide additional information on the host range of the sugar beet nematode.

Materials and Methods

Crop, ornamental, and weed plants were tested for susceptibility to the sugar beet nematode, *Heterodera schachtii* Schmidt. Sources of seed and plants tested are listed in Table 1. Weed plants collected in various localities in California and Arizona were sent to Dr. Gabriel Edwin, U. S. National Arboretum, Washington, D. C., or to Dr. June McCaskill, Botany Department of the University of California at Davis, for species identification.

Nematode-infested soil was obtained from several fields in Monterey and San Benito Counties of California. Only those fields in which heavily infected sugar beets had recently been grown were selected. Soils from these fields were screened and stored up to one year in large metal drums.

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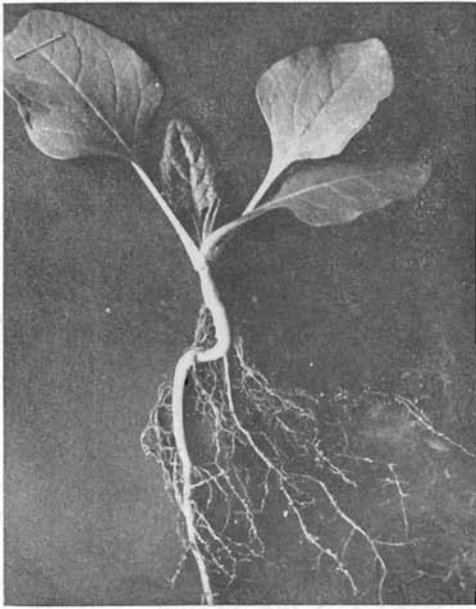


Figure 1.—*Beta trigyna* infected with sugar beet nematode.

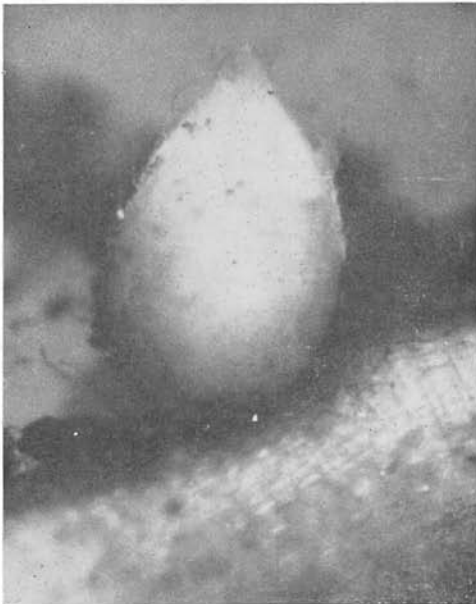


Figure 2.—Adult sugar beet nematode on root of *Beta trigyna*.

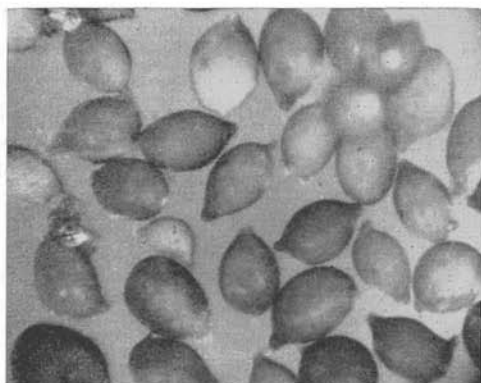


Figure 3.—Mature cysts of the sugar beet nematode.

Plants were tested in groups of 8-12 species after the method of Golden and Shafer (4). Each test group included a sugar beet (*Beta vulgaris* L., Cultivar U. S. 75) check. Seeds of each species were germinated in sterilized sand and allowed to grow for several days. Twenty-five young plants of each species were transplanted into aluminum-foil cylinders filled with soil heavily infested with the sugar beet nematode. Figure 4 illustrates the typical arrangement of tested plants.

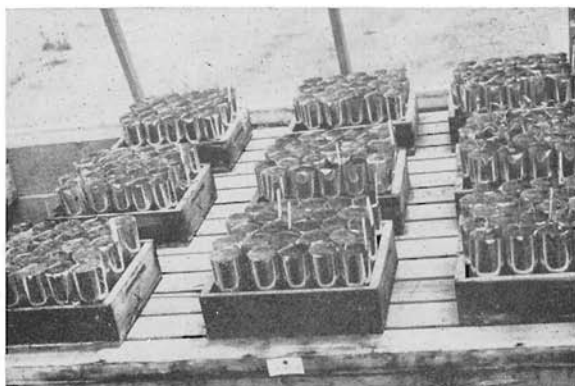


Figure 4.—Typical greenhouse test for host susceptibility to the sugar beet nematode.

After the plants had grown 50-60 days in a greenhouse, the plants were removed from cylinders and the roots washed and examined for nematodes. White female nematodes were removed from roots of susceptible plants and examined microscopically to determine whether or not the nematodes were

gravid. The results of this study, and published information on the host range of the sugarbeet nematode, are listed in Table 2.

In some instances, two or more authors reported different common names for a given plant species, or the same common name for different species. These are listed unchanged.

Results and Discussion

Twenty-three out of 49 families listed in Table 2 contained host species. Of 283 genera and 535 species reported, 218 species within 95 genera were hosts.

Families with host species differed greatly in the number of infected species. Approximately 80 percent of species within Chenopodiaceae and Cruciferae were hosts; host species within Boraginaceae and Onagraceae amounted to 17 and 14 percent, respectively.

Host species within seven separate families were collected in various fields in Monterey County of California. Roots of a number of weed species developed heavy infections of sugar beet nematode, indicating that adequate weed control will greatly increase the effectiveness of rotational programs.

Crop rotation is today the most satisfactory means available for controlling the sugarbeet nematode. This report provides a basis for crop recommendations in beet growing areas.

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Table 1.—Source of seeds or plants tested for susceptibility to the sugar beet nematode.¹

| Reference No. cited in Table 2 | | No. Specimens tested |
|--------------------------------------|---|----------------------------|
| (1) | Ferry-Morse Seed Company, Mountain View, California | 67 |
| (2) | Germain's, Inc., Los Angeles, California | 64 |
| (3) | Weed specimens collected in Monterey County, California | 59 |
| (4) | Yoder Bros. of California, Inc., Salinas, California | 1 |
| (5) | Rancho Santa Ana Botanic Gardens of the native plants of California, Santa Ana, California | 15 |
| (6) | United States Department of Agriculture | 32 |
| (7) | Weed specimens collected in Western Arizona | 5 |
| (8) | Weed specimens collected in San Bernardino County, California | 2 |
| (9) | The Butchart Gardens, Victoria, B. C. | 2 |
| (10) | Kitezawa Seed Company, San Jose, California | 1 |
| (11) | Clyde Robin Seed Co., Carmel Valley, California | 10 |
| (12) | Floraland Company, Los Angeles, California | 1 |
| (13) | Specimens collected in Marshall County, Iowa | 4 |
| (14) | Los Angeles State and County Arboretum, Arcadia, California | 4 |
| (15) | Seed Laboratory, Fort Collins, Colorado | 2 |

¹ Listing of trade names is for identification of seed only and does not imply indorsement by the Department of Agriculture over similar ones not mentioned.

Table 2.—Susceptibility of cultivated and weed plants to the sugar beet nematode (*Heterodera schachtii* Schmidt)

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|---|--------------------------------------|--------------------------------|------------------------|----------------|------------------|--------------------|-----------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| AIZOACEAE | | | | | | | |
| <i>Mesembryanthemum crystallinum</i> L. | Iceplant | | | | | + ⁵ | 17 ⁶ |
| <i>Tetragonia expansa</i> Murr. | New Zealand spinach | (1) ¹ | 25 ² | 2 ³ | 2.0 ⁴ | + | 9,17 |
| AMARANTHACEAE | | | | | | | |
| <i>Amaranthus blitoides</i> S. Wats. | Tumbling pigweed | | | | | + | 17 |
| <i>A. carneus</i> Greene | | | | | | + | 5 |
| <i>A. caudatus</i> L. | Love-lies-bleeding | | | | | + | 10,11,18 |
| <i>A. deflexus</i> L. | | | | | | + | 5 |
| <i>A. graecizans</i> L. | Tumbleweed | | | | | + | 12 |
| <i>A. hybridus</i> L. | Green amaranth | | | | | + | 5 |
| <i>A. hypochondriacus</i> L. | | | | | | 0 | 9 |
| <i>A. palmeri</i> S. Wats. | | | | | | + | 5 |
| <i>A. powellii</i> S. Wats. | | | | | | 0 | 5 |
| <i>A. quitensis</i> H.B.&K. | | | | | | + | 9 |
| <i>A. retroflexus</i> L. | Pigweed | | | | | + | 5,12,17 |
| <i>A. spinosus</i> L. | Spiny amaranth | | | | | 0 | 5 |
| <i>A. tricolor</i> L. | Josephcoat | | | | | + | 5 |
| <i>Celosia argentea</i> | Pampus plume | (1) | 25 | 1-3 | 2.1 | | |
| <i>C. argentea</i> L. v. <i>cristata</i> Kuntze | Cockscomb | (2) | 24 | 1 | 1.0 | 0 | 10 |
| AMARYLLIDACEAE | | | | | | | |
| <i>Allium cepa</i> L. | Onion | (1) | 25 | 0 | 0 | 0 | 5,9,17 |
| <i>A. porrum</i> L. | Leek | | | | | 0 | 9 |
| <i>A. schoenoprasum</i> L. | Hardy perennial chives | (1) | 16 | 0 | 0 | | |
| <i>Allium</i> sp. | Leek | (2) | 24 | 0 | 0 | 0 | 12 |
| <i>Allium</i> sp. | Onion | | | | | 0 | 10,12 |
| <i>Allium</i> spp. | Garlic | | | | | 0 | 17 |

¹ Numbers refer to the sources of seed listed in Table 1.

² Number of plants examined to determine the presence or absence of nematode.

³ Infection index: 0 = no adult females observed; 1 = few nematodes; 2 = moderately infected; 3 = heavily infected; 4 = very heavily infected.

⁴ Listing of average indices as fractional values is for comparative purposes only and does not indicate significance of data.

⁵ + = host; 0 = non-host.

⁶ Where conflicting reports on a given plant occurred, only reports listing the plant as a host were cited.

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|---|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| ASCLEPIADACEAE | | | | | | | |
| <i>Asclepias</i> sp. | Milkweed | (3) | 21 | 0 | 0 | | |
| <i>A. syriaca</i> L. | Milkweed | | | | | 0 | 10 |
| BORAGINACEAE | | | | | | | |
| <i>Amsinckia intermedia</i> F.&M. | Fiddleneck | (3) | 20 | 0 | 0 | | |
| <i>Borago officinalis</i> | Borage | (2) | 5 | 1 | 0.2 | | |
| <i>Cynoglossum amabile</i> | Chinese forget-me-not | (1) | 22 | 0 | 0 | 0 | 18 |
| <i>C. officinale</i> L. | Houndstongue | | | | | 0 | 9 |
| <i>Myosotis alpestris</i> | | | | | | 0 | 18 |
| <i>M. arvensis</i> L. Hill | Field forget-me-not | | | | | 0 | 9 |
| <i>M. oblongata</i> | Bluebird forget-me-not | (1) | 25 | 0 | 0 | | |
| <i>Myosotis</i> sp. | | | | | | 0 | 9 |
| CAMPANULACEAE | | | | | | | |
| <i>Lobelia</i> spp. | Lobelia | (1) | 24 | 0 | 0 | | |
| CANNABINACEAE | | | | | | | |
| <i>Humulus lupulus</i> L. | Wild hop | | | | | 0 | 9 |
| CAPPARIDACEAE | | | | | | | |
| <i>Cleome spinosa</i> Jacq. v. <i>rosea</i> | Giant pink queen | (1) | 25 | 4 | 4.0 | | |
| CARYOPHYLLACEAE | | | | | | | |
| <i>Agrostemma githago</i> L. | Corncockle | | | | | 0 | 18 |
| <i>Cerastium perfoliatum</i> | | | | | | 0 | 18 |
| <i>Dianthus barbatus</i> L. | Large flowered sweet-william | (2) | 25 | 1-4 | 1.6 | + | 10,11,18 |
| <i>Dianthus caryophyllus</i> | Colorado white sim carnation | (4) | 25 | 1-4 | 1.6 | | |
| <i>D. deltoides</i> L. | Maiden pink | | | | | + | 18 |
| <i>D. plumarius</i> L. | | | | | | + | 11 |
| <i>Dianthus</i> sp. | Carnation | | | | | + | 9 |
| <i>Dianthus</i> spp. | Pinks | (2) | 22 | 1-4 | 3.0 | + | 10 |

Table 2 (continued)—

| | Studies at Salinas, California | | | | Other host studies | | |
|--------------------------------------|--------------------------------------|-------------------------------|------------------------|----------------|--------------------|----------------|-------------|
| | Commercial variety or common name | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| <i>Gypsophila acutifolia</i> Fisch. | | | | | | + | 18 |
| <i>G. elegans</i> Bieb. | Covent garden market | (1) | 22 | 1-4 | 1.3 | + | 18 |
| <i>Lychnis coronaria</i> L. | | | | | | 0 | 18 |
| <i>L. fllos-cuculi</i> L. | Ragged-robin | | | | | 0 | 18 |
| <i>Lychnis</i> sp. | Campion | | | | | 0 | 10 |
| <i>Melandrium dioicum</i> (L.) C.&G. | Red Campion | | | | | 0 | 9 |
| <i>M. noctiflorum</i> (L.) Fr. | Night-flowering campion | | | | | 0 | 9 |
| <i>M. rubrum</i> (Weig.) Garcke | Red campion | | | | | 0 | 18 |
| <i>Saponaria cerastoides</i> | | | | | | 0 | 18 |
| <i>S. ocymoides</i> L. | | | | | | + | 18 |
| <i>S. officinalis</i> L. | Soapwort | | | | | + | 9,18 |
| <i>S. vaccaria</i> L. | | | | | | + | 9 |
| <i>Scleranthus annuus</i> L. | Annual Knawel | | | | | 0 | 18 |
| <i>Silene antirrhina</i> | | | | | | 0 | 18 |
| <i>S. armeria</i> L. | Sweet-william catchfly | | | | | + | 18 |
| <i>S. cucubalus</i> Wibel. | Bladder campion | | | | | 0 | 9 |
| <i>S. gallica</i> L. | Windmill pink | (3) | 25 | 0 | 0 | | |
| <i>S. maritima</i> With. | Sea campion | | | | | + | 18 |
| <i>S. noctiflora</i> L. | Night-flowering catchfly | | | | | 0 | 10 |
| <i>S. nutans</i> L. | Nottingham catchfly | | | | | + | 18 |
| <i>S. pendula</i> L. | | | | | | 0 | 9,18 |
| <i>S. quadrifida</i> L. | | | | | | + | 18 |
| <i>S. saxifraga</i> L. | | | | | | + | 18 |
| <i>Silene</i> sp. | Catchfly | | | | | 0 | 10 |
| <i>Spergula arvensis</i> L. | Corn spurry | (3) | 25 | 0 | 0 | 0 | 9,18 |
| <i>Stellaria media</i> (L.) Vill. | Common chickweed | | | | | + | 1,8,9,11,18 |
| <i>Stellaria</i> spp. | Chickweed | | | | | + | 17 |
| <i>Tunica saxifraga</i> Scop. | | | | | | 0 | 9 |
| <i>Vaccaria pyramidata</i> Med. | | | | | | + | 18 |
| <i>Viscaria vulgaris</i> Bernh. | Viscid campion | | | | | 0 | 9 |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|--|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|-------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| CHENOPODIACEAE | | | | | | | |
| <i>Atriplex confertifolia</i> | Sheep-fat spiny saltbush | (5) | 24 | 0 | 0 | | |
| <i>A. confertifolia</i> (T&F.) S. Wats. | Shadscale | | | | | + | 15 |
| <i>A. hastatum</i> | | | | | | + | 1 |
| <i>A. hortensis</i> L. | Garden orache | (5) | 25 | 2-4 | 3.1 | + | 9 |
| <i>A. hortensis</i> L. | Saltbush | | | | | + | 17 |
| <i>A. hortensis</i> L. v. <i>rubra</i> Moq. | Garden orache | | | | | + | 10 |
| <i>A. lentiformis</i> | Quail brush | (5) | 25 | 4 | 4.0 | | |
| <i>A. leucophylla</i> | | (5) | 25 | 4 | 4.0 | | |
| <i>A. littorale</i> | | | | | | + | 1 |
| <i>A. patula</i> L. | Common orache | | | | | + | 8,9 |
| <i>A. polycarpa</i> | Cattle spinach | (5) | 25 | 3 | 3.0 | | |
| <i>A. rosea</i> L. | | | | | | + | 17 |
| <i>Atriplex</i> sp. | Coppery orache | | | | | 0 | 10 |
| <i>Beta atriplicifolia</i> | | | | | | + | 7 |
| <i>B. atriplicifolia</i> Rouy × <i>B. vulgaris</i> L. (Fa) | | | | | | + | 3 |
| <i>B. corolliflora</i> Zoss. | Wild beet | (6) | 25 | 4 | 4.0 | | |
| <i>B. intermedia</i> Bunge | Wild beet | (6) | 25 | 4 | 4.0 | + | 17 |
| <i>B. lomatogona</i> Fisch. & Meyers | Wild beet | (6) | 25 | 4 | 4.0 | + | 7,17 |
| <i>B. macrocarpa</i> Guss. | Wild beet | | | | | + | 3,7,17 |
| <i>B. macrorrhiza</i> | Wild beet | (6) | 25 | 4 | 4.0 | | |
| <i>B. maritima</i> L. | Wild beet | | | | | + | 3,7,9,16,17 |
| <i>B. patellaris</i> Moq. | Wild beet | (6) | 25 | 0-1 | 0.1 | + | 13 |
| <i>B. patula</i> Ait. | Wild beet | | | | | + | 3 |
| <i>B. patula</i> Soland | Wild beet | | | | | + | 17 |
| <i>B. procumbens</i> Chrys. Sm. | Wild beet | | | | | 0 | 3,17 |
| <i>B. procumbens</i> Moq. | Wild beet | (6) | 25 | 0 | 0 | 0 | 7,16 |
| <i>B. trigyna</i> Wald. et Kitt. | Wild beet | (6) | 25 | 4 | 4.0 | + | 3,7,17 |
| <i>B. vulgaris</i> L. | Mangel | | | | | .. | 9,10,17 |
| <i>B. vulgaris</i> L. | Red table beet | (1) | 22 | 4 | 4.0 | .. | 9,10,17 |
| <i>B. vulgaris</i> L. | Spinach beet | | | | | + | 9 |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|--|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|------------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| <i>Beta vulgaris</i> L. | Sugar beet | | | | | + | 2,3,5,9,10,11,17 |
| <i>Beta vulgaris</i> L. | Swiss chard | | | | | + | 5,17 |
| <i>Beta vulgaris</i> L. v. <i>ciela</i> L. | Leaf beet | | | | | + | 10 |
| <i>Beta vulgaris</i> L. v. US 75 | Sugar beet | (6) | 25 | 4 | 4.0 | | |
| <i>B. webbiana</i> Moq. | Wild beet | (6) | 25 | 0 | 0 | 0 | 3,7,16,17 |
| <i>Chenopodium album</i> L. | Fat hen | | | | | + | 8,9 |
| <i>Chenopodium album</i> L. | Lambsquarters | | | | | + | 4 |
| <i>Chenopodium album</i> L. | White pigweed or goosefoot | | | | | + | 1 |
| <i>C. amaranticolor</i> | | | | | | + | 17 |
| <i>C. ambrosioides</i> v. <i>chilensis</i> (Schrad.) Spegaz. | | | | | | + | 5 |
| <i>C. bonus henricus</i> L. | Good-King-Henry | | | | | + | 9,11 |
| <i>C. botrys</i> L. | | | | | | 0 | 18 |
| <i>C. capitatum</i> (L.) Aschers | Strawberry-blite | | | | | + | 5,9,11,17 |
| <i>C. ficifolium</i> Sm. | Fig-leaved goosefoot | | | | | + | 18 |
| <i>C. glaucum</i> L. | Oak-leaved goosefoot | | | | | + | 10 |
| <i>C. hybridum</i> L. | Sowbane | | | | | + | 9 |
| <i>C. murale</i> L. | Nettle-leaved goosefoot | | | | | + | 9 |
| <i>C. murale</i> L. | Sowbane | | | | | + | 5,11,12,17 |
| <i>C. polyspermum</i> L. | Many-seeded goosefoot | | | | | + | 8,9,18 |
| <i>C. quinoa</i> Willd. | | | | | | 0 | 1,9,18 |
| <i>C. rubrum</i> L. | Red goosefoot | | | | | + | 1,8,9,11 |
| <i>C. schraderianum</i> Roem. & Schult. | | | | | | + | 5 |
| <i>Chenopodium</i> sp. | Pigweed | | | | | 0 | 9,10 |
| <i>C. urbicum</i> L. | | | | | | + | 17 |
| <i>C. vulvaria</i> L. | Stinking goosefoot | | | | | + | 9,11 |
| <i>Echinopsilon hirsutus</i> | | | | | | 0 | 1 |
| <i>Hablitzia tamnoides</i> | | | | | | + | 18 |
| <i>Kochia scoparia</i> | | | | | | 0 | 1 |
| <i>Obione portulacoides</i> (L.) Moq. | Sea purslane | | | | | + | 9 |
| <i>Salicornia herbacea</i> | | | | | | 0 | 1 |
| <i>Salsola kali</i> | | | | | | 0 | 1 |
| <i>Spinacia glabra</i> Mill. | Summer spinach | | | | | + | 9 |
| <i>S. oleracea</i> L. | Spinach | | | | | + | 5,10,11,17 |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|--|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| <i>Spinacia oleracea</i> L. | Winter spinach | | | | | + | 9 |
| <i>Suaeda maritima</i> | | | | | | 0 | 1 |
| CISTACEAE | | | | | | | |
| <i>Helianthemum scoparium</i> Nutt. | Common rush-rose | (7) | 25 | 0 | 0 | | |
| COMPOSITAE | | | | | | | |
| <i>Acamplopappus sphaerocephalus</i> (Harv. & Gray) A. Gray | Goldenhead | (8) | 12 | 0 | 0 | | |
| <i>Achillea millefolium</i> L. | Yarrow | | | | | 0 | 9 |
| <i>Ambrosia psilostachya</i> DC. | Perennial ragweed | | | | | 0 | 17 |
| <i>Ambrosia</i> sp. | Ragweed | | | | | 0 | 10 |
| <i>Anthemis cotula</i> L. | Dogfennel | (3) | 25 | 0 | 0 | | |
| <i>Anthemis</i> sp. | Lavender-Munstead strain | (9) | 22 | 0 | 0 | | |
| <i>Arctium lappa</i> L. | Burdock | (10) | 25 | 0 | 0 | 0 | 9 |
| <i>Artemisia</i> sp. | Mugwort | (3) | 14 | 0 | 0 | | |
| <i>A. vulgaris</i> L. | Mugwort | | | | | 0 | 9 |
| <i>Aster</i> sp. | | (3) | 16 | 0 | 0 | | |
| <i>Baeria chrysostoma</i> v. <i>gracilis</i> | Gold fields | (5) | 24 | 0 | 0 | | |
| <i>Bellis perennis</i> | Dble mixed English daisy | (1) | 25 | 0 | 0 | | |
| <i>Callistephus sinensis</i> | Gt. Crego mixed aster | (1) | 23 | 0 | 0 | | |
| <i>Carthamus tinctorius</i> | Safflower | (6) | 25 | 0 | 0 | 0 | 17 |
| <i>Centaurea cineraria</i> L. | Dusty-miller | (2) | 23 | 0 | 0 | | |
| <i>C. cyanus</i> | Bachelors-button | (2) | 25 | 0 | 0 | | |
| <i>C. melilensis</i> L. | Napa thistle | (3) | 25 | 0 | 0 | | |
| <i>C. solstitialis</i> L. | Yellow star thistle | (3) | 25 | 0 | 0 | | |
| <i>Cichorium endivia</i> | Green curled endive | (2) | 25 | 0 | 0 | | |
| <i>C. intybus</i> L. | Asparagus chicory or catalogna | (1) | 25 | 0 | 0 | | |
| <i>C. intybus</i> L. | Chicory | | | | | 0 | 9,10 |
| <i>C. intybus</i> L. | Lg.-root coffee chicory | (2) | 25 | 0 | 0 | | |
| <i>Cirsium arvense</i> (L.) Scop. | Canada thistle | | | | | 0 | 10 |
| <i>Cirsium arvense</i> (L.) Scop. | Common thistle | | | | | 0 | 9 |
| <i>C. vulgare</i> (Savi) Tenore | Bullthistle | (3) | 25 | 0 | 0 | | |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|---|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|--------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| <i>Coreopsis tinctoria</i> Nutt. | Dble mixed calliopsis | (1) | 25 | 0 | 0 | | |
| <i>Cosmos bipinnatus</i> Cav. | Sensation dazzler cosmos | (1) | 25 | 0 | 0 | | |
| <i>Cynara cardunculus</i> | Lg. smooth cardoon | (1) | 25 | 0 | 0 | | |
| <i>C. scolymus</i> L. | Greenglobe artichoke | (1) | 25 | 0 | 0 | 0 | 10 |
| <i>Dicoria canescens</i> T. & G. | Desert dicoria | (7) | 17 | 0 | 0 | | |
| <i>Dimorphotheca aurantiaca</i> | Mixed African-daisy | (1) | 22 | 0 | 0 | | |
| <i>Erigeron glaucus</i> Ker. | Seaside daisy | (3) | 23 | 0 | 0 | | |
| <i>Erigeron</i> sp. | | (3) | 24 | 0 | 0 | | |
| <i>Eupatorium coelestinum</i> L. | Blue mink ageratum | (1) | 24 | 0 | 0 | | |
| <i>Gaillardia picta</i> | Ann. double mixed | (1) | 25 | 0 | 0 | | |
| <i>Grindelia camporum</i> v. <i>interioris</i> (Jepson) Steyermark | Gum plant | (3) | 25 | 0 | 0 | | |
| <i>Helianthus annuus</i> L. | Common sunflower | (3) | 14 | 0 | 0 | | |
| <i>Helianthus</i> spp. | Sunflower | (2) | 25 | 0 | 0 | 0 | 10 |
| <i>Helichrysum bracteatum</i> Andr. | Mixed strawflower | (1) | 22 | 0 | 0 | | |
| <i>Heterotheca grandiflora</i> Nutt. | Telegraph-plant | (3) | 25 | 0 | 0 | | |
| <i>Hypochoeris radicata</i> L. | Coast dandelion | (3) | 23 | 0 | 0 | | |
| <i>Hypochoeris radicata</i> L. | Hairy cats-ear | (3) | 25 | 0 | 0 | | |
| <i>Lactuca saligna</i> | Willow lettuce | (6) | 25 | 0 | 0 | | |
| <i>L. sativa</i> L. | Lettuce | (6) | 25 | 0 | 0 | 0 | 5,9,10,12,17 |
| <i>L. serriola</i> L. | Prickly lettuce | (3) | 25 | 0 | 0 | 0 | 17 |
| <i>Layia platyglossa</i> v. <i>elegans</i> | Tidy tips | (5) | 25 | 0 | 0 | | |
| <i>Leontodon leysleri</i> (Wallr.) G. Beck | Hairy hawkbit | (3) | 25 | 0 | 0 | | |
| <i>Madia gracilis</i> (Smith) Keck | Slender tarweed | (3) | 13 | 0 | 0 | | |
| <i>Palafoxia linearis</i> (Cav.) Lag. | Spanish needle | (7) | 20 | 0 | 0 | | |
| <i>Parthenium argentatum</i> Gray | Guayule v. 593 | (6) | 22 | 0 | 0 | | |
| <i>Peucephyllum schottii</i> Gray | Pigmy cedar | | | | | 0 | 17 |
| <i>Picris echioides</i> L. | Bristly oxtongue | (3) | 5 | 0 | 0 | | |
| <i>Senecio douglasii</i> D. C. | Shrubby butterweed | (7) | 25 | 0 | 0 | | |
| <i>S. vulgaris</i> L. | Common groundsel | (3) | 25 | 0 | 0 | 0 | 9 |
| <i>Silybum marianum</i> (L.) Gaertn. | Milkthistle | (3) | 25 | 0 | 0 | | |
| <i>Sonchus arvensis</i> L. | Sowthistle | | | | | 0 | 10 |
| <i>S. oleraceus</i> L. | Sowthistle | | | | | + | 17 |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|---|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| <i>Sonchus</i> sp. | Sowthistle | | | | | 0 | 9 |
| <i>Stephanomeria</i> sp. | Stephanomeria | (3) | 20 | 0 | 0 | | |
| <i>S. tenuifolia</i> (Torr.) H. M. Hall | Narrow-leaved stephanomeria | (3) | 16 | 0 | 0 | | |
| <i>Tagetes</i> spp. | African crackerjack marigold | (2) | 25 | 0 | 0 | | |
| <i>Tagetes</i> spp. | Dwarf marigold | (1) | 25 | 0 | 0 | | |
| <i>Taraxacum officinale</i> Wiggers | Common dandelion | (3) | 25 | 0 | 0 | | |
| <i>Taraxacum officinale</i> Web. | Dandelion | | | | | 0 | 17 |
| <i>Taraxacum</i> sp. | Dandelion | | | | | 0 | 10 |
| <i>Tithonia rotundifolia</i> | Mexican-sunflower | (1) | 25 | 0 | 0 | | |
| <i>Tragopogon porrifolius</i> L. | Salsify | (3) | 25 | 0 | 0 | 0 | 12 |
| <i>Xanthium italicum</i> Mor. | Cockle-bur | | | | | 0 | 17 |
| <i>Zinnia elegans</i> | Calif. giant-white purity zinnia | (2) | 25 | 0 | 0 | | |
| CONVOLVULACEAE | | | | | | | |
| <i>Calonyction aculeatum</i> House | Moonflower | (1) | 12 | 0 | 0 | | |
| <i>Calystegia sepium</i> L. R. Br. | Larger bindweed | | | | | 0 | 9 |
| <i>Convolvulus arvensis</i> L. | Lesser bindweed | | | | | 0 | 9 |
| <i>Convolvulus arvensis</i> L. | Morning glory | | | | | 0 | 17 |
| <i>Ipomoea batata</i> | Sweet potato | | | | | 0 | 17 |
| <i>I. cardinalis</i> L. | Cardinal climber | (1) | 22 | 0 | 0 | | |
| <i>I. quamoclit</i> L. | Mixed cypress vine | (1) | 25 | 0 | 0 | | |
| <i>Ipomoea</i> sp. | Candy pink morning-glory | (1) | 25 | 0 | 0 | | |
| CRUCIFERAE | | | | | | | |
| <i>Aethionema grandiflora</i> | | | | | | 0 | 18 |
| <i>A. pulchellum</i> | | | | | | 0 | 18 |
| <i>A. stylosum</i> | | | | | | 0 | 18 |
| <i>Alliaria officinalis</i> Bieb. | Garlic mustard | | | | | + | 18 |
| <i>Alyssum alpestre</i> | | | | | | 0 | 18 |
| <i>A. argenteum</i> | | | | | | + | 18 |
| <i>A. borzaceanum</i> Nyar. | | | | | | + | 18 |
| <i>A. maritimum</i> L. | Sweet alyssum | | | | | + | 1 |
| <i>A. maritimum</i> L. | Sweet alyssum v. violet queen | | | | | + | 5 |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|---------------------------------------|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| <i>Alyssum maritimum</i> Lam. | Sweet alyssum v. carpet of snow | (3) | 25 | 1-4 | 2.2 | + | 5 |
| <i>A. montanum</i> | | | | | | + | 18 |
| <i>A. saxatile</i> L. | Yellow saxatile | | | | | | |
| | compactum alyssum | (2) | 10 | 0-1 | 0.1 | | |
| <i>Alyssum</i> sp. | Sweet alyssum | | | | | + | 10,18 |
| <i>A. spinosum</i> | | | | | | + | 18 |
| <i>Arabis arenosa</i> Scop. | | | | | | + | 11 |
| <i>A. bellidifolia</i> | | | | | | + | 18 |
| <i>A. caucasia</i> Willd. | Garden arabis | | | | | + | 18 |
| <i>A. muralis</i> Bertol | | | | | | + | 18 |
| <i>A. turrata</i> L. | | | | | | + | 11 |
| <i>A. verna</i> R. Br. | | | | | | + | 18 |
| <i>Armoracia lappathifolia</i> Gilib. | Horseradish | | | | | + | 9,10 |
| <i>Aubrieta columnnea</i> Guss. | | | | | | + | 11 |
| <i>Aubrieta</i> sp. | | | | | | + | 9 |
| <i>Barbarea longirostris</i> | | | | | | + | 18 |
| <i>B. praecox</i> R. Br. | | | | | | + | 11 |
| <i>B. vulgaris</i> R. Br. | Yellow-rocket | | | | | + | 11,18 |
| <i>Berteroa incana</i> (L.) DC. | | | | | | + | 18 |
| <i>Biscutella auriculata</i> L. | | | | | | + | 18 |
| <i>B. depressa</i> | | | | | | 0 | 18 |
| <i>B. lacvigata</i> L. | | | | | | + | 18 |
| <i>Brassica campestris</i> L. | Common mustard | | | | | + | 5,17 |
| <i>Brassica campestris</i> L. | Wild turnip | | | | | + | 18 |
| <i>B. caulorapa</i> Pasq. | Kohlrabi | | | | | + | 10 |
| <i>B. cernua</i> Thbg. | | | | | | + | 11 |
| <i>B. juncea</i> | So. gt. curled mustard | (1) | 25 | 4 | 4.0 | | |
| <i>B. juncea</i> (L.) Czern. & Coss. | Trowse mustard | | | | | + | 18 |
| <i>B. napobrassica</i> Mill. | Rutabaga | | | | | + | 10 |
| <i>B. napus</i> L. | Coleseed or rape | | | | | + | 9,10,17,18 |
| <i>B. napus</i> L. | Swede | | | | | + | 2,9,18 |
| <i>B. napus</i> L. | Turnip | | | | | + | 5 |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|--|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|----------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| <i>B. nigra</i> (L.) Koch. | Black mustard | (11) | 25 | 4 | 4.0 | + | 8,9,11,18 |
| <i>Brassica oleracea</i> L. | Broccoli | | | | | + | 5,9,10,17,18 |
| <i>Brassica oleracea</i> L. | Brussel sprouts | | | | | + | 5,9,17,18 |
| <i>Brassica oleracea</i> L. | Cabbage | | | | | + | 2,5,9,17,18 |
| <i>Brassica oleracea</i> L. | Red cabbage | | | | | + | 2 |
| <i>Brassica oleracea</i> L. | Cauliflower | | | | | + | 5,9,17,18 |
| <i>Brassica oleracea</i> L. | Collards | | | | | + | 5 |
| <i>Brassica oleracea</i> L. | Kale | | | | | + | 9,17,18 |
| <i>Brassica oleracea</i> L. | Kohlrabi | | | | | + | 9 |
| <i>Brassica oleracea</i> L. | | | | | | + | 11 |
| <i>Brassica oleracea</i> L. v. <i>acephala</i> DC. | Kale or collards | (11) | 25 | 4 | 4.0 | + | 10 |
| <i>B. oleracea</i> L. v. <i>acephala</i> DC. | Dwarf curled kale | (2) | 25 | 4 | 4.0 | | |
| <i>B. oleracea</i> L. v. <i>botrytis</i> L. | Cauliflower | | | | | + | 10 |
| <i>B. oleracea</i> L. v. <i>capitata</i> L. | Cabbage | | | | | + | 10 |
| <i>B. oleracea</i> L. v. <i>gemmifera</i> Zenk. | Brussel sprouts | | | | | + | 10 |
| <i>B. oleracea</i> L. v. <i>gongylodes</i> | Early white Vienna kohlrabi | (2) | 25 | 4 | 4.0 | | |
| <i>B. pekinensis</i> (Lour.) Rupr. | Chinese cabbage | | | | | + | 5 |
| <i>B. rapa</i> L. | Turnip | (1) | 25 | 4 | 4.0 | + | 8,9,10,17,18 |
| <i>Brassicella erucastrum</i> (L.) O. & E. Schultz | | | | | | + | 9 |
| <i>Cakile maritima</i> | | | | | | 0 | 1 |
| <i>Camelina sativa</i> (L.) Crantz | Gold-of-pleasure | | | | | + | 18 |
| <i>Capsella bursa-pastoris</i> (L.) Medic. | Shepherd's-purse | (3) | 25 | 4 | 4.0 | + | 1,8,9,10,17,18 |
| <i>Cardamine impatiens</i> L. | | | | | | + | 11 |
| <i>C. pratensis</i> L. | Cuckoo flower | | | | | + | 1,18 |
| <i>Cardaria pubescens</i> (C. A. Mey) Roll. | Hoarv. cress | (3) | 20 | 3-4 | 3.9 | | |
| <i>Cheiranthus allionii</i> Hort. | Siberian wallflower | (1) | 11 | 4 | 4.0 | + | 9 |
| <i>C. alpinus</i> L. | | | | | | + | 11 |
| <i>C. annuus</i> | | | | | | + | 18 |
| <i>C. cheirii</i> L. | Wallflower | | | | | + | 9,10,11 |
| <i>Cochlearia armoracia</i> | Horsradish | | | | | + | 8 |
| <i>C. glastifolia</i> L. | | | | | | + | 18 |
| <i>C. officinalis</i> L. | Scurvy grass | | | | | + | 9,18 |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|--|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| <i>Conringia orientalis</i> (L.) Dum. | Hares-ear-cabbage | | | | | + | 18 |
| <i>Coronopus squamatus</i> (Forsk.) Asc. | Swinecress | | | | | 0 | 1,18 |
| <i>C. ruellii</i> | Swinecress | | | | | + | 8 |
| <i>Descurainia sophia</i> (L.) Prantl. | Flixweed | | | | | + | 9,18 |
| <i>Diptlotaxis erucoides</i> (L.) DC. | White-wall rocket | | | | | + | 1,18 |
| <i>D. muralis</i> (L.) DC. | Wall rocket | | | | | 0 | 18 |
| <i>D. tenuifolia</i> (L.) DC. | Perennial wall rocket | | | | | 0 | 18 |
| <i>Erysimum allionii</i> | Siberian wallflower | | | | | + | 18 |
| <i>E. capitatum</i> | Wallflower | (5) | 21 | 1-2 | 1.0 | | |
| <i>E. cheiranthoides</i> L. | Treacle-mustard | | | | | + | 8,9,18 |
| <i>E. cheiranthoides</i> L. | Wormseed-mustard | | | | | + | 10 |
| <i>E. heiracifolium</i> L. | | | | | | + | 18 |
| <i>E. insulare</i> v. <i>grandifolium</i> | Wallflower | (5) | 25 | 3-4 | 3.6 | | |
| <i>Hesperis matronalis</i> L. | Dames-violet | | | | | 0 | 1,5,18 |
| <i>Hesperis matronalis</i> L. | Sweet rocket | (1) | 24 | 0-1 | 0.1 | | |
| <i>Hesperis</i> sp. | Rocket | | | | | 0 | 10 |
| <i>Iberis coronaria</i> Hort. | | | | | | + | 18 |
| <i>Iberis</i> sp. | Candytuft | | | | | + | 9,10 |
| <i>Iberis</i> spp. (<i>amara</i> & <i>umbellata</i>) | Mixed candytuft | (2) | 21 | 1-4 | 2.3 | | |
| <i>I. umbellata</i> L. | Candytuft | | | | | + | 11,18 |
| <i>Isatis tinctoria</i> L. | Woad | | | | | + | 9,11,18 |
| <i>Lepidium graminifolium</i> L. | | | | | | 0 | 18 |
| <i>L. latifolium</i> L. | Broad-leaved pepperwort | | | | | 0 | 18 |
| <i>L. nitidum</i> Nutt. | Common peppergrass | (3) | 15 | 0 | 0 | | |
| <i>L. sativum</i> L. | Garden cress | (2) | 20 | 4 | 4.0 | + | 8,9,10,18 |
| <i>Lobularia maritima</i> (L.) Desv. | Sweet alison | | | | | 0 | 18 |
| <i>Lunaria annua</i> L. | Hon. sty | | | | | + | 9,10,18 |
| <i>L. biennis</i> | Money plant | (1) | 24 | 2-4 | 3.5 | | |
| <i>L. rediviva</i> L. | | | | | | + | 18 |
| <i>Malcolmia littorea</i> (L.) DC. | | | | | | 0 | 18 |
| <i>M. maritima</i> (L.) R. Br. | Virginian stock | (2) | 24 | 3-4 | 3.6 | + | 1,2,11,18 |
| <i>Matthiola annua</i> | | | | | | 0 | 1 |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|--|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|-------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| <i>M. bicornis</i> (Sib. & Sm.) DC. | Night-scented stock | | | | | 0 | 18 |
| <i>M. incana</i> (L.) R. Br. | Stock | | | | | 0 | 5 |
| <i>M. sinuata</i> (L.) R. Br. v. <i>glabra</i> | Sea stock | | | | | 0 | 18 |
| <i>Matthiola</i> sp. | Garden stock | | | | | 0 | 9,10 |
| <i>Moricandia arvensis</i> (L.) DC. | | | | | | 0 | 18 |
| <i>M. sonchifolia</i> | | | | | | + | 18 |
| <i>Myagrum perfoliatum</i> L. | | | | | | + | 18 |
| <i>Nasturtium microphyllum</i> (Boenn.) Rchb. | One-rowed watercress | | | | | + | 18 |
| <i>N. officinale</i> R. Br. | Watercress | | | | | + | 18 |
| <i>Peltaria alliacea</i> Jacq. | | | | | | + | 18 |
| <i>Raphanus maritimus</i> Sm. | Sea radish | | | | | + | 18 |
| <i>R. raphanistrum</i> L. | Wild radish | | | | | + | 9,17 |
| <i>R. sativus</i> L. | Radish | (1) | 25 | 1-4 | 2.6 | + | 2,5,9,10,17 |
| <i>R. sativus</i> L. | Wild radish | (3) | 25 | 4 | 4.0 | | |
| <i>Rapistrum perenne</i> All. | | | | | | + | 11 |
| <i>R. rugosum</i> (L.) All. | | | | | | + | 18 |
| <i>Rorippa amphibia</i> (L.) Besser | Great yellowcress | | | | | + | 18 |
| <i>R. islandica</i> (Oeder) Borbas | Marsh yellowcress | | | | | + | 18 |
| <i>R. nasturtium</i> | True watercress | (11) | 20 | 4 | 4.0 | | |
| <i>R. sylvestris</i> (L.) Besser | Creeping yellowcress | | | | | 0 | 18 |
| <i>Saxatile citrinum</i> | Alyssum | (9) | 10 | 0 | 0 | | |
| <i>Sinapis alba</i> L. | White mustard | | | | | + | 2,9,18 |
| <i>S. arvensis</i> L. | Charlock | | | | | + | 1,9,18 |
| <i>S. haber</i> (DC.) | Wheeler charlock | | | | | + | 10 |
| <i>Sisymbrium austriacum</i> Jacq. | | | | | | + | 18 |
| <i>S. irio</i> L. | London rocket | | | | | + | 18 |
| <i>S. officinale</i> (L.) Scop. | Hedgemustard | | | | | + | 1,8,9,11 |
| <i>S. orientale</i> L. | Eastern rocket | | | | | + | 18 |
| <i>S. sophia</i> L. | | | | | | + | 11 |
| <i>Teesdalia nudicaulis</i> | | | | | | + | 1 |
| <i>Thlaspi arvense</i> L. | Field pennycress | | | | | + | 1,9,11 |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|------------------------------------|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| <i>Thlaspi arvense</i> L. | Mithridate mustard | | | | | + | 8 |
| <i>Tropaeolum</i> spp. | Calif. giants mixed nasturtium | (2) | 25 | 1-3 | 1.3 | | |
| CUCURBITACEAE | | | | | | | |
| <i>Citrullus vulgaris</i> | Kleckley's sweet watermelon | (2) | 25 | 0 | 0 | | |
| <i>Cucumis melo</i> L. | Muckmelon | | | | | 0 | 10 |
| <i>C. melo reticulatus</i> | Hale's best 936 cantaloupe | (2) | 25 | 0 | 0 | | |
| <i>C. sativus</i> L. | Cucumber | (2) | 25 | 0 | 0 | 0 | 10,12,17 |
| <i>Cucurbita maxima</i> | Banana-squash | (2) | 25 | 0 | 0 | | |
| <i>C. pepo</i> L. | Halloween pumpkin | (2) | 25 | 0 | 0 | | |
| <i>C. pepo</i> L. | Marrow | | | | | 0 | 9 |
| <i>Cucurbita</i> sp. | Squash | | | | | 0 | 10 |
| <i>Luffa cylindrica</i> | Loofa sponge | (12) | 19 | 0 | 0 | | |
| CYPERACEAE | | | | | | | |
| <i>Cyperus eragrostis</i> Lam. | Tall umbrella-plant | (3) | 8 | 0 | 0 | | |
| DIPSACACEAE | | | | | | | |
| <i>Dipsacus fullonum</i> | Fullers teasel | (11) | 21 | 0 | 0 | | |
| <i>D. lacineatus</i> L. | Teasel | | | | | 0 | 9 |
| <i>Scabiosa caucasica</i> | Pincushion flower | (1) | 25 | 0 | 0 | | |
| EUPHORBIACEAE | | | | | | | |
| <i>Euphorbia helioscopia</i> L. | Sun spurge | | | | | 0 | 9 |
| <i>E. lathyris</i> L. | Caper spurge | (11) | 5 | 0 | 0 | 0 | 9 |
| <i>Ricinus communis</i> L. | Castor bean | | | | | 0 | 12,17 |
| <i>Ricinus communis</i> L. | Castor oil bean | (2) | 25 | 0 | 0 | | |
| GERANIACEAE | | | | | | | |
| <i>Erodium cicutarium</i> L'Her. | Redstem filaree | (3) | 23 | 0 | 0 | 0 | 17 |
| <i>E. manescavi</i> Coss. | | | | | | 0 | 9 |
| <i>Geranium rotundifolium</i> L. | Round-leaved cranes-bill | | | | | 0 | 9 |
| <i>Pelargonium hortorum</i> Bailey | Cranium | | | | | 0 | 17 |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|--|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| GRAMINEAE | | | | | | | |
| <i>Agropyron</i> sp. | Couchgrass | | | | | 0 | 9,10 |
| <i>Alopecurus</i> sp. | Foxtail | | | | | 0 | 10 |
| <i>Arrhenatherum elatius</i> (L.) | Tall oatgrass | | | | | 0 | 17 |
| <i>Arrhenatherum elatius</i> (L.) J. & C. Presl. | False-oatgrass | | | | | 0 | 9 |
| <i>Avena bysantina</i> L. | Red cultivated oats | | | | | 0 | 17 |
| <i>A. fatua</i> L. | Wild oats | | | | | 0 | 17 |
| <i>A. sativa</i> L. | Oats | | | | | 0 | 9,10,12,17 |
| <i>A. sterilis</i> | Oats | (13) | 25 | 0 | 0 | | |
| <i>Briza maxima</i> L. | Quaking grass | (3) | 25 | 0 | 0 | | |
| <i>Bromus inermis</i> Leys | Smooth bromegrass | | | | | 0 | 17 |
| <i>B. mollis</i> L. | Soft bromegrass | | | | | 0 | 9 |
| <i>B. secalinus</i> L. | | | | | | 0 | 9 |
| <i>Cynodon dactylon</i> L. | Bermuda grass | | | | | 0 | 17 |
| <i>Cynosurus cristatus</i> L. | Crested dogs-tail | | | | | 0 | 9 |
| <i>Dactylis glomerata</i> L. | Cocks-foot | | | | | 0 | 9 |
| <i>Dactylis glomerata</i> L. | Orchard Grass | | | | | 0 | 17 |
| <i>Echinochloa crusgalli</i> (L.) Beauv. | Watergrass | (3) | 25 | 0 | 0 | 0 | 17 |
| <i>Festuca elatior</i> L. | Meadow fescue | | | | | 0 | 17 |
| <i>Festuca elatior</i> L. | Tall fescue | | | | | 0 | 17 |
| <i>F. pratensis</i> Huds. | Meadow fescue | | | | | 0 | 9 |
| <i>Hordeum jubatum</i> | Wild barley | | | | | 0 | 17 |
| <i>H. sativum</i> Pers. | Barley | | | | | 0 | 9 |
| <i>H. vulgare</i> L. | Atlas barley | | | | | 0 | 12 |
| <i>H. vulgare</i> L. | Barley | | | | | 0 | 10,17 |
| <i>Lolium multiflorum</i> Lam. | Italian ryegrass | | | | | 0 | 9 |
| <i>L. perenne</i> L. | Ryegrass | (2) | 24 | 0 | 0 | 0 | 9 |
| <i>Phalaris canariensis</i> L. | Canarygrass | (3) | 25 | 0 | 0 | | |
| <i>Phleum pratense</i> L. | Timothygrass | | | | | 0 | 9,10 |
| <i>Poa annua</i> L. | Annual meadowgrass | | | | | 0 | 9 |
| <i>P. pratensis</i> agg. | Smooth stalked meadowgrass | | | | | 0 | 9 |
| <i>Polygogon monspeliensis</i> L. | Rabbitfootgrass | (3) | 25 | 0 | 0 | | |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|---|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| <i>Secale cereale</i> L. Bieb. | Rye | | | | | 0 | 9,17 |
| <i>Setaria glauca</i> L. | Yellow foxtail | | | | | 0 | 17 |
| <i>Sorghum halapense</i> L. Pers. | Johnson grass | | | | | 0 | 17 |
| <i>S. vulgare</i> Pers. | Sweet sorghum v. honeydrip | (2) | 25 | 0 | 0 | | |
| <i>S. vulgare</i> Pers. | Milo | | | | | 0 | 17 |
| <i>Triticum aestivum</i> L. | Wheat | | | | | 0 | 10,12 |
| <i>T. vulgare</i> Vill. | Wheat | | | | | 0 | 9,17 |
| <i>Zea mays</i> L. | Corn | | | | | 0 | 9,10,17 |
| <i>Zea mays</i> L. v. <i>saccharata</i> | Stowell's evergreen sweet corn | (1) | 22 | 0 | 0 | | |
| <i>Zoysia japonica</i> | Japanese lawngrass | | 25 | 0 | 0 | | |
| HYDROPHYLLACEAE | | | | | | | |
| <i>Nemophila insignis</i> | Baby-blue-eyes | (1) | 7 | 0 | 0 | | |
| <i>Phacelia campanularia</i> | Desert bluebell | (5) | 17 | 0-1 | 0.7 | | |
| <i>P. minor</i> | Calif. bluebell | (5) | 19 | 0 | 0 | | |
| <i>P. tenuifolia</i> Harv. | | | | | | 0 | 9 |
| LABIATAE | | | | | | | |
| <i>Ajuga chamaepitys</i> (L.) | Groundpine | | | | | 0 | 9 |
| <i>Galeopsis dubia</i> Leers | Downy hemp-nettle | | | | | 0 | 18 |
| <i>G. pyrenaica</i> Bartl. | | | | | | + | 9,18 |
| <i>G. speciosa</i> Mill. | Large-flowered hemp-nettle | | | | | + | 2,8,9,18 |
| <i>G. tetrahit</i> agg. | Common hemp-nettle | | | | | + | 18 |
| <i>Hyssopus officinalis</i> L. | Hyssop | | | | | 0 | 9 |
| <i>Lamium album</i> L. | White deadnettle | | | | | 0 | 9,18 |
| <i>L. molle</i> | | | | | | 0 | 18 |
| <i>L. purpureum</i> L. | Red deadnettle | | | | | 0 | 9,18 |
| <i>Lavandula</i> sp. | Lavender | | | | | 0 | 10 |
| <i>Leonurus sibiricus</i> | | | | | | 0 | 18 |
| <i>Majorana hortensis</i> | Sweet marjoram | (1) | 25 | 0 | 0 | | |
| <i>Marrubium vulgare</i> L. | Horehound | (3) | 25 | 1 | 1.0 | 0 | 10 |
| <i>Me'issa officinalis</i> L. | Lemon balm | (1) | 16 | 0 | 0 | | |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|------------------------------------|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|----------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | References | Host status |
| <i>Mentha arvensis</i> L. | Corn mint | | | | | 0 | 9 |
| <i>M. piperita</i> L. | Peppermint | | | | | 0 | 10 |
| <i>Molucella laevis</i> | Beils of Ireland | (2) | 25 | 0 | 0 | | |
| <i>Ocimum basilicum</i> L. | Ornamental basil | (1) | 24 | 0-1 | 0.1 | | |
| <i>Ocimum basilicum</i> L. | Sweet basil | (1) | 25 | 0 | 0 | 0 | 10 |
| <i>Salvia lanigera</i> | | (14) | 19 | 0 | 0 | | |
| <i>S. officinalis</i> L. | Garden sage | | | | | 0 | 9 |
| <i>S. sclarea</i> L. | | | | | | 0 | 9 |
| <i>Salvia</i> sp. | Sage | | | | | 0 | 10 |
| <i>Scutellaria orientalis</i> L. | Skullcap | | | | | 0 | 9 |
| <i>Stachys annua</i> (L.) L. | Woundwort | | | | | 0 | 9,18 |
| <i>S. officinalis</i> (L.) Trev. | Bctony | | | | | 0 | 18 |
| <i>S. sylvatica</i> L. | Hedge woundwort | | | | | 0 | 18 |
| <i>Thymus</i> sp. | Thyme | | | | | 0 | 10 |
| <i>T. vulgaris</i> | Thyme | (2) | 25 | 0 | 0 | | |
| LEGUMINOSAE | | | | | | | |
| <i>Anthyllis vulneraria</i> L. | Kidneyvetch | | | | | 0 | 9,18 |
| <i>Arachis hypogaea</i> L. | Argentine-peanut (Spanish-type) | (6) | 20 | 0 | 0 | | |
| <i>Arachis hypogaea</i> L. | Southeastern runner | (6) | 25 | 0 | 0 | | |
| <i>Arachis hypogaea</i> L. | Virginia bunch peanut | (6) | 25 | 0 | 0 | | |
| <i>Crotalaria mucronata</i> | | (14) | 9 | 0 | 0 | | |
| <i>C. pumila</i> | | (14) | 25 | 0 | 0 | | |
| <i>C. spectabilis</i> | Rattlebox | | | | | 0 | 12 |
| <i>Cyanopsis tetragonoloba</i> | Texel guar | (6) | 25 | 0 | 0 | | |
| <i>Glycine max</i> (L.) Merr. | Soybean | | | | | 0 | 5,10,17 |
| <i>Glycine max</i> (L.) Merr. | Soybean v. Earlyana | (6) | 25 | 1-3 | 2.0 | | |
| <i>Lathyrus odoratus</i> L. | Winter-flowering spencer sweetpea | (2) | 25 | 0 | 0 | | |
| <i>Lathyrus odoratus</i> L. | Sweetpea | | | | | + | 12 |
| <i>Lens</i> sp. | Lentil | | | | | 0 | 18 |
| <i>Lespedeza stipulacea</i> Maxim. | Korean lespedeza v. auburn | (6) | 23 | 0-1 | 0.3 | | |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|-------------------------------------|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| <i>Lespedeza stipulacea</i> Maxim. | Koren lespedeza v. climax | (6) | 15 | 0-2 | 0.7 | | |
| <i>Lespedeza stipulacea</i> Maxim. | Korean lespedeza v. rowan | (6) | 21 | 0-1 | 0.6 | | |
| <i>L. striata</i> (Thunb.) H. & A. | Common lespedeza | (6) | 12 | 1-2 | 0.9 | | |
| <i>L. striata</i> (Thunb.) H. & A. | Giant striata | (6) | 22 | 1-2 | 1.5 | | |
| <i>L. striata</i> (Thunb.) H. & A. | Commercial Kobe type | (6) | 19 | 1-3 | 2.3 | | |
| <i>Lotus corniculatus</i> L. | Birdsfoot trefoil | | | | | 0 | 17,18 |
| <i>L. tetragonolobus</i> L. | | | | | | 0 | 18 |
| <i>Lupinus albo-coccineus</i> | | | | | | 0 | 18 |
| <i>L. nanus</i> | Lupine | (5) | 12 | 0 | 0 | + | 12 |
| <i>Lupinus</i> sp. | Annual lupine | | | | | 0 | 18 |
| <i>Medicago ciliaris</i> Willd. | | | | | | 0 | 17 |
| <i>M. hispida</i> Gaertn. | Burclover | (3) | 21 | 0-2 | 0.6 | 0 | 18 |
| <i>M. hispida</i> Gaertn. | Hairy medick | | | | | 0 | 18 |
| <i>M. sativa</i> L. | Alfalfa | | | | | 0 | 5,10,12,17 |
| <i>M. sativa</i> L. | Caliverde alfalfa | (2) | 25 | 0 | 0 | | |
| <i>M. sativa</i> L. | Chilean alfalfa | (2) | 25 | 0 | 0 | | |
| <i>M. sativa</i> L. | German alfalfa | (2) | 25 | 0 | 0 | | |
| <i>M. sativa</i> L. | Lahontan alfalfa | (2) | 25 | 0 | 0 | | |
| <i>M. sativa</i> L. | Lucerne | | | | | 0 | 9,18 |
| <i>M. sativa</i> L. | Ranger alfalfa | (2) | 25 | 0 | 0 | | |
| <i>Melilotus alba</i> Desr. | White sweetclover | (3) | 25 | 0 | 0 | 0 | 10 |
| <i>M. officinalis</i> (L.) Lam. | Common melilot | | | | | 0 | 18 |
| <i>M. officinalis</i> (L.) Lam. | Yellow sweet clover | | | | | 0 | 17 |
| <i>Melilotus</i> Mill. sp. | Sweetclover | (2) | 25 | 0 | 0 | 0 | 12 |
| <i>Onobrychis viciifolia</i> Scop. | Sanfoin | | | | | 0 | 9,18 |
| <i>Ornithopus compressus</i> L. | | | | | | 0 | 18 |
| <i>O. sativus</i> Brot. | | | | | | 0 | 18 |
| <i>Phaseolus coccineus</i> | Scarlet runner bean | (1) | 22 | 0 | 0 | | |
| <i>P. lunatus</i> L. | Fordhook pole lima bean | (2) | 25 | 0 | 0 | 0 | 17 |
| <i>Phaseolus multiflorus</i> Willd. | Runner bean | | | | | 0 | 9,18 |
| <i>Phaseolus multiflorus</i> Willd. | Scarlet runner bean | (1) | 22 | 0 | 0 | | |
| <i>Phaseolus</i> sp. | Black bean | | | | | 0 | 10,12 |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|---|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|---------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| <i>P. vulgaris</i> L. | Black wax bean | | | | | 0 | 17 |
| <i>P. vulgaris</i> L. | Blue Lake #21 bean | (2) | 25 | 0 | 0 | | |
| <i>P. vulgaris</i> L. | Dwarf bean | | | | | 0 | 18 |
| <i>P. vulgaris</i> L. | French bean | | | | | 0 | 9 |
| <i>P. vulgaris</i> L. | Golden wax bush bean | | | | | + | 12 |
| <i>P. vulgaris</i> L. | Kentucky wonder #191 white bean | (2) | 24 | 0 | 0 | 0 | 17 |
| <i>P. vulgaris</i> L. | Navy bean | | | | | 0 | 5,17 |
| <i>P. vulgaris</i> L. | Pencil pod wax bean | (2) | 25 | 0 | 0 | | |
| <i>P. vulgaris</i> L. | White-seeded pole bean | (2) | 25 | 0 | 0 | | |
| <i>Pisum sativum</i> L. | Dwarf telephone pea | (2) | 25 | 0 | 0 | | |
| <i>Pisum sativum</i> L. | Garden pea | (2) | 25 | 0 | 0 | + | 12 |
| <i>Pisum sativum</i> L. v. <i>arvense</i> | Papago pea | (6) | 25 | 0 | 0 | | |
| <i>Sesbania exaltata</i> (Ref.) Rydb. | | | | | | + | 11 |
| <i>S. macrocarpa</i> | Sesbania | (6) | 24 | 1-3 | 1.6 | + | 12 |
| <i>Trifolium hybridum</i> L. | Alsike clover | | | | | 0 | 10 |
| <i>T. pratense</i> L. | Redclover | (2) | 15 | 0 | 0 | 0 | 9,10,12,17,18 |
| <i>T. repens</i> L. | Whiteclover | | | | | 0 | 17,18 |
| <i>T. repens</i> L. | White Dutch clover | (2) | 25 | 0 | 0 | | |
| <i>T. repens</i> L. | Wild whiteclover | | | | | 0 | 9 |
| <i>Trifolium</i> sp. | Betsyann clover | (2) | 25 | 0 | 0 | | |
| <i>Trigonella caerulea</i> (L.) Ser. | | | | | | 0 | 18 |
| <i>Vicia americana</i> Muhl. | American vetch | (3) | 25 | 0 | 0 | | |
| <i>V. atropurpurea</i> | Purple vetch | (2) | 25 | 0 | 0 | 0 | 17 |
| <i>V. faba</i> L. | Broad bean | (2) | 12 | 0 | 0 | 0 | 9 |
| <i>V. faba</i> L. | Small-seeded horse bean | | | | | 0 | 17 |
| <i>V. sativa</i> L. | Winter vetch | | | | | 0 | 9 |
| <i>Vicia</i> sp. | Lana wooly pod vetch | (2) | 25 | 0 | 0 | | |
| <i>Vicia</i> sp. | Purple vetch | | | | | + | 12 |
| <i>V. villosa</i> Roth. | Hairy vetch | | | | | 0 | 10 |
| <i>Vigna sinensis</i> Endl. | Blackeye cowpea | (1) | 25 | 0 | 0 | + | 11 |
| <i>Vigna sinensis</i> L. | Cowpea | | | | | 0 | 17 |
| <i>Vigna</i> sp. | Iron cowpea | | | | | + | 12 |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|--|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| LILIACEAE | | | | | | | |
| <i>Asparagus officinalis</i> L. | Asparagus | (6) | 25 | 0 | 0 | 0 | 5,9 |
| <i>Bulbine annua</i> Willd. | | | | | | 0 | 9 |
| <i>Kniphofia uvaria</i> | Tritoma | (1) | 20 | 0 | 0 | | |
| LINACEAE | | | | | | | |
| <i>Linum anglicum</i> Mill. | Perennial flax | | | | | 0 | 9 |
| <i>L. grandiflorum rubrum</i> | Scarlet flax | (1) | 23 | 0 | 0 | | |
| <i>L. perenne</i> | Blue flax | (2) | 25 | 0 | 0 | | |
| <i>Linum</i> sp. | | | | | | 0 | 9 |
| <i>Pueraria thunbergiana</i> Benth. | Kudzu-vine | (1) | 25 | 0 | 0 | | |
| MALVACEAE | | | | | | | |
| <i>Abutilon theophrasti</i> Medic. | Velvetleaf | (13) | 25 | 0 | 0 | | |
| <i>Althaea rosea</i> | Double newport pink hollyhock | (1) | 16 | 0 | 0 | | |
| <i>Callirhoe involuerrata</i> (T. & G.) Gray | Poppy-mallow | (11) | 14 | 0 | 0 | | |
| <i>Gossypium</i> spp. | Cotton | | | | | 0 | 12,17 |
| <i>Malva parviflora</i> L. | Cheeseweed | | | | | 0 | 5 |
| <i>M. rotundifolia</i> L. | Cheese-mallow | | | | | 0 | 17 |
| <i>M. sylvestris</i> L. | Common mallow | | | | | 0 | 9 |
| NYCTAGINACEAE | | | | | | | |
| <i>Mirabilis jalapa</i> L. | Mixed four-o'clock | (2) | 21 | 0 | 0 | 0 | 9 |
| ONAGRACEAE | | | | | | | |
| <i>Clarkia biloba</i> v. Brandegeae | | (5) | 15 | 0 | 0 | | |
| <i>Clarkia</i> sp. | Clarkia | | | | | 0 | 10 |
| <i>Fuchsia</i> sp. | Fuchsia | | | | | 0 | 10 |
| <i>Godetia amoena</i> | Double-mixed godetia | (1) | 24 | 0 | 0 | | |
| <i>Lopezia coronata</i> Andr. | | | | | | | 9 |
| <i>Oenothera biennis</i> L. | Evening primrose | | | | | 0 | 9 |
| <i>O. hookeri</i> | Evening primrose | (11) | 14 | 0 | 0 | | |
| <i>O. hookeri</i> Montereyensis | Evening primrose | (11) | 7 | 0 | 0 | | |
| <i>O. lamarkiana</i> Ser. | Evening primrose | (11) | 14 | 0 | 0 | | |
| <i>O. micrantha</i> (Nels.) Munz | Evening primrose | (3) | 25 | 0 | 0 | | |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|--|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| PAPAVERACEAE | | | | | | | |
| <i>Argemone mexicana</i> L. | Mexican-poppy | | | | | 0 | 9 |
| <i>Eschscholtzia californica</i> Cham. | Extra golden Calif.-poppy | (1) | 18 | 0 | 0 | | |
| <i>Eschscholtzia californica</i> Cham. | True deep orange Calif.-poppy | (2) | 23 | 0 | 0 | 0 | 17,18 |
| <i>Eschscholtzia</i> sp. | | | | | | 0 | 9 |
| <i>Papaver rhoeas</i> L. | Double-mixed Shirley- poppy | (1) | 25 | 0-1 | 0.6 | | |
| <i>Papaver rhoeas</i> L. | Field poppy | | | | | 0 | 18 |
| <i>Papaver</i> sp. | Poppy | | | | | 0 | 10 |
| PHYTOLACCACEAE | | | | | | | |
| <i>Phytolacca acinosa</i> Roxb. | | | | | | + | 18 |
| <i>P. americana</i> L. | Pokeweed | | | | | + | 17 |
| PLANTAGINACEAE | | | | | | | |
| <i>Plantago coronopus</i> L. | Cut-leaved plantain | (3) | 25 | 0 | 0 | | |
| <i>P. lagopus</i> L. | | | | | | 0 | 9 |
| <i>P. lanceolata</i> L. | Buckhorn plantain | (3) | 25 | 0 | 0 | | |
| <i>P. lanceolata</i> L. | Narrow-leaf plantain | | | | | 0 | 17 |
| <i>P. major</i> L. | Common plantain | (3) | 23 | 0 | 0 | | |
| <i>P. major</i> L. | Greater plantain | | | | | 0 | 9 |
| PLUMBAGINACEAE | | | | | | | |
| <i>Limonium sinuatum</i> Mill. | Statice-mixed straw-flower | (1) | 25 | 0 | 0 | | |
| POLEMONIACEAE | | | | | | | |
| <i>Gilia abrotanifolia</i> Nutt. | | | | | | 0 | 9 |
| <i>G. achilleaeifolia</i> | | (5) | 25 | 0 | 0 | | |
| <i>G. capitata</i> | | (11) | 1 | 4 | 4.0 | | |
| POLYGONACEAE | | | | | | | |
| <i>Emex spinosa</i> Campd. | | | | | | 0 | 9,18 |
| <i>Fagopyrum esculentum</i> Moench | Buckwheat | | | | | 0 | 1,10,18 |
| <i>Fagopyrum sagittatum</i> Gilib. | Buckwheat | | | | | 0 | 9 |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|------------------------------------|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| <i>F. tartaricum</i> Gaertn. | | | | | | 0 | 9 |
| <i>Polygonum amphibium</i> L. | Amphibious polygonum | | | | | 0 | 9 |
| <i>P. aviculare</i> agg. | Knotgrass | | | | | 0 | 9,18 |
| <i>P. convolvulus</i> L. | | | | | | + | 11 |
| <i>P. lapathifolium</i> L. | Willow smartweed | (3) | 25 | 0-1 | 0.6 | | |
| <i>P. orientale</i> L. | Princesfeather | | | | | 0 | 10 |
| <i>P. pensylvanicum</i> L. | | | | | | + | 14 |
| <i>P. persicaria</i> L. | Persicaria | | | | | + | 8,9,18 |
| <i>P. punctatum</i> | | | | | | + | 14 |
| <i>Polygonum</i> sp. | Smartweed | | | | | + | 10,17 |
| <i>Rheum rhabonticum</i> L. | Rhubarb | (1) | 21 | 4 | 4.0 | + | 5,9,10,11 |
| <i>Rumex acetosa</i> | Large-leaved French sorrel | (1) | 25 | 0 | 0 | | |
| <i>R. acetosella</i> L. | | | | | | + | 11 |
| <i>R. alpinus</i> L. | Monks-rhubarb | | | | | + | 18 |
| <i>R. confertus</i> | | | | | | + | 18 |
| <i>R. crispus</i> L. | Curled dock | (3) | 25 | 1-4 | 1.7 | + | 2,8,9,10 |
| <i>R. hydrolapathum</i> Huds. | Great water dock | | | | | + | 11,18 |
| <i>R. maritimus</i> | | | | | | + | 1 |
| <i>R. obtusifolius</i> L. | Broad-leaved dock | | | | | + | 9 |
| <i>R. palustris</i> Sm. | Marsh dock | | | | | + | 18 |
| <i>R. patientia</i> L. | | | | | | + | 11 |
| <i>R. pulcher</i> L. | Fiddle dock | (3) | 25 | 4 | 4.0 | | |
| <i>R. sanguineus</i> L. | Red-veined dock | | | | | + | 18 |
| PORTULACACEAE | | | | | | | |
| <i>Montia gypsophiloides</i> | Indian lettuce | (6) | 22 | 0 | 0 | | |
| <i>Portulaca grandiflora</i> Hook. | Moss rose portulaca | (1) | 22 | 0-1 | 0.7 | | |
| <i>P. oleracea</i> L. | Purslane | (3) | 25 | 0-1 | 0.4 | + | 10,11,17 |
| PRIMULACEAE | | | | | | | |
| <i>Anagallis arvensis</i> L. | Common pimpernel | | | | | 0 | 9 |
| <i>Anagallis arvensis</i> L. | Scarlet pimpernel | (3) | 9 | 0 | 0 | | |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|-------------------------|---------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| RANUNCULACEAE | | | | | | | |
| | <i>Aquilegia vulgaris</i> | Columbine | (14) | 25 | 0 | 0 | |
| | <i>Aquilegia vulgaris</i> | Imperial mixed columbine | (1) | 25 | 0 | 0 | |
| | <i>Delphinium ajacis</i> | White supreme larkspur | (2) | 25 | 0 | 0 | |
| | <i>Delphinium</i> sp. | Dwarf delphenium | | | | 0 | 9 |
| | <i>Nigella damascena</i> | Love-in-a-mist | (1) | 22 | 0 | 0 | |
| | <i>Nigella</i> sp. | Love-in-a-mist | | | | 0 | 9 |
| RESEDACEAE | | | | | | | |
| | <i>Reseda alba</i> L. | Upright mignonette | | | | 0 | 18 |
| | <i>Reseda alba</i> L. | White mignonette | | | | 0 | 9 |
| | <i>R. lutea</i> L. | Wild mignonette | | | | 0 | 18 |
| | <i>R. odorata</i> | Mignonette | | | | 0 | 17 |
| | <i>R. odorata</i> | Red goliath mignonette | (1) | 14 | 4 | 1.0 | |
| ROSACEAE | | | | | | | |
| | <i>Agrimonia eupatoria</i> L. | Agrimony | | | | 0 | 9 |
| | <i>Fragaria chiloensis</i> Duchesne | Strawberry | | | | 0 | 17 |
| | <i>Poterium sanguisorba</i> L. | Salad burnet | | | | 0 | 9 |
| RUBIACEAE | | | | | | | |
| | <i>Crucianella angustifolia</i> L. | | | | | 0 | 9 |
| | <i>Galium aparine</i> L. | Goosegrass | | | | 0 | 9 |
| RUTACEAE | | | | | | | |
| | <i>Dictamnus albus</i> L. | | | | | 0 | 9 |
| | <i>Larrea divaricata</i> Cav. | Creosote bush | (8) | 15 | 0 | 0 | |
| SCROPHULARIACEAE | | | | | | | |
| | <i>Antirrhinum majus</i> L. | Snapdragon | | | | 0 | 18 |
| | <i>Antirrhinum</i> sp. | Snapdragon | (6) | 25 | 0 | 0 | |
| | <i>Chaenorrhinum minus</i> (L.) Lange | Small toadflax | | | | + | 18 |

Table 2 (continued)—

| Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|------------|
| | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| <i>Collinsia heterophylla</i> | (5) | 21 | 1-2 | 0.5 | | |
| <i>Linaria</i> sp. | | | | | 0 | 9 |
| <i>L. vulgaris</i> Hill | | | | | + | 5 |
| <i>Nemesia compacta</i> | | | | | | |
| Triumph mixed nemesia | (1) | 23 | 0 | 0 | | |
| <i>Scrophularia nodosa</i> L. | | | | | 0 | 9 |
| Figwort | | | | | 0 | 9 |
| <i>Veronica agrestis</i> L. | | | | | 0 | 9 |
| Procumbent speedwell | | | | | 0 | 18 |
| <i>V. persica</i> Poir. | | | | | 0 | 18 |
| Buxbaum's speedwell | | | | | 0 | 18 |
| <i>V. spicata</i> L. | | | | | 0 | 18 |
| Spiked speedwell | | | | | | |
| SOLANACEAE | | | | | | |
| <i>Capsicum annuum</i> | | | | | | |
| Bell pepper | (2) | 25 | 0 | 0 | | |
| <i>Capsicum annuum</i> | | | | | | |
| Pimiento pepper | (2) | 25 | 0 | 0 | | |
| <i>C. frutescens</i> L. | | | | | 0 | 17 |
| Pepper | | | | | | |
| <i>Datura stramonium</i> L. | | | | | | |
| Jimson weed | (3) | 25 | 0 | 0 | | |
| <i>Datura stramonium</i> L. | | | | | 0 | 9 |
| Thornapple | | | | | 0 | 9 |
| <i>Hyoscyamus niger</i> L. | | | | | 0 | 9 |
| Black henbane | (3) | 25 | 0 | 0 | | |
| <i>Lycopersicon esculentum</i> Mill. | | | | | | |
| Pearson A 1 tomato | (2) | 25 | 2 | 2.0 | | |
| <i>Lycopersicon esculentum</i> Mill. | | | | | + | 6 |
| Pearson XL tomato | | | | | | |
| <i>Lycopersicon esculentum</i> Mill. | | | | | 0 | 17 |
| Tomato | | | | | | |
| <i>L. pimpinellifolium</i> Mill. | | | | | | |
| Wild tomato | (6) | 25 | 2 | 2.0 | | |
| <i>Nicotiana affinis</i> | | | | | | |
| Affinis hybrid nicotiana | (2) | 25 | 0 | 0 | | |
| <i>N. glauca</i> Graham | | | | | | |
| Tree tobacco | (3) | 25 | 0 | 0 | 0 | 17 |
| <i>N. tabacum</i> L. | | | | | | |
| Tobacco | | | | | 0 | 17 |
| <i>N. tabacum</i> v. Samsun | | | | | | |
| Turkish tobacco | (6) | 25 | 0 | 0 | | |
| <i>Petunia parviflora</i> Juss. | | | | | | |
| Petunia seaside | (3) | 25 | 0 | 0 | | |
| <i>Petunia</i> spp. | | | | | | |
| Colorama mixed petunia | (2) | 25 | 0 | 0 | | |
| <i>Physalis longifolia</i> | | | | | | |
| Perennial groundcherry | (15) | 25 | 0 | 0 | | |
| <i>P. pubescens</i> | | | | | | |
| Yellow husk tomato | (13) | 10 | 0 | 0 | | |
| <i>Physalis</i> sp. | | | | | | |
| Golden queen tomato | | | | | + | 12 |
| <i>Physalis</i> sp. | | | | | | |
| Yellow pear tomato | (13) | 25 | 2 | 2.0 | | |
| <i>Salpiglossis sinuata</i> | | | | | | |
| Painted tongue | (1) | 19 | 1-3 | 2.3 | | |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|--|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| <i>Solanum douglasii</i> | Nightshade | (6) | 25 | 1-3 | 1.6 | | |
| <i>S. dulcamara</i> | Bittersweet nightshade | | 25 | 0 | 0 | | |
| <i>S. elaeagnifolium</i> Cav. | White horsenettle | (7) | 22 | 0 | 0 | | |
| <i>S. melongena</i> | N.Y. improved egg plant | (2) | 20 | 0-1 | 0.1 | | |
| <i>S. nigrum</i> L. | Black nightshade | | 25 | 0-1 | 0.4 | + | 12 |
| <i>S. rostratum</i> Dunal | Kansas-thistle buffalo-bur | (15) | 11 | 0 | 0 | | |
| <i>S. sarrachoides</i> Sendt. | | | | | | 0 | 9 |
| <i>Solanum</i> sp. | Nightshade | | | | | + | 12 |
| <i>S. tuberosum</i> L. | Potato | | | | | 0 | 9,10,17 |
| TROPAEOLACEAE | | | | | | | |
| <i>Tropaeolum peregrinum</i> | | | | | | + | 18 |
| UMBELLIFERAE | | | | | | | |
| <i>Aethusa cynapium</i> L. | Fools-parsley | | | | | 0 | 9 |
| <i>Anethum graveolens</i> L. | Dill | (2) | 25 | 0-3 | 1.0 | 0 | 9 |
| <i>Anthriscus cerefolium</i> | Chervil | (1) | 15 | 1-2 | 1.0 | | |
| <i>Apium graveolens</i> L. | Celeriac | | | | | 0 | 9 |
| <i>Apium graveolens</i> L. | Celery | | | | | 0 | 5,9,12,17 |
| <i>Apium graveolens</i> L. v. <i>dulce</i> Pers. | Celery | | | | | 0 | 10 |
| <i>A. graveolens</i> L. v. <i>rapaceum</i> | Smooth Prague celeriac | (2) | 25 | 0 | 0 | | |
| <i>Carum carvi</i> L. | Caraway | (1) | 25 | 0 | 0 | | |
| <i>Cicuta douglasii</i> (PC) C & R. | Water hemlock | | | | | 0 | 17 |
| <i>Conium maculatum</i> L. | Hemlock | | | | | 0 | 9 |
| <i>Conium maculatum</i> L. | Poison-hemlock | (3) | 25 | 0-3 | 0.6 | | |
| <i>Coriandrum sativum</i> | Coriander | (1) | 25 | 0 | 0 | | |
| <i>Daucus carota</i> L. | Carrot | | | | | 0 | 5,9,12 |
| <i>Daucus carota</i> L. | Imperator carrot | (1) | 22 | 0 | 0 | | |
| <i>Daucus carota</i> L. v. <i>sativa</i> DC. | Carrot | | | | | 0 | 10,17 |
| <i>Foeniculum dulce</i> | Anise | (1) | 25 | 0 | 0 | | |
| <i>F. vulgare</i> | Sweet-florence fennel | (2) | 25 | 0 | 0 | | |

Table 2 (continued)—

| | Commercial variety or common name | Studies at Salinas, California | | | | Other host studies | |
|---|--------------------------------------|--------------------------------|------------------------|----------------|---------------|--------------------|------------|
| | | Source of seed or plant | Number of plants | Index range | Avg. index | Host status | References |
| <i>Pastinaca sativa</i> L. | Hollow crown parsnip | (1) | 25 | 0-1 | 0.1 | | |
| <i>Pastinaca sativa</i> L. | Parsnip | | | | | 0 | 9,10 |
| <i>Pastinaca</i> sp. | Wild parsnip | | | | | 0 | 10 |
| <i>Petroselinum crispum</i> L. (Mill.) Nym. | Parsley | | | | | 0 | 9,12,17 |
| <i>P. hortense</i> crispum | Plain-leaved parsley | (2) | 25 | 0 | 0 | | |
| <i>Scandix pecten-veneris</i> L. | Shepherds-needle | | | | | 0 | 9 |
| <i>Trachymene caerulea</i> | Blue lace flower | (1) | 25 | 0 | 0 | | |
| URTICACEAE | | | | | | | |
| <i>Urtica dioica</i> L. | Common nettle | | | | | 0 | 9 |
| <i>U. gracilis</i> Ait. | Stinging nettle | | | | | + | 17 |
| <i>U. holosericea</i> Nutt. | Hoary nettle | (3) | 25 | 0 | 0 | | |
| <i>U. pilulifera</i> L. | Roman nettle | | | | | 0 | 9 |
| <i>U. urens</i> L. | Small nettle | | | | | 0 | 9 |
| VALERIANACEAE | | | | | | | |
| <i>Centranthus ruber</i> (L.) DC. | Red valerian | (3) | 25 | 0 | 0 | | |
| <i>Valerianella olitoria</i> (L.) | Large-leaved corn-salad | (1) | 25 | 0 | 0 | | |
| VIOLACEAE | | | | | | | |
| <i>Viola tricolor</i> | Swiss giants pansy | (2) | 25 | 0 | 0 | | |
| <i>Viola tricolor</i> agg. | Heartsease | | | | | 0 | 9 |
| ZYGOPHYLLACEAE | | | | | | | |
| <i>Erodium cicutarium</i> L'Her. | Redstem filaree | (3) | 23 | 0 | 0 | | |