A83-129-8,000-L180

TEXAS AGRICULTURAL EXPERIMENT STATION

A. B. CONNER, DIRECTOR
COLLEGE STATION, BRAZOS COUNTY, TEXAS

BULLETIN NO. 393 FEBRUARY, 1929

DIVISION OF PLANT PATHOLOGY AND PHYSIOLOGY

Plants Susceptible or Resistant to Cotton Root Rot and their Relation to Control

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SYNOPSIS

Root rot attacks at least two hundred and seventy-four species of cultivated plants. Many important field crops, vegetables, fruit trees, berries, and ornamentals are affected. The cultivated species listed as resistant to root rot number one hundred and thirty-five, including the few separate species of grasses which are named. Wheat, oats, corn, sorghum, rice, barley, and all other members of the grass family appear to be immune to the disease.

Root rot causes extensive damage to many important crops such as cotton, legumes, sweet potatoes, pears, figs, and grapes and results in extremely large losses. The widespread distribution of root rot and the susceptibility of so many useful plants account for the great importance of the disease in Texas. Yields are reduced, which increases costs of production; land values are thus depreciated and agricultural development limited.

Root rot also affects many plants not ordinarily cultivated, including weeds, native plants, and trees. Two hundred and forty-four species are listed as susceptible and sixty-six as resistant. These susceptible species of wild plants are important from the standpoint of the general problem of control. Short-lived plants or annuals support the fungus only during their period of life. Long-lived species or perennials carry the fungus over longer periods of time. Where these weeds are present, root root cannot be controlled without controlling the weeds. So long as susceptible perennial weeds persist in cultivated fields or along the borders of such fields, root rot will be able to survive and attack the susceptible crops.

Native vegetation is found affected with root rot. When virgin land is brought into cultivation, the root-rot fungus spreads from the diseased roots of native plants to the roots of cultivated crops.

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PLANTS SUSCEPTIBLE OR RESISTANT TO COTTON ROOT ROT AND THEIR RELATION TO CONTROL

J. J. TAUBENHAUS, B. F. DANA AND S. E. WOLFF*

The root-rot disease, caused by the fungus *Phymatotrichum omnivorum* (Shear) Duggar, is the most destructive plant disease of Texas. In regions in which root rot occurs nearly everyone is interested in knowing which plants are susceptible and which plants are resistant to this disease. The grower of field crops is in need of information which will enable him to select the proper crop to be grown, or to plan a profitable rotation which will at the same time control or reduce the losses from this disease to a minimum. Similarly, truck and fruit growers are in search of resistant crops in order to realize profitable returns. And no less interested are the nurserymen and home owners, who desire to select planting materials that will live.

To gather accurate information on the number of plants affected and the extent of injury produced by root rot, a state-wide survey, covering a period of years, was made. From the information now on hand, lists have been prepared of the species which are either free from, or subject to the disease. The species listed have been carefully examined whenever they were found in places where root rot was present. Continued freedom from disease in these areas has been considerd sufficient reason for placing such plants in the highly resistant or immune class.

Time has not permitted a study of all possible host plants. However, important cultivated species and a large proportion of the non-cultivated species found in root-rot areas are represented. The present list also includes the plants first tested by Taubenhaus and Killough (4). These, together with all other species studied, are classed as resistant or susceptible on the basis of present knowledge.

SYMPTOMS OF ROOT ROT

Root rot is usually noticed only when infected plants actually begin to wilt. Yet if plants which are growing next to wilted ones are pulled out, the root systems of these apparently healthy plants are often found already covered with the yellowish to buff-colored mats of the root-rot fungus. This fungus growth on the roots is the cause of the root-rot disease, and plants cannot exhibit symptoms of root rot unless the fungus has attacked their roots or underground parts. After

*The writers are indebted to the late Professor H. Ness, Chief of the Division of Botany, Agricultural Experiment Station, College Station, and to Mr. V. L. Cory, Grazing Research Botanist Substation No. 14, Sonora, for identifications of many of the plant species included in this study.

the fungus has started to grow on the roots, plants may still appear quite normal for a week or more while the roots are being destroyed. It is only when the roots of the diseased plants are thoroughly involved that symptoms usually appear on parts above ground.

In early stages of infection of many herbaceous plants the upper leaves may wilt slightly while the lower leaves appear normal. This wilting of the upper leaves is especially noticeable early in the morning when normal plants have recovered from the effect of the natural wilting that was brought about by the heat of the previous day. The lower leaves on such affected plants also wilt and droop by the following day. Other herbaceous plants in certain stages of infection may shed their leaves quickly, reducing the transpiration surface, then later recover and continue growth at the growing points. These plants often remain alive during the growing season. Less frequently the whole plant wilts in one day. The wilted leaves may recover their normal position or may remain in this wilted and collapsed condition and never recover. Within twenty to forty hours the wilted foliage dies, becomes crisp, and appears brown or blackened as though scorched by fire. The roots of an infected plant are at this time completely covered with the yellowish or buff mats of fungus threads. Furthermore, the cortex of the roots, particularly of the tap root, has become softened and may be readily peeled off with the least pressure of the finger. If an infected plant remains in the ground for some time the cortex rots off and all that is left of the tap root is a woody stub.

Shrubs and trees react in a manner similar to that of herbaceous plants. It is not possible to determine from an examination of the tops of plants when the roots are first infected. Especially on trees with large root systems, the disease may be present on the roots for many months before infection and growth of the fungus are suspected. Only after the disease has considerably invaded the root system, do affected shrubs or trees begin to shed their leaves. This shedding may be gradual or rapid, depending on how completely the root system has become involved. Occasionally, trees shed their foliage during one season but do not die until the following year.

When either a woody or an herbaceous plant is killed by root rot the entire root system is not necessarily involved at one time. The greatest destruction of the root system is usually of the tap root itself and of the portions of the laterals which join the tap root. The large laterals away from the zone of infection are not necessarily involved at this time, and may remain alive for months after the top of the plant has died. The root-rot fungus may slowly spread along these living laterals, and in this way be carried to underground parts of succeeding plants.

METHODS OF STUDY

A survey was made of selected areas throughout the state. Attention was paid not only to the wilted or dead plants, apparently suffering from

root rot, but also to plants that were apparently not injured though they were growing in root-rot spots.

Rather extensive and yet careful surveys were possible because of the positive and easily distinguished symptoms of the root-rot disease. With the majority of host plants there is a characteristic sudden wilting of the aerial portions following invasion of the root systems by the fungus. In all cases, however, the presence of root rot was verified by examination of the underground parts of the plants for the yellowish strands or mats of the fungus. These are always present on diseased plants and can ordinarily be seen by the unaided eye. The roots were examined in the field with a hand lens and were then sent to the laboratory, where the microscope was used to check the field determinations.

A few species have also been tested by inoculation experiments as a more positive means of determining resistance or susceptibility. As opportunity permits, these tests will be continued to include all important species.

EXPLANATION OF TABLES

The species reported in this study are listed below in two groups, the cultivated plants in Table 2 and the non-cultivated plants in Table 3. In general, those given in Standardized Plant Names (6) are listed as "Cultivated Plants." This group includes not only the common crops but also other plants often planted in home grounds or gardens. All the so-called weeds and native plants, with the exception of those brought into cultivation, are placed in a second group designated as "Non-cultivated Plants."

The organization of the two lists is identical and is essentially an alphabetical arrangement of species according to common names. This arrangement is used because of the familiarity of the public and growers in general with the common names. As far as possible, the common names and the principle of word formation as used in Standardized Plant Names (6) are adopted. Other names are taken from various floras and guides; while, in a number of instances, they are original and descriptive in character. For each kind of plant, the botanical name and citation are supplied in the second column for the benefit of nurserymen, technical workers, and others desiring the information. Small (3) is followed for names included in his flora. Others are obtained from Bailey (5), North American Flora (1), Britton and Brown (2), Jepson (7), Rehder (8) and Schulz (9). All family names are used according to the arrangement and terminology in Small (3).

In the last column of Tables 2 and 3, each plant is rated as to its susceptibility or resistance to root rot. Species found very susceptible are followed by a double plus (+ +) sign. Those showing slight to moderate susceptibility are indicated by a single plus (+) sign. Those not recognized as susceptible after observation and testing are designated by a minus (—) sign and tentatively may be considered resistant to root rot.

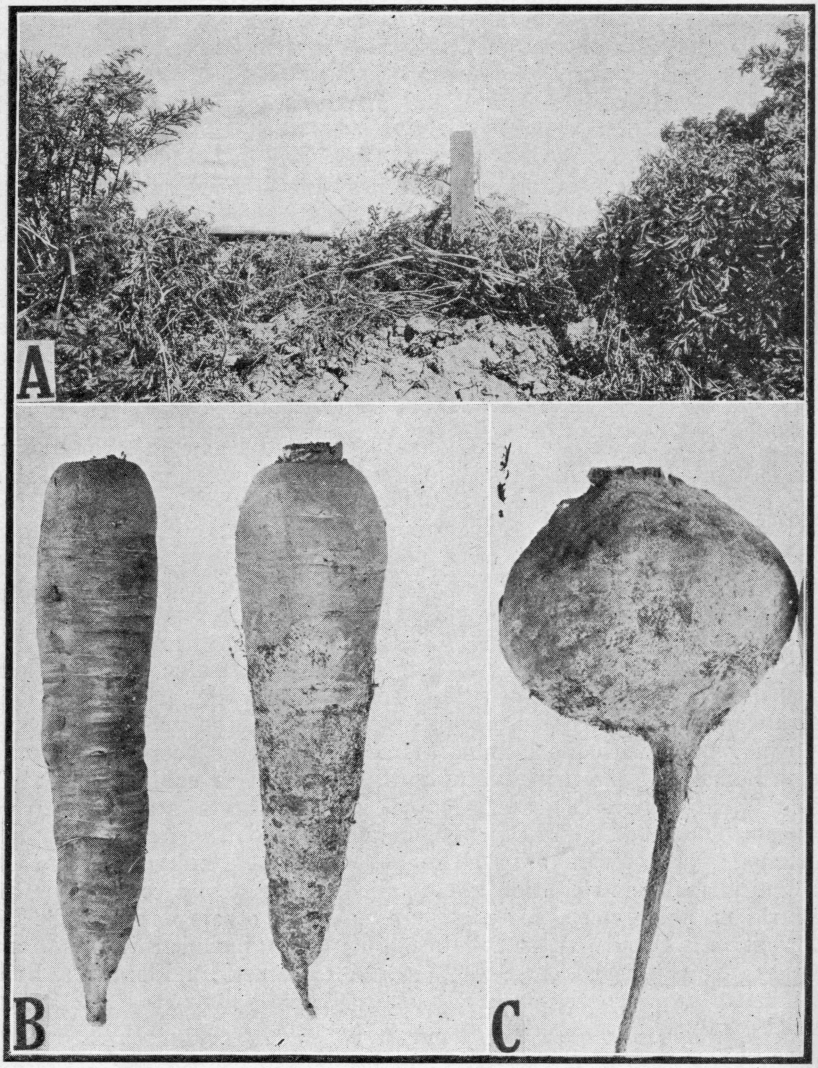

Fig. 1—Vegetable hosts for root rot. A. Carrots killed by root rot introduced at the point marked by the stake. B. Healthy and diseased carrots. Note fungous growth on the surface of the diseased carrot. C. Diseased beet with fungus covering the surface of the lower half.

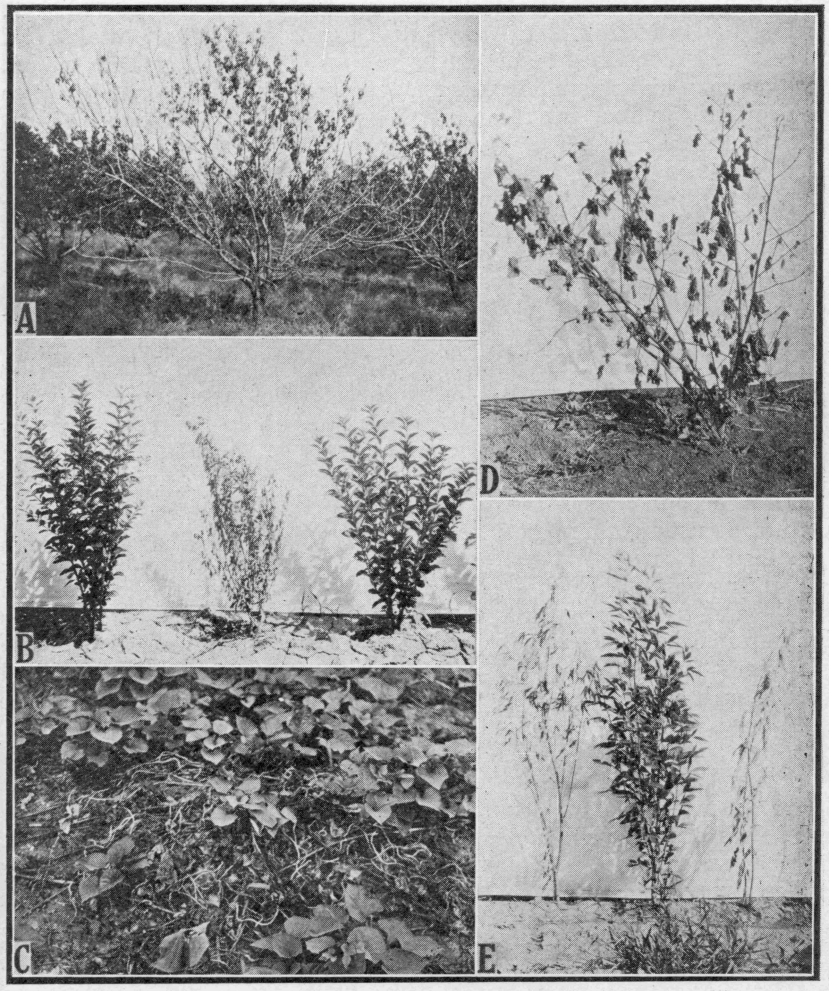

Fig. 2—Cultivated hosts for root rot. A. Diseased peach showing typical symptoms. B. Two healthy and one diseased California Privets. C. Sweet potatoes showing a tangled mass of vines killed by the disease. D. Wilted cotton plant. E. Pigeon pea, showing two plants diseased and one healthy.

DISCUSSION OF TABLES

Cultivated Plants

Many important facts can be gleaned from a study of the lists of cultivated and non-cultivated plants presented in Tables 2 and 3. Among the cultivated plants listed in Table 2 (see also Figures 1 and 2), may be mentioned some important groups of susceptible species. Cotton ranks high in importance in Southern agriculture. Its extreme susceptibility to root rot results in heavy losses to the grower. Many other members of the Mallow (*Malvaceae*) family to which cotton belongs are also highly susceptible, indicating that this character may be present throughout the family. Likewise, members of the Legume or Bean family (*Fabaceae*) show very high susceptibility. Where root rot is prevalent and severe, the susceptibility of legumes practically prevents their general use as field crops. The elimination of these valuable feed crops and soil builders is a serious handicap to the agriculture of the affected regions.

Susceptibility in trees and especially in long-lived, slow-growing fruits, nuts, and ornamentals is of considerable importance. In the orchard the life of fruit trees such as pears, apples, quinces, cherries, peaches, figs, mulberries, and persimmons is so short in the presence of root rot as to discourage all but the most persevering orchardists. No less serious is the disease in the long-lived ornamentals. Elms, maples, locusts, cottonwoods, and chinaberries should never be planted in affected locations. Certain spruces, pines, and arborvitae give disappointing results, which are more keenly felt because the loss of such shrubs and trees often ruins the landscape effect. Also new plantings in the same locations usually succumb, making the replacement of the specimens lost an uncertain procedure. Other ornamental trees and shrubs such as roses, spireas, privets, and the lilacs are also susceptible and unsatisfactory in locations where root rot is prevalent.

Many important vegetable crops are highly susceptible. The fact that these are short-lived serves to reduce, but does not eliminate the losses. Among the important and at the same time very susceptible vegetables are common beets, sugar beets, carrots, parsnips, eggplants, turnips, sweet potatoes, beans, peas, and cowpeas. Extensive growing of these may be unprofitable when root rot is present.

Small fruits are seriously injured by root rot. Grapes, blackberries, and raspberries scarcely become established before they succumb if they are set in locations where root rot is prevalent. The absence of these small fruits in communities where root rot is general is noticeable.

In attempting to classify the horticultural varieties of certain genera, it was found impossible to assign them to definite species. This was particularly true with grapes and roses. The cultivated varieties of grapes and roses appear highly susceptible. Material is being assembled for a test of resistance and determination of species in these groups and in certain other genera where the same situation exists.

From the number of important cultivated crops mentioned above and others included in the list, it will be seen that the disease is a serious limiting factor in the agriculture of the regions where root rot occurs. The task of finding satisfactory substitutes is indeed a difficult one. The parasite attacks such a large number of species and with such virulence that search for resistance is impractical except with a very few of the more important crops.

Cultivated plants naturally resistant or immune include the large family of grains and grasses and several other families, among which are the Melon (*Cucurbitaceae*), Onion (*Alliaceae*), Lily (*Liliaceae*), Mint (*Lamiaceae*), Asparagus (*Convallariaceae*), and Palm (*Arecaceae*). The grains and grasses appear to be immune. They are not killed by the disease even when grown among diseased plants of other species. The small grains, sorghum of all kinds, hay, and grass crops are of value in rotations. Small grains are harvested early, which permits cultivation of the land for weed eradication to be carried on during the dry hot weather when such operations are most effective. Sorghums, as row crops, allow continued cultivation for weed control. Grasses do not carry root rot, but perennial weeds may exist in meadow land and perpetuate the disease for an indefinite time. Corn does not seem to be affected, but on the average farm the cultivation given corn is not sufficient to keep weeds in check. In many cases, the fungus has a better opportunity to live over on susceptible weeds in corn fields than in the average cotton field. Altogether rotations with the grains and grasses, because of their resistance and the way in which they lend themselves to culture for weed control, offer the best avenue for lessening the ravages of the disease in cotton and other susceptible crops.

Melons, onions, and asparagus are mentioned above as showing high resistance and immunity. It is probable that they can be used to advantage as general crops only in irrigated sections where the disease is sometimes serious. A number of other cultivated species are listed as resistant. Some are valuable as ornamentals; others have a limited agricultural value in the areas where root rot occurs.

Non-cultivated Plants

The susceptible non-cultivated species belong to many families (see Table 3, and Figures 3, 4 and 5.) Some of these are perennials and harbor root rot from year to year and, if not disturbed, will carry infection indefinitely. The Common Tievine (*Ipomoea trifida*), Soft Groundcherry (*Physalis mollis*), Silver-leaved Nightshade (*Solanum elaeagnifolium*), Horse-nettle (*Solanum carolinense*), and Hog Potato (*Hoffmanseggia densiflora*), are examples of perennials that are attacked but are capable of persisting for a considerable period in a diseased condition. Some of these develop an extensive and vigorous underground root system which furnishes an extended food supply for the root-rot parasite. Others have storage organs which may be at-

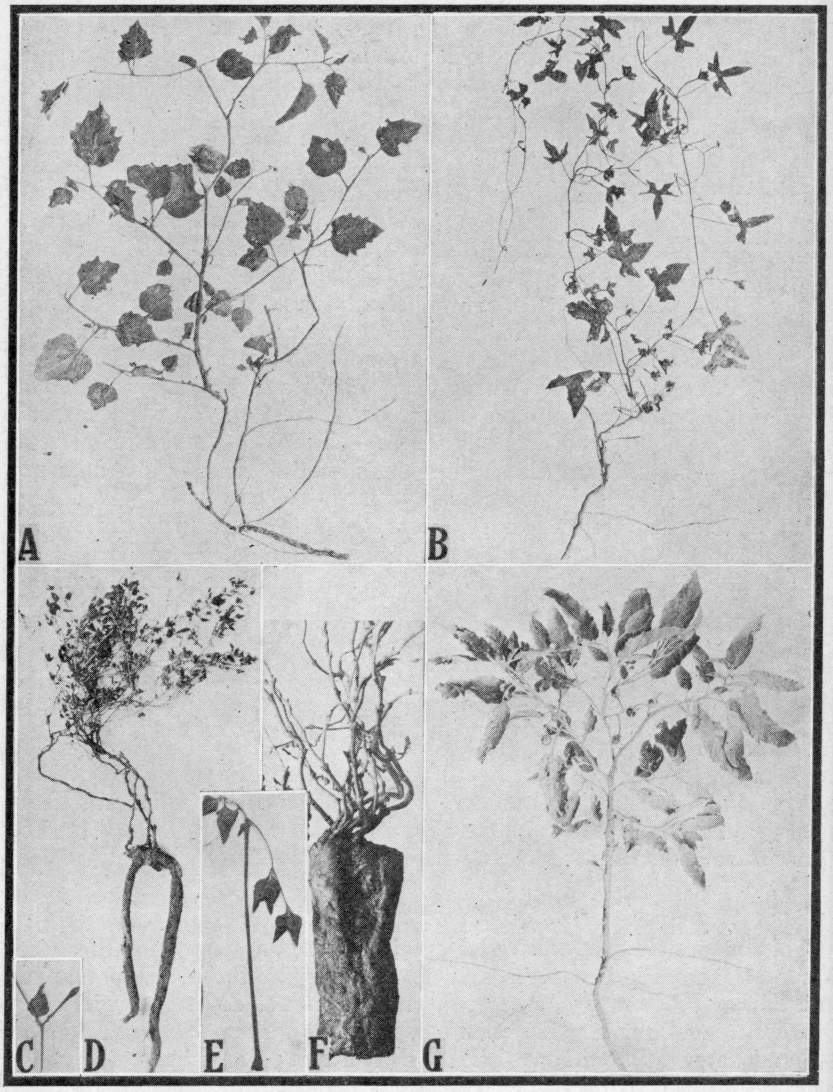

Fig. 3—Perennial weeds subject to root rot. A. Soft Groundcherry (*Physalis mollis*). B. Common Tievine (*Ipomoea trifida*). C, D, E, and F. Trumpet Four-o'clock (*Acleisanthes longiflora*). G. Silver-leaved Nightshade (*Solanum elaeagnifolium*).

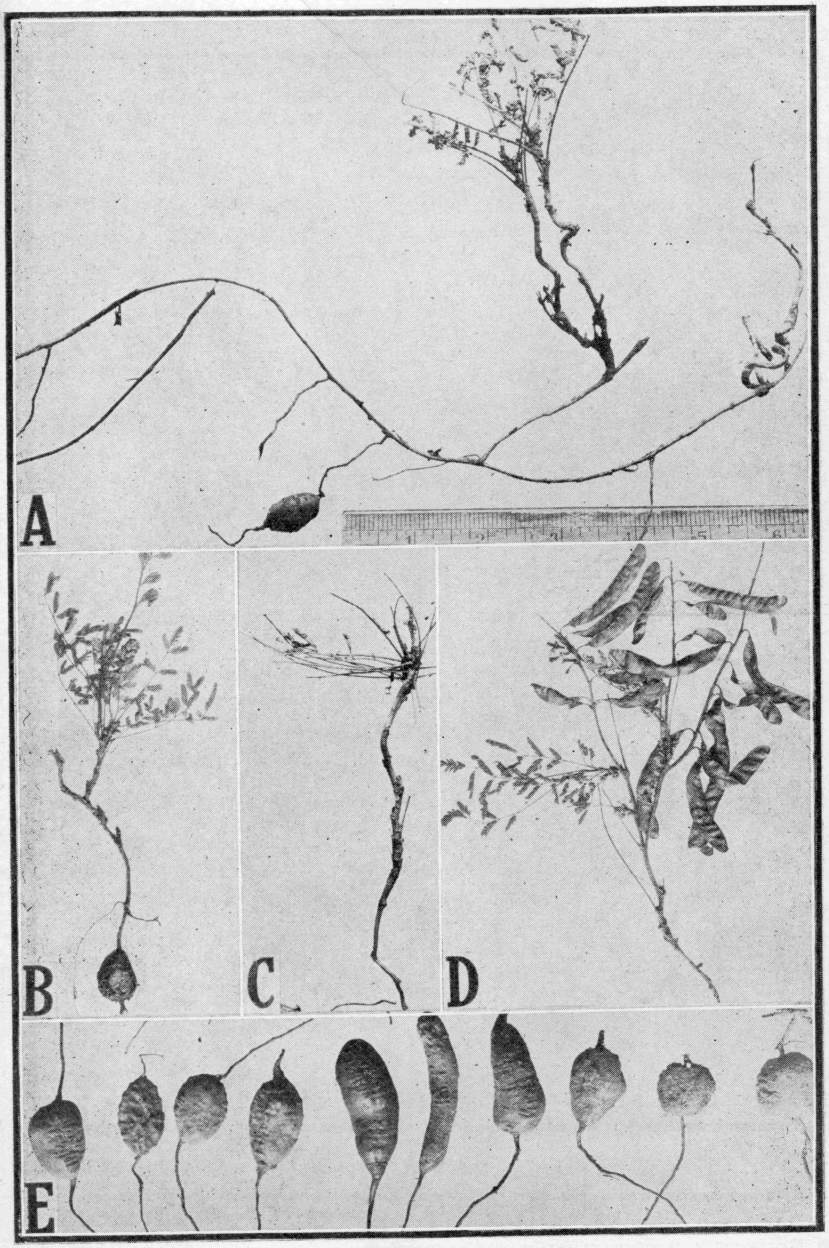

Fig. 4—Hog Potato (*Hoffmanseggia densiflora*). A. Growth habit. B and E. Tuberous enlargements of roots. C. Diseased plant. D. Portion of plant bearing pods.

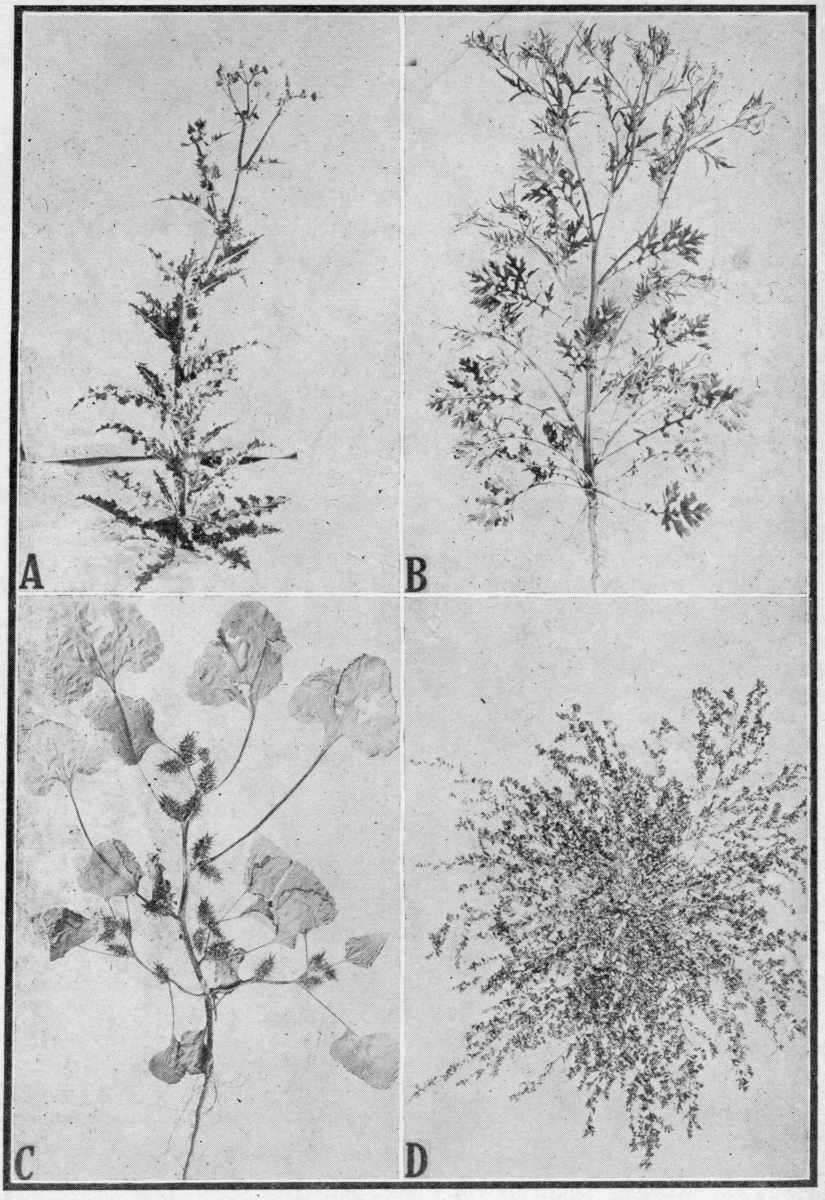

Fig. 5—Annual weeds subject to root rot. A. Spiny Sow-thistle (*Sonchus asper*). B. Ragweed Parthenium (*Parthenium hysterophorus*). C. Common Cocklebur (*Xanthium italicum*). D. Hairy Spurge (*Chamaesyce malaca*).

tacked but are only slowly destroyed by the fungus. When such species are found in affected areas, root rot can be controlled only by their elimination. The underground food storage of these perennials is sufficient for extended formation of buds and new shoots even though development aboveground is prevented by frequent cutting. The dry, hot season, after early maturing grain crops, is found to be the most opportune period for the elimination of these hosts by cultivation.

Many annual weeds and other non-cultivated plants are also attacked, but some may serve only as additional hosts or food plants for the fungus during a portion of the year. There are many susceptible plants that develop as winter annuals during the cooler season when root rot is less active. These may serve as over-wintering hosts to the disease. All non-cultivated plants persisting under cultivation should be considered potential root-rot carriers, and measures taken to keep them in check.

Resistance is present in some of the non-cultivated species. Members of the Geranium (*Geraniaceae*), Verbena (*Verbenaceae*), Garlic (*Alliaceae*), Krameria (*Krameriaceae*), Buttercup (*Ranunculaceae*), and Mint (*Lamiaceae*) families show this trait, which appears to be a general character with them. In certain families both susceptible and resistant species are found, indicating that they do not have this character of resistance in common. A study of these cases may throw light on immunity in more important groups. Resistance in non-cultivated species is interesting, and may prove of value in the study of resistance in cultivated plants.

ROOT ROT ON NEWLY CLEARED LAND

A small number of newly cleared areas (see Table 1) have been studied closely to determine the origin of root rot in the first cultivated crop grown there. Excavations in each case disclosed a connec-

Table 1.—Relation of Root Rot in Cotton on Newly Cleared Land to Previous Native Vegetation

Place and date of examination	Number of excavations per field	Per cent root rot in cotton	Character of previous virgin growth	Native plants whose roots were still alive in the soil and carrying infection
San Antonio, Texas, July, 1925	18	4	Mesquite thicket	Prosopis sp., Acleisanthes sp., Convolvulus sp., *Croton* sp.
Laredo, Texas, June, 1926	10	12	Brush land	Acleisanthes sp., Boerhaavia sp., Solanum sp., Hoffmanseggia sp.
Brownsville, Texas, June, 1926	5	6	Mesquite and brush land	Prosopis sp., Hoffmanseggia sp.
San Angelo, Texas, July, 1928	4	10	Mesquite and brush land	Prosopis sp., Boerhaavia sp.

tion between the mycelium of root rot on the roots of native plants, which had remained alive in the soil, and the mycelium on the diseased cotton roots. The immediate appearance of root rot when these areas were put into cultivation, and the connection observed between root rot on cotton and on diseased roots of native vegetation, strongly indicate the existence of root rot in non-cultivated lands on the many widely scattered native susceptible species. Limited studies have shown the occurrence of root rot in fence-rows, neglected areas, and grassland where susceptible weeds harbor the parasite. These cases strongly support the belief in the indigenous occurrence of root rot on native vegetation in prairies, pastures, and so-called virgin lands, and help to explain why root rot often occurs on crops grown on newly cleared land.

SUMMARY

A statewide survey of species of plants subject to root rot has been carried on during a period of several years. Both cultivated and non-cultivated plants have been examined for symptoms. Final diagnosis has been based on the presence of the parasite on the root systems. The plants designated as resistant have either been specially tested and found resistant or have remained healthy in locations where root rot was destructive.

Among the cultivated plants there are many showing high susceptibility. These include many of the important field crops, tree and bush fruits, ornamental trees, shrubs, and vegetables. Two hundred and seventy-four cultivated species are listed as susceptible. The list includes cotton, legumes, apples, pears, peaches, figs, elms, locusts, cottonwoods, poplars, spruces, pines, roses, spireas, privets, carrots, beets, turnips, sweet potatoes, beans, grapes, and blackberries. Marked resistance is shown by members of the melon, onion, lily, mint, asparagus, and grass families.

Of non-cultivated plants, the susceptible species number two hundred and forty-four, while sixty-six others are listed as resistant. Weeds such as the Common Tievine, Soft Groundcherry, and Solanum species are susceptible and, because of their perennial nature, are important carriers of root rot. Distinct resistance is exhibited by representatives of the geranium, verbena, buttercup, and mint families.

Native vegetation, in the limited number of cases studied, has carried root rot and apparently has been the source of the disease in the first crop grown after the breaking of the land. Susceptible species in fence-rows, waste places, and meadows were found to be infected, indicating that the fungus may be carried over from year to year on weeds in these locations.

The total number of susceptible species is very large. Five hundred and twenty-seven are named in Tables 2 and 3. This large range of host plants makes the disease extremely important. Moreover, when the value of the economic species attacked is considered, it is evident

that root rot should be considered one of the most serious plant diseases known to science.

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Table 2.—Relative Susceptibility of Cultivated Plants to Root Rot

Common Name	Species or Botanical Name	Family	Relative Susceptibility**
Abelia, Chinese	*Abelia chinensis*, R. Br.	*Caprifoliaceae*	+
Abelia, Glossy	*A. grandiflora* Rehd.	"	+
Abelia, Mexican	*A. floribunda* Decne.	"	+
Abutilon, Brazilian	*Abutilon megapotamicum* St. Hil. & Naud.	*Malvaceae*	+
Abutilon, Painted	*A. pictum* Walp.	"	+
Acacia, Bald	*Acacia neriifolia* Cunn.	*Mimosaceae*	+
Acanthus, Soft	*Acanthus mollis* L.	*Acanthaceae*	+
Alder, American Green	*Alnus mitchelliana* M. A. Curtis	*Betulaceae*	+
Alder, European	*A. glutinosa* Gaertn.	"	+
Alder, Hazel	*A. rugosa* (Du Roi) Spreng.	"	+
Alder, Mountain	*A. tenuifolia* Nutt.	"	+
Alfalfa	*Medicago sativa* L.	*Fabaceae*	++
Alyssum, Sweet	*Alyssum maritimum* Lam.	*Brassicaceae*	—
Amaranth, Common Globe	*Gomphrena globosa* L.	*Amaranthaceae*	—
Amaranth, Tassel	*Amaranthus paniculatus* L.	"	—
Ampelopsis, Heartleaf	*Ampelopsis cordata* Michx.	*Vitaceae*	+
Anise	*Pimpinella anisum* L.	*Ammiaceae*	—
Apple	*Malus malus* (L.) Britton	*Malaceae*	++
Arborvitae, Giant	*Thuja plicata* D. Don	*Juniperaceae*	+
Arborvitae, Oriental	*T. orientalis* L.	"	+
Artichoke	*Cynara scolymus* L.	*Carduaceae*	+
Ash, Black	*Fraxinus nigra* Marsh	*Oleaceae*	+
Ash, Green	*F. lanceolata* Borck.	"	+
Ash, White	*F. americana* L.	"	+
Ashplant	*Leucophyllum texanum* Benth.	*Rhinanthaceae*	+
Asparagus, Garden	*Asparagus officinalis* L.	*Convallariaceae*	—
Babysbreath	*Gypsophila paniculata* L.	*Caryophyllaceae*	—
Balloonvine	*Cardiospermum halicacabum* L.	*Sapindaceae*	+
Balsam, Garden	*Impatiens balsamina* L.	*Balsaminaceae*	+
Bamboo, Carpet	*Bambusa pygmaea* Miq.	*Poaceae*	—
Bamboo, Feather	*B. vulgaris* Schrad.	"	—
Bamboo, Reed	*B. arundinacea* Willd.	"	—
Barberry, Himalayan	*Berberis asiatica* Roxb.	*Podophyllaceae*	+
Barberry, Japanese	*B. thunbergii* DC.	"	+
Barley	*Hordeum vulgare* L.	*Poaceae*	—
Basil, Sweet	*Ocimum basilicum* L.	*Lamiaceae*	—
Basketflower	*Centaurea americana* Nutt.	*Carduaceae*	+
Bean, Common	*Phaseolus vulgaris* L.	*Fabaceae*	++
Bean, Hyacinth	*Dolichos lablab* L.	"	+
Bean, Jack	*Canavalia ensiformis* (L.) DC.	"	+
Bean, Japanese Sword	*C. gladiata* DC.	"	+
Bean, Moth	*Phaseolus aconitifolius* Jacq.	"	+
Bean, Mung	*P. aureus* Roxb.	"	+
Bean, Rice	*P. calcaratus* Roxb.	"	+
Bean, Tepary	*P. acutifolius* A. Gray, var. *latifolius* Freem.	"	+
Beautyberry, American	*Callicarpa americana* L.	*Verbenaceae*	—
Beebalm, Spotted	*Monarda punctata* L.	*Lamiaceae*	—
Beech, American	*Fagus americana* Sweet.	*Fagaceae*	+
Beet, Common	*Beta vulgaris* L.	*Chenopodiaceae*	++
Beet, Sugar	*B. vulgaris* L.	"	++
Birch, European White	*Betula alba* L.	*Betulaceae*	+
Birch, Gray	*B. populifolia* Marsh.	"	+
Bishopscap, Common	*Mitella diphylla* L.	*Saxifragaceae*	—
Blackberry, Highbush	*Rubus argutus* Link	*Rosaceae*	+
Black-eyed-susan	*Rudbeckia hirta* L.	*Carduaceae*	+
Blazingstar, Scaly	*Laciniaria squarrosa* (L.) Hill.	"	+
Bluebells, Virginia	*Mertensia virginica* DC.	*Boraginaceae*	+
Bluelips	*Collinsia grandiflora* Lindl.	*Rhinanthaceae*	—
Boxelder	*Rulac negundo* (L.) A. S. Hitchc.	*Aceraceae*	+
Breath-of-heaven	*Diosma ericoides* L.	*Rutaceae*	—
Bridalwreath	*Spiraea prunifolia* Sieb. & Zucc.	*Rosaceae*	+
Broom, Bridal-veil	*Genista monosperma* Lam.	*Fabaceae*	+
Brussels-sprouts	*Brassica oleracea* L., var. *gemmifera* Zenker	*Brassicaceae*	+

**Double plus (++) sign highly susceptible, single plus (+) moderate to slight susceptibility; minus (—) immune or resistant.

Table 2.—Relative Susceptibility of Cultivated Plants to Root Rot—Continued

Common Name	Species or Botanical Name	Family	Relative Susceptibility
Buckeye, Texas	*Aesculus arguta* Buckl.	*Aesculaceae*	+
Burningbush, Evergreen	*Euonymus japonicus* L. f.	*Celastraceae*	+
Bushclover, Japan	*Lespedeza striata* Hook. & Arn.	*Fabaceae*	+
Butterflybush, White	*Buddleia asiatica* Lour.	*Spigeliaceae*	+
Butterfly-pea	*Clitoria ternata* L.	*Fabaceae*	+
Butterfly-pea, Plumier	*Bradburya plumieri* (Turp.) Kuntze	"	+
Butterflyweed	*Asclepias tuberosa* L.	*Asclepiadaceae*	+
Cabbage	*Brassica oleracea* L., var. *capitata* L.	*Brassicaceae*	+
Caladium, Spotted	*Colocasia neoguineensis* Lindl.	*Araceae*	+
Calceolaria, Feather	*Calceolaria pinnata* L.	*Violaceae*	—
Calendula	*Calendula officinalis* L.	*Carduaceae*	+
Calicoflower	*Aristolochia elegans* Mast.	*Asaraceae*	+
California-poppy, Common	*Eschscholtzia californica* Cham.	*Papaveraceae*	—
Calla, Common	*Zantedeschia aethiopica* Spreng.	*Araceae*	—
Calliopsis	*Coreopsis tinctoria* Nutt.	*Carduaceae*	+
Camphor-tree	*Cinnamomum camphora* Nees & Eberm.	*Lauraceae*	+
Canaigre	*Rumex hymenosepalus* Torr.	*Polygonaceae*	—
Candytuft, Common White	*Iberis amara* L.	*Brassicaceae*	—
Candytuft, Sweet	*I. odorata* L.	"	—
Canna	*Canna indica* L.	*Cannaceae*	—
Canna, Edible	*C. edulis* Ker.	"	—
Canterbury-bells	*Campanula medium* L.	*Campanulaceae*	+
Cape-jasmine, Veitch	*Gardenia veitchii* Hort.	*Rubiaceae*	+
Cardinalflower	*Lobelia cardinalis* L.	*Lobeliaceae*	+
Carnation	*Dianthus caryophyllus* L.	*Caryophyllaceae*	—
Carrot, Common	*Daucus carota* L.	*Ammiaceae*	++
Castor-bean	*Ricinus communis* L.	*Euphorbiaceae*	++
Catalpa, Western	*Catalpa speciosa* Warder	*Bignoniaceae*	+
Catnip	*Nepeta cataria* L.	*Lamiaceae*	—
Cauliflower	*Brassica oleracea* L., var. *botrytis* L.	*Brassicaceae*	+
Centuryplant	*Agave americana* L.	*Leucojaceae*	—
Chard, Swiss	*Beta vulgaris* L., var. *cicla* L.	*Chenopodiaceae*	++
Chaste-tree, Lilac	*Vitex angus-castus* L.	*Verbenaceae*	+
Cherry-laurel, English	*Laurocerasus officinalis* Roem.	*Amygdalaceae*	+
Cherry, Nanking	*Prunus tomentosa* Thunb.	"	+
Chestnut, American	*Castanea dentata* (Marsh.) Borkh.	*Fagaceae*	+
Chinaberry	*Melia azedarach* L.	*Meliaceae*	++
Chokecherry, Common	*Prunus virginiana* L.	*Amygdalaceae*	+
Chrysanthemum, Mulberry.	*Chrysanthemum morifolium* Ram.	*Carduaceae*	+
Cinquefoil, Alpine	*Potentilla grandiflora* L.	*Rosaceae*	—
Citron	*Citrus medica* L.	*Rutaceae*	—
Clover, Alsike	*Trifolium hybridum* L.	*Fabaceae*	+
Clover, Mammoth	*T. medium* L.	"	+
Clover, Red	*T. pratense* L.	"	+
Clover, White	*T. repens* L.	"	+
Cockscomb, Common	*Celosia cristata* L.	*Amaranthaceae*	—
Coleus, Common	*Coleus blumei* Benth.	*Lamiaceae*	—
Columbine, American	*Aquilegia canadensis* L.	*Ranunculaceae*	—
Coneflower, Prairie	*Ratibida columnaris* (Sims) D. Don	*Carduaceae*	+
Copperleaf, Chenille	*Acalypha hispida* Burm. f.	*Euphorbiaceae*	+
Copperleaf, Painted	*A. wilkesiana* Muell. Arg.	"	+
Corn (Cult. var.)	*Zea mays* L.	*Poaceae*	—
Cornflower	*Centaurea cyanus* L.	*Carduaceae*	+
Cornsalad	*Valerianella olitoria* Poll.	*Valerianaceae*	—
Cosmos, Yellow	*Cosmos sulphureus* Cav.	*Carduaceae*	+
Cotton, Peruvian	*Gossypium peruvianum* Cav.	*Malvaceae*	++
Cotton, Sea-island	*G. barbadense* L.	"	++
Cotton, Upland	*G. hirsutum* L.	"	++
Cottonwood, Narrowleaf	*Populus angustifolia* James	*Salicaceae*	++
Cottonwood, Southern	*P. deltoides* Marsh.	"	+
Cowpea, Common	*Vigna sinensis* Endl.	*Fabaceae*	++
Cranberry	*Oxycoccus macrocarpus* (Ait.) Pursh	*Vacciniaceae*	—

Table 2.—Relative Susceptibility of Cultivated Plants to Root Rot—Continued

Common Name	Species or Botanical Name	Family	Relative Susceptibility
Cranberry, Small	*Oxycoccus oxycoccus* MacM	*Vacciniaceae*	—
Crapemyrtle, Common	*Lagerstroemia indica* L.	*Lythraceae*	+
Creeper, Virginia	*Ampelopsis quinquefolia* Michx.	*Vitaceae*	++
Creeper, Wall	*A. quinquefolia* Michx., var. *murorum* Rehd.	"	+
Cucumber	*Cucumis sativus* L.	*Cucurbitaceae*	—
Cupids-dart, Blue	*Catananche caerulea* L.	*Cichoriaceae*	+
Currant, American Black	*Ribes americanum* Mill.	*Grossulariaceae*	—
Currant, Common Red	*R. vulgare* Lam.	"	—
Cyclamen, Persian	*Cyclamen persicum* Mill.	*Primulaceae*	—
Cypress, Smooth	*Cupressus glabra* Sudw.	*Juniperaceae*	+
Cypressvine	*Quamoclit quamoclit* (L.) Britton	*Convolvulaceae*	+
Daffodil, Petticoat	*Narcissus bulbocodium* L.	*Leucojaceae*	—
Dahlia, Old Garden	*Dahlia rosea* Cav.	*Carduaceae*	+
Dahlia, Tree	*D. excelsa* Benth.	"	+
Dahoon	*Ilex cassine* L.	*Aquifoliaceae*	—
Daisy, Shasta	*Chrysanthemum maximum* Ram.	*Carduaceae*	+
Deutzia, Fuzzy	*Deutzia scabra* Thunb.	*Hydrangeaceae*	—
Dewberry, Northern	*Rubus procumbens* Muhl.	*Rosaceae*	+
Dill	*Anethum graveolens* L.	*Ammiaceae*	—
Dogwood, Flowering	*Cynoxylon floridum* (L.) Raf.	*Nyssaceae*	+
Eggplant, Common	*Solanum melongena* L.	*Solanaceae*	+
Elder, American	*Sambucus canadensis* L.	*Caprifoliaceae*	+
Elm, American	*Ulmus americana* L.	*Ulmaceae*	+
Elm, Chinese	*U. parvifolia* Jacq.	"	++
Elm, Rock	*U. racemosa* Thomas	"	+
Fennel, Common	*Foeniculum vulgare* Hill	*Ammiaceae*	—
Fern, Common Staghorn	*Platycerium bifurcatum* C. Chr.	*Polypodiaceae*	—
Fig, Common	*Ficus carica* L.	*Artocarpaceae*	++
Fir, Balsam	*Abies balsamea* (L.) Mill.	*Pinaceae*	+
Fir, Cascade	*A. amabilis* Forb.	"	+
Fir, Great Silver	*A. grandis* Lindl.	"	+
Fir, Silver	*A. pectinata* DC.	"	+
Flax	*Linum usitatissimum* L.	*Linaceae*	+
Flax, Golden	*L. flavum* L.	"	+
Forget-me-not, True	*Myosotis scorpioides* L.	*Boraginaceae*	+
Four-o'clock, Common	*Mirabilis jalapa* L.	*Allioniaceae*	+
Foxglove, Common	*Digitalis purpurea* L.	*Rhinanthaceae*	—
Freesia	*Freesia refracta* Klatt	*Ixiaceae*	—
Gaillardia, Maroon	*Gaillardia amblyodon* Gay	*Carduaceae*	+
Gayfeather, Pinkscale	*Laciniaria elegans* (Walt.) Kuntze	"	+
Gherkin, West Indian	*Cucumis anguria* L.	*Cucurbitaceae*	—
Goldentuft	*Alyssum saxatile* L.	*Brassicaceae*	—
Goldenwave	*Coreopsis drummondii* (D. Don) T. & G.	*Carduaceae*	+
Gooseberry, English	*Grossularia reclinata* (L.) Mill.	*Grossulariaceae*	+
Grape, Bourquin	*Vitis aestivalis* Michx., var. *bourquiniana* Bailey	*Vitaceae*	+
Grape, European	*V. vinifera* L.	"	+
Grape, Mustang	*V. candicans* Engelm.	"	—
Grasses*	Various species*	*Poaceae*	—
Guar	*Cyamopsis tetragonoloba* (L.) Taub.	*Fabaceae*	+
Gypsophila, Common	*Gypsophila elegans* Bieb.	*Caryophyllaceae*	—
Hackberry	*Celtis occidentalis* L.	*Ulmaceae*	—
Hazelnut, American	*Corylus americana* Walt.	*Corylaceae*	+
Heliotrope, Common	*Heliotropium peruvianum* L.	*Heliotropiaceae*	+
Hemp, Common	*Cannabis sativa* L.	*Cannabinaceae*	+
Hickory, Shellbark	*Hicoria laciniosa* (Michx.) Sarg.	*Juglandaceae*	+
Hoarhound, Common	*Marrubium vulgare* L.	*Lamiaceae*	—
Holly, American	*Ilex opaca* Ait.	*Aquifoliaceae*	+
Hollyhock	*Althaea rosea* Cav.	*Malvaceae*	++
Hollyhock, Figleaf	*A. ficifolia* Cav.	"	++
Honeylocust, Common	*Gleditsia triacanthos* L.	*Cassiaceae*	++
Horsechestnut	*Aesculus hippocastanum* L.	*Aesculaceae*	+
Horseradish	*Radicula armoracia* Rob.	*Brassicaceae*	+

*Including a large number of cultivated species, such as Bermuda Grass, Sudan Grass, etc. in addition to the species listed.

Table 2.—Relative Susceptibility of Cultivated Plants to Root Rot—Continued

Common Name	Species or Botanical Name	Family	Relative Susceptibility
Hyacinth, Common	*Hyacinthus orientalis* L.	*Liliaceae*	—
Indigo	*Indigofera suffruticosa* Mill.	*Fabaceae*	+
Iris, Blueflag	*Iris versicolor* L.	*Ixiaceae*	—
Jerusalem-artichoke	*Helianthus tuberosus* L.	*Carduaceae*	+
Joe-pye-weed	*Eupatorium purpureum* L.	"	+
Joint-vetch	*Aeschynomene americana* L.	*Fabaceae*	+
Jonquil	*Narcissus jonquilla* L.	*Leucojaceae*	—
Josephs-coat	*Amaranthus tricolor* L.	*Amaranthaceae*	—
Jujube, Common	*Zizyphus jujuba* Mill.	*Rhamnaceae*	+
Ka'e	*Brassica oleracea* L., var. *acephala* DC.	*Brassicaceae*	+
Kohlrabi	*B. oleracea* L., var. *caulo-rapa* Pasq.	"	+
Lantana, Common	*Lantana camara* L.	*Verbenaceae*	+
Leek	*Allium porrum* L.	*Alliaceae*	—
Lettuce, Garden	*Lactuca sativa* L.	*Cichoriaceae*	+
Lilac, Common	*Syringa vulgaris* L.	*Oleaceae*	++
Lily, Easter	*Lilium longiflorum* Thunb.	*Liliaceae*	—
Linden, American	*Tilia americana* L.	*Tiliaceae*	+
Linden, Common	*T. vulgaris* Hayne	"	+
Lobelia, Large Blue	*Lobelia syphilitica* L.	*Lobeliaceae*	+
Locust, Common	*Robinia pseudoacacia* L.	*Fabaceae*	+
Love-in-a-mist	*Nigella damascena* L.	*Ranunculaceae*	—
Love-lies-bleeding	*Amaranthus caudatus* L.	*Amaranthaceae*	—
Maderia-vine	*Boussingaultia baselloides* HBK.	*Basellaceae*	+
Magnolia, Southern	*Magnolia grandiflora* L.	*Magnoliaceae*	—
Maidenhair, American	*Adiantum pedatum* L.	*Polypodiaceae*	—
Maidenhair-tree	*Ginkgo biloba* L.	*Ginkgoaceae*	++
Maple, Black	*Acer nigrum* Michx.	*Aceraceae*	+
Maple, Dwarf Red	*A. rubrum* L., var. *globosum* Rehd.	"	+
Maple, Mountain	*A. spicatum* Lam.	"	+
Maple, Norway	*A. platanoides* L.	"	+
Maple, Red	*A. rubrum* L.	"	+
Maple, Silver	*A. saccharinum* L.	"	++
Maple, Sugar	*A. saccharum* Marsh.	"	+
Maple, Sycamore	*A. pseudoplatanus* L.	"	+
Marshmarigold	*Caltha palustris* L.	*Ranunculaceae*	—
Mignonette, Common	*Reseda odorata* L.	*Resedaceae*	—
Millet	*Chaetochloa italica* (L.) Scribn.	*Poaceae*	—
Mint, Apple	*Mentha rotundifolia* (L.) Huds.	*Lamiaceae*	—
Mint, Bergamot	*M. citrata* Ehrh.	"	—
Monkeyflower, Golden	*Mimulus luteus* L.	*Rhinanthaceae*	—
Monkshood-vine	*Ampelopsis aconitifolia* Bunge	*Vitaceae*	+
Moonflower	*Calonyction aculeatum* (L.) House	*Convolvulaceae*	+
Morning-glory, Bush	*Ipomoea leptophylla* Torr.	"	+
Morning-glory, Ivyleaf	*Pharbitis hederacea* (L.) Choisy	"	+
Mountain-ash, American	*Sorbus americana* Marsh.	*Malaceae*	+
Mountain-laurel	*Kalmia latifolia* L.	*Ericaceae*	+
Mulberry, Black	*Morus nigra* L.	*Artocarpaceae*	++
Mulberry, Paper	*Broussonetia papyrifera* (L.) Vent.	"	+
Mulberry, Red	*Morus rubra* L.	"	++
Mulberry, Russian	*M. alba* L., var. *tatarica* Loudon	"	++
Mulberry, White	*M. alba* L.	"	++
Muskmelon	*Cucumis melo* L.	*Cucurbitaceae*	—
Mustard, Leaf	*Brassica juncea* Coss.	*Brassicaceae*	+
Mustard, Potherb	*B. japonica* Hort.	"	—
Nasturtium, Bush	*Tropaeolum minus* L.	*Tropaeolaceae*	—
Nasturtium, Common	*T. majus* L.	"	—
Norfolk-island-pine	*Araucaria excelsa* R. Br.	*Pinaceae*	+
Oak, Black	*Quercus velutina* Lam.	*Fagaceae*	+
Oak, Common Red	*Q. rubra* L.	"	+
Oak, Live	*Q. virginiana* Mill.	"	—
Oak, Mossycup	*Q. macrocarpa* Michx.	"	+
Oak, Pin	*Q. palustris* L.	"	+
Oak, Post	*Q. minor* (Marsh.) Sarg.	"	+
Oak, Scrub	*Q. nana* (Marsh.) Sarg.	"	+
Oak, Water	*Q. nigra* L.	"	—
Oak, White	*Q. alba* L.	"	+

Table 2.—Relative Susceptibility of Cultivated Plants to Root Rot—Continued

Common Name	Species or Botanical Name	Family	Relative Susceptibility
Oats	*Avena sativa* L.	*Poaceae*	—
Okra	*Hibiscus esculentus* L.	*Malvaceae*	++
Oleander, Common	*Nerium oleander* L.	*Apocynaceae*	+
Olive, Common	*Olea europaea* L.	*Oleaceae*	+
Onion	*Allium cepa* L.	*Alliaceae*	—
Orange, Hardy	*Citrus trifoliata* L.	*Rutaceae*	+
Osage-orange	*Toxylon pomiferum Raf.*	*Artocarpaceae*	—
Oxalis, Bowie	*Oxalis bowiei* Herb.	*Oxalidaceae*	—
Paintbrush, Indian	*Castilleja coccinea* (L.) Spreng.	*Rhinanthaceae*	—
Palm, California Washington	*Washingtonia filifera* Wendl.	*Arecaceae*	—
Palm, Ceylon Date	*Phoenix pusilla* Gaertn.	"	—
Palm, Date	*P. dactylifera* L.	"	—
Pampasgrass, Common	*Cortaderia argentea* Stapf.	*Poaceae*	—
Pansy, Common	*Viola tricolor* L.	*Violaceae*	—
Parasoltree, Chinese	*Sterculia platanifolia* L.	*Sterculiaceae*	+
Parsley	*Petroselinum hortense* Hoffm.	*Ammiaceae*	+
Parsnip	*Pastinaca sativa* L.	"	++
Passionflower, Bluecrown	*Passiflora caerulea* L.	*Passifloraceae*	+
Passionflower, Crinkled	*P. gracilis* Jacq.	"	+
Pea, Common	*Pisum sativum* L.	*Fabaceae*	+
Pea, Pigeon	*Cajanus cajan* (L.) Millsp.	"	+
Pea, Sweet	*Lathyrus odoratus* L.	"	+
Peach	*Amygdalus persica* L.	*Amygdalaceae*	+
Peanut	*Arachis hypogaea* L.	*Fabaceae*	+
Pear, Common	*Pyrus communis* L.	*Malaceae*	+
Pecan	*Hicoria pecan* (Marsh.) Britton	*Juglandaceae*	+
Peony, Common	*Paeonia officinalis* L.	*Ranunculaceae*	+
Peppervine	*Ampelopsis arborea* Koehne	*Vitaceae*	+
Periwinkle, Common	*Vinca minor* L.	*Apocynaceae*	+
Persimmon, Common	*Diospyros virginiana* L.	*Ebenaceae*	+
Persimmon, Kaki	*D. kaki* L. f.	"	++
Petunia, Common	*Petunia hybrida* Vilm.	*Solanaceae*	—
Phlox, Drummond	*Phlox drummondii* Hook.	*Polemoniaceae*	—
Photinia, Low	*Photinia serrulata* Lindl.	*Rosaceae*	+
Pine, Chinese	*Pinus sinensis* Mayr.	*Pinaceae*	+
Pine, Loblolly	*P. taeda* L.	"	+
Pink, Chinese	*Dianthus chinensis* L.	*Caryophyllaceae*	—
Pistache, Chinese	*Pistachia chinensis* Bunge	*Spondiaceae*	++
Pitcherplant, California	*Darlingtonia californica* Torr.	*Sarraceniaceae*	—
Pitcherplant, Common	*Sarracenia purpurea* L.	"	—
Planetree, American	*Platanus occidentalis* L.	*Platanaceae*	+
Poinsettia	*Poinsettia pulcherrima* Graham.	*Euphorbiaceae*	++
Pomegranate, Common	*Punica granatum* L.	*Punicaceae*	—
Poplar, Balsam	*Populus balsamifera* L.	*Salicaceae*	+
Poplar, Carolina	*P. eugenei* Simon-Louis	"	++
Poplar, Lombardy	*P. nigra* L., var. *italica* Du Roi.	"	++
Poppy, Peacock	*Papaver pavoninum* May.	*Papaveraceae*	—
Portulaca, Common	*Portulaca grandiflora* Hook.	*Portulacaceae*	—
Potato (Irish)	*Solanum tuberosum* L.	*Solanaceae*	+
Prairiegentian	*Eustoma russellianum* (Hook.) Griseb.	*Gentianaceae*	+
Primrose, Chinese	*Primula sinensis* Lindl.	*Primulaceae*	—
Primrose, English	*P. acaulis* Hill.	"	—
Princesfeather	*Amaranthus hypochondriacus* L.	*Amaranthaceae*	—
Privet, Amur	*Ligustrum amurense* Carr.	*Oleaceae*	+
Privet, California	*L. ovalifolium* Hassk.	"	+
Privet, Glossy	*L. lucidum* Ait.	"	+
Privet, Japanese	*L. japonicum* Thunb.	"	+
Privet, Quihou	*L. quihoui* Carr.	"	+
Pumpkin	*Cucurbita pepo* L.	*Cucurbitaceae*	—
Quince, Common	*Cydonia oblonga* Mill.	*Malaceae*	++
Quince, Flowering	*C. japonica* Pers.	"	+
Radish	*Raphanus sativus* L.	*Brassicaceae*	+
Rape	*Brassica napus* L.	"	+
Raspberry, Common Red	*Rubus strigosus* Michx.	*Rosaceae*	+
Rattlebox, Hoary	*Crotalaria incana* L.	*Fabaceae*	+
Rattlebox	*C. retusa* L.	"	+
Rattlebox, Showy	*C. spectabilis* Roth	"	+
Redbud, American	*Cercis canadensis* L.	*Cassiaceae*	+
Redcedar	*Sabina virginiana* (L.) Ant.	*Juniperaceae*	—

Table 2.—Relative Susceptibility of Cultivated Plants to Root Rot—Continued

Common Name	Species or Botanical Name	Family	Relative Susceptibility
Redpepper, Common	*Capsicum annuum* L.	*Solanaceae*	+
Rhododendron, Catawba	*Rhododendron catawbiense* Michx.	*Ericaceae*	+
Rhubarb, Common	*Rheum rhaponticum* L.	*Polygonaceae*	++
Rice	*Oryza sativa* L.	*Poaceae*	—
River-hemp, Colorado	*Sesbania macrocarpa* Muhl.	*Fabaceae*	+
Rose	*Rosa spp**	*Rosaceae*	+
Roselle	*Hibiscus sabdariffa* L.	*Malvaceae*	++
Rosemallow, Common	*H. moscheutos* L.	"	+
Rouge-plant	*Rivina humilis* L.	*Petiveriaceae*	+
Rye	*Secale cereale* L.	*Poaceae*	—
Sacred-lily, Chinese	*Narcissus tazetta* L., var. *orientalis* Hort.	*Leucojaceae*	—
Sage, Azure	*Salvia azurea* Lam.	*Lamiaceae*	—
Sage, Garden	*S. officinalis* L.	"	—
Sage, Mealycup	*S. farinacea* Benth.	"	—
Savory, Summer	*Satureia hortensis* L.	"	—
Scarletbush	*Hamelia patens* Jacq.	*Rubiaceae*	—
Scholartree, Chinese	*Sophora japonica* L.	*Fabaceae*	++
Sensitiveplant	*Mimosa pudica* L.	*Mimosaceae*	+
Sesbania	*Sesbania cannabina* (Retz.) Poir.	*Fabaceae*	+
Shrub-althea	*Hibiscus syriacus* L.	*Malvaceae*	++
Sisal	*Agave sisalana* (Engelm.) Perrine	*Leucojaceae*	—
Snapdragon, Common	*Antirrhinum majus* L.	*Rhinanthaceae*	—
Snowdrop, Common	*Galanthus nivalis* L.	*Leucojaceae*	—
Snow-on-the-mountain	*Dichrophyllum marginatum* (Pursh) Kl. & Garcke	*Euphorbiaceae*	+
Sorghum (Cult. var.)	*Holcus sorghum* L.	*Poaceae*	—
Soybean	*Soja max* Piper	*Fabaceae*	++
Spearmint	*Mentha spicata* L.	*Lamiaceae*	—
Spinach, Common	*Spinacia oleracea* L.	*Chenopodiaceae*	++
Spirea, Vanhoutte	*Spiraea vanhouttei* Zabel	*Rosaceae*	+
Spruce, Norway	*Picea excelsa* Link	*Pinaceae*	+
Spruce, Red	*P. rubra* Link	"	+
Spruce, Tigertail	*P. polita* Carr.	"	+
Spurge, Cypress	*Tithymalus cyparissias* (L.) Hill	*Euphorbiaceae*	—
Spurge, Flowering	*Tithymalopsis corollata* (L.) Kl. & Garcke	"	—
Squash	*Cucurbita maxima* Duchesne	*Cucurbitaceae*	—
Squash, Summer Crookneck	*C. pepo* L., var. *condensa* Bailey	"	+
Stock, Common	*Matthiola incana* R. Br.	*Brassicaceae*	—
Strawberry (Cult. var.)	*Fragaria chiloensis* Duchesne	*Rosaceae*	—
Strawflower	*Helichrysum bracteatum* Andr.	*Carduaceae*	—
Sundrops, Rose	*Hartmannia rosea* (Ait.) G. Don	*Epilobiaceae*	+
Sunflower, Ashy	*Helianthus mollis* Lam.	*Carduaceae*	+
Sunflower, Common	*H. annuus* L.	"	+
Sunflower, Maximilian	*H. maximilianii* Schrad.	"	+
Sunflower, Silverleaf	*H. argophyllus* T. & G.	"	+
Sunflower, Swamp	*H. angustifolius* L.	"	+
Sweetclover, Annual Yellow	*Melilotus indica* All.	*Fabaceae*	++
Sweetclover, Biennial Yellow	*M. officinalis* Lam.	"	++
Sweetclover, Hubam	*M. alba* Desr., var. *annua* Coe.	"	++
Sweetclover, White	*M. alba* L.	"	++
Sweetgum	*Liquidambar styraciflua* L.	*Altingiaceae*	++
Sweetgum, Formosa	*L. formosana* Hance	"	++
Sweetpotato	*Ipomoea batatas* Lam.	*Convolvulacae*	++
Sweet-sultan	*Centaurea moschata* L.	*Carduaceae*	+
Sweet-william	*Dianthus barbatus* L.	*Caryophyllaceae*	—
Tallowtree, Chinese	*Sapium sebiferum* (L.) Roxb.	*Euphorbiaceae*	++
Tamarix, French	*Tamarix gallica* L.	*Tamaricaceae*	+
Thoroughwort, Sweet	*Eupatorium ageratifolium* DC.	*Carduaceae*	+
Tobacco, Common	*Nicotiana tabacum* L.	*Solanaceae*	+

*Numerous varieties grown in Texas.

Table 2.—Relative Susceptibility of Cultivated Plants to Root Rot—Continued

Common Name	Species or Botanical Name	Family	Relative Susceptibility
Tomato	*Lycopersicon lycopersicon* (L.) Karst.	*Solanaceae*	+
Tree, Tung-oil	*Aleurites fordii* Hemsl.	*Euphorbiaceae*	+
Tuberose	*Polianthes tuberosa L.*	*Leucojaceae*	—
Tuliptree	*Liriodendron tulipifera* L.	*Magnoliaceae*	+
Turnip	*Brassica rapa* L.	*Brassicaceae*	+
Valerian, Common	*Valeriana officinalis* L.	*Valerianaceae*	—
Vegetable-oyster	*Tragopogon porrifolius* L.	*Cichoriaceae*	++
Velvetbean, Deering	*Mucuna deeringianum* (Bort) Small	*Fabaceae*	+
Verbena, Dakota	*Verbena bipinnatifida* Nutt.	*Verbenaceae*	+
Verbena, Rose	*V. canadensis* (L.) Britton	"	—
Violet, Sweet	*Viola odorata* L.	*Violaceae*	—
Wallflower, Common	*Cheiranthus cheiri* L.	*Brassicaceae*	—
Walnut, Black	*Juglans nigra* L.	*Juglandaceae*	+
Walnut, Japanese	*J. sieboldiana* Maxim.	"	+
Wandering-jew	*Tradescantia fluminensis* Vell.	*Commelinaceae*	—
Watercress	*Roripa nasturtium* (L.) Rusby	*Brassicaceae*	—
Watermelon (All var.)	*Citrullus vulgaris* Schrad.	*Cucurbitaceae*	—
Waxmallow, Drummond	*Malvaviscus drummondii* T. & G	*Malvaceae*	+
Weigela, Pink	*Weigela rosea* Lindl.	*Caprifoliaceae*	+
Wheat (Cult. var.)	*Triticum aestivum* L.	*Poaceae*	—
Wild-sarsaparilla	*Aralia nudicaulis* L.	*Araliaceae*	+
Willow, Babylon Weeping	*Salix babylonica* L.	*Salicaceae*	+
Willow, Black	*S. nigra* L.	"	+
Witch-hazel, Common	*Hamamelis virginiana* L.	*Hamamelidaceae*	+
Woodsorrel, Common	*Oxalis acetosella* L.	*Oxalidaceae*	—
Woodsorrel, Violet	*Ionoxalis violacea* (L.) Small	"	—
Yam, Common	*Dioscorea sativa* L.	*Tamaceae*	+
Yaupon	*Ilex vomitoria* Ait.	*Aquifoliaceae*	—
Yucca, Common	*Yucca filamentosa* L.	*Dracaenaceae*	—
Zinnia, Common	*Zinnia elegans* Jacq.	*Carduaceae*	—

Table 3.—Relative Susceptibility of Non-cultivated Plants to Root Rot

Common Name	Species or Botanical Name	Family	Relative Susceptibility**
Abutilon, Berlandier	*Abutilon berlandieri* A. Gray	*Malvaceae*	+
Abutilon, Texas	*A. texense* T. & G.	"	+
Abutilon, Wright	*A. wrightii* A. Gray	"	+
Acanthochiton, Soft	*Acanthochiton wrightii* Torr.	*Amaranthaceae*	+
Alternanthera, Prostrate	*Alternanthera repens* (L.) Kuntze	"	+
Amaranth, Green	*Amaranthus retroflexus* L.	"	+
Amaranth, Prostrate	*A. blitoides* S. Wats.	"	+
Amaranth, Slender	*A. hybridus* L.	"	—
Amaranth, Spiny	*A. spinosus* L.	"	—
Anemone, Carolina	*Anemone caroliniana* Walt.	*Ranunculaceae*	—
Angelico	*Ligusticum canadense* (L.) Britton	*Ammiaceae*	+
Aster, Drummond	*Aster drummondii* Lindl.	*Carduaceae*	+
Aster, Grass-leaved	*A. poaceus* Burgess	"	+
Aster, Hairy	*A. hirtellus* Lindl.	"	+
Aster, Purple	*A. purpuratus* Nees	"	+
Aster, Slender	*A. exilis* Ell.	"	+
Aster, Spiny	*A. spinosus* Benth.	"	+
Aster, Tansy	*Machaeranthera tanacetifolia* (HBK.) Nees	"	+
Aster, Western Silvery†	*Aster sericeus* Vent.	"	+
Atriplex, Bushy	*Atriplex canescens* (Pursh) James	*Chenopodiaceae*	+
Atriplex, Common	*A. oppositifolia* S. Wats.	"	+
Bahia, Absinthium-leaved	*Bahia absinthifolia* Benth.	*Carduaceae*	+
Balloonvine, Small-fruited	*Cardiospermum microcarpum* HKB.	*Sapindaceae*	+
Balloonvine, Woolly	*C. corindum* L.	"	+
Berlandiera, Lyre-leaved	*Berlandiera lyrata* Benth.	*Carduaceae*	+
Berlandiera, Texas	*B. texana* DC.	"	+
Bindweed, Gray	*Convolvulus hermannioides* A. Gray	*Convolvulaceae*	+
Bindweed, Hedge	*C. repens* L.	"	+
Bindweed, Hoary	*C. incanus* Vahl	"	+
Bitterweed	*Helenium tenuifolium* Nutt.	*Carduaceae*	+
Bladderpod, Many-flowered	*Lesquerella polyantha* Schlecht.	*Brassicaceae*	—
Bladderpod, Slender	*L. gracilis* (Hook.) S. Wats.	"	—
Blazingstar, Slender	*Laciniaria acidola* (Engelm. & Gray) Kuntze	*Carduaceae*	+
Boerhaavia, Hairy	*Boerhaavia hirsuta* L.	*Allioniaceae*	+
Boerhaavia, Linear-leaved	*B. linearifolia* A. Gray	"	+
Boerhaavia, Prostrate	*B. decumbens* Vahl	"	+
Boerhaavia, Upright	*B. erecta* L.	"	+
Boltonia, Panicled	*Boltonia diffusa* Ell.	*Carduaceae*	+
Breweria, Pickering	*Breweria pickeringii* (M. A. Curtis) A. Gray	*Convolvulaceae*	+
Broomweed	*Gutierrezia texana* (DC.) T. & G.	*Carduaceae*	+
Buffalo-bur	*Solanum rostratum* Dunal	*Solanaceae*	+
Buttercup, Wedge-leaved	*Ranunculus cuneiformis* Small	*Ranunculaceae*	—
Buttonweed	*Diodia teres* Walt.	*Rubiaceae*	+
Calthrop, Hairy	*Kallstroemia hirsutissima* Vail	*Zygophyllaceae*	—
Cardinal-feather	*Acalypha lindheimeri* Muell. Arg.	*Euphorbiaceae*	+
Carrot, Wild	*Daucus pusillus* Michx.	*Ammiaceae*	+
Chaetopappa	*Chaetopappa parryi* A. Gray	*Carduaceae*	+
Chenopodium, Whitish	*Chenopodium albescens* Small	*Chenopodiaceae*	+
Chervil	*Chaerophyllum teinturieri* Hook.	*Ammiaceae*	—
Chickweed, Common	*Alsine media* L.	*Alsinaceae*	—
Chickweed, Mouse-ear	*Cerastium vulgatum* L.	"	—
Cladothrix, Shrubby	*Cladothrix suffruticosa* (Torr.) S. Wats.	*Amaranthaceae*	+
Cladothrix, Woolly	*C. lanuginosa* Nutt.	"	+
Clotbur, Great	*Xanthium speciosum* Kearney	*Ambrosiaceae*	+
Clotbur, Spiny	*X. spinosum* L.	"	+
Clover, Burr†	*Medicago arabica* All.	*Fabaceae*	+
Cocklebur, Common	*Xanthium italicum* Moretti	*Ambrosiaceae*	+

**Double plus (++) sign highly susceptible, single plus (+) moderate to slight susceptibility, minus (—) immune or resistant.

†Those occasionally cultivated indicated by †.

Table 3.—Relative Susceptibility of Non-cultivated Plants to Root Rot—Continued

Common Name	Species or Botanical Name	Family	Relative Susceptibility
Coneflower, Large-flowered	*Rudbeckia grandiflora* C. C. Gmel.	*Carduaceae*	+
Coriander	*Bifora americana* (DC.) S. Wats.	*Ammiaceae*	+
Cowherb	*Vaccaria vaccaria* (L.) Britton	*Caryophyllaceae*	—
Cranesbill, Carolina	*Geranium carolinianum* L.	*Geraniaceae*	—
Cranesbill, Texas	*G. texanum* (Trel.) Heller	"	—
Croton, Capitate	*Croton capitatus* Michx.	*Euphorbiaceae*	+
Croton, Dwarf	*C. berlandieri* Torr.	"	+
Croton, Engelmann	*C. engelmannii* Ferguson	"	+
Croton, Lindheimer	*C. lindheimerianus* Scheele	"	+
Croton, Silvery	*C. argyranthemus* Michx.	"	+
Croton, Single-fruited	*C. monanthogynus* Michx.	"	+
Croton, Texas	*C. texensis* (Kl.) Muell. Arg.	"	+
Croton, White	*C. leucophyllus* Muell. Arg.	"	+
Daisy, Berlandier	*Berlandiera dealbata* (T. & G.) Small	*Carduaceae*	+
Daisy, Mountain	*Melampodium cinereum* DC.	"	+
Daisy, Western	*Bellis integrifolia* Michx.	"	+
Daisy-fleabane, Western	*Erigeron bellidiastrum* Nutt.	"	+
Datura, Sacred†	*Datura meteloides* DC.	*Solanaceae*	+
Daubentonia	*Daubentonia longifolia* (Cav.) DC.	*Fabaceae*	+
Ditaxis, Low	*Ditaxis humilis* (Engelm. & Gray) Pax	*Euphorbiaceae*	+
Dock, Berlandier	*Rumex berlandieri* Meisn.	*Polygonaceae*	—
Dock, Swamp	*R. verticillatus* L.	"	—
Dock, Yellow	*R. crispus* L.	"	+
Dragonroot	*Muricauda dracontium* (L.) Small	*Araceae*	—
Elder, Marsh	*Iva ciliata* Willd.	*Ambrosiaceae*	+
Encelia	*Encelia subaristata* A. Gray	*Carduaceae*	+
Eriogonum, Long-leaved	*Eriogonum longifolium* Nutt.	*Polygonaceae*	—
Eryngo, Hooker	*Eryngium hookeri* Walp.	*Ammiaceae*	+
Eryngo, Wright	*E. wrightii* A. Gray	"	+
Evolvulus, Silvery	*Evolvulus pilosus* Nutt.	*Convolvulaceae*	+
Evolvulus, Soft	*E. mollis* Small	"	+
Evolvulus, Tufted	*E. alsinoides* L.	"	+
Eysenhardtia	*Eysenhardtia amorphoides* HBK.	*Fabaceae*	+
False-dandelion, Leafy-stemmed	*Sitilias caroliniana* (Walt.) Raf.	*Cichoriaceae*	+
False-dandelion, Many-stemmed	*S. multicaulis* (DC.) Greene	"	+
False-dandelion, Rough	*S. grandiflora* (Nutt.) Greene	"	+
False-mallow, American	*Malvastrum americanum* (L.) Torr.	*Malvaceae*	+
False-mallow, Red	*M. coccineum* (Pursh) A. Gray	"	+
False-mallow, Slender-leaved	*M. leptophyllum* A. Gray	"	+
False-mallow, Spiked	*M. spicatum* (L.) A. Gray	"	+
Flax, Prairie	*Linum lewisii* Pursh	*Linaceae*	+
Flower-of-an-hour	*Hibiscus trionum* L.	*Malvaceae*	+
Four-o'clock, Trumpet	*Acleisanthes longiflora* A. Gray	*Allioniaceae*	+
Frog-fruit, Narrow-leaved	*Phyla lanceolata* (Michx.) Greene	*Verbenaceae*	—
Frog-fruit, Shrubby	*Lippia geminata* HBK	"	—
Frog-fruit, Wedge-leaved	*Phyla cuneifolia* (Torr.) Greene	"	—
Gaillardia	*Gaillardia chrysantha* Small	*Carduaceae*	+
Garlic, Meadow	*Allium canadense* L.	*Alliaceae*	—
Gaura, Scarlet	*Gaura coccinea* Pursh	*Epilobiaceae*	+
Gaura, Small-flowered	*G. parviflora* Dougl.	"	+
Gaura, Wavy-leaved	*G. sinuata* Nutt.	"	+
Gayoides	*Gayoides crispum* (L.) Small	*Malvaceae*	+
Gilia, Needle-leaved	*Gilia rigidula* Benth.	*Polemoniaceae*	+
Golden-aster, Berlandier	*Chrysopsis berlandieri* Greene	*Carduaceae*	+
Goldenrod, Downy	*Solidago petiolaris* Ait.	"	+
Goldenrod, Slender Showy	*S. rigidiuscula* (T. & G.) Porter	"	+
Goosefoot, Bosc	*Chenopodium boscianum* Moq.	*Chenopodiaceae*	+
Goosefoot, Narrow-leaved	*C. leptophyllum* (Moq.) Nutt.	"	+

Table 3.—Relative Susceptibility of Non-cultivated Plants to Root Rot—Continued

Common Name	Species or Botanical Name	Family	Relative Susceptibility
Grasses	Various species*	*Poaceae*	—
Groundcherry, Hoary	*Physalis viscosa* L.	*Solanaceae*	+
Groundcherry, Purple-flowered	*Quincula lobata* (Torr.) Raf.	"	+
Groundcherry, Soft	*Physalis mollis* Nutt.	"	+
Groundcherry, Texas	*P. texana* Rydb.	"	+
Groundsel, Balsam	*Senecio balsamitae* Muhl.	*Carduaceae*	+
Gum-plant, Narrow-leaved	*Grindelia lanceolata* Nutt.	"	+
Hawkweed, Long-bearded	*Hieracium longipilum* Torr.	*Cichoriaceae*	+
Heliotrope, Smooth	*Heliotropium glabriusculum* A. Gray	*Heliotropiaceae*	+
Hibiscus, Heartleaf	*Hibiscus cardiophyllus* A. Gray	*Malvaceae*	+
Horse-nettle	*Solanum carolinense* L.	*Solanaceae*	+
Horseweed	*Leptilon canadense* (L.) Britton	*Carduaceae*	+
Horseweed, Purple	*L. divaricatum* (Michx.) Raf.	"	+
Hymenopappus, Smooth White.	*Hymenoppapus corymbosus* T. & G.	"	+
Hymenopappus, Woolly White	*H. tenuifolius* Pursh	"	+
Ibervillea	*Ibervillea tenuisecta* (A. Gray) Small	*Cucurbitaceae*	—
Indigo-plant, Lindheimer	*Indigofera lindheimeriana* Scheele	*Fabaceae*	+
Indigo-plant, Western	*I. leptosepala* Nutt.	"	+
Ironweed, Tall	*Vernonia maxima* Small	*Carduaceae*	+
Isocoma, Drummond	*Isocoma drummondii* (T. & G.) Greene	"	+
Jimson-weed	*Datura stramonium* L.	*Solanaceae*	+
Jimson-weed, Purple†	*D. tatula* L.	"	+
Krameria	*Krameria secundiflora* DC.	*Krameriaceae*	—
Krameria, Hoary	*K. canescens* A. Gray	"	—
Krameria, Small-leaved	*K. parvifolia* Benth.	"	—
Lambs-quarters	*Chenopodium album* L.	*Chenopodiaceae*	+
Larkspur, Carolina	*Delphinium carolinianum* Walt.	*Ranunculaceae*	—
Larkspur, White	*D. albescens* Rydb.	"	—
Lettuce, Grass-leaved	*Lactuca graminifolia* Michx.	*Cichoriaceae*	+
Lettuce, Hairy	*L. hirsuta* Muhl.	"	+
Lettuce, Prickly	*L. virosa* L.	"	+
Lettuce, Western	*L. ludoviciana* (Nutt.) DC.	"	+
Lions-heart, Slender	*Physostegia intermedia* (Nutt.) A. Gray	*Lamiaceae*	—
Loosestrife, Narrow-leaved.	*Lythrum linearifolium* (A. Gray) Small	*Lythraceae*	+
Lygodesmia, Texas	*Lygodesmia texana* (T. & G.) Greene	*Cichoriaceae*	+
Malachra, Yellow	*Malachra capitata* L.	*Malvaceae*	+
Mallow, Bristly-fruited	*Modiola caroliniana* (L.) G. Don	"	+
Mallow, Common	*Malva rotundifolia* L.	"	+
Mallow, High	*M. sylvestris* L.	"	+
Mallow, Small-flowered	*M. parviflora* L.	"	+
Marilaunidium, Bristly	*Marilaunidium hispidum* (A. Gray) Kuntze	*Hydroleaceae*	—
Marshallia, Large-flowered.	*Marshallia grandiflora* Beadle & Boynton	*Carduaceae*	+
Marshallia, Narrow-leaved	*M. caespitosa* Nutt.	"	+
Medic, Black	*Medicago lupulina* L.	*Fabaceae*	+
Melampodium, Branched	*Melampodium ramosissimum* DC.	*Carduaceae*	+
Mercury, Arc-shaped	*Acalypha radians* Torr.	*Euphorbiaceae*	+
Mercury, Hornbeam	*A. ostryaefolia* Ridd.	"	+
Mercury, Ivyleaf	*A. hederacea* Torr.	"	+
Mesquite, Prairie	*Prosopis glandulosa* Torr.	*Mimosaceae*	+
Milkvetch, Carolina	*Astragalus carolinianus* L.	*Fabaceae*	+
Milkvetch, Nuttall	*Hamosa nuttalliana* (DC.) Rydb.	"	+

*Including a large number of non-cultivated species, such as Johnson Grass and various other introduced and native species.

Table 3.—Relative Susceptibility of Non-cultivated Plants to Root Rot—Continued

Common Name	Species or Botanical Name	Family	Relative Susceptibility
Milkvetch, Wright	*Astragalus wrightii* A. Gray	*Fabaceae*	+
Milkvetch, Wrinkled	*A. reflexus* T. & G.	"	—
Milkweed, Broad-leaved	*Asclepias latifolia* (Torr.) Raf.	*Asclepiadaceae*	+
Milkweed, Oblong-leaved	*Asclepiodora viridis* (Walt.) A. Gray	"	+
Milkweed, Spreading	*A. decumbens* (Nutt.) A. Gray	"	+
Milkweed, Variegated	*Asclepias variegata* L.	"	+
Monarda, Hairy	*Monarda hirsutissima* Small	*Lamiaceae*	—
Monarda, Slender	*M. tenuiaristata* (A. Gray) Small	"	+
Monoxalis	*Monoxalis dichondraefolia* (A. Gray) Small	*Oxalidaceae*	—
Morning-glory, Long-leaved	*Ipomoea longifolia* Benth.	*Convolvulaceae*	+
Morning-glory, Small-flowered Pink	*I. caroliniana Pursh*	"	+
Morning-glory, Small-ribbed	*I. costellata* Torr.	"	+
Morning-glory, White-flowered	*I. lacunosa* L.	"	+
Museniopsis	*Museniopsis texana* (A. Gray) Coult. & Rose	*Ammiaceae*	+
Nemastylis, Northern	*Nemastylis acuta* (Bart.) Herb.	*Ixiaceae*	—
Nightshade, Black	*Solanum nigrum* L.	*Solanaceae*	+
Nightshade, Silver-leaved	*S. elaeagnifolium* Cav.	"	+
Orache, Halberd-leaved	*Atriplex hastata* L.	*Chenopodiaceae*	+
Orache, Prickly	*A. acanthocarpa* (Torr.) S. Wats.	"	+
Palmetto, Saw	*Serenoa serrulata* (Michx.) Hook.	*Arecaceae*	—
Parosela, Feathery	*Parosela pogonathera* (A. Gray) Vail	*Fabaceae*	+
Parosela, Golden	*P. aurea* (Nutt.) Britton	"	+
Parosela, Graceful	*P. formosa* (Torr.) Vail	"	+
Parosela, Pink	*P. dalea* (L.) Britton	"	+
Parsley, Sand	*Ammoselinum popei* T. & G.	*Ammiaceae*	+
Parsnip, Cow	*Heracleum lanatum* Michx.	"	+
Parthenium, Ragweed	*Parthenium hysterophorus* L.	*Carduaceae*	+
Pea, Partridge	*Chamaecrista fasciculata* (Michx.) Greene	*Cassiaceae*	+
Pea, Sensitive	*C. procumbens* (L.) Greene	"	+
Peavine, Leavenworth	*Vicia leavenworthii* T. & G.	*Fabaceae*	+
Pectis	*Pectis tenella* DC.	*Carduaceae*	+
Pennywort, Water	*Hydrocotyle prolifera* Kellogg	*Ammiaceae*	+
Peppergrass, Medium	*Lepidium medium* Greene	*Brassicaceae*	—
Peppergrass, Tall	*L. virginicum* L.	"	—
Peppergrass, Wild	*L. apetalum* Willd.	"	—
Persicaria, Mexican	*Persicaria mexicana* Small	*Polygonaceae*	—
Persicaria, Pennsylvania	*P. pennsylvanica* (L.) Small	"	—
Phacelia, Bicknell	*Phacelia bicknellii* Small	*Hydroleaceae*	—
Phacelia, Crowded	*P. congesta* Hook.	"	—
Phacelia, Dissected	*P. dissecta* (A. Gray) Small	"	—
Phlox, Rough	*Phlox aspera* E. Nelson	*Polemoniaceae*	—
Phyllanthus, Angled	*Phyllanthus polygonoides* Nutt.	*Euphorbiaceae*	+
Phyllanthus, Carolina	*P. carolinensis* Walt.	"	+
Phyllanthus, Winged	*P. avicularia* Small	"	+
Pigweed, Winged	*Cycloloma atriplicifolium* (Spreng.) Coult.	*Chenopodiaceae*	+
Plantago, Rough	*Plantago inflexa* Morris	*Plantaginaceae*	—
Plantago, Western	*P. occidentalis* Decne.	"	—
Plantago, Woolly	*P. lanatifolia* (Coult. & Fish.) Small	"	—
Polypteris, Rough	*Polypteris callosa* (Nutt.) A. Gray	*Carduaceae*	+
Polypteris, Texas	*P. texana* (DC.) A. Gray	"	+
Poppymallow, Clustered	*Callirrhoe triangulata* (Leavenw.) A. Gray	*Malvaceae*	+
Poppymallow, Fringed	*C. digitata* Nutt.	"	+
Poppymallow, Low	*C. involucrata* (Nutt.) A. Gray	"	+
Poppymallow, Narrow-lobed	*C. linearilobа* (T. & G.) A. Gray	"	+
Poppymallow, Palm-leaved	*C. pedata* A. Gray	"	+

Table 3.—Relative Susceptibility of Non-cultivated Plants to Root Rot—Continued

Common Name	Species or Botanical Name	Family	Relative Susceptibility
Portulaca, Hairy	*Portulaca pilosa* L.	*Portulacaceae*	+
Potato, Hog	*Hoffmanseggia densiflora* Benth.	*Cassiaceae*	+
Prairie-clover, Small-leaved.	*Petalostemon microphyllus* T. & G.	*Fabaceae*	+
Prairie-clover, White	*P. albidus* (T. & G.) Small	"	+
Prairiegentian, Slender	*Eustoma gracile* Engelm.	*Gentianaceae*	—
Primrose	*Galpinsia hartwegii* (Benth.) Britton	*Epilobiaceae*	—
Primrose, Oblong-leaved	*G. interior* Small	"	—
Prionopsis	*Prionopsis ciliata* Nutt.	*Carduaceae*	+
Pussy-foot, Yellow	*Petalostemon obovatus* T. & G.	*Fabaceae*	+
Ragweed, Common	*Ambrosia artemisiifolia* L.	*Ambrosiaceae*	+
Ragweed, Giant; Bloodweed	*A. aptera* DC.	"	+
Ragweed, Great	*A. trifida* L.	"	+
Ragweed, Lance-leaved	*A. bidentata* L.	"	+
Ragweed, Perennial	*A. psilostachya* DC.	"	+
Ragwort, Prairie	*Senecio plattensis* Nutt.	*Carduaceae*	+
Ruellia, Hairy	*Ruellia ciliosa* Pursh	*Acanthaceae*	—
Ruellia, Stalked	*R. pedunculata* Torr.	"	+
Ruellia, Tuberous	*R. tuberosa* L.	"	+
Sage, Lance-leaved	*Salvia lanceolata* Willd.	*Lamiaceae*	—
Sage, Roemer	*S. roemeriana* Scheele	"	—
Sheepsorrel	*Rumex acetosella* L.	*Polygonaceae*	—
Sida, Heller	*Sida helleri* Rose	*Malvaceae*	+
Sida, Long-beaked	*S. longipes* A. Gray	"	+
Sida, Narrow-leaved	*S. angustifolia* Lam.	"	+
Sida, Prickly	*S. spinosa* L.	"	+
Sida, Rhomboid-leaved	*S. rhombifolia* L.	"	+
Sida, Round-leaved	*S. hederacea* Torr.	"	+
Sida, Texas	*S. texana* (T. & G.) Small	"	+
Sida, Triangular	*S. hastata* S. Hil.	"	+
Sideranthus	*Sideranthus cotula* Small	*Carduaceae*	+
Sideranthus, Viscid	*S. rubiginosus* (T. & G.) Britton	"	+
Skunkcabbage	*Spathyema foetida* (L.) Raf.	*Araceae*	+
Snailseed, Carolina†	*Cebatha carolina* (L.) Britton	*Menispermaceae*	+
Sneezeweed	*Helenium microcephalum* DC.	*Carduaceae*	+
Sneezeweed, Small-flowered	*H. parviflorum* Nutt.	"	+
Solanum, Spiny	*Solanum aculeatissimum* Jacq.	*Solanaceae*	+
Sow-thistle, Spiny	*Sonchus asper* (L.) All.	*Cichoriaceae*	+
Spermolepsis	*Spermolepsis echinatus* (Nutt.) Heller	*Ammiaceae*	+
Spurge, Hairy	*Chamaesyce malaca* Small	*Euphorbiaceae*	+
Spurge, Round-leaved	*C. serpens* (HBK.) Small	"	+
Spurge, Toothed	*Poinsettia dentata* (Michx.) Small	"	+
Spurge, Upright Spotted	*Chamaesyce nutans* (Lag.) Small	"	+
St. Johnswort, Spotted	*Hypericum maculatum* Walt.	*Hypericaceae*	—
Storksbill, Texas	*Erodium texanum* A. Gray	*Geraniaceae*	—
Sunflower, Hairy	*Helianthus hirsutus* Raf.	*Carduaceae*	+
Sunflower, Hoary	*H. cinereus* T. & G.	"	+
Sunflower, Prairie†	*H. petiolaris* Nutt.	"	+
Sunflower, Threadleaf	*H. filiformis* Small	"	+
Talinum, Golden	*Talinum aurantiacum* Engelm.	*Portulacaceae*	—
Tetraneuris, Fine-leaved	*Tetraneuris linearifolia* (Hook.) Greene	*Carduaceae*	+
Tetraneuris, Narrow-leaved	*T. linearis* (Nutt.) Greene.	"	+
Thamnosma, Texas	*Thamnosma texana* (A. Gray) Torr.	*Rutaceae*	+
Thistle, Bull	*Carduus lanceolatus* L.	*Carduaceae*	+
Thistle, Russian	*Salsola pestifer* A. Nelson	*Chenopodiaceae*	+
Thistle, Slender	*Carduus austrinus* Small	*Carduaceae*	+
Tievine, Common	*Ipomoea trifida* (HBK.) G. Don	*Convolvulaceae*	+
Tragia, Branching	*Tragia ramosa* Torr.	*Euphorbiaceae*	+
Tragia, Catnip	*T. nepetaefolia* Cav.	"	+
Tragia, Prickly	*T. urticaefolia* Michx.	"	+
Trumpetweed	*Eupatorium compositifolium* Walt.	*Carduaceae*	+

Table 3.—Relative Susceptibility of Non-cultivated Plants to Root Rot—Continued

Common Name	Species or Botanical Name	Family	Relative Susceptibility
Tumbleweed	*Amaranthus albus* L.	*Amaranthaceae*	+
Umbrellawort, Hairy	*Allionia pilosa* (Nutt.) Rydb.	*Allioniaceae*	+
Umbrellawort, Lance-shaped	*A. lanceolata* Rydb.	"	+
Umbrellawort, Smooth	*A. floribunda* (Chois.) Rydb.	"	+
Umbrellawort, Sticky	*A. comata* Small	"	+
Umbrellawort, Texas	*A. texensis* (Coult.) Small	"	+
Velvetleaf	*Abutilion abutilon* (L.) Rusby	*Malvaceae*	+
Verbena, New Mexican	*Verbena neo-mexicana* (A. Gray) Small	*Verbenaceae*	—
Verbena, Small-flowered	*V. ambrosifolia* Rydb.	"	—
Vetch, Louisiana	*Vicia ludoviciana* Nutt.	*Fabaceae*	+
Vetch, Narrowleaf	*V. angustifolia* L.	"	+
Vetch, Small-flowered	*V. micrantha* Nutt.	"	+
Vetch, Texas	*V. texana* (T. & G.) Small	"	+
Vetch, Wild	*V. reverchonii* S. Wats.	"	+
Waterhemp, Southern	*Acnida australis* A. Gray	*Amaranthaceae*	+
Waterhemp, Whitish	*A. cannabina* L.	"	+
Wildbergamot	*Monarda fistulosa* L.	*Lamiaceae*	—
Wildbergamot, Hairy	*M. mollis* L.	"	—
Woodsorrel, Berlandier	*Lotoxalis berlandieri* (Torr.) Small	*Oxalidaceae*	—
Woodsorrel, Drummond	*Ionoxalis drummondii* (A. Gray) Rose	"	—
Wormseed	*Chenopodium anthelminticum* L.	*Chenopodiaceae*	+
Wormwood, Mexican	*Artemisia mexicana* Willd.	*Carduaceae*	+
Wormwood, Western	*A. gnaphalodes* Nutt.	"	+
Yellow-flax, Fluted	*Cathartolinum sulcatum* (Ridd.) Small	*Linaceae*	+
Yellow-flax, Prairie	*C. rupestre* (Engelm.) Small	"	+
Yellow-flax, Winged	*C. alatum* Small	"	+
Yucca, Prairie	*Yucca constricta* Buckl.	*Dracaenaceae*	—
Yucca, Twisted-leaved	*Y. rupicola* Scheele	"	—
Zexmenia, Bristly	*Zexmenia hispida* (HBK.) A. Gray	*Carduaceae*	+