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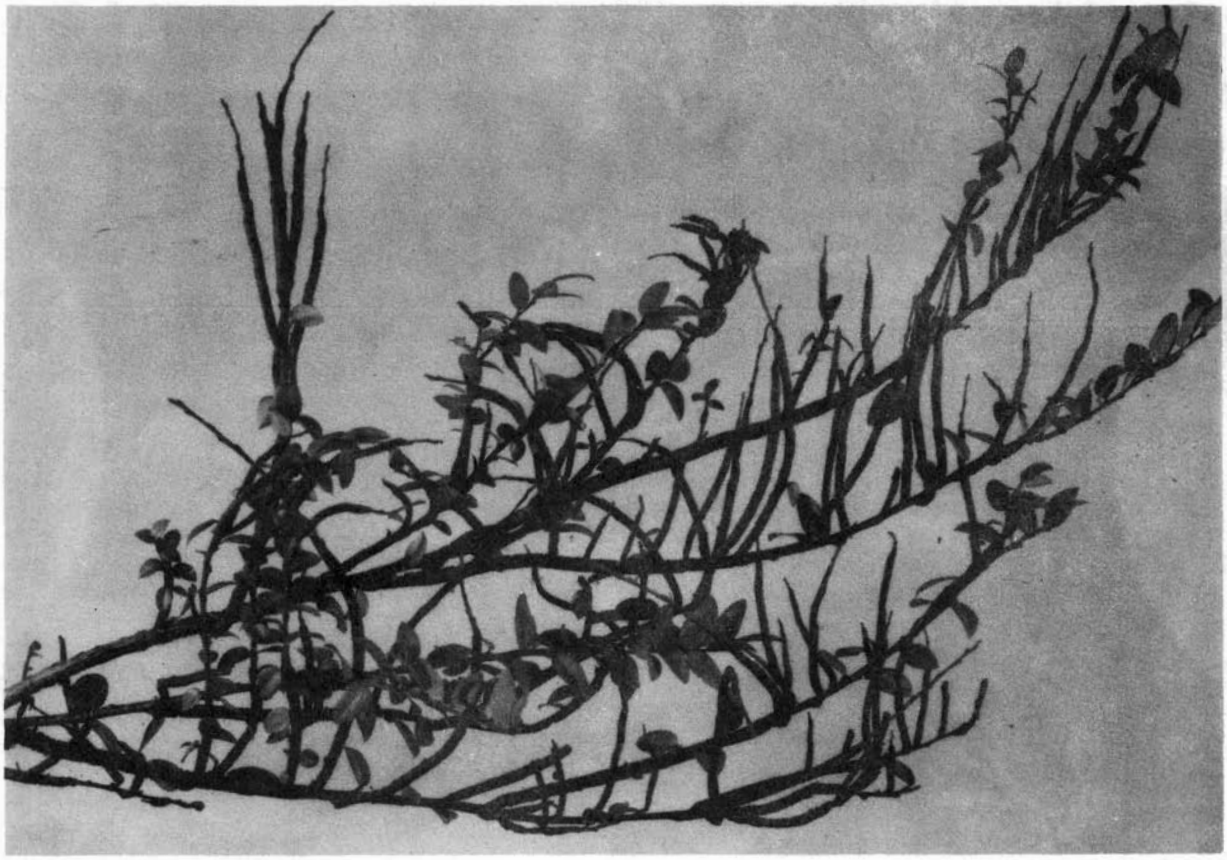

Witches' broom symptoms and thickened, encrusted twigs of wild huckleberry (Vaccinium ovatum) caused by the rust fungus Pucciniastrum goeppertianum.

HUCKLEBERRY RUST

T.E. Tidwell

Huckleberry rust, also known as blueberry rust, fir-huckleberry rust, and fir-blueberry rust, occurs throughout North America, as well as Europe, Japan, and Siberia. The host range of the rust fungus, Pucciniestrum goeppertianum, includes true firs (Abies spp.) huckleberry, blueberry, and cranberry (Vaccinium spp.). The disease, which is systemic and perennial in huckleberry, is easily field diagnosed on Vaccinium spp. by the conspicuous witches' brooms with the "polished" reddish-brown swollen twigs (T, Fig. A). The telia of the fungus form intraepidermal "sleeves" around infected stems. Leaves remaining on such branches usually become atrophied.

The less conspicuous aecial stage occurs on true firs. A "repeating" uredinial stage is apparently lacking (or at least unknown). Thus, it has been assumed that the rust has an obligatory Abies-Vaccinium host-alternating life cycle. However, both in Europe and on the California coast, extensive numbers of infected Vaccinium have been observed in the complete absence of firs. Some have suggested that the basidiospores produced on Vaccinium which would normally infect Abies, may in fact also infect more Vaccinium, although such infection has yet to be demonstrated experimentally.

The disease rarely causes economic loss, but commercial blueberry growers would still be well advised to plant blueberry vineyards in areas free of true firs, and likewise, to be cognizant of potential reservoirs of the disease from nearby stands of wild huckleberry. Diseased bushes, of course, should be destroyed.

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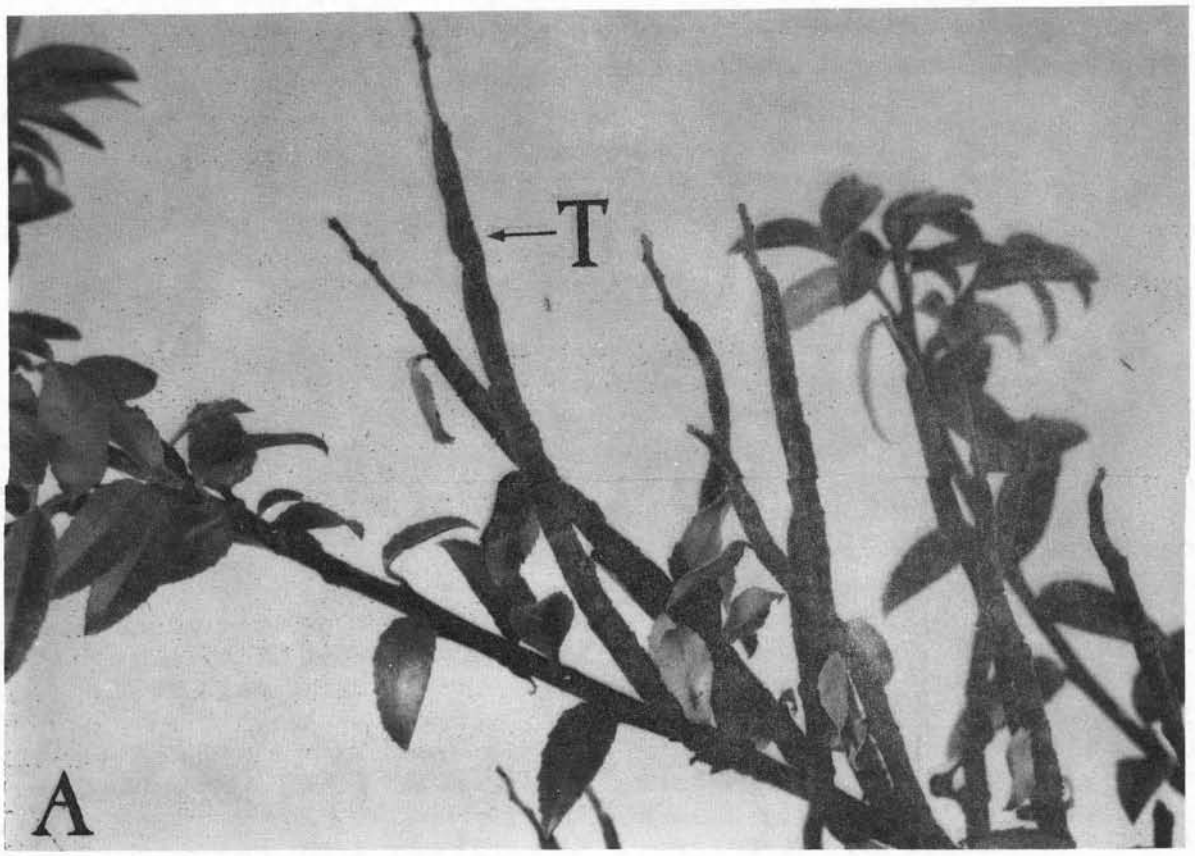

Fig. A. A witches' broom of wild huckleberry (Vaccinium ovatum). Note the thickened twigs which are encrusted with telia (T) of the rust fungus Pucciniastrum goeppertianum.

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ROOT ROT OF WESTERN SWORDFERN CAUSED BY PHYTOPHTHORA CINNAMOMI

T.E. Tidwell, Kathleen Kosta, and James Henderson

Polystichum munitum, the California native swordfern, is a popular landscape plant in California. Few pathogens are reported to attack P. munitum (6). Recently, a landowner who landscaped a 0.5 acre plot of land in a Sierra Nevada forest reported that approximately half of the 150 swordferns he had planted had collapsed and died over a period of a few months. The plants had been purchased from a retail nursery in the central valley of California. When the plot was examined, it was found that the site was shady, with a well-drained soil, and situated on a gradual slope. Numerous Rhododendrons, representing a wide diversity of species and cultivars, had also been planted. The Rhododendrons originated from various nurseries--some of which had a history of Phytophthora problems. The landownder informed us that several of his Rhododendrons had collapsed and died. Some of these individual planting sites had been replanted with new Rhododendrons and some with swordferns. Soil samples taken throughout the planting area revealed that Phytophthora cinnamomi was indeed present in the soil, and P. cinnamomi was easily isolated from roots of dying Rhododendrons. Field symptoms on the swordferns included the wilting and drying of one to several fronds (depending on the extent of infection) ultimately resulting in the complete collapse of the plant. The extensiveness of the infection was determined visually by the relative proportion of discolored roots. In some cases the discoloration extended several centimeters up the dying fronds. Phytophthora cinnamomi was isolated from such discolored portions of fronds, as well as from discolored roots and rhizomes. Tests were designed to confirm pathogenicity of P. cinnamomi on Polystichum munitum. From an "information retrieval" literature search, only one published report of any species of Phytophthora attacking any species of fern could be found. Bega (2) reported "Cibotium spp." among a list of plants from which P. cinnamomi was isolated in Hawaii. However, no mention of confirmation by pathogenicity tests was made in that report.

MATERIALS & METHODS

Plants for Inoculation. One gallon Polystichum munitum plants were obtained from Haight's Nursery, Roseville, California 95678. Plants were visually checked for health before repotting in sterile U.C. mix (1). The plants were then permitted to acclimate to greenhouse conditions for three weeks, with sterile distilled water added sparingly as needed. At the end of three weeks, the plants appeared healthy and were actively producing new growth.

Inoculum and inoculations. Mycelial inoculum was produced in a manner similar to the method of Tsao and Garber (5) for Phytophthora parasitica and P. citrophthora. 100 ml of potato dextrose broth (PDB) (per liter: extract from 250 g peeled

potatoes plus 20 g dextrose) were placed in 1 L prescription glass bottles and autoclaved at 121°C for 20 min. 7 mm agar-mycelium plugs from 7-day-old P. cinnamomi cultures (grown on acidified PDA) were used to "seed" the PDB. After the seeded bottles had incubated vertically for 24 hours at 25°C +/- 5°C, they were hand shaken vigorously for 2 min. to break up the hyphae grown out from the mycelial plugs. The bottles were then incubated horizontally. After 7 days at 25°C +/- 5°C, the fungus had covered the entire medium surface. Mycelial mats were harvested, pooled, repeatedly rinsed with sterile distilled water, then comminuted in a blender for 30 seconds. The mycelial fragment suspension was thoroughly mixed with sterile sand. The inoculum concentration consisted of the amount of inoculum from one prescription bottle for each plant. The final proportion of the potted ferns' inoculated "soil mix" was 90% sterile U.C. mix (1) and 10% artificially infested sand. Each disinfected pot contained 2 L of the inoculated "soil mix". Plants were "incubated" in a greenhouse maintained at 75°C +/- 5°C. The plants were flooded weekly for 48 hr. with sterile distilled water, and received no additional watering. The numbers of healthy fronds and wilted fronds were tabulated after 9 weeks in the greenhouse. Plants were harvested and reisolations were done, using a medium selective for Phytophthora (4). For each of two experiments, nine ferns were inoculated with P. cinnamomi and three controls were inoculated with sterile distilled water. The duration of each of the two experiments was 9 weeks.

RESULTS

After nine weeks, most inoculated plants had numerous dry, wilted fronds, and were producing no new growth (Table 1), whereas control plants were healthy looking and actively producing new growth (Fig. 1). One control plant in the first experiment was beginning to show symptoms of root stress (after nine weeks of weekly flooding) in the form of a single wilted frond. Since no discoloration of roots could be found, and since no water molds could be isolated from this fern using non-selective media, this was attributed to drowning injury to the roots. P. cinnamomi was reisolated from discolored roots and crowns from each inoculated plant. In several cases the fungus could be recovered from discolored areas several cm up into a wilting, yet still green, frond. All control plants remained free of the pathogen (Table 1).

DISCUSSION

To our knowledge, this is the first report of a Phytophthora-caused disease of a fern confirmed by Koch's postulates. Only one other published report (Bega, 1974) was found which mentioned a Phytophthora attacking a fern, and in that particular case pathogenicity tests were apparently not done. The fact that a Phytophthora, and in particular P. cinnamomi, would attack and caused disease in a fern is not surprising, especially considering the wide host range of P. cinnamomi (7). Since ferns, as a group, are not a particularly economically important

group, it is possible that the lack of reports of the genus Phytophthora attacking them is more a result of lack of attention, rather than the fact that this is a unique host-pathogen combination. What makes this such an interesting field situation is that apparently the pathogen was inadvertently brought to the site on a notoriously susceptible host, Rhododendron [3]. This ultimately resulted in a representative of a group of plants not previously known to be susceptible to P. cinnamomi being severely attacked. Polystichum munitum proved, in fact, to be quite susceptible. This situation also graphically illustrates the importance of carefully examining nursery stock before purchasing and planting, as well as purchasing nursery stock only from reputable sources.

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Table 1. Mean percentages of wilted fronds of ferns inoculated with Phytophthora cinnamomi 9 weeks after inoculation.

	Percentage Wilted Fronds	
	Inoculated	Control
EXPERIMENT 1	76.0%[a]	4.8%[b]
EXPERIMENT 2	95.4%	0.0
EXPERIMENT 1 & 2	85.7%	2.4%

[a] Mean of percentages of wilted fronds from nine ferns inoculated with P. cinnamomi.

[b] Mean of percentages of wilted fronds from three control ferns inoculated with sterile distilled water. One control fern had one wilted frond out of seven. This was determined to be due to drowning injury to the root system, as root pathogens could not be isolated from the plant after several attempts.

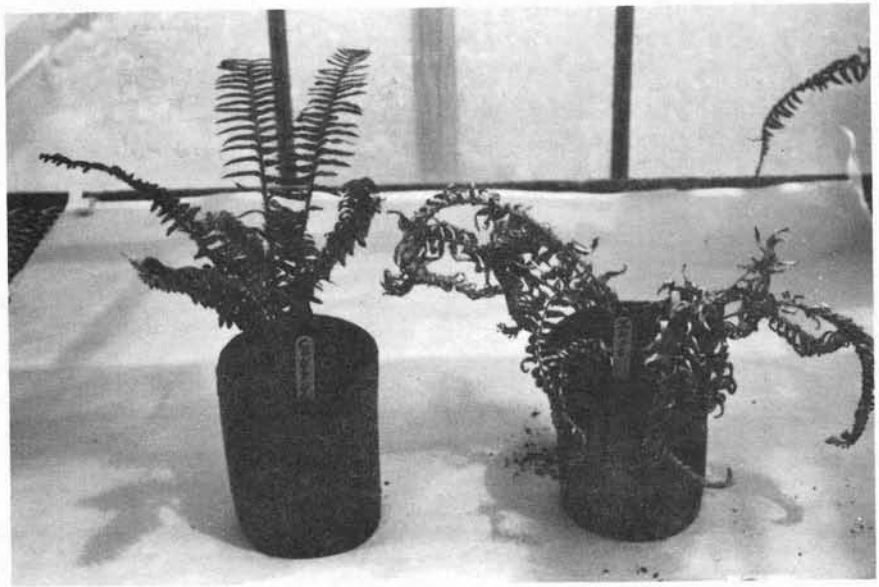

Fig. 1. Swordfern exhibiting severe wilting (right) 9 wk after inoculation with Phytophthora cinnamomi, and weekly flooding treatments. Control plant (left) remained healthy.

SSEM, A SENSITIVE SEROLOGICAL TECHNIQUE FOR THE DETECTION OF PLANT VIRUSES

A.L. Braun and D.C. Opgenorth

In recent years significant progress has been made in the development of serological techniques for detecting plant viruses (5). Milne and Luisoni reviewed the methods used in the detection of the specific binding of antibodies to virus particles by electron microscopy (2). One of these methods, called serologically specific electron microscopy (SSEM), was introduced in 1972 by Derrick (1). SSEM proved to be highly sensitive, reliable and yielding rapid results. It was reported in 1979 that SSEM is far more sensitive than conventional electron microscopy or the leaf dip method (3). SSEM is a useful diagnostic tool. The procedure is basically described as follows:

Carbon-coated formvar-filmed electron microscope grids are sensitized by treating them with a drop of antiserum (A.S.) containing antibodies (A.B.) which are specific for a particular virus. When virus particles are present in the extract from suspected virus-infected material, they will be trapped by the specific antibodies. After a certain incubation time and temperature, the grids are washed with a buffer to remove excess antiserum and drained with a filter paper. Grids are then transferred with fine tweezers to drops of sample extracts, incubated for a period of time (15 minutes - 24 hours) and at a certain temperature ($4^{o}C$ - $37^{o}C$). By increasing the incubation period and/or temperature, the sensitivity of the method can be increased. After the incubation period, the grids are washed with distilled water and/or buffer to remove salts and contaminants, drianed with a filter paper, and then either stained or again treated with a drop of antiserum. To distinguish the virus particles from other plant material, the grids are stained, drained, dried, and finally examined in the electron microscope. This procedure is also called the Derrick method.

In the case where the grids are again treated with antiserum, antibody molecules will specifically coat the trapped virus particles. This is called "decoration". The identity of specific viruses is confirmed by the "decoration" and because of their increase in size and specific halo pattern, they are more easily detected in the electron microscope (Fig. 1).

SSEM has been used successfully to detect viruses from plants, nematodes (4), and aphids (3). This technique is, because of its high sensitivity, valuable in detecting viruses which are present in the test sample at very low levels. Our investigations with materials known to be infected with potato virus X and potato leafroll virus have shown that these viruses can be detected using SSEM in dilutions 10 to 100-fold greater than the detection end point for ELISA. SSEM is currently used at CDFA for those

test samples which have given inconclusive results with ELISA. We are presently investigating several variations of the SSEM technique with the purpose of applying this to detect other plant viruses.

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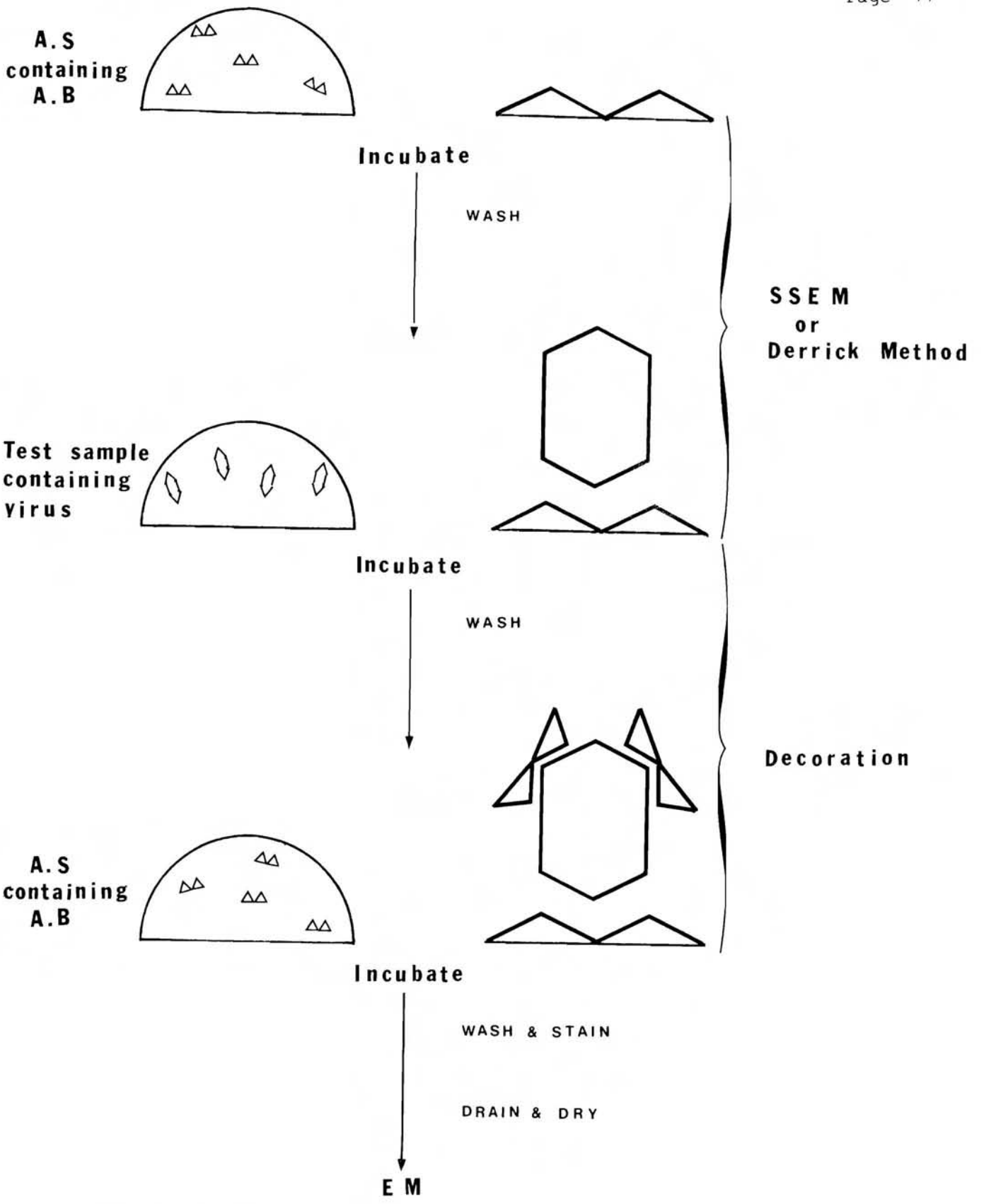

FIG. 1 PRINCIPLE OF THE SSEM TECHNIQUE FOLLOWED BY DECORATION FOR DETECTING PLANT VIRUSES.

HISTORY OF SEVEN SEPARATE OUTBREAKS OF CHESTNUT BLIGHT IN WESTERN NORTH AMERICA

Quintin L. Holdeman

The story is told of chestnut blight occurrence and eradication on the West Coast of North America.

A review of the available history of seven separate occurrences of chestnut blight in Western North America has lead the writer to believe that the destruction of American chestnut forests in the eastern United States by the pathogenic fungus, Endothia parasitica, was inevitable even if the disease had been contained in New York City where it was first recognized in 1904.

Factors which have (or would have) contributed to the inevitable were: (1) the exploratory nature of man and his desire to collect and observe the exotic plants; (2) science's lack of awareness in the first quarter of the 20th century of the disease in the Orient and the high susceptibility of the American chestnut; and (3) science's reluctance to presume that, in addition to nursery stock, infected chestnut seed used to plant in nurseries, be the surviving seedlings ever so infinitesimal in number, can serve to "introduce" the disease.

In order to share the foundations of this belief the summaries of seven West Coast infestations are presented and discussed separately. It is noted that native stands of chestnuts do not occur west of the 100th meridian (central South Dakota through central Texas).

BRITISH COLUMBIA 1913-1941

In 1913, Endothia parasitica, the cause of chestnut blight, was collected from chestnuts growing on the Experimental Farm at Agassiz, British Columbia. Trees on the farm had been badly affected for at least four years. The stock growing at Agassiz contained American, European and Oriental chestnuts purchased from New Jersey, Ohio, and California nurseries (Faull & Graham, 1914). It has been reported that "all trees there had been planted prior to 1890" (Bedwell, 1938).

"In the fall of 1934, there were standing one large infected tree and one healthy tree." A number of unhealthy trees had been cut prior to this time (Gravatt, 1935). In 1941 blight was reported on one tree at the Experimental Farm.

No evidence of chestnut blight has been reported in any other location in British Columbia, nor in any Canadian province west of Ontario.

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Discussion. The source and time of the original infestation on the Experimental Farm in Agassiz remains unknown. Personal communications indicate there are no chestnuts present on the experimental farms and all other chestnut plantings in British Columbia are free of chestnut blight. One can assume that chestnut blight in British Columbia has been eradicated. (The disease was self-eliminated. It ran out of chestnut trees on the Experimental Farm.)

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WASHINGTON 1932-1936

In 1932, an infected chestnut was found in a residential area of Seattle, Washington. The source was traced back to the University of Washington in Seattle where four infected chestnuts were found on the campus by June 1933 and additional trees that winter. All infected trees were American chestnuts (Castanea dentata). No infection was found on Japanese, Chinese (C. mollisima), and/or European (C. sativa) chestnuts present in the area. Diseased trees were grubbed out and burned. No blight was found in the area after 1936.

It is reported that the Washington infection was "from nuts brought in from New York. In this connection it may be stated that 23 percent of the nuts in one lot of American chestnuts from South Carolina examined by the writer [Gravatt] were infested with the blight fungus."

Discussion. Evidence points to the introduction of chestnut blight into Washington on infected nuts. In a letter to W.W. Wagener, Oct. 26, 1946, Gravatt stated that when infected "American chestnut seed is planted, sometimes the seed germinates alright, but the blight will grow right on up and kill it." Recently in Connecticut "approximately 50 seedlings each from infected and uninfected nuts were grown each year in nursery rows in the field. Blight infections on the 1- and 2-year-old plants were rare (less than 2%) and apparently not related to infection of the nut shell" (Jaynes and DePalma, 1984). It is my conclusion that seed transmission of Endothia parasitica through seed of the American chestnut has been demonstrated.

Reference. Bedwell, J.L. (1938) Plant Dis. Rep. 22:66-8. Gravatt, G.F. (1935) California Department of Agriculture Bull. 24:173-4. Letter in CDFA Plant Pathology subject file. Jaynes, R.A. and DePalma, N.K. (1984) Phytopathology 74:296-299.

OREGON 1929-1934

The first report of chestnut blight in the western United States was from a small planting near Gunter (northern Douglas County), Oregon, in 1929. Endothia parasitica was found on a stump of the variety 'Paragon' (probably a Castanea dentata x sativa hybrid) which had been received from Pennsylvania about 1916, and a tree of European chestnut (C. sativa). No disease was found on western chinquapin (Castaneopsis chrysophilla), oak (Quercus garyana), and the few American (Castanea dentata), and Japanese (C. crenata) chestnuts, chestnut varieties, and seedlings growing in the vicinity. The diseased material was cut and burned.

A reinspection five years later in the spring of 1934 turned up an infected sucker, which was removed from a burned-but-not-killed stump. In the fall, further examination revealed the fungus living on the stump at a depth of one foot below ground. The stump was removed and burned. With the exception of this infected sprout, annual reinspections of the other chestnuts and the native trees at this location were negative during the period 1934-1938. Inspections of numerous additional orchard, shade, and ornamental chestnuts and chinquapins revealed no other infections in Oregon.

Discussion. Circumstances point to introduction on nursery stock shipped from the infected area of the East Coast. The fungus can survive below the soil level.

References. Brass, H.P. (1929) Plant Dis. Rep. 13:173-4. Bedwell, J.L. (1938) Plant Dis. Rep. 22:66-8. Gravatt, G.F. (1935) California Department of Agriculture Bull. 24:173-7.

CALIFORNIA 1934-1959

Interception - 1914

"California State inspectors at San Francisco have found a new canker disease on chestnut trees recently imported from Japan. According to Dr. Haven Metcalf, the government's expert on such diseases, this appears to be of the same type as the chestnut blight which is ravaging the forests of the eastern United States, and it is possible that the new disease would be equally as destructive if it became established in this country." (News and Notes. [1914] Forestry Quarterly 12:306.)

Alameda County - 1935

Four infected Chinese chestnut trees (Castanea mollissima) were discovered October 8, 1935, on the University of California, Division of Pomology experimental growing grounds within the City of Berkeley (southwest corner Rose and Sacramento Streets) by J.L. Mielke and confirmed by W.W. Wagener, both of the USDA Office of Forest Pathology. Infections (lesions six to eight inches long) were at the ground line on the main trunk. The four

infected trees were at different locations within a planting involving 37 Chinese, 5 American (C. dentata), and 2 European (C. sativa) chestnut trees. All chestnut trees in the experimental growing grounds were removed and destroyed.

It is suggested that the pathogen, Endothia parasitica, was introduced on the Chinese chestnut seedlings obtained from a nursery, and probably introduced on seed direct from China. All trees of Chinese and European chestnut were obtained from Louis Vistica of Yuba City and planted in 1932. The five American chestnut trees were obtained from Felix Gillet Nursery, Nevada City, and planted in 1930.

According to Louis Vistica, interviewed November 18, 1935, thousands of C. mollissima seedlings were grown in 1930, derived from seed imported directly from China and planted and grown on the Hetzel place, Linden district, San Joaquin County (about 1-1/2 miles from Grosso grove towards Stockton and along river bed); but few were disposed of. Seedlings were two years old when sent to Pomology, U.C. Berkeley, and to T.O. Holt, Manager, Eugene Fruit Growers Association, Eugene, Oregon. Other hybrid chestnut varieties (C. sativa x dentata) were grown on the Hetzel place at the same time. The buds of the hybrid varieties were obtained at the Loma Rica Ranch, Grass Valley, El Dorado County, and grafted on C. sativa seedlings grown from seed obtained from John Privatelli, Jackson, Amador County. The grafted material was distributed to seven named parties (Lake, Sutter, and San Joaquin Counties) with plantings totaling 50 acres.

Discussion. Based on no finds of chestnut blight in these associated locations, the circumstantial evidence points to the introduction of Endothia parasitica on seed of the Chinese chestnut imported directly from China. Under the growing conditions of the seedling nursery (i.e., the usual custom of flood irrigation during the rainless summers) during the two years from seed to sale, only one infected seed (and resulting diseased seedling) among the "thousands" planted by Vistica would have been sufficient to introduce the disease.

It is published that "cultures from hundreds of Asiatic nuts and critical examinations of many thousands of chestnuts imported from the Orient have not yet resulted in finding blight" (Gravatt, 1935). Thus the scientific blessing has been used to give a "credible negative survey." The negative data would be more believable if thousands of nuts from the area in China where the plant explorer, Meyer, had found chestnut blight (Science, Aug. 29, 1919) had been examined.

Gravatt's letter to Wagener, Oct. 25, 1946, also stated that: "We have not isolated the fungus from the Asiatic chestnuts, though I suppose that if considerable work were to be done it would be found that the fungus is also carried in this way."

One seed among "thousands," yielding an infected seedling in the nursery, is all that is needed to introduce the disease. From

this point onward, success of the introduced chestnut blight would depend upon whether or not the seedlings were either marketed or plowed under.

Although seed transmission of Endothia parasitica through the nuts of Oriental chestnut species has not been demonstrated, from the regulatory viewpoint there is reasonable cause to presume that it is possible and probable. The implied danger of allowing entry of chestnuts from infested areas depends upon whether they are imported for planting or for consumption.

References. Unpublished notes in CDFA Plant Pathology subject file.

Butte County - 1942

A single infected 13-year-old chestnut tree (either C. sativa or a hybrid C. sativa x mollissima) with three cankers caused by E. parasitica was found standing in a block of 26 chestnut trees of different ages and varieties in the USDA Plant Introduction Garden, Chico, California. History of the planting was vague. Quite a large number of trees had been removed during the previous four or five years. The infected tree originated from a seedling, about 18 inches long, shipped by W.J. Aumiller, Yakima, Washington on March 28, 1929, along with three other seedlings, of which two were not planted due to deterioration and the third removed after several years.

The infected tree was removed and burned. No evidence of chestnut blight was found in the other trees or in nursery stock when examined June and October 1942, 1943, 1944, and June and August 1945.

Discussion. Circumstances point to the introduction of chestnut blight into California via nursery stock grown in the State of Washington.

References. California Department of Agriculture Bull. 31:206 [1942], 32:298 [1943]. Unpublished notes in CDFA Plant Pathology subject file.

El Dorado County - 1946-1950

Six infected European chestnut trees (Castanea sativa), over 40 years old and grown from seed, were found September 27, 1946, on the property of James Irving, near Placerville, by Dr. Aldo Pavari of Florence, Italy, while visiting the Forest Tree Institute at Camino. The identity of the disease was verified (October 4, 1946) by W.W. Wagener, USDA Office of Forest Pathology. The estimated age of the infection was 15 to 20 years. "We got a count of 13 years for one of the older cankers," and indication of an additional two years on another.

No other infections were found on this property or on an additional 51 properties involving 387 trees (not counting

seedlings) in El Dorado County.

The diseased trees were cut and burned--four were entirely removed--and two of the stumps scorched in place. An infected sprout growing from one of the scorched stumps was found (October 30, 1950) four years later. The stump was removed November 28, 1950. All other chestnuts on the property had been pulled at some prior date. Absence of all chestnuts on the Irving property was reconfirmed in 1956.

Note of interest: In 1946, on the Irving property, it was noted that there was a chestnut grafted onto valley oak understock (Quercus lobata).

Discussion. Source of disease introduction, which was prior to 1933, remains unknown. Survival of the disease on the stump reconfirms lesson learned in Oregon in 1934. The diseased tree must be uprooted prior to burning.

Reference. California Department of Agriculture Bull. 35:235 [1946] 39:249 [1950]. Unpublished notes CDFA Plant Pathology subject file.

San Joaquin County - 1934-1959

In 1934 in San Joaquin County, California, Endothia parasitica was found infecting 43 trees (3 Japanese, remainder European chestnuts) in a 736-tree commercial grove (#1) in the Stockton area and one tree (European) in a 778-tree commercial grove (#2) in the Linden area. It was estimated that the infestation was at least eight years old in the first grove (i.e., present in 1926) and three years old in the second grove. The disease occurred in varieties that "were largely Italian and Japanese origin." The source of the planting stock was not given nor was the source of infestation determined. The diseased trees were uprooted and burned.

Observations made on grove #1 revealed that there were aerial cankers on some trees that were associated with either topworking (grafting) or pruning, while on other trees the cankers were basal and associated with flood-type irrigation. Fungous spore-horns that had broken off were observed on the ground under one tree. In addition, it was noted in October 1934, about two weeks after a rain, that the fungus was sporulating on chestnut cord-wood stacked near the residence. The cord-wood had been cut in early spring and had passed through the hot, rainless summer.

A statewide survey failed to reveal any additional infestations in California. The decision was made to eradicate chestnut blight without eliminating the commercial plantings, a task that was to continue for 25 years, involve two additional properties and more than 250 diseased trees. An internal quarantine was placed on the infested properties.

In 1938, two additional infested groves were found in the

Stockton area, 12 trees in a 567-tree grove (#3) and, nearby, one tree in a 16-tree grove (#4). The source of the disease in grove #3 was associated with tools used by a commercial propagator who grafted trees for both groves #1 and #3.

The original eradication procedure (i.e., to eliminate only infected trees instead of the entire infested grove) was reevaluated. The decision was to continue to eliminate only infected trees.

Eradication in grove #3 was successful after a period of 10 years. Grove #4 was removed in 1939 after an additional five infected trees were found. The last infected trees in San Joaquin County were removed in 1959. Surveys of the previously infested orchards were continued through 1964, after which chestnut blight was declared eradicated (in California) and the internal quarantine was removed.

During the reinspections of the infested orchards, a sporadic determination of the ages of cankers encountered showed that some cankers were already two to three years old when found, thus indicating that incipient cankers may be overlooked. The conspicuous red spore-horns were not present on the surface of all the cankers that were discovered. In the 25 years there were two-year periods when infections were not found in an orchard (Two such periods in grove #1 and one in grove #2), after which additional infected trees were located, thus crushing optimistic hopes.

Discussion. Under eastern U.S. conditions, the trees in the infested groves would have been 100 percent infected in three to four years. Disease spread in California in these groves appeared to be due to the activities of man and to water flooding over the surface of the soil. There was no apparent evidence of the disease being carried by insects or birds, or of being spread on the wind as ascospores.

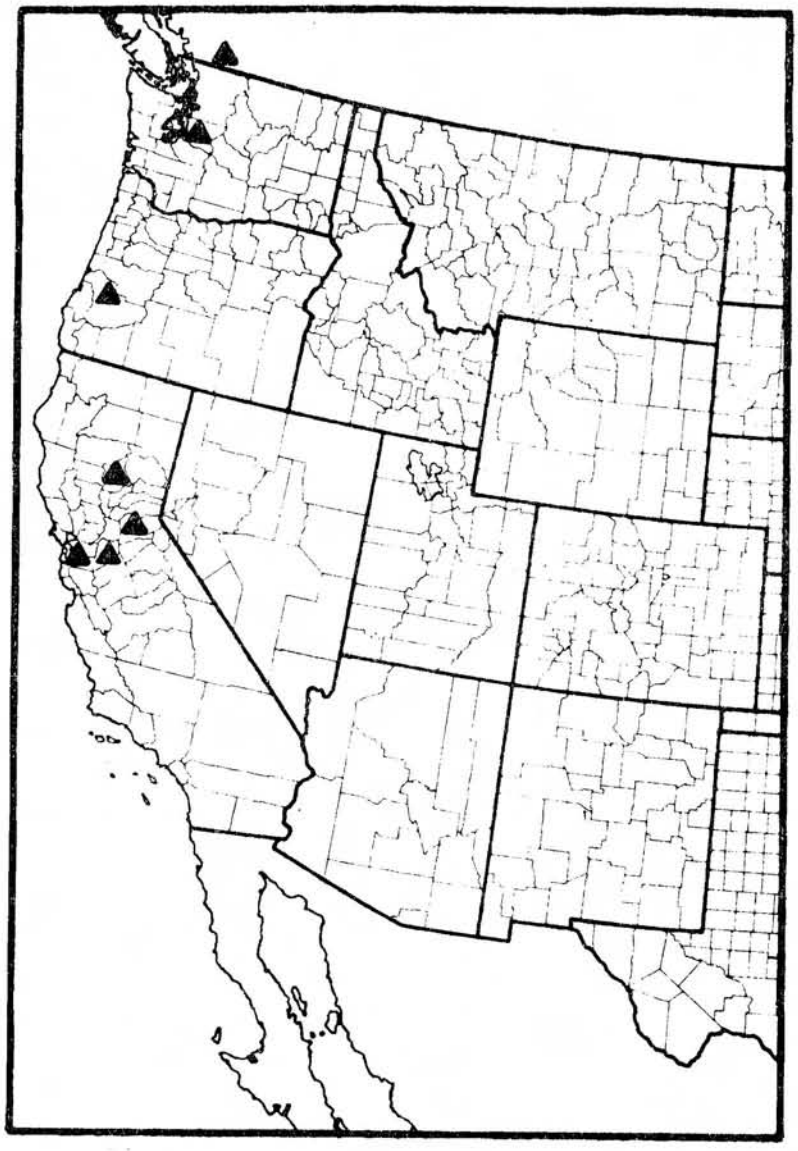
Experience has shown that even with diligent inspectors and two inspections per year on approximately 2,000 trees, incipient cankers can be overlooked. This would have been disastrous under eastern conditions. In California's Mediterranean-type climate (rainless hot summers) the job of eradication required 25 years.

E. parasitica cannot penetrate the unbroken bark; therefore it must depend on wounds for entry. Although one basal canker was found to be associated with a crown gall infection, the nature of the wounds through which the basal infections occurred remains undetermined.

In California only the asexual stage of E. parasitica (i.e., mycelium then pycnidia which produce spores in a sticky mass, or spore horns, from which the spores are released by flood irrigation or splashing rain) has been reported. Cursory observations failed to yield evidence of the sexual stage (i.e., perithecia which replace the pycnidia and produce ascospores that

are shot into the air and drift with the wind) under California valley and foothill conditions.

References. Milbrath, G.D. (1934) California Department of Agriculture Bull. 23:475-6. Gravatt, G.F. (1935) C.D.A. Bull. 24:173-7. Harris, M.R. (1942) C.D.A. Bull. 31:99-109. Annual Reports in C.D.A. Bull. 25:578-9; 26:538-9; 28:571; 29:272; 30:374-5; 31:205-6; 32:297-8; 33:282-3; 34:216-7; 35:234-5; 37:291; 39:249; 45:167; 47:174; 48:137; 49:150, [1936 through 1960]. Unpublished notes in CDFA Plant Pathology subject file.



▲ Reported chestnut blight outbreaks on the west coast. All outbreaks eradicated.

ENTOMOLOGY HIGHLIGHTS

Japanese Beetle Popillia japonica -(A)- this serious pest of over 200 agricultural and ornamental plants has been found again in the Sacramento area. The following report by John Pozzi outlines the first find for this year (see the July 1983 issue of CPPDR - Vol. 2 No. 4, for a summary of last season's beetle finds):

> "The first Japanese beetle (JB) for 1984 has been detected in California. An adult male was found on 5/31/84 in a JB trap in Orangevale, Sacramento County. This location is approximately 3/4 mile east of the nearest 1983 Japanese beetle finds, and just outside the Orangevale treatment zone.
>
> County Trapper Teresa Miller made the discovery while servicing a JB trap along Sheraton Drive in Orangevale. The trap density in that area was 160 per square mile.
>
> A total of 33 Japanese beetles were detected last year in Sacramento County. The first adult was trapped on June 30, 1983."

Unfortunately this find was outside the treatment area, which means that the infested area is much bigger than was thought last year. Also as the month of June progressed, we found that many more beetles were to be discovered throughout the infested area and in the town of Citrus Heights, which is approximately 1.5 miles east of the 1983-4 finds in Orangevale.

One property found infested last year on Steve Way in Orangevale has produced 43 of the adult beetles collected this year. Larvae and pupae were also found on this property as per this report by John Pozzi.

> "Japanese beetle (JB) larvae, pupae, and adults were discovered on 6/14/84 and 6/16/84 in Orangevale, Sacramento County.
>
> A total of 27 JB adults, 8 pupae, a fragmented larva, and 4 larvae cast skins were discovered. Two of the adults were found alive in a JB trap and another two were discovered dead under a rose bush. The remaining 23 adults, pupae, and larvae were removed from soil in the yard.
>
> Sacramento County Trapping Supervisor Larry Manger found the first of the JB in the ground while sifting soil at the Steve Way residence. The remaining JB were discovered by Japanese Beetle Eradication Project personnel while preparing the area of the finds for fumigation with methyl bromide. CDFA Area Manager Pat Minyard and Economic Entomologist Neil Wright were

also responsible for individual JB finds."

This property has a large rose garden which is interplanted with edible strawberry plants. Since only turf areas received treatment last year, the untreated soil under the strawberries apparently provided an excellent breeding area for the beetles.

Further finds have been made in Citrus Heights; one specimen was found by Troy Andal on a property 100 yards from the first find in Citrus Heights and the other specimen also found by Troy Andal about 1/2 mile east of the other two finds.

The following list by John Pozzi outlines the total finds in the Sacramento area this year:

Summary - 1984 Japanese Beetle Finds

	Sacramento County
Adults Trapped	22
Adults Visual	37
Pupae	8
Pupal Properties	1
Airport Interceptions	0

Other field personnel responsible for JB finds other than those already mentioned include Leo Cloninger, Marina Abeyta, Jack Doyle, Jim Cox, Mark Lubinski, and Leland Brown.

Oriental fruit fly, Dacus dorsalis -(A)- Six specimens of this serious fruit pest have been found during this period in Los Angeles County. The following report by John Pozzi outlines the first two finds:

> "Two male Oriental fruit flies (OFF) were trapped on 6/27/84 in Los Angeles County.
>
> Masood Azhar, Los Angeles County Trapper, made the discovery while servicing OFF (Jackson) traps at two separate locations in the Silverlake area of Los Angeles. One OFF was found along Edgecliffe Drive, and the other was discovered a few blocks east on Redcliff Street. Both traps had been placed in lemon trees.
>
> Trap density in the area is two per square mile. Los Angeles County Agricultural personnel are increasing the density to five traps in each 81 square miles around the finds."

Since the collection of these two specimens, five more flies have been trapped in the LA area, four from the Silverwood Lake area and one from further south in Lomita. The following data

outline the finds as of July 5.

Lake Silverwood, 6/28, Jackson Trap in Lemon, Masood Azhar; Lomita, 6/29, Jackson Trap in Loquat, Matt Kehr; Highland Park, 6/30, Jackson Trap in Lemon, Nelson Quintanilla; Eagle Rock, 7/2, Jackson Trap in Lemon, Patricia Hynes; Highland Park, 7/3, Jackson Trap in Grapefruit, Masood Azhar.

Western cherry fruit fly, Rhagoletis indifferens -(A)- one specimen of this cherry pest was collected from an apple maggot trap at Mt. Shasta, Siskiyou County on June 14 by S. Crossman.

Gypsy Moth, Lymantria dispar -(A)- "The first two gypsy moths (GM) for 1984 were trapped on 6/29/84 in Fremont, Alameda County and Santa Barbara County.

While inspecting GM traps in Fremont, County Trapper John Perry found a male GM in a trap placed in a liquidambar tree along Paxton Court. GM trap density in the area was 25 traps per square mile. In response to the find, Alameda County Agricultural personnel increased the GM trap density to 49 in the square mile around the find. Afterwards, another moth was discovered on 7/1/84 by John in a trap that had been placed in a liquidambar along Racine Avenue.

CDFA Agricultural Inspector, Roger Faulkner found the Santa Barbara GM while servicing a trap placed in an oak tree along Las Mission Ridge Road. The trap site is about 1,500 feet from another GM trapped in 1983. GM trap density in the area is 25 traps per square mile. It has been increased to 49 traps in the immediate square mile around the find." (By John Pozzi)

Western grapeleaf skeletonizer, Harrisina brillians -(B)- Activity of this pest has started in the San Joaquin Valley. The following collections have been made:

Lamont, Kern Co.	5/14	L. Bennett
Mariposa, Mariposa Co.	6/25	H. Schmidt
Arvin, Kern Co.	5/7	L. Bennett
Lamont, Kern Co.	4/16	D. Poore
Elk Grove, Sacto. Co.	6/19	L. Brown

Satin Moth, Leucoma salicis -(B)- Larvae of this forest pest were collected at Loyalton Cowcamp and Chilcoot, in Plumas County by F.H. Surber and G.A. Rush. Collections were made on June 4 and 5.

Nantucket pine tip moth, Rhyacionia frustrans -(B)- An adult of this pine pest was trapped in a tip moth trap at Sanger, Fresno County on June 4 by E. Haulman.

Woolly whitefly, Aleurothrixus floccosus -(A)- Found in the Thousand Oaks area of Ventura County on June 19 by D.R. Runkle.

Striped mealybug, Ferrisia virgata -(B)- found for the second time in Sacramento, Sacramento County by C.J. Rasmussen on June 8 on mulberry. Also found on Cactus in a nursery in Lucerne Valley, San Bernardino County on June 12 by J.P. Lounsbury. The Sacramento find is the biparental race; the Lucerne Valley specimens are of the uniparental race.

A eucalyptus psyllid, undescribed -(Q)- This psyllid, already widespread in southern California (see CPPDR back issues 2(3):77 and 2(5):144) has been found on nursery trees in Sunol, Alameda County by B. Curtner on April 17.

A long horned beetle, Anoplophora malasiaca -(Q)- This strikingly colored cerambycid beetle was picked up alive from a lawn in Sacramento, Sacramento County on June 24 by Jill McGee. This longhorn beetle is found in Malaysia and southern Japan. It probably is a wood boring species, and how it got to this location alive is quite a mystery. The beetle is black with white or grey spots on the thorax and wing covers. The antennae are alternating black and grey. The beetle is 35 mm long.

Smokybrown cockroach, Periplaneta fuliginosa -(B)- Specimens of this roach were found in a garage in Sacramento, Sacramento County on June 22 by an employee of a local pest control firm.

DILLEY NOMINATED FOR ESA AWARD

Principal Entomologist Donald Dilley has been nominated by the Pacific Branch of the Entomological Society of America for the 1984 ESA Distinguished Achievement Award in Regulatory Entomology. Earlier this year he was selected by the Western Plant Board as their choice for the National Plant Board nominee for the award. Each of the four regional plant boards proposes a nominee, with the final choice for the NPB nominee being made by the NPB Chairman.

With these two endorsements it is hoped that Don's baggage will be slightly heavier when he returns from the ESA meetings in San Antonio, Texas in November.

NEW STATE RECORDS

Brachycaudus rumexicolens (Patch), an Aphid New to California (Homoptera: Aphididae).

An aphid new to California was collected in Imperial County on a sticky trap by Dr. Albert Kishaba and Mr. Steve Castle of the Boyden Fruit and Vegetable Entomology Laboratory at the University of California at Riverside. Dr. Manya B. Stoetzel, USDA-ARS, identified the aphid as Brachycaudus rumexicolens (Patch).

According to Dr. Stoetzel, the USDA-ARS collection consists of specimens from U.S.A., District of Columbia, Maryland, New Jersey, New York, North Carolina, Pennsylvania; CANADA, New Brunswick; ETHIOPIA, Alemaya; and the NETHERLANDS, Bennekom. All specimens were from Rumex spp. or traps except for one New York collection from Dahlia. (By T. Kono)

NEW COUNTY RECORDS

New County Record for Myzocallis borneri Stroyan (Homoptera: Aphididae).

A new County record was established when Lee Guidry of the San Diego Agricultural Commissioner's Office collected an aphid on cork oak at Oceanside, San Diego County, California (84F22-11). T. Kono of CDFA identified the aphid as Myzocallis borneri Stroyan (1957).

CDFA has records of Myzocallis borneri from Alameda, Los Angeles, Riverside, San Bernardino, San Joaquin, and Yolo Counties on Quercus ilex (holly oak) and Quercus suber (cork oak).

S.F. Bailey and L.A. Stange (1966) reported that collections that they made of this aphid on cork oaks in Napa, California, were the first for California and the United States. They also reported collections made in Yolo, Sonoma, and Los Angeles Counties. (By T. Kono)

References

Bailey, S.F. and Stange, L.A. 1966. The twig wasp of cork oak - its biology and control. J. Econ. Entomol. 59(3):663-668.

Stroyan, H.L.G. 1957. Further additions to the British aphid fauna. Trans. Roy. Entomol. Soc. London 109(11):311-360; Pls. I-III; Text figs. 1-6.

Rice water weevil, Lissorhoptrus oryzophilus -(C)- This common pest of rice is recorded officially here for the first time from San Joaquin County. The collection was made at Escalon in a flooded rice field on May 10 by K.W. Brown.

A Tephritid fly, Cryptotreta pallida -(C)- Collected for the first time in Los Angeles County at Vernon on March 27 in an apple maggot trap. Collection was made by P. Hynes in a flowering pear tree.

Thorn scale, Eulecanium tiliae -(C)- Collected for the first time outside of a nursery in Nevada County. Collected by M. Broga, who found specimens in a plum tree on April 5 at Grass Valley.

Iceplant scale, Pulvinaria mesembryanthemi -(C)- Specimens were submitted by S. Rodriquez and A. Lomelli from the water treatment plant in Kerman on May 17. Specimens were identified by Norm Smith of Fresno County and confirmed in Sacramento. This is a new county record.

Fuchsia mite, Aculops fuchsiae -(B)- This devastating pest of fuchsias continues to disperse at a rapid rate. Collections by Steve Lincoln on June 1 at Fort Bragg represent a new record for Mendocino County. Previous collections in that county have been in nurseries. Other collections of this mite were made by King in American Canyon, Napa County on April 17; by V. Cole in Sacramento on May 16; and by King at Napa, Napa County on May 3.

The following A, B, and Q pests have been intercepted in Quarantine between April and July.

Rating	Species	Common Name	Date	Origin	County	Host	Collector
A	Anastrepha suspensa	Carribbean fruit fly	6/18	FL	Orange	Sapote	McRoberts
A	Toxotrypana curvicauda	Papaya fruit fly	5/22	FL	SM	papaya	Buerer/Davis
A	Dacus dorsalis	Oriental fruit fly	5/21	HI	LA	Mango	Eisenhart
A	Rhagoletis suavis	A walnut husk fly	4/27	MO	Hum	walnuts	Spadoni
A	Anastrepha nr. obliqua	A fruit fly (larvae)	6/04	Ecuador	Ven	mango	Land
A	Anastrepha nr. ludens	A fruit fly (larvae)	6/14	?	SLO	mango	Lilly/ Bourland
A	Leptinotarsa decemlineata	Colo. potato beetle	4/13	ID	F	beans	Wallers
Q	Sybra alternans	a long horned beetle	4/25	HI	LA	Eryngium	Hansen
Q	Anomala nr. undulata	a scarab beetle	4/24	FL	LA	misc.	Calicchia
Q	Xyloborus sp.	a scolytid beetle	5/09	FL	SM	Dracaena	Straffenegger
Q	Sternochetus mangiferae	a weevil	5/21	HI	LA	Mango	Eisenhart
Q	Oryctes sp.	a scarab beetle	6/20	HI	SF	coconut	Rios
Q	Sphenophorus nr. maidis	a weevil	6/21	MI	Tuo	Rose/ Sharon	Barlow
Q	Protaetia fusca	a scarab beetle	6/14	HI	Ala	Vehicle	Brown
Q	Diacalandra nr. taitensis	a weevil	4/10	?	SLO	coconut	Smithback
Q	Diaphania nitidalis	pickleworm	5/10	?	AM	melon	Hegseth
A	Thyridopteryx ephemeraeformis	bagworm	6/25	?	CC	Poplar	Pierce
Q	Amorbia emigratella	Mexican leaf roller	4/02	HI	STCL	Schefflera	Maggi
Q	Oecia oecophila?	a gelechiid	4/09	HI	SF	Macadamia	Lee
Q	Chrysodeixis chalcites	green garden looper	5/09	HI	B	Protea	Mattoon
Q	Orgyia leucostigma	a tussock moth	5/10	NY	SD	chair	Kennedy/ Ginsky
Q	Diplolepis sp.	a gall wasp	4/17	CA	Tuo	Rose	Watkins
Q	Amorbia sp.	a tortricid	4/07	HI	SD	flowers	Ginsky
Q	Euxoa sp.	a noctuid	5/11	?	O	table	McRoberts
Q	Atractomorpha ambigua	a grasshopper	4/05	HI	B	Rice	Stewart/ Surjan
Q	Graptostethus manillensis	woodrose bug	4/08	HI	SD	flowers	Ginsky
B	Bradybaenus similaris	a snail	4/05	FL	SJ	Ficus	Willson
			4/13	FL	SJ	Palm	Hudson
			5/09	FL	SJ	Palm	Hudson
			5/09	HI	LA	Palm	Hansen
Q	Solenopsis invicta	red imported fire ant	6/13	FL	LA	Dracaena	Calicchia
Q	Solenopsis geminata	fire ant	5/14	TX	LA	onions	Matsumoto
Q	Anoplolepis longipes	long legged ant	4/03	HI	LA	Dracaena	Juten
			5/04	HI	LA	Ginger	Smice
			5/16	HI	H	Ginger	Holzberger

Rating	Species	Common Name	Date	Origin	County	Host	Collector
Q	Pheidole megacephala	bigheaded ant	4/06	HI	SD	ginger	Ginsky
			5/17	HI	SJ	flowers	Frieders
			5/01	HI	SD	ginger	Ginsky
Q	Paratrechina fulva	an ant	5/14	FL	LA	Ficus	Calicchia
			6/20	FL	LA	Palm	Calicchia
Q	Ochetomyrmex auropunctata	little fire ant	5/14	FL	LA	Ficus	Calicchia
Q	Technomyrmex albipes	an ant	6/24	HI	STB	flowers	Cheesman
	The following A, B, and Q pests have been intercepted in Quarantine between April & July.						
A	Pulvinaria psidii	green shield scale	4/06	HI	SF	ginger	Rios
			4/06	HI	SD	ginger	Ginsky
			4/11	HI	SD	ginger	Ginsky
			4/16	HI	SD	ginger	Ginsky
			5/11	HI	SJ	flowers	Watkins
			5/17	HI	LA	ginger	Hansen/ Wegener
			5/17	HI	LA	ginger	"
			5/19	HI	LA	ginger	Hansen
			5/29	FL	SD	Ficus	Parker
			5/31	FL	SJ	Ficus	Croce
			6/08	FL	SJ	Ficus	Croce
			6/12	HI	SD	Ginger	Ginsky
			6/21	HI	LA	Ficus	Smice
			6/25	FL	SJ	Ficus	Croce
Q	Coccus viridis	green scale	5/04	HI	SD	ginger	Mariscal
			5/10	HI	Stn	flowers	Watkins
			5/10	HI	Stn	flowers	Watkins
			5/19	HI	LA	ginger & Anthurium	Hansen
			6/12	HI	SD	ginger	Ginsky
A	Kilifia acuminata	acuminate scale	4/10	HI	LA	Monstera	Hansen
			4/11	HI	LA	Monstera	Hansen
			5/22	FL	SM	Philodendron	Buerer
Q	Ceroplastes floridensis	Florida wax scale	6/26	FL	SJ	Ficus	Croce
Q	Philephedra sp.	a soft scale	6/14	FL	SM	papaya	Buerer
Q	Geococcus coffeae	a soil mealybug	4/10	HI	LA	-	Adams
			5/22	HI	LA	Areca palm	Sulentich
			6/04	HI	LA	Caryota	Sulentich
Q	Palmicultor palmarum	palm mealybug	6/22	HI	SF	coconut	Brown

Rating	Species	Common Name	Date	Origin	County	Host	Collector
B	Pseudococcus elisae	elisa mealybug	5/16	CstaRica	CC	Dracaena	Ziegler
			6/08	"	CC	Aglaonema	Meyer/ Ziegler
B	Ferrisia virgata	striped mealybug	4/25	HI	Cal	flowers	Watkins
			5/16	CstaRica	CC	Dracaena	Ziegler
B	Dysmicoccus alazon	alazon mealybug	4/10	Ecuador	Yu	banana	Paulsen/ Storm
Q	Pseudococcus lycopodii	a mealybug	5/11	HI	H	Lycopodium	Spadoni
Q	Pseudococcus sp. *species undescribed	a mealybug	4/11	HI	LA	Monstera	Hansen
			*5/31	FL	SJ	Schefflera	Croce
			*6/25	FL	SJ	Ficus	Croce
A	Pseudaulacaspis cockerelli	Magnolia white scale	4/04	FL	SD	Chrysalidocarpus	Bertrand
			4/17	FL	SD	Areca palm	Bertrand
			5/05	HI	LA	palm grass	Papilli
			5/18	HI	SD	Areca palm	Sixtus
			6/15	HI	V	bird of paradise	Mitchell
A	Howardia biclavis	mining scale	5/17	FL	LA	Ficus	Smice
			5/17	FL	LA	Ficus	Smice
A	Pinnaspis strachani	lesser snow scale	4/07	HI	LA	tropicals	Papilli
			5/04	HI	SD	bird of paradise	Mariscal
			5/11	HI	STB	Heliconia	Mitchell
			5/17	HI	LA	ginger	Hansen/ Wegener
			5/17	HI	LA	ginger	"
			6/08	HI	V	Ti	Mitchell
			6/14	Ecuador	SF	limes	Brown
			6/22	HI	SF	coconut	Brown
Q	Lepidosaphes tokionis	croton scale	4/07	HI	LA	tropicals	Papilli
			5/15	HI	V	orchid	VanEpp
B	Lepidosaphes beckii	purple scale	6/25	Col	SF	limes	Brown
Q	Pseudaulacaspis pentagona	peach scale	6/11	IA	YU	blueberry	Roush
A	Selenaspidus articulatus	rufous scale	6/25	Col	SF	limes	Brown
			6/14	-	SF	limes	Brown
Q	Parlatoria zizyphus	blk parlatoria scale	6/11	-	Ala	citrus	Brown
Q	Acutaspis decorosa	an armored scale	4/24	-	SD	bromeliad	Kenyon
Q	Aulacaspis tubercularis	an armored scale	4/25	-	SD	mango	Banzhof
Q	Pinnaspis buxi	boxwood scale	5/14	HI	LA	Monstera	Hansen
Q	Pseudaonidia trilobitiformis	trilobe scale	4/04	Nic	CC	mango	Brown

Rating	Species	Common Name	Date	Origin	County	Host	Collector
Q	Pseudischnaspis acephala	an armored scale	4/04	Nic	CC	mango	Brown
Q	Hemiberlesia diffinis	an armored scale	5/11	TN	H	tulip tree	Spadoni
Q	Aonidiella orientalis	Oriental scale	6/14	FL	SM	coconut	Buerer
A	Lopholeucaspis cockerelli	cockerell scale	5/08	HI	STB	Dracaena	Wurster
A	Aspidiotus destructor	coconut scale	5/18	HI	SD	Areca palm	Sixtus
Q	Aleurodicus disperus	spiraling whitefly	4/07	HI	LA	tropicals	Papilli
			4/04	HI	SJ	flowers	Watkins
Q	Orchamoplatus mammaeferus	croton whitefly	4/07	HI	LA	tropicals	Papilli
Q	Aleurocerus sp.	a whitefly	5/18	Mex	SLO	comador palms	Crump
Q	Aleurotulus sp.	a whitefly	5/11	HI	V	Anthurium	VanEpp
			5/21	HI	H	Anthurium	Holzberger
Q	Siphanta acuta	torpedo bug	5/11	HI	SBO	Protea	Nash
			6/01	HI	H	tropicals	Spadoni
Q	Melormensis antillarum	a fletid planthopper	4/17	HI	STCL	Dracaena	Castro/ Asakawa/ Maggi
Q	Pheidole megacephala	bigheaded ant	6/01	HI	H	tropicals	Spadoni
Q	Paratrechina sp.	an ant	6/01	HI	H	tropicals	Spadoni
Q	Pheidole sp.	an ant	6/11	Singapore	Ala	citrus	Brown
B	Bradybaena similaris	a snail	5/17	FL	LA	Ficus	Smice
Q	Euxoa sp.	a cutworm	5/02	SD	STB	pine	Pitchard

The following insects intercepted in quarantine were not immediately identifiable to species because of life stage, condition or lack of comprehensive taxonomic studies of the groups.

Q	Cicadellidae	a leafhopper	5/11	HI	SF	Medicinal herbs	Rios
			5/25	HI	SJ	flowers	Hlemer/ Frieders
			5/10	-	IM	Wheat	Flock
			5/11	HI	SF	Medicinal herbs	Rios
Q	Tettigoniidae	a katydid	6/01	HI	H	tropicals	Spadoni
Q	Diaspididae	an armored scale	6/13	HI	STB	Dracaena	Pitchard
Q	Pseudococcidae	a mealybug	5/08	HI	SD	ginger	Mariscal
			6/19	HI	SF	flowers	Weeth
Q	Coccidae	a soft scale	6/06	HI	B	flower arrangement	McBride/ Storm
			6/01	HI	H	ginger	Spadoni
Q	Bruchidae	a seed beetle	6/06	Mex	SD	tamarind	Bowers
Q	Scolytidae	a bark beetle	4/16	-	LA	dunnage	Peterson
Q	Curculionidae	a weevil	5/17	Japan	SD	cabbage	Banzhof
			5/24	HI	LA	fern stump	Simon

Rating	Species	Common Name	Date	Origin	County	Host	Collector
Q	Cerambycidae	a wood-boring beetle	6/09	-	Sac	wooden decoration	Trueworthy's Pest Control
			6/13	Europe	Ala	Oak	Brown
Q	Noctuidae	a noctuid moth	4/07	HI	SD	flowers	Ginsky
Q	Tortricidae?	a tortricid moth	5/31	FL	SJ	Schefflera	Croce
Q	Gelechiidae or Oecophoridae	a moth	6/14	FL	SM	guava	Buerer
Q	Lepidoptera?		5/09	FL	SJ	Areca palm	Hudson
Q	Isoptera	a termite	5/24	HI	LA	fern stump	Wegener
Q	Acalyptratae	an acalypterate fly	6/11	Singapore	Ala	citrus	Brown

QUARANTINE AND EXCLUSION

Gypsy Moth, Lymantria dispar -(A)- Fifteen collections representing all life stages were recorded between March 22 and June 26, on outdoor furniture and household goods arriving from the New England states. Collectors were Morton, Weeth, Karl, Bowers, Alavi, Eisenhart, Souza, Del Bondio, Garand, Dowd, Reppas, Bennett, and Kingore.

A Tent Caterpillar, Malacosoma sp. -(Q)- Five collections of immature stages were made between April 5 and May 30 on outdoor furniture and household goods shipped from New York, Vermont, Washington, D.C., and Quebec. Collectors were Webb, Rasmussen, Voorbees, Ginsky, Kennedy, and Jensen.

BORDER STATION INTERCEPTIONS
(Through July 1, 1984)

-Editor's Note-

The following list of pest interceptions made at the California border stations is meant to illustrate the frequency and large numbers of interceptions of potentially serious pests which otherwise would have been brought into California. When similar lists were first put into the CPPDR, it was our original intent to acknowledge the fine efforts of the individual border station inspectors. However, as one can see from this list, the numbers of interceptions is staggering. It would take many pages, particularly during the summer travel seasons, to give adequate recognition to all of these dedicated people. Since we do have to keep a lid on rising costs of printing the CPPDR, we unfortunately cannot list all of their individual names and contributions. Dick Brown prepares a very thorough weekly tally of border station interceptions and from these weekly reports we will try to choose one or more items of unusual or interesting nature that will give credit to the station personnel. The following report by Dick Brown is an example:

New State Interception Record - Asparagus aphid, Brachycolus asparagi, has been confirmed for the first time in a California border interception. Congratulations to BENTON Inspector Matt Pastell for getting the record. Two additional confirmed finds were also made as indicated:

BE	Matt Pastell	ID to Los Angeles	Asparagus spears	5/10
TR	Mae Obata	ID to San Francisco	Asparagus spears	5/11
MS	Anna McGuire	OR to Stockton	Asparagus spears	5/18

These nymphs are very tiny, almost invisible to the naked eye. Congratulations to each of these sharp-eyed inspectors. It's always fun to accomplish something that has not been done before.

PECAN WEEVIL	(Curculio caryae)	-A-	13
HICKORY SHUCKWORM	(Cydia caryana)	-A-	20
GYPSY MOTH	(Lymantria dispar)	-A-	47
JAPANESE BEETLE	(Popillia japonica)	-A-	1
A TENT CATERPILLAR	(Malacosoma sp.)	-Q-	24
AN OWLET MOTH	(Noctuidae)	-Q-	1
CRAZY ANT	(Paratrechina longicornis)	-B-	1
RUFOUS SCALE	(Selenaspidus articulatus)	-A-	1
PURPLE SCALE	(Lepidosaphes beckii)	-B-	10
AN ANT	(Paratrechina fulva)	-Q-	4
EASTERN TENT CATERPILLAR	(Malacosoma americanum)	-Q-	12
IMPORTED FIRE ANT	(Solenopsis invicta)	-A-	2
CALIFORNIA RED SCALE	(Aonidiella aurantii)	-B-	6
LITTLE FIRE ANT	(Ochetomyrmex auropunctata)	-Q-	2
AN ANT	(Paratrechina sp.)	-Q-	1
A WOOLLY BEAR	(Arctiidae)	-Q-	10
A SLUG CATERPILLAR	(Limacodidae)	-Q-	1
POSSIBLE EASTERN BAGWORM	(Fumaria casta)	-Q-	1
COCONUT SCALE	(Aspidiotus destructor)	-A-	5
WHITE-MARKED TUSSOCK MOTH	(Orgyia leucostigma)	-Q-	2
CHAFF SCALE	(Parlatoria pergandii)	-B-	6
A SNAIL	(Bradybaena similaris)	-B-	1
A PYRALID MOTH	(Pyralidae)	-Q-	1
A WEEVIL	(Curculio sp.)	-Q-	1
A TORTRICID MOTH	(Tortricidae)	-Q-	1
AN ARCTIID MOTH	(Arctiidae)	-Q-	3
ASPARAGUS APHID	(Brachycolus asparagi)	-Q-	5
A LEAFHOPPER	(Deltocephalinae)	-Q-	1
AN OLETHREUTID MOTH	(Torticidae)	-Q-	1
A WEEVIL	(Conotrachelus sp.)	-A-	7
A SCARAB BEETLE	(Anomala sp.)	-Q-	1
CARIBBEAN FRUIT FLY	(Anastrepha suspensa)	-A-	2
MAGNOLIA WHITE SCALE	(Pseudaulacaspis cockerelli)	-A-	2
A LEAFHOPPER	(Proconiini)	-Q-	1
A WEEVIL	(Curculionidae)	-A-	3
GLOVER SCALE	(Lepidosaphes gloverii)	-B-	2
A FRUIT FLY	(Rhagoletis sp.)	-Q-	1
A LEAFHOPPER	(Typhlocybinae)	-Q-	2
A SCARAB BEETLE	(Phyllophaga sp.)	-Q-	4
WESTERN CHERRY FRUIT FLY	(Rhagoletis indifferens)	-A-	1
PINK BOLLWORM	(Pectinophora gossypiella)	-A-	1
A LEAF MINER	(Liriomyza sp.)	-Q-	1
ORIENTAL SCALE	(Aonidiella orientalis)	-Q-	1
A BAGWORM	(Thyridopteryx ephemeraeformis)	-A-	1
A LAWN MOTH	(Crambus sp.)	-Q-	1

SAN JOAQUIN COUNTY BLACK LIGHT TRAP REPORT

DATE	5-20-84	5-21-84	5-21-84	5-28-84	5-29-84	
LOCATION	Bellota	Roberts Island	Manteca	Manteca	Roberts Island	
TEMPERATURE						
ALFALFA LOOPER Autographa californica		2	1	2		
ARMYWORM Pseudaletia unipuncta	6	6	3	1	10	
BEET ARMYWORM Spodoptera exigua	2		1	1	1	
BLACK CUTWORM Agrotis ipsilon	2	1	5	13	3	
CABBAGE LOOPER Trichoplusia ni						
CLOVER CUTWORM Scotogramma trifolii						
CODLING MOTH Laspeyresia pomonella		1	5	2		
CORN EARWORM, (ETC.) Heliothis zea						
FALSE CELERY LEAFTIER Udea profundalis				1		
GRANULATE CUTWORM Feltia subterranea	1		1	1		
GRAPE LEAFFOLDER Desmia funeralis						
NAVEL ORANGEWORM Amyelois transitella			3	16	13	
OMNIVOROUS LEAFROLLER Platynota stultana						
PEACH TWIG BORER Anarsia lineatella			16	23		
ROUGH SKINNED CUTWORM Proxenus mindara	1	2	2	1	15	
SALTMARSH CATERPILLAR Estigmene acrea		1				
SPOTTED CUTWORM Amathes c-nigrum	2			1		
SUGARBEET WEBWORM Loxostege sticticalis				2	1	
TOBACCO BUDWORM Heliothis virescens						
VARIEGATED CUTWORM Peridroma saucia	2	2	1	3	1	
W.YELLOWSTRIPED ARMYWORM Spodoptera praefica	1	1				
False Corn Earworm Heliothis phloxiphaga		1		1	1	

SAN JOAQUIN COUNTY BLACK LIGHT TRAP REPORT

DATE	6-3-84	6-6-84	6-10-84	6-12-84	6-13-84	
LOCATION	Bellota	Manteca	Bellota	Roberts Island	Manteca	
TEMPERATURE						
ALFALFA LOOPER Autographa californica						
ARMYWORM Pseudaletia unipuncta	3	23	29	65	54	
BEET ARMYWORM Spodoptera exigua	1			2		
BLACK CUTWORM Agrotis ipsilon	4	6	20	1	2	
CABBAGE LOOPER Trichoplusia ni						
CLOVER CUTWORM Scotogramma trifolii	1	1				
CODLING MOTH Laspeyresia pomonella						
CORN EARWORM, (ETC.) Heliothis zea						
FALSE CELERY LEAFTIER Udea profundalis						
GRANULATE CUTWORM Feltia subterranea						
GRAPE LEAFFOLDER Desmia funeralis						
NAVEL ORANGEWORM Amyelois transitella		2		4	4	
OMNIVOROUS LEAFROLLER Platynota stultana						
PEACH TWIG BORER Anarsia lineatella						
ROUGH SKINNED CUTWORM Proxenus mindara			1	11	1	
SALTMARSH CATERPILLAR Estigmene acrea						
SPOTTED CUTWORM Amathes c-nigrum				1		
SUGARBEET WEBWORM Loxostege sticticalis						
TOBACCO BUDWORM Heliothis virescens						
VARIEGATED CUTWORM Peridroma saucia	2	5	3	2	9	
W.YELLOWSTRIPED ARMYWORM Spodoptera praefica		1		1	1	

SAN JOAQUIN COUNTY BLACK LIGHT TRAP REPORT

DATE	6-17-84	6-18-84	6-21-84	6-24-84	6-25-84	6-26-84
LOCATION	Bellota	Roberts Island	Manteca	Bellota	Roberts Island	Manteca
TEMPERATURE						
ALFALFA LOOPER Autographa californica						
ARMYWORM Pseudaletia unipuncta	18	177	220	148	400	92
BEET ARMYWORM Spodoptera exigua		18	1			2
BLACK CUTWORM Agrotis ipsilon	8	5	5	9	2	5
CABBAGE LOOPER Trichoplusia ni						
CLOVER CUTWORM Scotogramma trifolii		6	3		4	6
CODLING MOTH Laspeyresia pomonella				1		2
CORN EARWORM, (ETC.) Heliothis zea						
FALSE CELERY LEAFTIER Udea profundalis	1					
GRANULATE CUTWORM Feltia subterranea						
GRAPE LEAFFOLDER Desmia funeralis						
NAVEL ORANGEWORM Amyelois transitella		1	4			2
OMNIVOROUS LEAFROLLER Platynota stultana			1			
PEACH TWIG BORER Anarsia lineatella			2			3
ROUGH SKINNED CUTWORM Proxenus mindara	1	79	4	11	120	2
SALTMARSH CATERPILLAR Estigmene acrea		27		2	48	
SPOTTED CUTWORM Amathes c-nigrum	2	2	1	8	8	4
SUGARBEET WEBWORM Loxostege sticticalis			2		4	
TOBACCO BUDWORM Heliothis virescens						
VARIEGATED CUTWORM Peridroma saucia	2	3	1	6	4	1
W.YELLOWSTRIPED ARMYWORM Spodoptera praefica	2	3	10	20	16	4

PRE-REGISTRATION ANNOUNCEMENT

Fifth California Plant Disease Conference

September 20 & 21, 1984
Registration 8:30 - Program 9:30

Clarion Hotel
San Francisco Airport
401 East Millbrae Avenue
Millbrae, CA 94030

TOPIC: NEW PESTICIDES AND PHYTOTOXICITY OF PESTICIDES

PROGRAM

September 20	Pesticides	
	Welcome and Introduction	
	Session I	- Pesticide Regulations
	Session II	- Pesticide Application, Phytotoxicity and Resistance
	Evening Session	- Poster Presentation by Companies
September 21	Biocontrol	
	Session III	- Biocontrol of Plant Pests

PCA CREDITS 10.5

DUE TO LIMITED SEATING, PRE-REGISTRATION IS REQUIRED

PLEASE RESERVE ACCOMMODATIONS FOR: CAL. PLANT DISEASE CONFERENCE

Name _____ Group Name 9/19-21/84

Address _____

City _____ State _____ Zip _____

Company Name & Address _____

MUST BE RETURNED BY 9/4/84

Date of Arrival _____ Date of Departure _____

Time _____ Reservation Gtd. _____
Credit Card # / Expiration Date

Room Type: Single (King) $53 ___ Double $59 ___ Additional Occupants ___

NO CHARGE FOR CHILDREN 12 OR UNDER IF OCCUPYING SAME ROOM WITH PARENTS — REQUIRING NO ADDITIONAL BEDDING.

All room reservations are held until 6 P.M. unless one night's deposit has been received or payment has been guaranteed for late check-in. If guest guarantees reservation and does not arrive, room will be billed for one night. All rooms subject to state tax. All requests should be received two weeks prior to the starting date of the meeting. Reservations received after that date confirmed subject to availability. Check out time is 12 noon. Free shuttle service.

PRE-REGISTRATION

Registration Fee - $30.00

Number attending _____

Luncheon, Sept. 20 - $ 7.50

Number attending _____

TOTAL ENCLOSED $_____

Please enclose your name and address along with this form and mail to:

California Plant Disease Conference
1220 N Street, Room 340
Sacramento, CA 95814

Make Checks Payable To:

California Plant Disease Conference

Please make hotel reservations directly with Clarion Hotel. Hotel reservations include free continental breakfast and happy hour.