

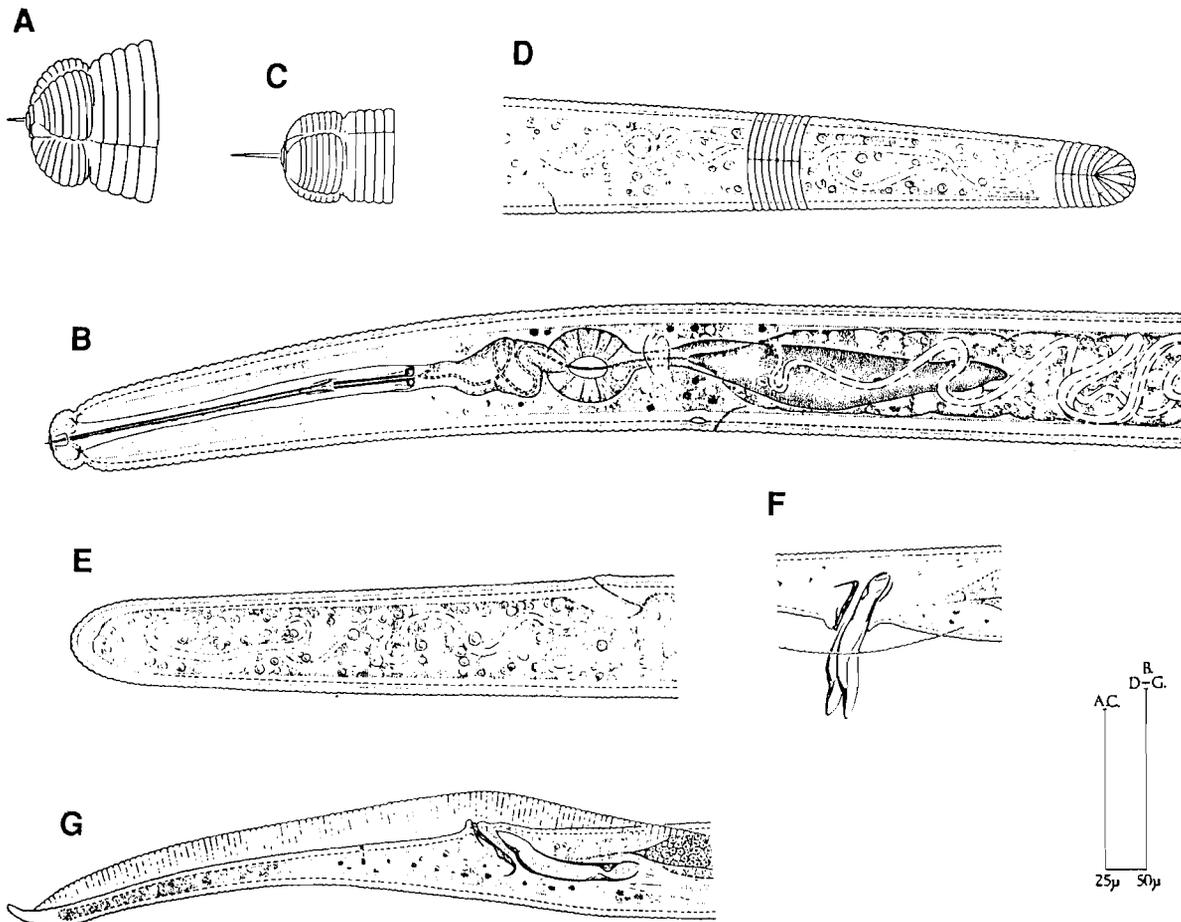
# CALIFORNIA PLANT PEST and DISEASE REPORT



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Sting Nematode, *Belonolaimus longicaudatus*

A morphological illustration of sting nematode, found for the first time in California. Article on page 3.

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California Plant Pest and Disease Report

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# NEMATODOLOGY HIGHLIGHTS

## NEW STATE RECORD

**STINGNEMATODE, *Belonolaimus longicaudatus*, -(A)**- On May 29 sting nematode was detected for the first time in California in turf at a golf course complex near Rancho Mirage, Riverside County. Dr. Manuel Mundo with the University of California made the collection, and Dr. James Baldwin made the initial identification. A sample was submitted by Dr. H. S. Gill, nematologist with the Riverside County Department of Agriculture, to CDFA, Analysis and Identification where Dr. Robert Hackney, Senior Plant Nematologist, confirmed the find as sting nematode.

The nematode was found in some of the tree box areas of the golf course. The infested spots showed as circular die-back areas in the bermuda grass. The grass showed symptoms of malnutrition and did not respond to water or fertilizer.

In response, the Riverside County Department of Agriculture and CDFA are conducting a delimiting survey for the nematode on the course and suspect adjacent properties.

Dr. Hackney supplied the following information on the sting nematode:

Sting nematode has a wide host range, including many field crops and ornamentals. Serious crop losses have been reported for citrus, grapes, carrots, tomatoes, strawberry, cotton, bean, beet, cabbage, other crucifers, celery, corn, cucumber, okra, onion, pea, pepper, potato, soybean, turf grasses, and others. This nematode does well in sandy soils and high temperatures. Optimum temperature for reproduction is about 30°C. At average maximum soil temperatures of 103°F (39.4°C), sting nematode is still active enough to cause severe root injury. The nematode's activity, however, declines above this point. Physiological races of *Belonolaimus longicaudatus*, have been described that have big differences in host range. Sting nematode can be controlled with nematicides, resistant cover crops, resistant alternate crops, rotating susceptible crops with resistant varieties, and using organic soil amendments.

Dr. James Baldwin, Chairman, Department of Nematology, University of California, Riverside, says, "I believe it has a great potential for widespread destruction of agriculture in the sandy irrigated soil of the Coachella Valley. It has a very wide host range on a number of crops and ornamentals, and in my experience is one of the most destructive plant parasitic nematodes in Florida." Dr. Baldwin reported the presence of *Heterodera mani*, a grass cyst nematode rated "Q", in the same area where he found sting nematode. Dr. Hackney is in the process of confirming Dr. Baldwin's find of grass cyst nematode in Riverside County.

The cover diagram illustrates the morphological characteristics of sting nematode. A. Female head. B. Female anterior region. C. Male head. D, E. Female tails showing intestine extending into caudal cavity, serpentine lateral canals and, in D. annulation of phasmid region and terminus. F. Male cloacal region, showing spicules extended. G. Male tail. The illustration is from C. I. H. Descriptions of Plant-Parasitic Nematodes, Set 3, No. 40, Commonwealth Institute of Helminthology, St. Albans Herts., England, 1974.

## ENTOMOLOGY HIGHLIGHTS

### SIGNIFICANT FINDS

MEDITERRANEAN FRUIT FLY, *Ceratitis capitata*, -(A)- So far this year, only one fruit fly has been trapped in California. The specimen was collected January 3 in Orange County. In response to this occurrence, trap densities were increased to protocol levels for new Medfly finds over an 81-square-mile area.

ORIENTAL FRUIT FLY, *Bactrocera dorsalis*, -(A)- As of May 31, six adult specimens have been trapped for 1992, most of the findings occurring in Los Angeles County. Data covering the finds are presented in the table on the following page.

MEXICAN FRUIT FLY, *Anastrepha ludens*, -(A)- There have been six specimens found during the first half of 1992, again primarily in Los Angeles County. Data covering the finds are presented in the table on the next page.

### NEW STATE RECORDS

FORMOSAN TERMITE, *Coptotermes formosanus*, -(Q)- This serious termite pest has been found for the first time at a California residence in San Diego County. John Pozzi describes the new find:

A San Diego County pest control operator made the discovery at a residence in the La Mesa area. On March 6, termite samples were submitted to University of California personnel Tom Atkinson, Mike Rust, and James Smith. San Diego County Department of Agriculture entomologist David Kellum inspected the property on March 11, and made a preliminary identification. The sample was positively identified by Dr. Rudolf Scheffrahn, University of Florida, as a Formosan termite.

A visual survey on adjacent properties was made on March 28, by San Diego County Department of Agriculture, CDFA, USDA, University of California, and local industry personnel. Formosan termites were found in wood piles and in live California pepper trees on three properties. No Formosan termites were found in home structures other than the initial site.

Pest control operators began treating some of the infected area and delimitation surveys were continued on April 17. Wooden stakes were set in the ground outside the infested area and they were inspected for the presence of the Formosan termite. Blacklights and a yellow sticky panel trap were utilized in an effort to collect flying adults.

CDFA Insect Biosystematist Alan Hardy notes that termite identifications are based primarily on soldier and reproductive castes. These can be distinguished from the worker caste by a head capsule that is more darkly pigmented than the rest of the body, or the

Oriental Fruit Fly, *Bactrocera dorsalis*, -(A)- 1992 Collections

County	City	Date	#M/F/Stage	Trap	Host	Collectors
Los Angeles	Downey	3/30/92	1/0	Jackson	loquat	Maciel
Santa Clara	San Jose	3/30/92	1/0	Jackson	orange	Wilson
Los Angeles	Los Angeles	4/9/92	1/0	Jackson	loquat	Davila
Los Angeles	Westchester	4/23/92	0/1	McPhail	grapefruit	Famili
Los Angeles	Pasadena	5/19/92	?	Jackson	apricot	De la Huya
Los Angeles	Inglewood	5/20/92	1/0	Jackson	avocado	Camacho

Mexican Fruit Fly, *Anastrepha ludens*, -(A)- 1992 Collections

County	City	Date	#M/F/Stage	Trap	Host	Collectors
Los Angeles	Los Angeles	1/21/92	1/0	McPhail	guava	Morris
Los Angeles	Downey	1/23/92	1/0	McPhail	orange	Vargas
Los Angeles	Downey	2/13/92	0/1	McPhail	orange	Vargas
San Diego	Chula Vista	2/27/92	0/1	McPhail	orange	Johnson
Los Angeles	Maywood	3/17/92	0/1	McPhail	orange	Vargas
Los Angeles	Pasadena	5/18/92	1/0	McPhail	loquat	De la Huya

presence of wings or wing stubs. Samples should be submitted to CDFA, Analysis and Identification, in a small vile or bottle, not under scotch tape or with materials such as soil which could damage the specimens.

The Formosan termite belongs to the termite family Rhinotermitidae. This family is characterized primarily because of the wing venation, which consists of two major thickened veins (the costa and radial sector) on the anterior or leading edge with no crossveins between them. In the soldier caste, the family can be recognized because the mandibles are well developed but are without teeth. Within the family (which includes the genera *Coptotermes*, *Reticulitermes*, *Heterotermes* and *Prorhinotermes*) adults of *Coptotermes* can be recognized because they have wings with numerous hairs on the membrane, 18 antennal segments, nearly circular head (dorsal view), large ocelli and a median vein in the wing. The soldier caste can be recognized by the large, tubular fontanelle. Separation of species within the genus *Coptotermes* is very difficult and must be done by a specialist.

EUROPEAN VIOLET GALL MIDGE, *Dasineura affinis*, -(Q)- For the first time in North America, violet midge has been found in five different counties in California. The first record is from Stockton, San Joaquin County, and was discovered January 2 by Jack Gianelli. It was not until February 20 that another specimen was found in Cupertino, Santa Clara County. Then, on February 25, this pest was detected in Sacramento, Sacramento County. Two more new finds were detected in May, the first on May 4 by Fallen and Anderson in Napa, Napa County, and then on May 19 in Walnut Creek, Contra Costa County, by Stout.

This new midge is similar to *Prodiplosis violicola*, another gall forming pest of violets already known from California. Both species cause a severe rolling and general thickening and distortion of the leaves. However, the new midge differs from *P. violicola* in that the larvae of *affinis* pupate within the rolled leaves and the larvae of *violicola* drop to the soil for pupation.

This midge occurs throughout western Europe and northern Africa, where it is often a serious pest of violets. It causes severe distortion and stunting of the plants and usually prevents flower production, although in some cases the flowers are also attacked. Heavily attacked plants often die. There are four or five generations yearly.

GREEN SHIELD SCALE, *Pulvinaria psidii*, -(A)- This soft scale pest been found for the first time in the state in Orange County. The following report outlines the discovery:

The collection was made on Dobson Way in Villa Park, Orange County on January 23 by a pest control operator who found insects infesting dooryard hopseed bushes, *Dodonea viscosa*. Apparently, many of the shrubs were infested in this particular yard. A detection survey team conducted a delimitation in the yard and in the surrounding neighborhood.

Green shield scale is commonly encountered in quarantine shipments of nursery stock in post-entry situations in nurseries. Occasionally, however, it has been found outdoors on the nursery grounds on plants not involved with quarantine shipments. Such infestations are eradicated and there are no current infestations known in California nurseries. Until this discovery, it apparently has never been found outside the nursery or quarantine situation in California.

The scale is a major pest in many tropical areas of the world. It is a common and often serious pest of ornamental plants in Florida, especially *Ficus* and guava, and is a prolific honeydew producer. The white ovisacs can also become unsightly, along with sooty molds, when populations become large. In California, it can be expected to be troublesome in coastal communities outdoors, and especially troublesome in indoor decorative landscape situations such as shopping malls.

A work crew went to the infested property and physically removed all of the infested hopseed bushes. The scale is now thought to be eradicated, but surveys will be continued.

A GREEN WATTLE PSYLLID, *Acizzia* species near *jucunda*, -(Q)- A green wattle psyllid was found on *Acacia* sp. for the first time in California on January 21 at a nursery, Orange County. This discovery was also a new record for North America. The taxonomic characteristics of this psyllid are very close to those of *A. jucunda*, however, specialists at the United States National Museum felt that there were some differences between this and their determined specimens of *jucunda*. Specimens were sent to Keith Taylor in Australia, who forwarded the specimens to Dr. Alan Yen, a specialist of psyllids attacking acacia. An answer from Dr. Yen is pending.

After the initial discovery, it was then collected three more times in Orange County. Green wattle psyllid was again detected by J. Clodt at a nursery in Brea. Specimens were collected by J. Wynn in Fullerton on February 28 and on March 3. The green wattle psyllid was not found again until May 17 when a specimen was collected for the first time in Los Angeles County in San Gabriel.

## NEW COUNTY RECORDS

BLUEGUM PSYLLID, *Ctenarytaina eucalypti*, -(C)- So far this year there have been nine new county records for bluegum psyllid. A bluegum psyllid was found in Penngrove, Sonoma County on March 12 by A. Czarnecki. On March 26, this pest was found by Lizio and Gaines in Alta Loma, San Bernardino County. In San Mateo County, a bluegum psyllid was collected by Kyra Kingore in Burlingame on April 2. On April 11, Greg Clark found a specimen in Jamestown, Tuolumne County, and then on April 17, Dennis Haines collected a nymph further south in Woodlake, Tulare County. Bluegum psyllid was found in Napa, Napa County on April 24 by Nathan George, and in Modesto, Stanislaus County on April 29 by E. Perry and T. Sandoval. Finally, specimens were collected by J. Thompson in Clovis, Fresno County on May 12, and on May 19, they were found by V. Castellano and D. Isola in Los Banos, Merced County. The map on the following page shows the present distribution.

RED BANDED WHITEFLY, *Tetraleurodes* sp.-- This as yet undescribed whitefly was found for the first time in Ventura County. It was found for the first time in California infesting avocados in San Diego on October 5, 1982. Besides occurring in San Diego, Los Angeles, Orange, Riverside, and Ventura counties in California, the whitefly has been collected in Florida and Mexico. For more information, see CPPDR 2(1):9-10,1982 and 10(1-2):12,1991.



KUNO SCALE, *Eulecanium kunoense*, -(B)- Kuno scale was collected by a pest control operator in Stockton on April 7. This is a new county record for the scale in San Joaquin County.

The adult female scale is almost spherical, 3 to 4 mm in diameter, and resemble rows of spheres (B-Bs) glued to the stems of the host. One of the most useful identification characteristics of this species is the broad internal "lip" of the body margin which occurs where the adult female scale attaches to the host. This lip is best seen by removing the female scale from the host and examining the venter. During most of the year, females are a dark, shiny, chestnut brown, with numerous darker depressed spots.

This scale generally live one generation per year in California, overwintering in March through early May. After this time, crawlers migrate to the leaves where the nymphs will develop throughout the summer. The nymphs return to the twigs before leaf drop in the fall. Kuno scale prefer pyracantha and plum as hosts, but also infest walnut and most fruit trees in the rose family.

Introduced from the Orient, Kuno scale is a minor pest of dooryard ornamentals. It is not a pest of commercial crops in California but has the potential to become one because of the scale's rapid growth pattern and the the production of copious amounts of honeydew.

In addition to the recent find in San Joaquin County, Kuno scale has been established in Alameda, Butte, Contra Costa, Lake, Napa, Sacramento, and Santa Clara counties for many years. According to E. O. Essig, this scale has probably been in California at least since 1896.

LEUCAENA PSYLLID, *Heteropsylla cubana*, -(Q)- On May 14, a leucaena psyllid was collected for the first time in Los Angeles County in Rosemead. Soon after that new county record, a heavy infestation was found in Whittier, also in Los Angeles County, on May 29. This serious pest was first found in California in Orange County on the C. S. U. Fullerton campus on August 15, 1986. For more information on this initial find, see CPPDR 5(3-4):225-226.

A Winrock International conference in Bogor, Indonesia in 1989, focusing on the invasion of the leucaena psyllid in Asia, greatly emphasized the severity of this developing global problem and gave reports on controlling the pest's progress into new areas.

A native of Central America, this sucking insect was first sited in Hawaii in 1984 and has since spread over 3 million square miles throughout the tropical Pacific islands to China, Australia, and into western India. The psyllid's invasions have caused defoliation of leucaena plantings world-wide, and when followed by drought, the trees are often killed. To combat the serious economic losses, some areas, such as Hawaii, have implemented effective bio-control programs to eradicate the pest. Possible economic potential in California is not known at this time.

Previously the psyllids in *Heteropsylla* had been poorly understood. However, S.B. Muddiman, I.D. Hodkinson and D. Hollis have recently revised the genus (Bull. Entomol. Res. 82:73-117, 1992). There are still several species apparently very close to *H. cubana*, particularly *H. mexicana*. Since *H. cubana* is thought to be restricted to *Leucaena* spp., but all California records are apparently from *Albizia* sp., there is a possibility that the California material is some other species. Specimens have been sent to the Systematic Entomology Laboratory at Beltsville for comparison with determined *cubana* material. The answer is pending.

## EXCLUSION

RED IMPORTED FIRE ANT, *Solenopsis invicta*, -(A)- Collections of this serious ant pest have been made in nursery situations in two counties. Apparently these nurseries all belong to one company, and the infested nursery stock might have been brought into California illegally. Collections were made in Thermal, Riverside County by E. Drake and E. Reeves on May 19 and 21. Collections were made in San Diego County by C. Avery and D. Sudduth at Escondido on May 22 and at San Diego on May 26. Eradication and further investigation are in progress. See 'BORDER STATIONS.'

LILYBULB MEALYBUG, *Phenacoccus emansor*, -(Q)- This Middle East native mealybug has been intercepted in several counties on bulbs coming into California from The Netherlands. Collections were made at Oceanside, San Diego County on April 3 by L. Parker; at Watsonville, Santa Cruz County on April 9 by C. Jensen; and on April 10 at Carpinteria, Santa Barbara County by S. Squires and J. Davidson. California quarantine officials are working with USDA and company officials in an effort to track down and eliminate the source of the infestation.

AN ORCHID THRIPS, *Liothrips* sp. -(Q)- This large black thrips in the family Phlaeothripidae was found injuring the leaf bases and crowns of Paphiopedilum orchids. The find was made on nursery grown plants by Steve Hajik and Jim Xerogeanes at Fort Bragg, Mendocino County on May 18. The only *Liothrips* known to feed on orchids is an undescribed species from Southeast Asia. The adults look like the well-known black hunter thrips; the nymphs are red and black. The origin of the infested orchids is unknown.

BAMBOO DIASPIDID, *Kuwanaspis hikosani*, -(Q)- This bamboo infesting armored scale was discovered for the first time on the west coast by L. Fernandez on January 30, and then, for a second time, on February 26. Both were found infesting arrow bamboo, *Pseudosasa japonica*, at a nursery in Tustin. Previously, the bamboo diaspidid was only known in the United States in Georgia and South Carolina. It is considered to be a serious pest and is being eradicated in accordance with the California Agricultural Code. All infested and exposed host plants are being held pending treatment and eradication.

MAGNOLIA WHITE SCALE, *Pseudaulacaspis cockerelli*, -(A)- There have been some significant new finds for magnolia white scale so far this year. In late January, Neil Stalnaker detected the scale pest infesting pygmy date palm, *Phoenix roebellenii*, at a retail outlet in El Cajon and Santee, San Diego County. N. Stalnaker also found magnolia white scale at a nursery on April 8 in Escondido. Also in April, N. Kellam detected this pest at a nursery in Torrance, Los Angeles County. Magnolia white scale is a serious pest and eradication measures have been taken.

Three scale insects, TRILOBE SCALE, *Pseudaonidia trilobitiformis*, -(Q)-, FLORIDA WAX SCALE, *Ceroplastes floridensis*, -(Q)-, and A SOFT SCALE, *Philephedra tuberculosa*, -(Q)-, were detected by Art Moretto infesting *Ficus benjamina* at a nursery in Lodi, San Joaquin County on January 30.

A GIANT AFRICAN SNAIL, *Archachatina marginata*, -(Q)- On March 27, 1992, a Florida Division of Plant Industry (DPI) Inspector discovered an exotic land snail in a pet store in Tallahassee, Florida. The fist-sized snail was identified as *Archachatina marginata* by a malacologist at the

University of Florida. *Archachatina marginata* is a plant pest belonging to the "Giant Snail" group, related to the well-known *Achatina fulica*, and is not known to occur in the United States.

APHIS investigation has disclosed that the snails originated in Lagos, Nigeria, and entered the United States through John F. Kennedy International Airport. A New Jersey firm was the broker for the shipments from Africa. Starting in October 1991, seven shipments arrived totaling approximately 850 snails. Records indicate that these snails were manifested as live tropical fish or reptiles. Distributors sent these snails to 61 pet shops in 21 states.

Giant African snails are popular as terrarium pets and are sought after because of their large size. The snails are voracious eaters known to feed on virtually any plant material. A snail consumes one-fourth of its weight daily. If released in the wild, the giant African snail could cause substantial damage to plant crops, specifically bananas, melons, and vegetables. These snails are hermaphrodites, possessing both female and male sex organs. One snail can produce 1,000 offspring during its life.

APHIS Plant Protection and Quarantine (PPQ) Officers, Florida (DPI), and Regulatory Enforcement and Animal Care Investigators visited all identified locations and seized any suspect snails found in the pet shops. A press release was prepared informing the public of the agricultural danger from these pests and asking the public for assistance in recovering any snails which may be known to them or in their possession. A 1970's introduction of the giant African snail, *Achatina fulica*, took nearly six years to eradicate in Florida.

The USDA traced only one shipment entering California to a pet store in Richmond, Contra Costa County. Of the 30 snails that arrived in California, agricultural officials have successfully tracked down most of the giant pests. However, residents were asked to notify their local County Agricultural Commissioner's Office if they 1) had received one of these snails, 2) have seen any of the giant snails offered for sale, or 3) have any information regarding distribution of the pests.

## SIGNIFICANT FINDS IN OTHER STATES AND COUNTRIES

BROWN CITRUS APHID (BCA), *Toxoptera citricida*, -(Q)- On April 30, specimens of an aphid submitted from Puerto Rico were confirmed as *Toxoptera citricida* (Kirkaldy), the brown citrus aphid. This aphid has never been detected in the continental United States, but it has been established in Hawaii for many years as well as in numerous countries around the world. This species is known as the "principal and most efficient aphid vector" of citrus tristeza virus (CTV). CTV causes decline and death of *Citrus* spp., particularly those planted on sour orange rootstocks. The aphid feeds and breeds primarily on citrus and the related Rutaceae. However, other recorded hosts include fig, persimmon, azalea, cotton, *Anacardium*, *Calodendron*, *Evodia*, *Passiflora*, and *Mangifera*. Development to maturity requires about 12 days. In the spring colonies increase rapidly on young growth. Severe host deformation occurs in heavy infestations.

Clearly, tristeza is one of the most destructive citrus diseases today. The International Organization of Citrus Virologists (IOCV) was created after tristeza destroyed millions upon millions of

trees between the 1930's and the 1950's. This severe global threat is of significant interest to people around the world.

The following report on the basic biology of the citrus tristeza virus was presented by Richard Lee at the Workshop on Citrus Tristeza Virus, *Toxoptera citricida*, in Central America and the Caribbean Basin, held at CATIE, Turrialba, Costa Rica in May 1991.

Citrus tristeza virus is a member of the closterovirus group. It is the largest reported plant virus and has a flexuous rod shape about 11 X 2,000 nm in size. The virus particle contains a plus-sense RNA of about 6.6 million daltons size. The phloem-limited virus forms inclusion bodies which can be seen with the light microscope. Double-stranded (ds) RNAs can be extracted and purified from virus-infected plants, these include a full length replicative form of about 13.3 million daltons plus several "subgenomic" dsRNAs. The virus is transmitted semipersistently by several aphid species, the most efficient vector being *Toxoptera citricida*. The virus is spread also through infected budwood.

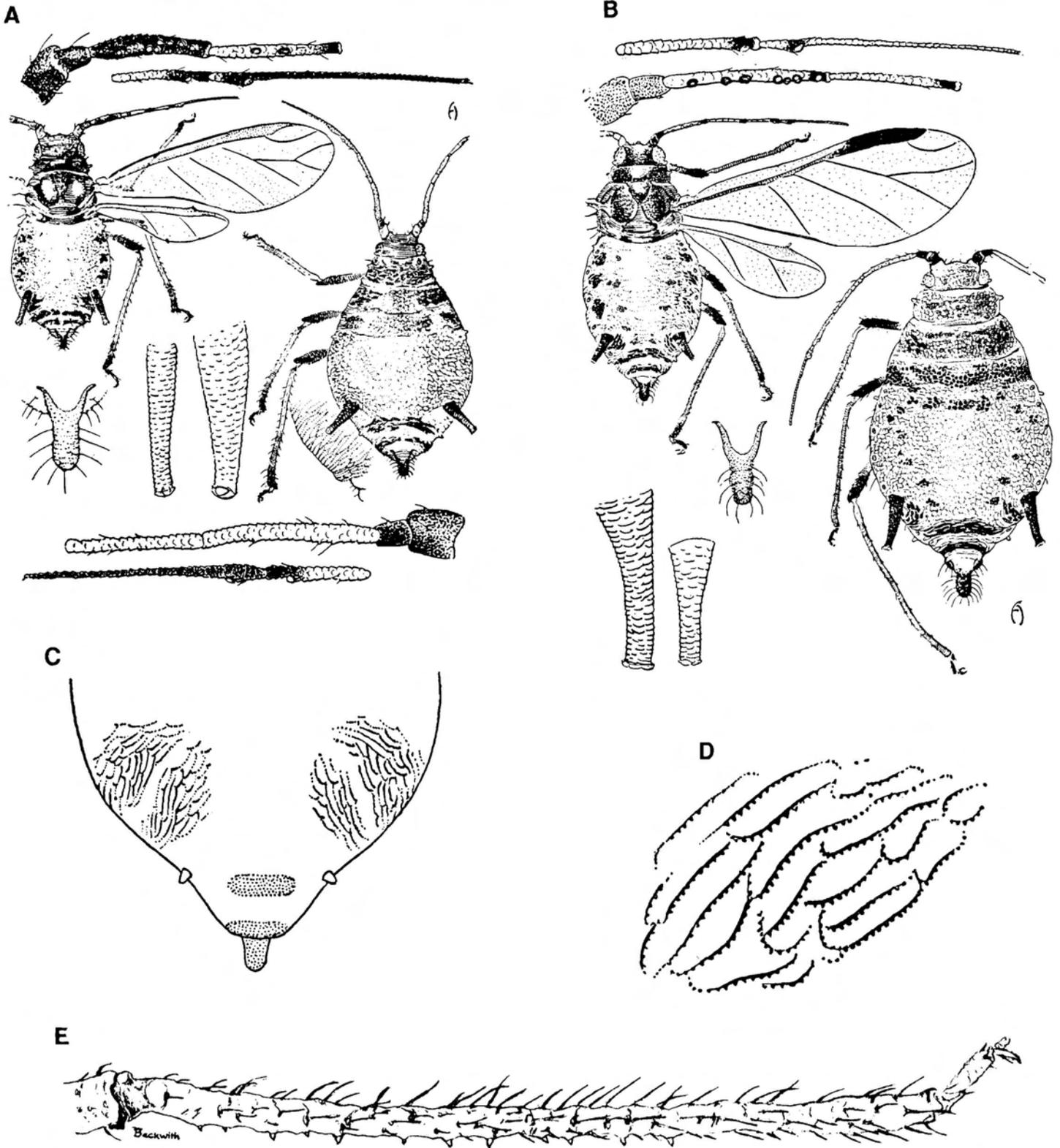
There are other aphids that occur on citrus in California that could be confused with either of these aphids in the field and so field identification of aphids on citrus should not be relied on. All local agricultural officials should be on the lookout for this pest and carefully examine host plants for this insect. Submit a generous sample in an alcohol vile and get some winged forms if at all possible.

In the laboratory, however, slide mounted specimens of the two *Toxoptera* species can be separated readily from all other California aphids. The undersides of the abdomen (roughly in the area directly under the cornicles) have a series of striations which are used for sound production via stridulation. Associated with these striations on the abdomen are the corresponding stridulatory pegs found on the inner sides of the hind tibiae. The stridulatory mechanisms are unique to the genus *Toxoptera*.

The brown citrus aphid differs from the common black citrus aphid by five primary characteristics. Color alone is not sufficient to discriminate between them. If one is able to see the winged form of both aphids on the same leaf or plant, the four primary characteristics that differentiate them are the following:

1. Relative size -- *T. citricida* is 10% larger.
2. The dark 3rd segment of the antennae of the winged form of *T. citricida* compared to the lighter 3rd segment for *T. aurantii*.
3. The distinctly lighter pterostigma wing area in *T. citricida* as compared to the very dark segment for *T. aurantii*.
4. The median or middle vein is conspicuously forked in *T. citricida*, but is not forked in *T. aurantii*.
5. *T. citricida* has 10-20 scattered sensoria on antennal segment III and 2-4 setae on antennal segment IV, compared to the absence of sensoria on antennal segment IV and 6-8 sensoria in a line on segment III in *T. aurantii*.

The morphological illustrations on the next page illustrate the general morphology of both *T. aurantii* and *T. citricidus* and the stridulatory devices which are characteristic of the genus



Morphological characteristics of *Toxoptera*: A. Adult morphology of *T. citricida*. B. Adult morphology of *T. aurantii*. C. Ventral view of abdomen of *T. aurantii* showing positions of the stridulating striations. D. Enlargement of the abdominal stridulation areas of *T. aurantii*. E. Hind tibia of *T. aurantii* showing the arrangement of the stridulatory pegs. Illustrations A to D taken from Essig, 1949, Pan-Pacific Entomologist 25(1):13-23.

Toxoptera. There are numerous species of *Toxoptera* in other parts of the world, and the included information is meant only to separate *T. aurantii* from *T. citricida*.

MEDITERRANEAN FRUIT FLY, *Ceratitidis capitata*, -(A)- Five Medfly outbreaks were detected in early January in Chiapas, Mexico. Five adult males and two larvae were detected within nine miles of the Guatemalan border. Increased outbreaks in Guatemala since December 1991 are responsible for the outbreaks in Mexico.

AFRICANIZED HONEY BEE (AHB), *Apis mellifera scutellata*, -(Q)- A stinging incident in the city of Corpus Christi involving two men was reported by the Corpus Christi Health Department. The incident occurred the afternoon of April 13, 1992, when two men were getting into their car to go home at the end of the day. A feral colony was located in the walls of a building where school buses are kept. Both men were seen by the nurse and later sent to the hospital for treatment. A sample was sent to Beltsville for official confirmation.

Also in April, officials of the African Bee Program in Mexico report the first fatality in northern Tamaulipas. Not much information is available other than the victim was a 70-year-old man and the incident occurred in the town of Valle Hermoso, about 50 miles south of Brownsville, Texas. A 12-year-old boy and his 36-year-old father were also stung at the same location. Both were taken to the hospital.

A 60-year-old woman postmaster of Sebastian, Texas, was stung approximately 409 times by AHB while operating a weed eater around a mobile home. The attack occurred on April 13 at Santa Rosa, Texas, Cameron County. The woman was hospitalized and released later in the week. The honey bees had built a large nest underneath the mobile home. The woman's daughter was stung 40 or 50 times and a neighbor several times while assisting her. In addition to Cameron County there have been AHB infestations in the counties of Bexar, Frio, Kinney, McMullen, Uvalde, Atascosa, and Live Oak in Texas so far this year.

ASIAN GYPSY MOTH, *Lymantria dispar*, -(A)- As of January 7, seven adult specimens of gypsy moth trapped in Washington State and one specimen trapped in Oregon have been identified as apparently Asian gypsy moth (AGM). Dr. Rick Harrison at Cornell used mitochondrial DNA (mtDNA) procedures to identify these specimens. At that time, several other specimens from Washington and Oregon were pending mtDNA identification.

A request for a temporary restraining order to delay the AGM eradication project in North Portland, Oregon, was filed in the Federal District Court on April 15. The judge handling the case held a hearing on April 17 and ruled that the program could continue. This situation may have given rise to several unconfirmed rumors concerning the possibility of similar actions being planned in the Tacoma, Washington area.

On April 21, the first of three aerial applications of *Bacillus thuringiensis* (Bt) had begun in the Pacific Northwest. The AGM eradication project covers about 7,000 acres near North Portland in Oregon and 119,000 acres near Tacoma in Washington. As of May 20, 25,164 acres have been treated in North Portland, Oregon, and 282,160 acres in Tacoma, Washington. All three applications have been completed in Portland. The first and second applications have been completed, and the third application is approximately 47 percent complete in Tacoma.

The APHIS shipboarding policy on suspect vessels appears to be working extremely well. None of the vessels on the AGM suspect list have entered ports in either Washington or Oregon. One Russian ship requested in-stream boarding at Astoria, Oregon, prior to entering the Columbia River. Another was boarded twice off Port Angeles, Washington. No egg masses were found during vessel inspections. The first AGM survey trap was placed in Oregon during the third week of April; in Washington, the first trap was placed May 19.

## **CAPS 'COOPERATIVE AGRICULTURAL PEST SURVEY'**

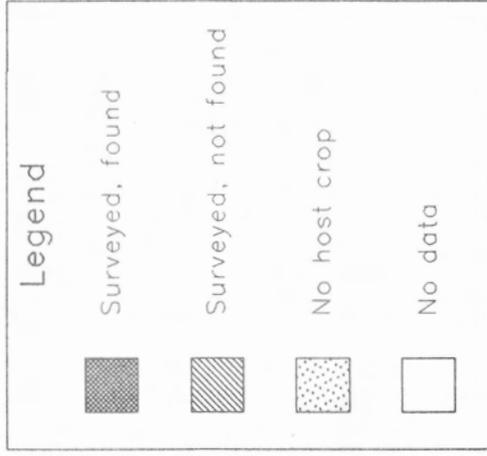
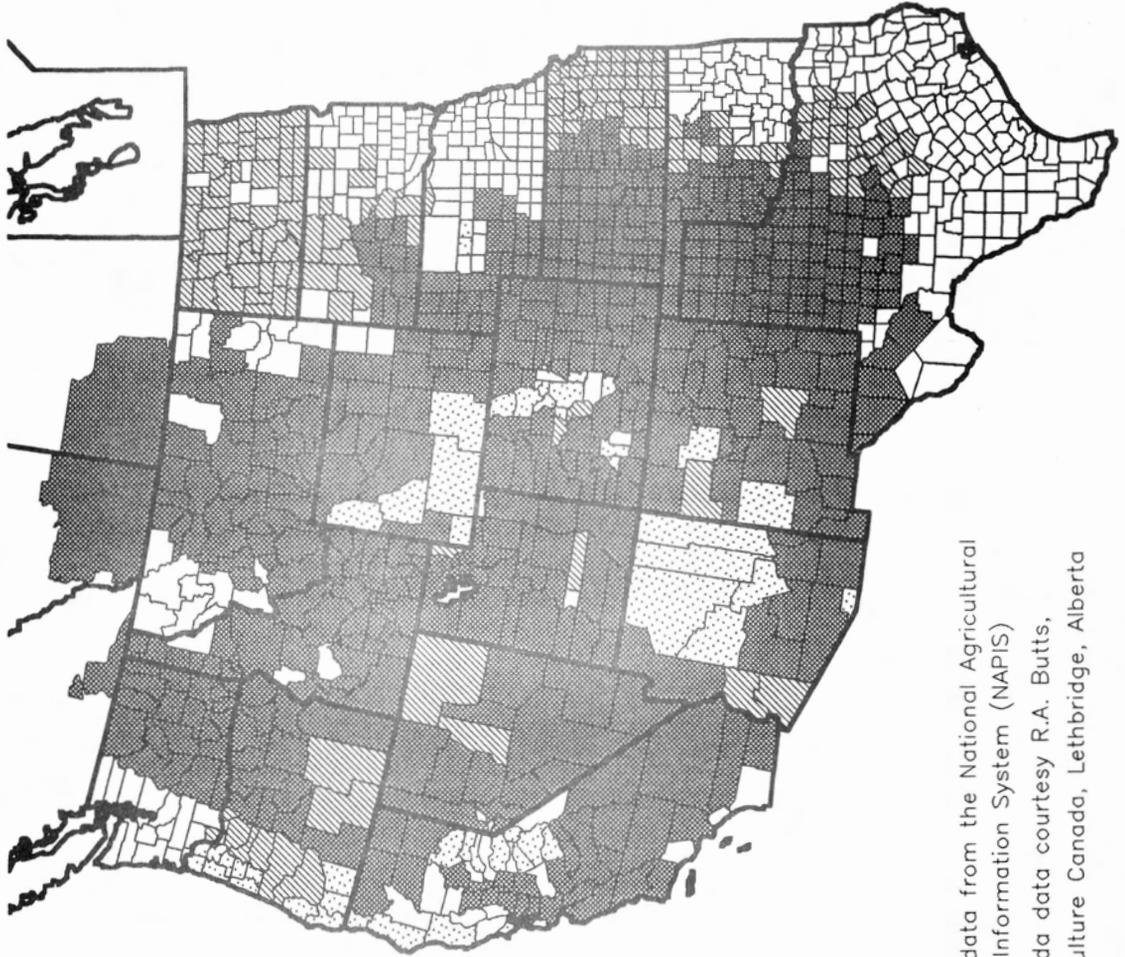
A United States Department of Agriculture sponsored program has been in operation for many years. The object of the program is to detect the introduction of exotic pests in to the United States and to monitor the movement of these pests once they are established. Many of these exotics are part of a large computerized data base (The National Agricultural Pest Information Service (NAPIS)). This data base is often tapped for the purpose of producing pest distribution maps for the United States. One such map example is a color computer map print out of the current United States distribution of gypsy moth. Another such map covers the current distribution of the Russian wheat aphid in the western half of the United States.

California agricultural officials tracked the movement of Russian wheat aphid across the United States and through California when it arrived here. It was first found in the United States in 1986 in Lubbock, Texas [see CPPDR 5(1-2):9-10]. It was first found in California during 1988 in Imperial County [see CPPDR 6(1-4):206-208]. It has since moved throughout the state wherever host crops occur, and it has done the same throughout the rest of the western states. Surveys for the pest are winding down as biological control organisms are being released for its control. In the meantime, a final distribution map has been produced and can be found on the following page. The map was produced from the NAPIS data base using computerized mapping software. The map was developed by Diana Cooksey, a CAPS State Survey Coordinator at Montana State University at Bozeman. Copies of the map can be obtained from Diana at:

Department of Plant and Soil Science  
Montana State University  
Bozeman, Montana 59717  
USA

# Counties reporting Russian wheat aphid, 1986-1991

## Cooperative Agricultural Pest Survey (CAPS)



Map by D. Cooksey  
Montana State University  
Department of Plant and Soil Science  
November 7, 1991

U.S. data from the National Agricultural  
Pest Information System (NAPIS)  
Canada data courtesy R.A. Butts,  
Agriculture Canada, Lethbridge, Alberta

## BORDER STATIONS

California has long employed the border stations as a first line of defense against the introduction of exotic pests into the state. Many interceptions of imported fire ants have been made at the borders over the years, and many of these interceptions have been reviewed in this section of the CPPDR. Arizona also maintains border stations and they do monitor plant materials moving there from California. Imagine our surprise when Arizona rejected California nursery stock for an infestation of red imported fire ant! In this particular case, California is very fortunate that the ants were discovered by sharp-eyed inspectors in Arizona, because we would otherwise have had an introduction that may not have been discovered until too late. Describing the initial find is the following report by Donna Cunningham. Additional information can be found in the 'EXCLUSION' section of this issue.

A truckload of California origin nursery stock was rejected by the Arizona Department of Agriculture due to the discovery of imported fire ants (IFA), *Solenopsis* spp., in the containers. The truck returned through the Blythe Border Station where samples were taken and IFA was confirmed by our CDFA lab. The infested shipment was destroyed.

The shipping nursery has three known locations in California and one in Arizona. All of the affected nursery stock at the three California locations have been put under hold after preliminary inspections. IFA nests have been found at each site. The nests may extend from the containers into the ground beneath. The nursery owners and managers have been instructed not to treat or disturb the known IFA infestations until delimitation is complete and eradication treatment can begin.

A draft action plan has been developed calling for an initial application of an effective bait (LOGIC) treatment followed by a drench treatment of DURSBAN. Further treatments and surveys will be conducted later this year to be sure that the IFA is eradicated.

Arizona and Nevada have been notified of the potential for IFA infested nursery stock from this nursery. The Arizona site is familiar to the Arizona Department of Agriculture due to prior problems with IFA. The source and distribution of the nursery stock was investigated and delivery information was sent to those affected counties for follow-up inspections.

### Other Important Interceptions:

A fruit fly, *Anastrepha striata*, a relative of the Mexican fruit fly, was collected last fall from the Fresno area and in 1989 from the Los Angeles area. Prior to this time the species, sometimes called the guava fruit fly in Mexico, had never been intercepted at the border until Quarantine Inspector Martin DeLeon found live larvae in guavas from Jalisco, Mexico on January 16. This species prefers guavas but feeds also on a wide variety of fruits.

Caribbean fruit fly, *Anastrepha suspensa*, was intercepted from a California auto returning from Florida. Live larvae were collected from tangerines by PQI Lance Ebert on January 15.

A live sterile Mexican fruit fly was intercepted by PQI Tom Duitsman at the Benton Station in Inyo County. The truck driver stated that the fly had flown in the window at a Vernon, Los Angeles County truck stop and had traveled this way all the way to Oregon and back!

## PLANT PATHOLOGY HIGHLIGHTS

**SORGHUMSTUNT MOSAIC (SSM)**- A rhabdovirus, tentatively identified by Dr. Dennis Mayhew as sorghum stunt mosaic, has been found infecting sweet corn in Stanislaus County. SSM is known to infect corn, sorghum, and wheat, and can result in 100 percent crop loss.

Symptoms in corn include a severe mosaic with a "stripplled" appearance, stunting, and ears that have little or no "fill." The virus is transmitted by the leafhopper *Graminella sonora*, but not by seed or mechanically. There are no known resistant varieties of corn.

Previously, this virus was restricted to the Imperial Valley and was not known to occur anywhere else in the world. The find in Stanislaus County is the first evidence of the spread of this virus from the Imperial Valley.

The sample was originally collected on May 11, 1992, by personnel from U. C. Extension.

**CHRYSANTHEMUM WHITE RUST, *Puccinia horiana*, -(A)**- On January 21, chrysanthemum white rust (CWR) was detected at the fifth Santa Barbara County nursery. This nursery is located in the same general area as the nurseries previously found to be infested in December 1991. The nursery was placed in quarantine.

On April 8, CWR was found by Mike Oak, USDA seasonal inspector, and Lorin Bronson, CDFA Economic Entomologist, in a cut flower greenhouse in Santa Barbara County during a project survey. This location is within the one-quarter mile radius of the previously infested greenhouses. The infected plants were of the "Moneymaker" and "Yellow Spider" varieties. The greenhouse was placed under a Quarantine Hold order, the owner signed a compliance agreement, and the infected plants were destroyed under quarantine supervision.

Because of this infestation, delimitation and detection surveys were started and conducted at least monthly at nurseries within the immediate vicinity of the infected greenhouse. All residences, fields, and other susceptible locations, within at least a one-quarter mile radius of the infected greenhouse, were surveyed. Locations associated with all the infected greenhouses were surveyed, as well as local backyards and the yards of greenhouse employees.

The cuttings for these plants were obtained from California plants in Ventura County. This location was previously inspected and found to be free of CWR. It will be resurveyed in the near future.

Survey activities will continue for at least two generations to assure eradication has been achieved.

As of May 22, there have been four new finds in Santa Clara County nurseries of chrysanthemum white rust. Two of the nurseries are in Morgan Hill, one nursery is in San Martin, and the fourth is in San Jose. A total of five greenhouses and two outdoor shade houses were found infested with this disease. State and federal quarantine hold orders have been placed on the infested nurseries. Varieties of chrysanthemum so far found positive for this disease are "Red Rover," "Detroit News," "Super White," and "Super Yellow." The USDA is working to determine how the disease entered

the U.S. and California by surveying production areas of commercial chrysanthemum producers in several states which supply cuttings to California. Introduction of the disease was also indicated as occurring from illegal, private import of propagative material from the Orient.

Chrysanthemum white rust project personnel (Santa Clara County, state and federal cooperators) have inspected 65 nurseries for the disease so far. Quarter-mile and half-mile surveys of all commercial and private properties around the four infested nurseries have begun.

Chrysanthemum white rust is a federal action pest and requires quarantine and eradication actions be taken whenever it is found in the United States. In late 1991, an infestation of the disease was found in Santa Barbara County and was eradicated under a cooperative program with Santa Barbara County, the California Department of Food and Agriculture (CDFA), and USDA personnel.

Because this is the second infestation of this disease found in California within a year, it has been requested that all County Departments of Agriculture survey the production areas of all chrysanthemum growers in their counties and that if any rust is detected, a sample of the diseased plant be submitted material. Chrysanthemum white rust is a host-specific pathogen on chrysanthemum only.

## SIGNIFICANT FINDS IN OTHER STATES

**CITRUS CANKER**, *Xanthomonas campestris pv. citri* -- On January 28, APHIS was notified by the Agricultural Research Service in Beltsville, Maryland, that the identity of a recently submitted specimen was confirmed as being the A-strain of citrus canker. The specimen was collected on January 13 within the current regulated area in Manatee County, Florida. The tree from which the specimen was obtained was located on the residential property about 0.3 mile from a previously infested grove. The detection was made in the course of conducting a routine survey. Based on visual confirmation of the disease by a plant pathologist from the Florida Department of Agriculture and Consumer Services, the tree was cut down and burned at the site. Initial

## BOTANY HIGHLIGHTS

DALMATIAN TOADFLAX, *Linaria dalmatica*, -(A)- On January 16, Dalmatian toadflax was found in Carmel Valley. This is a significant new township record for Monterey County. The occurrence in a residential garden is also the source of plants being exchanged among other gardeners in the region. The origin of these plants is reported to be the University of California, Santa Cruz, Arboretum.

FERTILE CAPEWEED, *Arctotheca calendula*, -(A)- Fertile capeweed has been found in a new township in Marin County. The map on page 33 shows the current California distribution. The following report was prepared by Doug Barbe:

Two infestations of fertile capeweed were discovered along the Bolinas Ridge Trail within one mile of the trailhead at Sir Francis Drake Highway on April 16. Eight plants were found destroyed.

The occurrence of this weed is apparently associated with a history of agricultural land use and seeding with subterranean clover from Australia, where fertile capeweed is widespread.

Fertile capeweed has dark disk flowers, in contrast to the sterile ornamental form which has bright yellow disk flowers.

JOINTED GOATGRASS, *Aegilops cylindrica*, -(B)- Jointed goatgrass was found for the first time in Sacramento County on May 11. It was discovered near 5th and I streets at the Southern Pacific Depot, Sacramento. Jointed goatgrass is slowly spreading into the Sacramento Valley. An infestation was discovered in Colusa County in 1988, and then in Butte County in 1991. The map on page 34 shows the current California distribution.

WILD GARLIC, *Allium vineale*, -(B)- There have been two significant finds for wild garlic in California. For the current statewide distribution, see page 35. Doug Barbe reports the new findings:

On March 4, an infestation was found for the first time in Yuba County. Then, in June, it was found in Shasta County marking another new county record.

Wild garlic is slowly spreading in the United States and was first detected in California, in northern Sonoma County, in 1973. When wild garlic becomes well established in pastures, it imparts a tainted flavor to dairy products and meat and is difficult to eradicate.

BARB GOATGRASS, *Aegilops triuncialis*, -(B)- There are several new township records for Mendocino County. The map on page 36 shows the current California distribution. The following report was prepared by Doug Barbe:

Barb goatgrass has been present on the Hopland University of California Field Station since 1960. The original infestation is reported to have started around utility poles, thought to have been brought in on utility equipment from Stanislaus County. It is now reported to

be in every pasture on the station up to the chaparral line, and appears to out-compete medusa-head (*Taeniatherum caput-medusae*).

The station runs sheep which don't touch goatgrass but do consume all of the competing vegetation. Cattle are reported to graze barb goatgrass and do a good job on it while the heads are still green, but cattle have not run on the station for years. Grazing trials with cattle and sheep are planned for the next season.

Meanwhile, barb goatgrass has spread along roads in the area. Surveys to delimit the infestation continue.

CAJEPUT, *Melaleuca quinquenervia*, -(D)- *Melaleuca quinquenervia* was added to the list of exotic noxious weeds that are regulated by the Federal Noxious Weed Act of 1974. This action was taken to prevent the spread of this weedy tree into non-infested areas of the United States. This species may be moved into the United States only under written permit as of April 13.

Other common names for this native Australian tree include melaleuca, punk tree, and broadleaf paper bark tree. Possible avenues of entry include nursery stock, seed shipments, and passenger baggage.

As of May 11, a monograph of this species was being prepared for the identification section of the Noxious Weed Inspection System Notebook. Descriptive material and illustrations were to be sent to area botanists.

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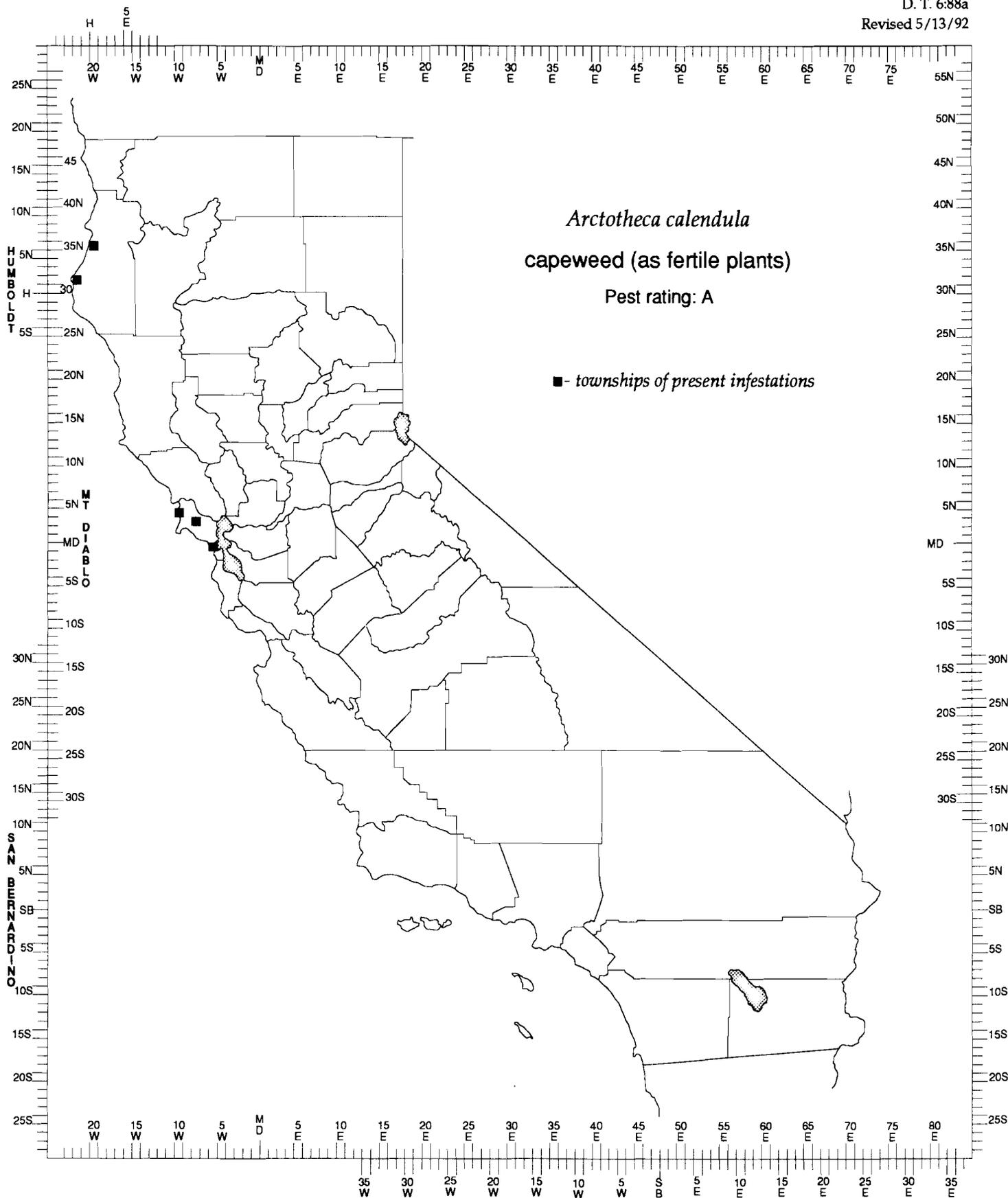
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22

DETECTION MANUAL

D. T. 6:88a

Revised 5/13/92



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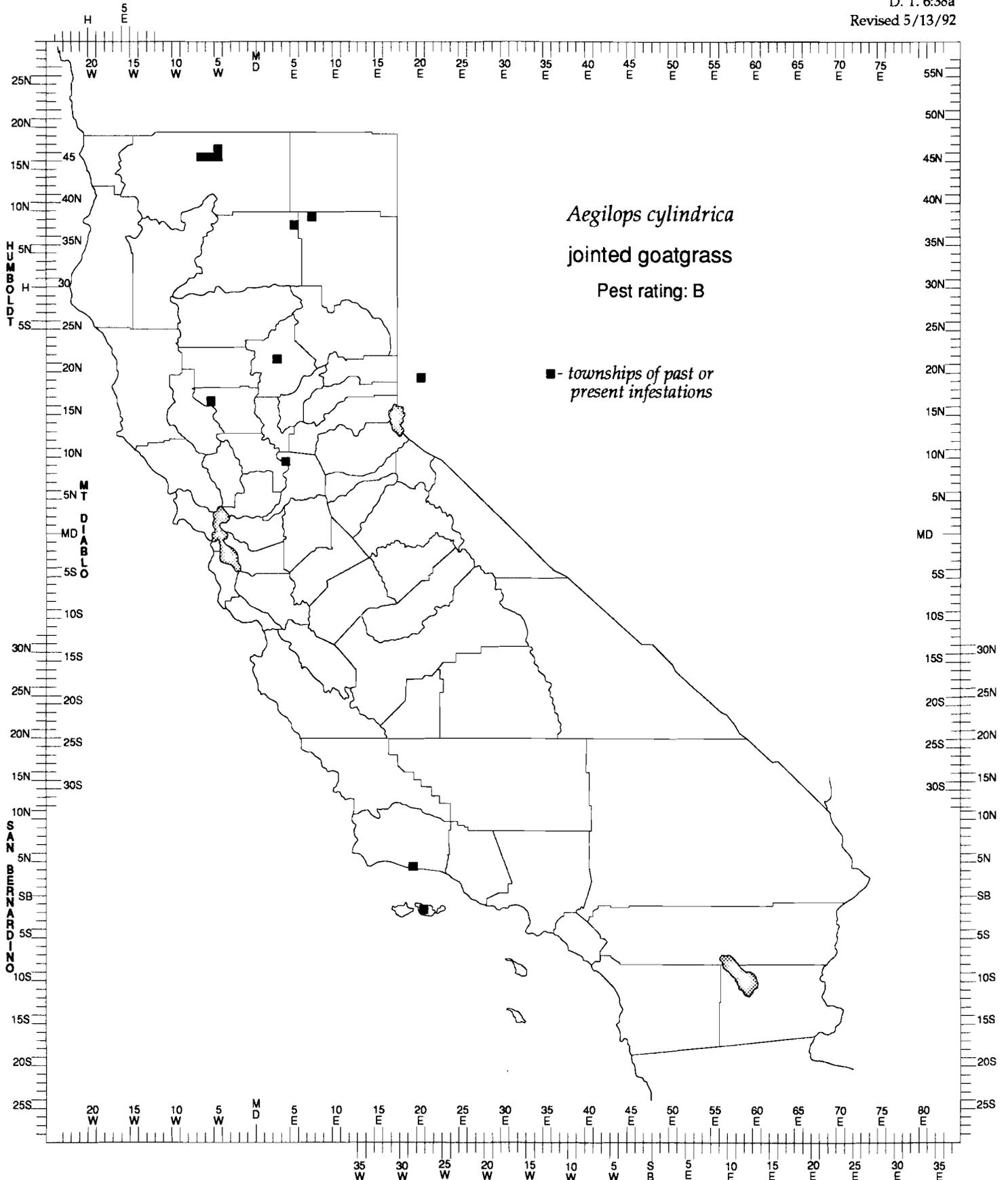
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DETECTION MANUAL

D. T. 6:38a

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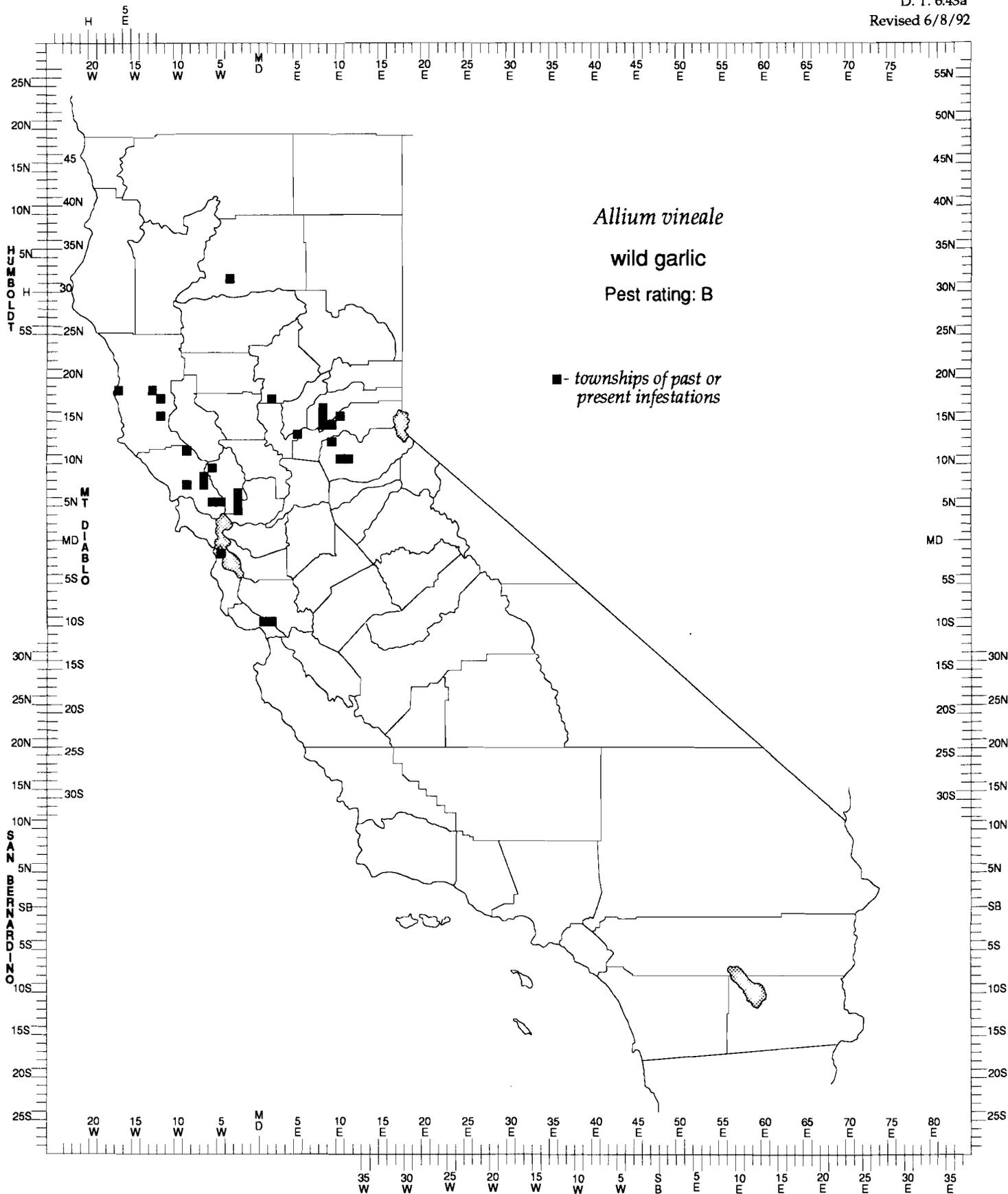
DIVISION OF PLANT INDUSTRY - ANALYSIS & IDENTIFICATION/BOTANY

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DETECTION MANUAL

D. T. 6:43a

Revised 6/8/92



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DETECTION MANUAL

D. T. 6:40a

Revised 6/2/92

