CALIFORNIA PLANT PEST and DISEASE REPORT

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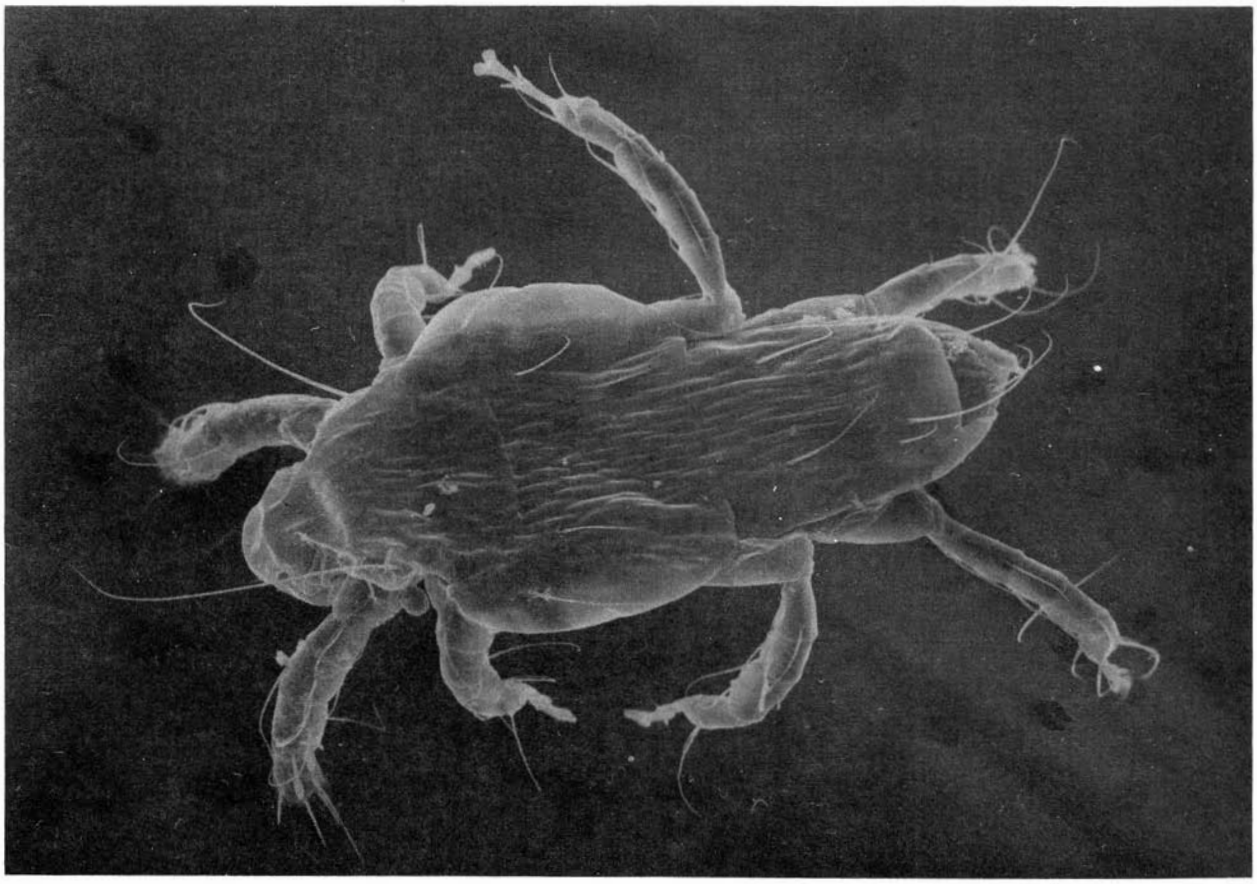
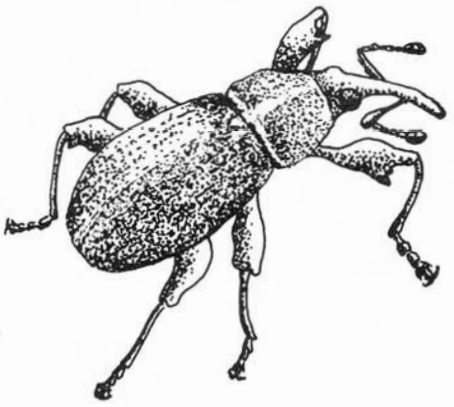
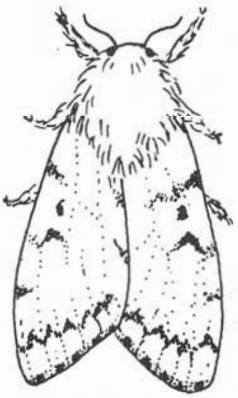


Dorsal aspect of straw itch mite, *Pyemotes tritici* (Acari: Pyemotidae). Scanning electron micrograph photo by T. Kono, Analysis and Identification, CDFA.



Entomology Highlights



Fruit flies have once again captured first place at California Department of Food and Agriculture. The last issue was concerned with the finds of apple maggot in the north state. While apple maggot is still of great importance, our attention has been diverted by two other important species.

Mexican Fruit Fly, *Anastrepha ludens* -(A)- A major infestation of this serious fruit pest has been found in the Los Angeles basin. The following report by John Pozzi covers the details of the first find:

> "The first Mexican fruit fly for 1983 was trapped on 10/25/83 in Huntington Park, Los Angeles County. The discovery was made by County Trapper Curtis Vaughn while servicing a McPhail trap that had been placed in a grapefruit tree on Belgrave Avenue. It was determined by Systematic Entomologist, Karen Corwin that it was a mated female with mature eggs.
>
> McPhail trap densities are being increased around the find. Fifty have been placed in the square mile around it and 20 each in the eight adjoining square miles."

Two more flies were trapped the next day on the same property. Trap deployment throughout the area has indicated beyond doubt the severity of the infestation. Between October 25 and November 4, 97 flies have been trapped or caught in a 6 1/2 square mile area surrounding the original find. The major infested area is in Huntington Park eastward from Alameda Street between Slauson and Florence Avenues to the communities of Bell, Maywood and Vernon. Larval finds have also been made in the area. Adult and larval finds have been made by the following detection personnel: Dave Cassidy, Jim Wiseman, Mike Hamilton, Curtis Vaughn, Elizabeth Davis-Robbins, Larry Godwin, Mike Kermode, Galahad Amaya, Ron Cabiera and Jim Kincaid.

A quarantine line and spray area has been established over 41 square miles bounded by the Santa Ana and Santa Monica freeways, Harbor Freeway, Century Boulevard and a northerly line just east of the Long Beach freeway. McPhail traps have been deployed at the rate of 50 per square mile in the core area and between 5 and 10 square miles within the quarantine area. Spray applications of Malathion and Staley's bait were begun on the evening of November 4.

Calif. Pl. Dis Vol. 2, No. 6: 163-184 was issued on November 30, 1983.

The following report by Bob Dowell outlines the recommendations for Mexican fruit fly eradication as set forth by the MFF Science Advisory Panel:

1. California has a breeding population of MexFF.
2. Under current conditions, aerial application of malathion and bait is the most effective tool for use against MexFF.
3. Sprays should be at weekly intervals through November and biweekly intervals from December through the end of February. Rain may alter this schedule.
4. Soil treatment with diazinon and fruit stripping add to the effectiveness of the program.
5. Sterile MexFF are not available in sufficient numbers to be used at this time.
6. Trap at five (5) traps per square mile within the treatment zone during treatment.
7. Increase trap density to approximately 25 traps per square mile in the mile zone surrounding the treatment zone during treatment and approximately 10 traps per square mile in the next mile out.
8. Return to 25 traps per square mile within the treatment zone after ending treatment. Maintain trapping at this level for two (2) generations. Trap for three (3) successive generations without finding any MexFF to declare eradication.
9. The panel sees no climatic barriers to MexFF movement throughout California wherever hosts are available.
10. Re-evaluate the situation in February.

Oriental Fruit Fly, *Dacus dorsalis* -(A)- As of October 28, ten oriental fruit flies have been trapped in California. The following summary of finds has been adapted from a report by John Pozzi:

County	City	Date	Collector
LA	Valinda	9/29	M. Hamilton
LA	Artesia	10/15	P. White
OR	San Clemente	10/25	D. Gregory
SM	Atherton	10/21	L. Kuwahara
SM	Menlo Park	10/24	M. Jende
SM	Menlo Park	10/27	M. Jende
SC	Cupertino	9/20	J. Reeves
SC	Cupertino	10/14	R. Pummer
SC	Cupertino	10/20	K. O'Day
V	Moorpark	10/13	K. Hupp

In response to the large number of finds in the San Mateo and Santa Clara County areas a treatment program has been initiated. Details of this program can be found in the following report by Gera Curry:

"Treatment measures to eradicate the Oriental fruit fly (OFF) will begin Friday, October 28, 1983 in selected areas of the communities of Sunnyvale and Saratoga in Santa Clara County and Atherton and Menlo Park in San Mateo County.

The treatment program is in direct response to OFF trappings in Saratoga, Sunnyvale, Atherton, and Menlo Park on September 20 and October 14, 17, 21 and 24. Previous discoveries of OFF in southern California have been successfully eradicated using a spot bait application to vertical surfaces

such as utility poles, trees, fence posts, etc. This same procedure, called "male annihilation" because it uses a sex lure combined with an effective pesticide to kill the male fly on contact, will be used in this case.

The bait material is a mixture of the pesticide Dibrom, the male attractant methyl eugenol, and a thickening agent, Min-U-Gel. The bait station, harmless to humans and pets, will appear as a dark spot three to four inches in diameter on the surface to which it is applied. An "X" marked in yellow crayon, will appear near the bait station to confirm its location. Six hundred bait stations applied six to seven feet above ground level, will be evenly distributed per square mile or 60 to 80 per city block. In order to remain effective, these bait stations must not be disturbed.

A mimimum of two bait station applications will be made at two-week intervals. After an estimated two OFF generations, with negative detections, treatments are discontinued. Eradication can be declared after three generations of negative detections.

The Oriental fruit fly (*Dacus dorsalis*) is native to Asia, and was introduced into Hawaii in 1945.

The adult fly is somewhat larger than a horsefly, mostly yellow, with dark markings on the thorax and abdomen. The wings are clear, narrow, have a dark band along the top edge and short diagonal band near the base.

Oriental fruit fly is known to damage 236 varieties of fruit, nut, and vegetable crops. Punctures, made by the female fly when she lays her eggs, admit decay organisms into the fruit. Larval feeding reduces the interior of the fruit to a rotten mass. In California, those crops susceptible to feeding by the Oriental fruit fly include: almonds, apples, apricots, avocados, bell peppers, cucumbers, grapes, grapefruit, lemons, limes, tangerines, nectarines, oranges, peaches, pears, plums, tomatoes, and walnuts.

A mated female may oviposit as many as 136 eggs per day, usually about 10 per oviposition site, but this can go up to 100 or more. The eggs may take only 24 hours to hatch, but in cooler temperature can require up to 20 days. The developing larvae go through three instars. The larval stage may last from 6 to 35 days depending on the temperature. Under optimum temperature (80°F/27°C) and humidity(70%) the larval stage can be as short as 6 to 7 days. The third instar can exit the fruit, by a flipping motion. When the fruit drops to the ground and ruptures, the larva leaves the fruit to pupate two to three cm in the soil. The pupal stage usually takes 10 to 12 days for completion, but this can be extended to 90 days by extremely cool temperatures. The newly emerged adults normally need about 8 to 12 days to mature before they can begin to oviposit. Adults usually live for about one to three months, but have survived a year in cool mountain localities."

Apple Maggot -(A)- This serious pest of apples has been found in a number of new locations since those reported in the last issue of CPPDR. Many larval collections have also been made. New locations include Gazelle, Hamburg, Mt. Shasta, Klamath River, Somes Bar, Etna, Montague, and Fort Jones, Siskiyou County; Carlotta, Hoopa, Stafford, Orleans, and Weitchjsec, Humboldt County; and Crescent City and Gasquet, Del Norte County. Larvae have been found in either apple or hawthorn fruit at Fort Jones, Yreka, Gazelle, Hamburg, Happy Camp, Klamath River, Montague, Seiad Valley, Mt. Shasta, Somes Bar, and Yreka in Siskiyou County and at Smith River,

Crescent City and Gosquet in Del Norte County.

The following summary by John Pozzi gives total apple maggot finds up to October 27:

Summary - 1983 Apple Maggot Trap Finds

County	Adults Trapped	Larval Properties
Del Norte	71	9
Humboldt	5	0
Siskiyou	25	28
Total	101	37

The California infestation has proven to be too large for a feasible eradication program. The following report by Bob Dowell outlines the recommendations of the Science Advisory Panel on the control and management of this pest in the State:

"The following are the conclusions and recommendations reached by the Apple Maggot Science Advisory Panel at its meeting in Yreka from 16-18 October 1983. Panel members were Drs. R. Prokopy (Chairman), G. Bush, M. AliNiazee, J. Brunner, and R. Dowell.

1. We are very impressed with the superb effort put forth by Commissioner Hale and his staff and CDFA personnel. Without their efforts and data our job would have been far harder.
2. The panel has concluded that the apple maggot cannot be eradicated from California.
3. Trap type, placement, and density have not been uniformly optimal to detect the apple maggot.
4. No effective controls other than pesticides exist for use against apple maggot in commercial settings.
5. Soil treatments with pesticides are not biologically feasible.
6. We recommend that an extensive survey be conducted to determine the distribution of apple maggot and its known hosts, and to monitor future movement of the pest in California.
7. Based upon current information, containment does not appear to be a viable option. This does not exclude it from future consideration when more information is available.
8. Elimination of hosts in a 1/4 mile buffer around commercial orchards, monitoring of the orchards with Pherocon AM type traps and red sphere traps on the outer rows of trees, and pesticide cover sprays triggered by positive trap catches should protect California apple orchards from apple maggot.
9. We recommend that a public relations program be used to explain to our citizens the danger of host movement out of known infested areas."

Gypsy Moth, *Lymantria dispar* -(A)- Trap and immature stage collections of this serious tree pest have been made throughout this period in many areas of the state. Recent trap catches include an adult from Bell Gardens, Los Angeles County on September 15 by Curt Vaughn. Also included is a collection by Park Ranger Bob Justice and State Trapper Paul Greer as recounted in the following report by John Pozzi:

"A gypsy moth was trapped on 9/21/83 in Mount Diablo State Park, Contra Costa County. The find was made by State Park Ranger Bob Justice and State Trapper Paul Greer while servicing a gypsy moth trap in Sycamore Canyon. The find is near the southern edge of the Park and is about 1/2 mile from a new housing development. Mount Diablo State Park is approximately 3 miles east of Danville where gypsy moths were trapped earlier this year.

California Department of Parks and Recreation personnel in cooperation with State and County Agricultural personnel are servicing gypsy moth traps in limited access areas of state parks."

Egg masses were found at Ward Road along the San Diego River in San Diego County on August 29 by Anne Sixtus, Brian Taylor, Tom Smith, Tom Eichlin and Terry Seeno.

Egg masses, larval cast skins, empty pupal cases and a dead adult female were found in Oakland, Alameda County between September 13 and 19 by Victor Barnett, Jim Hughes, Tad Pieslak, James Miller, Earl Whitaker and Dorothea Zadig.

Egg mass, larval skins and empty pupal cases have been found at Danville, Contra Costa County, on September 26 by Jim Bombaci, Bob Cruickshank and Dorothea Zadig.

Egg masses have also been found in several San Jose properties. The following chart by John Pozzi summarizes the total gypsy moth finds in California up till October 27:

Summary - 1983 Gypsy Moth Finds

	⟨-----Adults-----⟩		Properties Egg Masses/
County	Trapped	Visual	Pupal Cases
Alameda	13	1	3
Contra Costa	24	0	0
Fresno	1	0	0
Los Angeles	3	0	0
Marin	4	0	0
San Bernardino	4	0	1
San Diego	31	0	1
San Mateo	1	0	0
Santa Barbara	4	0	0
Santa Clara	76	5	2
Santa Cruz	6	0	0
Shasta	1	0	0
Solano	2	0	0
Sonoma	1	0	0
Tulare	1	0	0
	172	6	7

Cotton Boll Weevil, *Anthonomus grandis* -(A)- Adults of this serious cotton pest are being trapped literally by the thousands in the desert valleys of southeastern California. The crop is being harvested and the plants are being plowed under, which is driving many weevils out of the fields. These weevils are being trapped many miles from cotton fields. For more information see the following November 7 cotton boll weevil update by Tom Palmer:

"Since the last Boll Weevil News, weevil populations have exploded, especially along the Colorado River. Weevils have also been trapped considerable distances into the desert. Special attention is being given to the more than 60 weevils that have been trapped in the Imperial Valley. An update of the trapping program follows.

TRAPPING PROGRAM UPDATE

Cotton Growing Region

	Blythe		Bard		Imperial	
Month	# Traps	Weevils Trapped	# Traps	Weevils Trapped	# Traps	Weevils Trapped
January	445	2,927	325	218	352	4
February	481	182	"	145	"	2
March	481	198	"	112	"	8
April	665	77	"	36	"	0
May	694	97	"	42	"	4
June	725	9	"	1	"	0
July	774	0	"	0	"	0
August	774	0	"	2	"	0
September	770	23	387	97	368	0
October	771	1,054	386	1,625	374	67

Weevils Taken in Desert
Trap Lines During October

Imperial County	Riverside County
3,343	3,187

The weevil-free periods:

Imperial Valley	5/03/83 to 10/05/83
Bard/Winterhaven	6/02/83 to 08/25/83
Blythe/Palo Verde	6/16/83 to 09/16/83

As can be seen, the numbers of weevils being taken in traps has increased significantly during October. The disconcerting element of these finds is the high number of weevils being trapped in the desert area.

Intensive visual surveys on cotton fields, in California, along the Colorado River, are starting to detect "infield" infestations of weevils in the Bard/Winterhaven area. Some cotton fields in Arizona we know have extremely high populations of weevils, and it's not difficult to detect weevil populations in these fields visually.

There is a problem in determining exactly where all the weevils are coming from and what these high populations of weevils mean to California's cotton industry. Friday, October 14, will mark exactly one year ago that weevils

were found in a trap in the Bard/Winterhaven area.

PROJECT TREATMENT ACERAGE

Location	Week Ending 10/15/83	Week Ending 10/22/83	Week Ending 10/29/83
Bard/Winterhaven	464	666	1,537
Imperial	0	597	874
Blythe	705	2,347	4,200
Totals	1,169	3,610	6,611

Treatments in all areas have gone smoothly, thanks to the cooperation between aerial contractors, County and CDFA personnel. The chemical treatment utilizes Bakersfield Ag-Chem Cythion, premium grade malathion 91%, applied at 16 ounces per acre--Ultra-Low-Volume (ULV). The cost is approximately $2.57 per acre. (Note: A gallon of malathion costs $20.58 and treats 8 acres.)

To date, the Project has borrowed 3,300 gallons of malathion from the Curly Top Virus Project inventory. An additional 7,000 gallons of malathion was put out to bid.

AERIAL CONTRACT ARRANGEMENTS

Location	Contractor	Rate/Acre
Bard/Winterhaven	Yuma Helicopters	$2.75
Blythe/Palo Verde	Cyr Aviation	$3.59
Imperial Valley	Visco Flying Service	$2.70

UPCOMING EVENTS

A workshop on weevil detection will be held November 16 in Yuma, Arizona. The exact location is, as yet, unknown. The workshop is for regulatory personnel, growers, and agricultural PCA's."

If you wish to obtain more information about boll weevil, please contact Tom Palmer, California Department of Food and Agriculture, 2889 N. Larkin, Suite 106, Fresno, CA 93727, (209) 445-5031.

NEW STATE RECORDS

Lorryia formosa Cooreman (Acari: Tydeidae), A MITE NEW TO CALIFORNIA

A mite new to California was collected at Valley Center, San Diego County, California, on Valencia orange, on September 28, 1983, by Ann Sixtus of San Diego County (83J5-5). The type of injury to orange was not reported. The mite was identified as *Lorryia formosa* Coorman (Acari: Tydeidae) by T. Kono (CDFA) and E.W. Baker (USDA-ARS).

A review of the CDFA identifications revealed that the first collection of this mite was made in Fallbrook, San Diego County, California, on citrus, on April 15, 1983, by Lynn Parker of San Diego County. The type of injury to citrus was not reported. The mite was identified as *Lorryia* sp. by T. Kono of CDFA (83D25-12).

Lorryia formosa belongs to the family Tydeidae, which consists of small to very small mites. According to Baker (1965), the biology is known for only a few species of these mites that are found commonly on plants, in mosses and lichens on trees, in soil, and in stored foods.

Smirnoff (1957) reported on his life-history studies in Morocco of an undescribed species of *Lorryia* that appeared in numerous colonies on citrus trees infested with *Saissetia oleae* (black scale). The mites were attracted to the copious amount of honeydew excreted by the black scale. Smirnoff observed that this mite may become phytophagous during its development, with high concentrations of the mite causing premature sclerification of the green branches followed by desquamation. Feeding injury to fruit by large numbers of mites on the stem end of young fruit resulted in a ring of dead brown tissue, similar to injury caused by thrips. This mite was described as *Lorryia formosa* by Cooreman (1958).

In Israel, high populations of *Lorryia formosa* reduced the amount of sooty mold on citrus leaves and fruits by feeding on honeydew and sooty mold. The mite is considered a beneficial organism, serving as a sanitizing agent in citrus groves (Mendel and Gerson, 1982).

The U.S. National Museum records for this mite are: avocado: Ecuador; citrus: Argentina, Brazil, Chile, France, Spain, and Uruguay; and gardenia: Mexico (Baker, 1968). Baker by telephone conversation added citrus: California (83D25-12) and Florida.

In California, there is another mite belonging to the family Tydeidae, *Tydeus californicus* (Banks), that feeds on leaves of citrus and avocado. It does not produce obvious feeding symptoms (Fleschner and Arakawa, 1952).

References

Baker, E.W. 1965. A review of the genera of the family Tydeidae. p. 95-131. In Naegele, J.A. (editor) Advances in Acarology Vol. 2, Cornell University Press, Ithaca, New York. 174 p.

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Cooreman, J. 1958. Notes et observations sur les acariens. VII. *Photia graeca* n. sp. (Acaridiae, Canestriniidae) et *Lorryia formosa* n. sp. (Stomastigmata, Tydeidae). Bull. Inst. Roy. Sci. Natur. Belg. 34: 1-10.

Fleschner, C.A. and Arakawa, K.Y. 1952. The mite *Tydeus californicus* on citrus and avocado leaves. Jour. Econ. Entomol. 45: 1092.
Mendel, Z. and Gerson, U. 1982. Is the mite *Lorryia formosa* Cooreman (Prostigmata: Tydeidae) a sanitizing agent in citrus groves? Acta OEcol./ OEcol. Applic. 3: 47-51.
Smirnoff, W.A. 1957. An undescribed species of *Lorryia* causing injury to citrus trees in Morocco. Jour. Econ. Entomol. 50: 361-2.

-T. Kono, CDFA

NEW COUNTY RECORDS

Apple Maggot is new to Humboldt County. See previous article on this pest.

Torpedo bug, *Siphanta acuta* -(Q)- The first official record of the occurrence of this species in California was from egg masses collected in San Diego on October 21, 1983 by J. Blocker and W. Williams of the County Agricultural Department (see CPPDR Vol. 2 #1, p. 10).

On September 16 two specimens of this planthopper were collected by Dave Cassidy of L.A. Agricultural Commissioner's office at Redondo Beach. This is a new county record (83I22-5). About a dozen specimens of adults have since been collected from the Redondo Beach site. Some of these specimens were sent to Dr. Jim Kramer at the Smithsonian Institution, who wanted a series of Torpedo bugs from California.

At the same time, it was learned that Dave Cassidy had been a student at Cal Poly where he was interested in Entomology. He collected an adult specimen of *Siphanta acuta* for his personal collection while in San Diego on July 4, 1980.

This indicates that this species was probably established in California at least three years earlier than originally supposed. The San Diego specimen has been confirmed in the lab.

Ice Plant Scale, *Pulvinaria mesembryanthemi* -(C)- This pest of ice plant was found in two new counties during this period. On September 27, specimens were collected by D. Mendoza of Cal Trans and Dr. Eldon Reeves of Riverside County. The specimens were found in a patch of Freeway 215 ice plant 0.1 mi north of University Avenue near the U.C. Riverside Campus.

On October 27, specimens of this soft scale were submitted to the Calaveras County Commissioner by Frank Mello. The specimens were collected in Valley Springs.

Miscellaneous Finds of Interest

A MITE PEST OF MARANTA, *Steneotarsonemus furcatus* De Leon (Acari: Tarsonemidae)

A tarsonemid mite (83I28-17) damaging 4,000 Maranta plants at a nursery in Hayward, Alameda County, California, was collected on September 23, 1983 by Everett Henning (Alameda County) and Tom Watson (CDFA). The mite was identified as *Steneotarsonemus furcatus* De Leon (Acari: Tarsonemidae) by T. Kono (CDFA).

According to one of the collectors, Tom Watson, there is a shoot die-back of Maranta associated with this mite.

Donald De Leon (1956) described this mite from specimens collected in Florida in 1955 on an ornamental grass, *Paspalum* sp. Robert E. Beer (1958) reported that the first collection of this mite that he had seen was taken by an unidentified collector from *Maranta leuconeura* var. *Kerchoveana* in Buena Park, Los Angeles County, California, in 1953. According to H.A. Denmark and J.C. Nickerson (1981), this mite has been found recently on *Maranta* and *Calathea* in greenhouses in Florida. The Hayward infestation is the second time that this mite has been observed as a pest of Maranta in California.

Steneotarsonemus furcatus is characterized by the course bifurcate seta or process on the posterior face of the femur of leg IV of the male (Figs. 1, 2, 3).

References

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De Leon, D. 1956. Four new acarina in the family Tarsonemidae. Florida Entomol. 39: 105-112.

Denmark, H.A. and Nickerson, J.C. 1981. A tarsonemid mite, *Steneotarsonemus furcatus* De Leon on *Maranta* spp. (Acarina: Tarsonemidae). Fla. Dept. Cons. Serv. Entomol. Cir. No. 229: 2 pp.

-T. Kono, CDFA

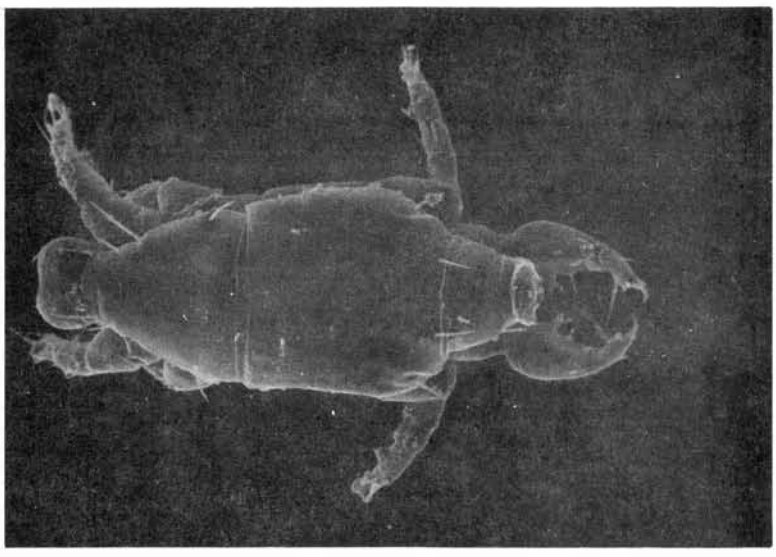

Fig. 1. Dorsal aspect of a male

Scanning electron micrograph photos of *Steneotarsonemus furcatus* De Leon.

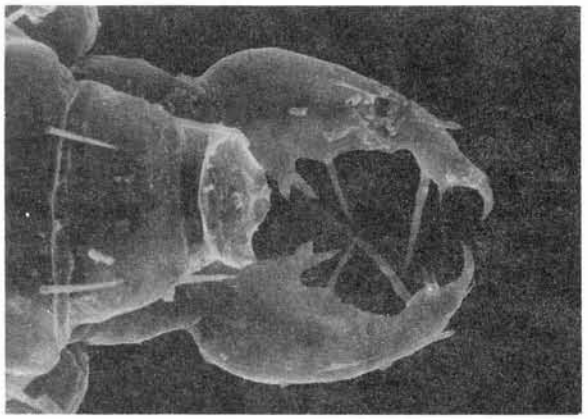

Fig. 2. Hind legs of a male

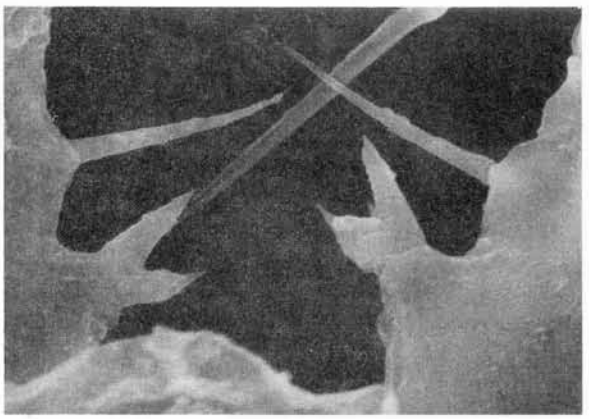

Fig. 3. Bifurcate setae on femora of hind legs

STRAW ITCH MITE, *Pyemotes tritici* (Lagreze-Fossat and Montane) (Acari: Pyemotidae)

For the past two years, employees of a rice growers' association developed lesions that itched severely whenever they worked in seed rice storage areas.

This year when a fork lift operator who has been loading bins of seed rice on a truck came down with a severe case of rash, he was taken to a doctor, who diagnosed the rash as bites of rat mite or bird mite.

Sticky board traps capable of trapping insects and mice were placed in the storage area to collect the pests responsible for the discomfort of the employees. Large numbers of a species of moth and a species of mite were trapped on the sticky boards. The moth and mites were identified, respectively, as *Sitotroga cerealella*, Anguimois grain moth, by R. Somerby (CDFA), and *Pyemotes tritici*, straw itch mite, by T. Kono (CDFA).

Pyemotes tritici is primarily an ectoparasite of the larvae of grain insects such as the Anguimois grain moth (Baker and Wharton, 1952). These mites will attack man if grain infested with grain moth larvae is handled at threshing or in storage. This is most likely to occur in hot weather when the mites need moisture. Severe cases may involve fever, malaise, vomiting, headache, secondary infection, and regional lymphadenopathy(Baker et al., 1956).

Pyemotes tritici is a tiny, elongate mite (Fig. 1). Its identity is facilitated if it is found in association with the Anguimois grain moth.

In older literature, the straw itch mite was known as *Pyemotes ventricosus* (Newport). Moser (1975) reviewed the taxonomic status of the straw itch mite in the United States and concluded that its correct name is *Pyemotes tritici*.

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Moser, J.C. 1975. Biosystematics of the straw itch mite with special reference to nomenclature and dermatology. Trans. R. Entomol. Soc. Lond. 127: 185-191.

-T.Kono, CDFA

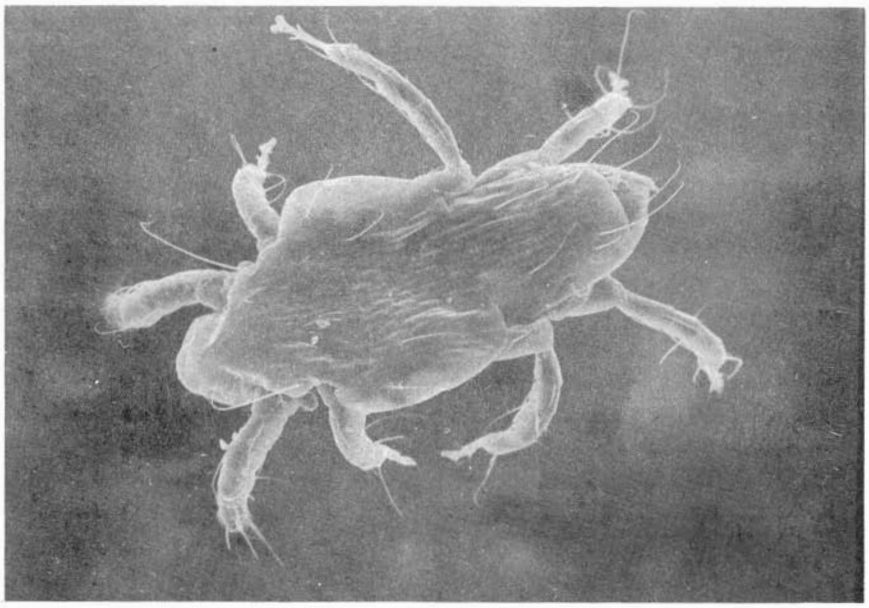

Fig. 1. Scanning electron micrograph photo of the dorsal aspect of a *Pyemotes tritici* female

Quarantine and Exclusion
Pest Interceptions - Insects

Gypsy Moth, *Lymantria dispar* -(A)- Eleven interceptions of this pest were made from household goods moving into the State during this period. States of origin included New Jersey, Maine, Connecticut, Maryland, New York, and Massachusetts.

An Ant, *Paratrechina fulva* -(Q)- intercepted on July 27 and July 29 by Darlene Sulentich on areca palms moving from Florida to Carson, Los Angeles County.

Scarab beetles - Aircraft surveys for Japanese beetles were continued during this period. Detection personnel collected 25 specimens of the Japanese Beetle, *Popillia japonica* -(A)-; 4 specimens of Asiatic Garden Beetle, *Maladera castanea* -(Q)-; 6 specimens of Oriental beetle, *Anomala orientalis* -(Q)-; and 7 specimens of Q-rated scarab beetles in the genera *Anomala* and *Phyllophaga*.

Other Q-rated insects found in aircraft during the Japanese beetle survey were: *Halisidota harisii*, an arctiid moth, collected by J. Meyer at San Diego; *Chelymorpha cassidea*, a chrysomelid beetle by J. Meyer at San Diego; *Choristoneura* sp., a tortricid moth by McChure at Los Angeles; *Euxoa* sp., a noctuid moth by J. Killeen at San Francisco; *Melanoplus* sp., an acridid grasshopper by J. Monroe at San Diego.

The following insects have also been intercepted in quarantine:

Rating	Species	Common Name	Origin	County	Host	Collector
A	*Pulvinaria psidii*	Green shield scale	Hawaii	LA	ginger	P. Eisenhart
			"	"	*Monstera*	"
			"	SD	*Protea*	Johnson/Ginsky
			Florida	LA	*Ficus*	Sulentich
			Hawaii	SON	"	H. Kobayashi
			"	SJ	"	S. Hudson* (*Two collections)
			"	V	ginger	J. Hillis
A	*Ischnaspis longirostris*	Black thread scale	Hawaii	LA	*Monstera*	P. Eisenhart
			"	SJ	*Ficus*	S. Hudson
Q	*Pinnaspis buxi*	Boxwood scale	Hawaii	LA	*Monstera*	P. Eisenhart
Q	*Siphanta acuta*	Torpedo bug	Hawaii	LA	*Monstera*	P. Eisenhart
Q	*Aleurodicus dispersus*	Spiraling whitefly	Hawaii	LA	*Monstera*	P. Eisenhart
			"	"	Chinese vegetables	Sulentich
Q	*Palmicultor palmarum*	Palm mealybug	Hawaii	LA	Chinese vegetables	Sulentich
B	*Protopulvinaria pyriformis*	Pyriform scale	Florida	STB	*Schefflera*	M. Pitchard
Q	*Rhizoecus americanus*	Soil mealybug	Florida	LA	*Schefflera*	Sulentich
Q	*Geococcus coffeae*	Soil mealybug	Hawaii	LA	*Areca* palm	Sulentich
A	*Pseudaulacaspis cockerelli*	Magnolia white scale	Hawaii	LA	*Areca* palm	Sulentich
			-	SBO	" "	M. Cohen
Q	*Aonidiella orientalis*	Oriental scale	-	ALA	coconut	S. Brown
Q	*Unaspis yanonensis*	Yanon scale	Japan	SF	orange	S. Brown
Q	*Pheidole megacephala*	Bigheaded ant	Hawaii	V	ginger	J. Hillis

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:

Rating	Species	Common Name	Origin	County	Host	Collector
Q	*Otiorhynchus* sp. or near	A weevil	? near airport	LA	Japanese beetle trap	Davis-Robbins/ McClure
Q	*Nysius* sp.	A lygaeid bug	Korea	SF	cabbage	S. Brown
Q	Prob. Cicadellidae	Leafhopper eggs	Honduras	STB	*Aglaonema*	S. Piper
Q	Cerambycidae	Long-horned wood-boring beetle	-	LA	dunnage	E. Peterson* (*Two collections)
			-	ALA	"	S. Brown
Q	*Rhizoecus* sp.	Soil mealybug	Hawaii	LA	*Areca* palm	N. Kellam
A	*Pinnaspis strachani* or *Pseudaulacaspis cockerelli*	Armored scale-scale cover only	Florida	STB	*Chamaedorea*	T. Wurster
Q	Prob. *Metcalfa pruinosa*	A flatid (female)	Hawaii	LA	*Ficus*	P. Eisenhart
Q	Delphacidae	A leafhopper (nymph)	Hawaii	LA	Taro	McGrath
Q	*Crenidorsum* sp.	A whitefly	Hawaii	LA	*Monstera*	P. Eisenhart

BORDER STATION INTERCEPTIONS
(Since September 1983)

GYPSY MOTH	*Lymantria dispar*	-A-	46
EASTERN TENT CATERPILLAR	*Malacosoma americana*	-Q-	3
APPLE MAGGOT	*Rhagoletis pomonella*	-A-	218
A MEALYBUG	Pseudococcidae	-Q-	1
EUROPEAN CORN BORER	*Ostrinia nubilalis*	-A-	10
IMPORTED FIRE ANT	*Solenopsis invicta*	-A-	1
CALIFORNIA RED SCALE	*Aonidiella aurantii*	-B-	5
A TENT CATERPILLAR	*Malacosoma* sp.	-Q-	21
WHITE PEACH SCALE	*Pseudaulacaspis pentagona*	-Q-	1
A WOOLLY BEAR CATERPILLAR	Arctiidae	-Q-	11
AN OWLET MOTH	*Spodoptera* sp.	-Q-	1
AN OWLET MOTH	*Euxoa* sp.	-Q-	2
A FRUIT FLY	*Rhagoletis* sp.	-Q-	2
SOUTHERN CORN ROOT WORM	*Diabrotica ll-punctata howardi*	-Q-	1
A WEEVIL	Curculionidae	-A-	3
COLORADO POTATO BEETLE	*Leptinotarsa decemlineata*	-A-	1
PLUM GOUGER	*Coccotorus scutellaris*	-A-	1
A WEEVIL	*Conotrachelus* sp.	-A-	1
CHAFF SCALE	*Parlatoria pergandii*	-B-	8
PURPLE SCALE	*Lepidosaphes beckii*	-B-	4
AN ARMORED SCALE	*Pseudischnaspis bowreyi*	-Q-	1
SUNFLOWER BEETLE	*Zygogramma exclamationis*	-Q-	3
GLOVER SCALE	*Lepidosaphes gloverii*	-B-	2
A BILLBUG	*Sphenophorus* ? sp.	-Q-	1
AN OLETHREUTINE MOTH	Olethreutinae	-Q-	2
WALNUT HUSK MAGGOT	*Rhagoletis suavis*	-A-	6
A TORTRICID MOTH	*Grapholita* sp.	-Q-	3
SOUTHERN GREEN STINKBUG	*Nezara viridula*	-Q-	1
PINE CONE MOTH	*Dioryctia* sp.	-Q-	1
PINK BOLLWORM	*Pectinophora gossypiella*	-A-	8
SOUTHWESTERN CORN BORER	*Diatraea grandiosella*	-A-	1
A CARPENTER ANT	*Camponotus* sp.	-Q-	1
GRAY SUGARCANE MEALYBUG	*Dysmicoccus boninsis*	-Q-	1
BAGWORM	*Thyridopteryx ephemeraeformis*	-A-	1
A BAGWORM	Psychidae	-Q-	2
A LOOPER	Geometridae	-Q-	1
AN EASTERN TORTRICID MOTH	*Archips* sp.	-Q-	1
A CUTWORM	*Euxoa* sp.	-Q-	1
A LEAFROLLER	*Acleris* sp.	-Q-	3
AN ANT	*Paratrechina* sp.	-Q-	1
HICKORY SHUCKWORM	*Laspeyresia caryana*	-A-	17
A LEAFHOPPER	Cicadellidae	-Q-	1
MINING SCALE	*Howardia biclavis*	-A-	1
A GLYPHIPTERYGID MOTH	Glyphipterygidae	-Q-	1
A CUTWORM	*Spodoptera* sp.	-Q-	1
AN ANT	*Solenopsis* sp.	-Q-	1
A WEEVIL	*Curculio* sp.	-A-	6
BIG-HEADED ANT	*Pheidole megacephala*	-Q-	3
A LEAFMINER	*Lithocolletis* sp.	-Q-	1
AN OWLET MOTH	Noctuidae	-Q-	2
A LEAFROLLER	Tortricidae	-Q-	2
BEAN LEAF BEETLE	*Cerotoma trifurcata*	-Q-	1

AN ANT	*Paratrechina fulva*	-Q-	1
HOLLY LEAFMINER	*Phytomyza ilicis*	-B-	1
A SNAIL	Subulinidae	-B-	1
BOLL WEEVIL	*Anthonomus grandis*	-A-	3
A PECAN WEEVIL	*Curculio* sp.	-A-	1
ORIENTAL SCALE	*Aonidiella orientalis*	-Q-	1

PLANT VIRUS DATABASE. 1983. Dennis E. Mayhew. Computer based plant virus database designed for Apple II, II+, IIe (48K, 1 or 2 disk drives). California Department of Food and Agriculture. $35.00.

A plant virus database designed primarily for field biologists and plant pathologists to assist in identification of plant viruses. This edition includes 164 of the most common viruses with data in 18 areas (synonyms, nucleic acid, morphology, vectors, diagnostic hosts, host range, distribution, etc.). Programs and data are upgraded annually and made available to purchasers. System includes program disk, data disk, and documentation. For more information contact: Dennis E. Mayhew, 1220 N Street, Room 340, Sacramento, CA 95814, (916) 445-4521.

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SMUT DISEASES OF JOHNSON GRASS

Tom Matsumoto, David Showers and David Higuera

Johnson grass (*Sorghum halepense*) is a widespread noxious perennial weed found in many sorghum and sudan grass fields. Three smut diseases have been reported in California on Johnson grass: kernel smut (*Sphacelotheca holci*); loose kernel smut (*S. cruenta*); and covered kernel smut (*S. sorghi*).

S. holci, most common smut disease on Johnson grass, exhibits symptoms in the inflorescences (Fig. 1a). The black powdery spore masses cause a stunting and shortening of the inflorescence. The smut spores are globose to ellipsoidal (Fig. 1b), and the surface of the spores has a warty appearance (Fig. 1c).

S. cruenta and *S. sorghi*, found occasionally on Johnson grass, are of regulatory concern to California and are listed in the USDA Federal Export Manual. *S. cruenta* is prohibited from importation on sorghum and sudan grass seed into Jordan. *S. sorghi* is included in quarantine regulations of Egypt and Japan. Problems can occur when Johnson grass serves as a reservoir of disease spread and contamination for sorghum and sudan grass in commercial fields.

Some mycologists consider *S. holci* and *S. cruenta* as the same species while other mycologists believe these two smuts are different and distinct. SEM studies in our laboratory show similar markings on spore surfaces of *S. cruenta* and *S. holci* (Fig. 2). *S. sorghi* has distinctly different spore wall patterns (Fig. 3). Interspecific hybrids between *Sphacelotheca* species have been produced experimentally. Since the identification of *S. cruenta*, *S. holci* and *S. sorghi* is difficult and sometimes controversial, the plant pathology laboratory with the cooperation of Butte and San Joaquin County Agricultural Biologists is collecting samples and developing improved identification techniques.

Reference

Fischer, G.W. 1953. Manual of the North American smut fungi. Ronald Press Co., New York. 343 pp.

Tom Matsumoto is a Plant Pathologist, David Showers is an Agricultural Biological Technician, and David Higuera is an Agricultural Inspector with the CDFA Analysis and Identification Unit, Sacramento.

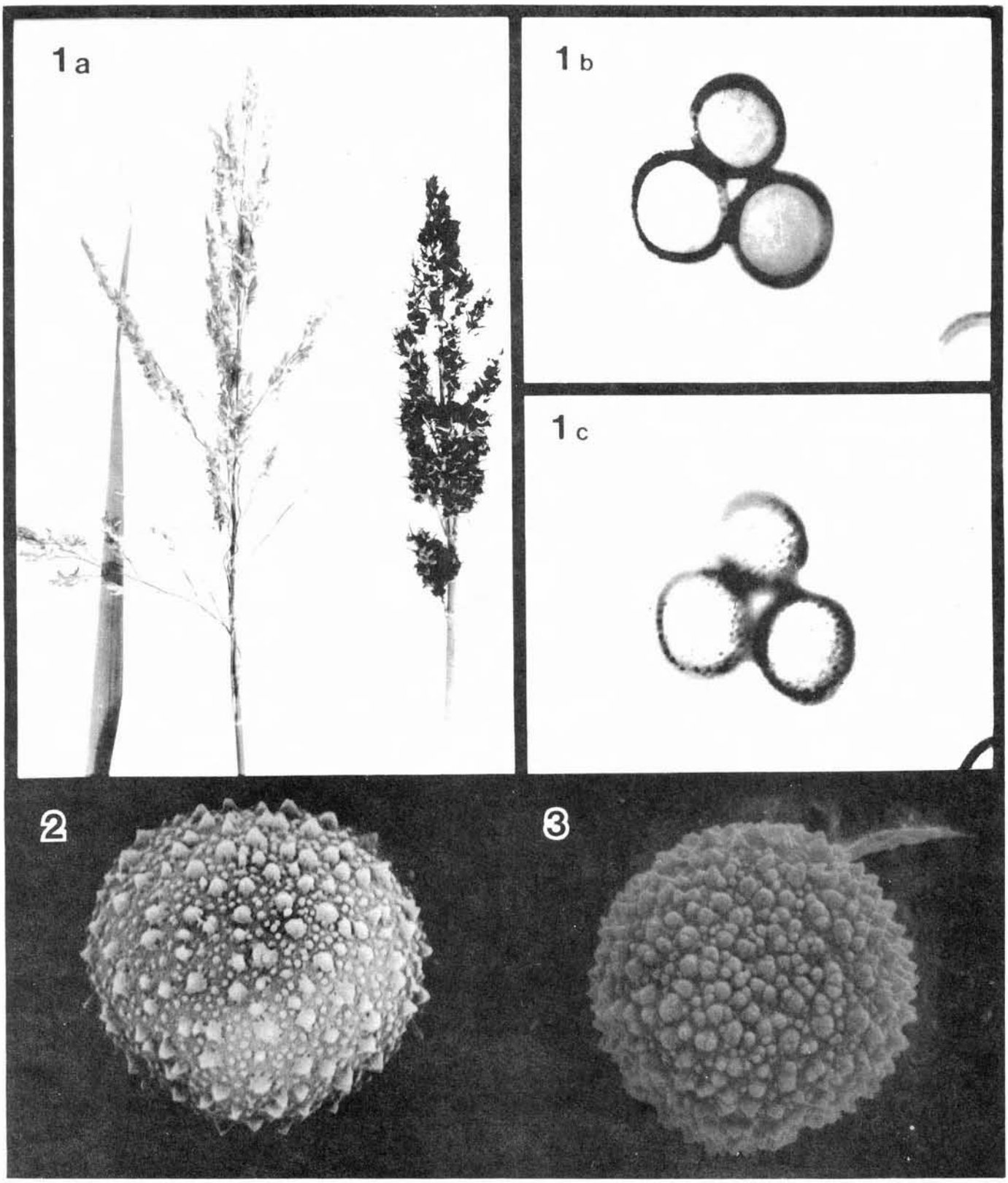

Fig. 1. (a) Symptoms of *Sphacelotheca holci* are seen in the infected inflorescence on the right. (b) Cross section of spores of *S. holci*. (c) Surface photomicrograph of *S. holci* showing the warty appearance of spore walls. Fig. 2. Scanning electron micrograph of *S. cruenta* showing the exospore ornamentation. Fig. 3. Scanning electron micrograph of exospore characters of *S. sorghi*.

"SHOT HOLE OF TURF"

K.L. Kosta

Unusual dead patches of turf began to show up in a popular Sacramento park, about two months following a large fireworks display. The park gardeners noticed that in the center of each circular, brown patch were one to several metallic, ball-bearing-like structures of varying sizes (Figs. 1 and 2). CDFA plant pathologists working with grounds maintenance personnel determined them to be the remains of the fireworks which failed to ignite and fell to the ground. Chemical analysis revealed that they contained large amounts of lead and quantities of chloride.

Laboratory testing found no pathogens to be involved. The fireworks display occurred during the rainy season of a very wet year; it is believed that salts from the pellets were leached out, killing the surrounding grass.

Fig. 1. Fireworks "pellet" in center of dead patch of turf.

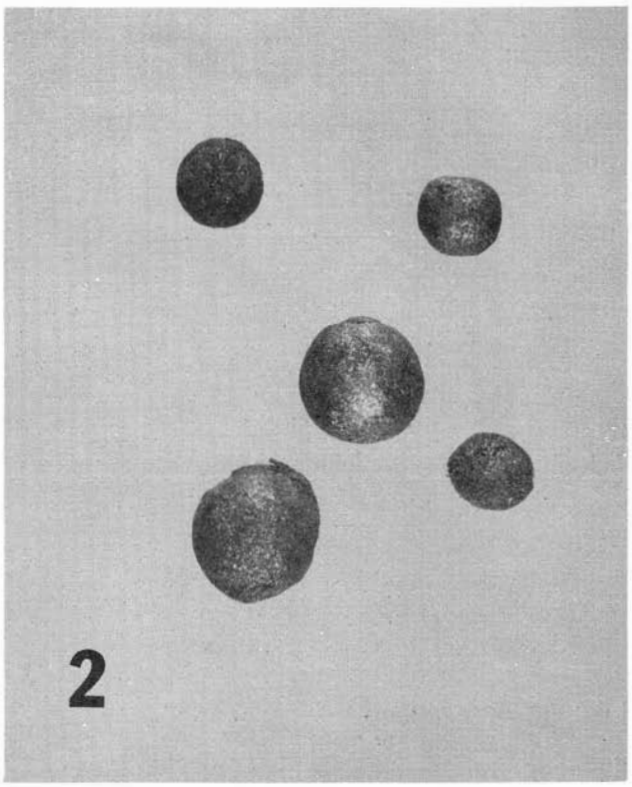

Fig. 2. Unexpended fireworks pellets are of varied sizes.

Kathy L. Kosta is an Agricultural Inspector with the Analysis and Identification Unit, Sacramento, CDFA.

SLIPPERY-SKIN OF ONION

Carl M. Lai

A bacterial rot of onions which is uncommon in California was diagnosed recently in two Riverside county plantings involving about 45 acres. Submitted to the laboratory by Dr. H. Gill, county plant pathologist, the disease was identified in the state laboratory as "slippery-skin" caused by *Pseudomonas alliicola* Burkholder. It occurs rather commonly in onion-growing areas outside of California.

This disease is distinctly different in its early stages from common soft rot caused by *Erwinia carotovora* and sour-skin caused by *Pseudomonas cepacia*. The inner scales of the bulb are usually infected one at a time; the rot follows one scale from the top downward to the base. When the bulb is cut open at this stage, one or more of the inner scales has a translucent appearance, as if it had been cooked. There usually are no external symptoms, except for softening at the neck of the bulb.

The rot does not commonly move crosswise from one scale to another, but after reaching the base of one scale, it may transfer to an adjacent one until all the inner portion is affected. At this stage pressure on the base of the bulb may cause the central core to slip out the top.

Since the bacteria which cause the disease require moisture for infection, the major factor contributing to slippery-skin is occurrence of excessive free moisture on the bulbs either before or after harvesting. The most effective means of prevention is proper maturing of the crop in the field, and quick drying after harvest.

Reference

Chupp, Charles, and Sherf, Arden F. 1960. Vegetable diseases and their control. Ronald Press Co., New York. 668 pp.

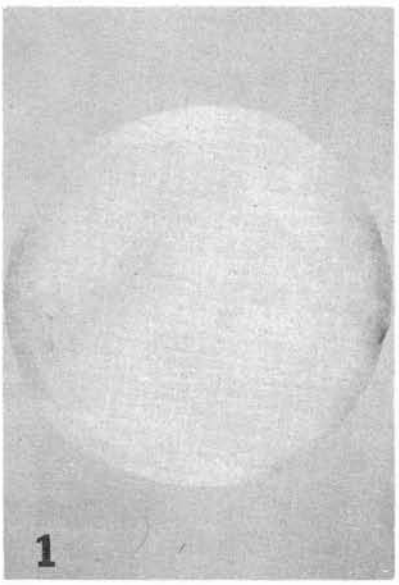

Fig. 1. Healthy onion bulb.

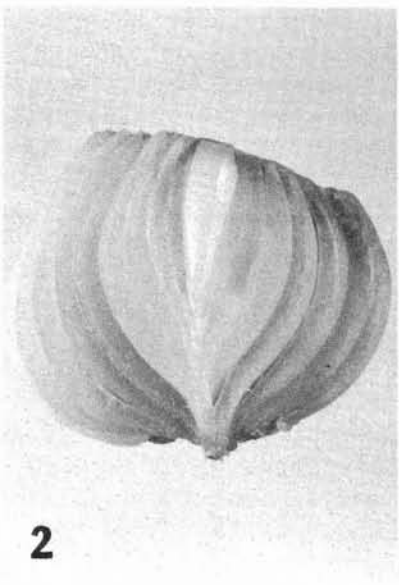

Fig. 2. Infected bulb showing water-soaked areas and brown discoloration of scales.

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FIFTH California Plant Disease Conference

Preliminary Notice

DATE: Thursday and Friday, September 20-21, 1984

LOCATION: Airport Plaza Inn, Millbrae, California
(San Francisco International Airport)

TOPIC: New Pesticides and Phytotoxicity of Pesticides

We would like to offer you the opportunity to participate as a speaker to discuss the technical aspects of new pesticides; particularly fungicides and bactericides and how these will effect California agriculture.

Other ways you may wish to call attention to your Company's products and/or services are:

1. Posters, displays, or literature to be distributed.
2. You may wish to be recognized as a sponsor of a coffee break, providing refreshments; or, possibly, you may wish to sponsor an evening get together. Since we are non-profit, we need all the help we can get.

Persons interested in participating in the program, please contact:

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