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University of California
Agriculture and Natural Resources
Making a Difference for California

UCCE

Field Notes
Cooperative Extension San Joaquin County

November 2013

Brown Marmorated Stink Bug (BMSB) – Coming our way

Since initial finds in the Mid-Atlantic States early in the last decade this potentially serious pest has slowly become established in various parts of US. This summer it was discovered in large numbers in Sacramento, and more recently, it was found in Yuba City. It is only a matter of time until it becomes established in San Joaquin County - if it is not already here, undetected, in low numbers. Growers and PCAs should become familiar with this pest, its biology, monitoring, and control strategies in preparation for its arrival in fields and orchards. The following is an excellent summary prepared in September by UC Cooperative Extension Advisor Chuck Ingels in Sacramento County.

Joe Grant, Farm Advisor

As some of you have heard, Midtown and Downtown Sacramento now have well-established populations of brown marmorated stink bugs (BMSB) (*Halyomorpha halys*) on several blocks, perhaps a half-square mile. It is a CDFA Class B pest, so there is no plan to eradicate it. It is estimated that they have been here for 2 or 3 years, perhaps more. This is the first reproducing BMSB population in Calif. outside LA County. They have been found through various means in 41 states.

The photo from a Midtown resident shows how dense the populations can get. Because they are strong flyers (perhaps up to ½ mile) it's likely a matter of time before they reach farms – perhaps 1 to 3 years or maybe longer – and growers and their PCAs should be on the lookout for these true bugs. There are several types of pheromone traps available. Generally speaking, the traps have been inefficient at catching BMSB until the populations are very high.

BMSB feeds on several dozen species, including apples, pears, cherries, peaches, melons, corn, tomatoes, peppers, berries, wine grapes - just about any plant with a botanical fruit - as well as many ornamentals, especially trees such as Paulownia, Catalpa, and Tree of Heaven. In 2010, they caused $37M in damage to orchards in the Mid-Atlantic States. It is also a serious nuisance pest, as it seeks out lights at night and aggregates in sheltered areas in the winter in droves, including in homes, garages, and attics.

BMSB is a pest in East Asia, where it originated, but generally not a serious pest because of control by parasitic wasps. Collections of parasitic wasps (especially *Trissolcus*) have been made, but it will take 2-3 years before they can be released in California because they need to be tested first. Parasitism is the best hope for reducing populations.

Control of BMSB is very challenging. Some insecticides are effective but must be applied frequently, and sometimes they have simply not worked. Without a doubt, the use of pyrethroids, organophosphates, and neonicotinoids will cause disruptions in grower IPM programs. Fortunately, we can utilize years of research in other states as a starting point here. Control for organic growers, home gardeners, and residents will be the most daunting challenge.

Important Links:

UC identification guides:
BSMB Pest Alert (http://www.ipm.ucdavis.edu/pestalert/pabrownmarmorated.html)
UC BMSB ID Video (http://www.youtube.com/watch?v=EHhtss8E7xM)

Trapping studies have been conducted by USDA-ARS in the Northeast states: http://www.northeastipm.org/neipm/assets/File/BMSB%20Resources/BMSB-IWG-Nov-2012/Attraction-of-BMSB-to-Pheromone-Lures-and-Light-Traps-Leskey-Nov-2012.pdf

A key national BMSB web page is: http://www.stopbmsb.org/.

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UC IPM has good photos on their BSMB Pest Alert: http://www.ipm.ucdavis.edu/pestalert/pabrownmarmorated.html

Oregon State University BMSB web page: http://horticulture.oregonstate.edu/group/brown-marmorated-stink-bug-oregon

Brochure from Oregon on BMSB identification: http://www.oregon.gov/ODA/PLANT/docs/pdf/ippm_bmsb_alert2010.pdf

The primary US research leader is Tracey Leskey, and her online presentation is very informative: http://stream.ucanr.org/fps_stinkbug/index.html

Field Corn Variety Trial Results

Table 1 shows the results of the 2013 Delta field corn variety trial, located on Tyler Island. Two replicates of sixteen varieties were planted on April 16, 2013 by air planter. Each replicate consisted of four 30-inch beds on an average row length of 1324 feet. Seed was planted two inches deep and six inches apart down the row, for an approximate planting density of 35,000 seeds per acre. The soil is a Rindge mucky silt loam with approximately 20 percent organic matter in the top 15 inches of soil. The Rindge series is a mucky peat soil down to 60 inches, and approximately 55,600 acres in the Delta are described by the Rindge classification. The previous crop in the field was corn, and subsurface irrigation by "spud ditch" was employed three times. Nitrogen was applied preplant (125 units as NH_3), and then 25 gallons per acre of 8-24-6 with ½% of zinc was sidedressed. Weed control was by cultivation and one glyphosate application. The field was harvested on October 4, 2013.

The table presents mean values for the two replicates. When interpreting the results, keep the following in mind. The mean is equal to the sum of values divided by the number of values, in this case, two replicates. The statistical method used to compare the means, called Tukey's range test, compares all means against each other. Varieties were considered statistically different if their P value was less than 0.05, or 5 percent. What this means is that when differences between varieties exist, we are 95% certain that the two varieties are actually different; the results are not due to random chance. Differences between varieties are indicated by different letters following the mean. For example, a variety that has only the letter "a" after the mean yield value is different from a variety that is followed by only the letter "b", but it is not different from a variety whose mean value is followed by both letters ("ab"). All varieties but one had statistically similar yield, but differences in bloom date, disease presence,

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Silage Management Reminders for Feeders

Good management practices during the feeding process will help to minimize spoilage when forage is exposed to air. In the presence of oxygen, yeast can metabolize lactic acid, causing silage pH to increase. When pH increases, undesirable fungi and bacteria are able to grow and further spoil the silage. This spoilage translates into dry matter (DM) losses that can be as high as 10% in poorly managed silages, as well as reduction in forage quality, and palatability.

Once ensiled and fermented, the silage's quality is set – good feeding management practices can't improve silage quality, but they can help to reduce further feed deterioration. Here are a few reminders for the feedout phase:

- Remove enough forage from the face. Twelve inches in depth is recommended in the cooler months, with 18 inches being the recommendation in warmer months.
- Remove the forage carefully so the face is smooth and the surface exposed to oxygen is minimized.
- Pull the plastic cover back two to three times per week. Check the integrity of the plastic cover throughout the year and patch any holes or tears so that air cannot infiltrate the silage mass.
- Remove silage as needed throughout the day so it is incorporated into the ration shortly after removal.
- Push feed up frequently, especially during the warm months, to avoid heating of the TMR in the feedbunk and to stimulate appetite.

Noelia Silva-del-Río, UCCE Dairy Specialist, &
Jennifer Heguy, Dairy Advisor, UCCE Stanislaus and San Joaquin

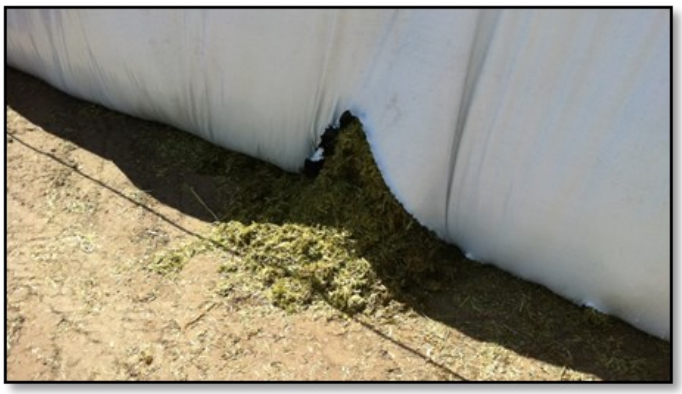

Figure 1. Silage bag ripped at the time of ensiling. Check plastic of piles and bags at the time of ensiling and throughout feedout – repair rips and holes as necessary.

(Continued from page 2)

ear height, and grain moisture were more pronounced. The CV, or coefficient of variation, is the standard deviation divided by the mean, or a measure of variability in relation to the mean. For some measures, particularly the disease percentage, the variability between the two replicates was very high.

Special thanks go to grower cooperators, Steve and Gary Mello, and participating seed companies.

Michelle Leinfelder-Miles, Farm Advisor, Delta Crops

Table 1: 2013 Delta field corn variety trial

Initials	Entry Name/NO.	Company Name	Stand (plants/A)	Days to Bloom[2]	Fusarium Ear Rot[2] (%)	Head Smut[2] (%)	Common Smut (%)	Plants Lodged (%)	Ear Height (in)	Moisture at Harvest[2] (%)	Bushel Weight[2] (lbs/bu)	Yield[1] (lbs/A)
ES	7443RR	Eureka Seeds	34848	72 e	5 abc	0 e	0	0	47 abcd	10.4 abc	61.1	14976 a
DK	C64-82	DeKalb/Grower	33759	72 e	4 abc	2 de	1	0	45 bcd	10.1 abc	61.3	14896 a
DK	C62-08RIB	DeKalb	33106	74 cd	0 c	4 cd	0	0	56 a	10.9 abc	66.5	13705 a
BAG	5409VTP	Baglietto Seeds	34848	74 bc	0 c	7 bcd	0	0	42 cd	10.8 abc	63.0	13654 a
INT	9678VT3PRO	Integra	32888	73 de	1 bc	8 bcd	0	0	48 abcd	11.3 abc	65.4	13370 a
NT	3F-515™	NuTech Seeds	33977	76 a	7 ab	12 bc	0	0	54 ab	10.3 abc	61.8	13343 a
DK	C64-69	DeKalb	35502	74 bc	4 abc	5 bcd	0	0	50 abcd	10.3 abc	63.9	13271 a
MY	2Y767	Mycogen	32017	74 bc	1 bc	4 cd	1	0	54 ab	11.3 abc	64.2	13227 a
INT	9613VT3PRO	Integra	34848	72 e	0 c	5 bcd	0	0	41 d	9.2 c	62.8	13209 a
CP	6640VT3/P	Croplan	35066	72 e	0 c	9 bc	0	0	51 abcd	10.8 abc	65.7	12650 ab
CP	6960VT3/P	Croplan	33759	72 e	3 abc	5 bcd	0	0	46 abcd	9.4 c	60.1	12511 ab
MY	2Y816	Mycogen	33106	75 ab	1 bc	2 de	0	0	56 a	12.3 a	63.3	12069 ab
NT	5H-716™	NuTech Seeds	32453	76 a	5 abc	16 ab	0	0	52 abc	10.4 abc	60.3	11941 ab
ES	7553RR	Eureka Seeds	33106	72 e	10 a	5 bcd	0	0	45 bcd	10.0 bc	61.9	11743 ab
NK	N79T-3111	Syngenta	33324	74 bc	0 c	7 bcd	0	0	54 ab	11.9 ab	65.8	11681 ab
NK	N74R-3000GT	Syngenta	34848	74 bc	1 abc	47 a	1	0	52 abc	11.5 abc	64.0	9563 b
		Average	**33841**	**74**	**3**	**9**	**0**	**0**	**50**	**10.7**	**63.2**	**12863**
		Coefficient of Variation (%)	**4.3**	**1.9**	**137.0**	**150.0**	**0.0**	**0.0**	**10.0**	**9.0**	**3.7**	**11.5**
		Significant variety effect (P value)	**NS**	**<0.0001**	**0.0001**	**<0.0001**	**NS**	**NS**	**0.0001**	**0.0051**	**NS**	**0.0019**

[1] Yield adjusted to 15.5% moisture.

[2] Data were transformed for analysis. Arithmetic means are presented.

Foamy Canker Disease of Almonds

Several weeks ago I visited an orchard in Escalon that had several second-leaf Carmel trees showing foamy canker disease. Symptoms are spectacular; copious amounts of red gum and white foam drain down the scaffold and trunk of the tree and puddle on the ground (see figures). The white foam bubbles from the bark and resembles beer foam—but doesn't smell as good. Often you can detect an alcoholic odor suggesting some sort of bacterial or yeast fermentation is taking place. Under the bark, the cambium, or outermost layer of wood, is often rotted, white, and mushy. Bark removal reveals a layer of white macerated tissue found near the cambial layer. Ultimately, infected bark and wood die and turn dark brown or even black. Diseased tissue may surround healthy areas, leaving islands of tissue that are still capable of producing shoots for a short time.

Foamy canker is only active in the growing season; cankers can heal over in winter providing the tree is not completely killed. If the tree trunk or limbs are completely girdled by the disease, leaves die and remain on the tree. Foamy canker usually begins at the scaffold crotch of the tree and advances up into primary and secondary limbs and down toward the bud union. Foamy canker does not progress past the bud union, and roots are not affected (similar to bacterial canker). Symptoms typically appear in late July after we have had periods of intense heat. Disease activity usually tapers off in fall, and the canker becomes inactive. Most cankers do not reactivate the following spring.

The identity of the pathogen is uncertain, and nothing is known about how the disease is spread or how infection occurs.

The trees that I observed in Escalon appeared to be growing vigorously and were not noticeably stressed.

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Foamy canker disease of almond showing the red gum and white foam that are characteristic of an active canker.

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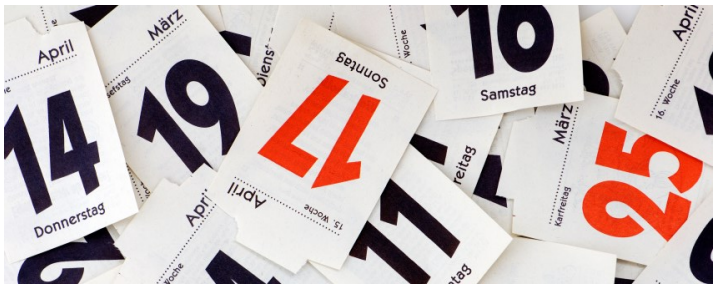
Foamy canker has been found primarily on the Carmel almond variety but it has also been reported on other cultivars (See UCCE Merced Advisor Dave Doll's blog posts at: http://thealmonddoctor.com). No particular pattern or cultural practice has been associated with this disease, but Dr. Beth Teviotdale, retired UC plant pathologist, and I observed that many orchards exhibiting symptoms had used manure as a nitrogen source. The orchard I visited in Escalon had also used manure, but no association has been confirmed and the disease occurrence is so irregular it will be difficult to research.

We believe the foam associated with the disease is due to the fermentative bacteria *Zymomonas* which have been found within the vascular system. We tried to inoculate healthy trees with *Zymomonas* to see if they would also become infected, but we were unable to reproduce symptoms. We speculate that bacteria and fungal yeasts, which have also been isolated, can cause a buildup of gasses and fluids that erupt when the pressure is great enough to break through the surface of the bark. This has been termed 'alcoholic flux.'

Brent Holtz, County Director and Pomology Farm Advisor



Calendar of Events

Northern California Farm to School Conference
Wednesday November 20, 2013, 9:30 am to 4 pm
Robert J. Cabral Agricultural Center
2101 E. Earhart Ave., Stockton
Learn more on how to start, find, and/or participate in your local farm to school programs.
On-line registration: http://ucce.ucdavis.edu/survey/survey.cfm?surveynumber=11206
$30.00 per Person, $75.00 Exhibit Table
Contact: Anna Martin acmartin@ucanr.edu
(209) 953-6121

Mite Identification and Management Workshop
See flyer on page 6
Thursday, November 21, 2013 at
Stanislaus County Cooperative Extension, Modesto
or
Friday, November 22, 2013 at
Tulare County Cooperative Extension, Tulare
Contact for registration questions: Angela Oates
(530) 752-2442
Coffee and breakfast snacks along with boxed lunch will be provided. Course binder is also provided and **4 credits have been approved by DPR.** For more information and to register: http://ucanr.edu/sites/Mite_ID_Workshop/. Please register by Nov 15 at $60, or after Nov 15 at $70.

Western Alfalfa and Forage Symposium
December 11-13, 2013
Peppermill Hotel and Casino, Reno, NV
Agenda, registration, and lodging information available from http://ucanr.edu/sites/Alfalfa/.

Northern San Joaquin Valley Processing Tomato Production Meeting
Tuesday, January 28, 2014, 8 am to 11 am
Doubletree Hotel, 1150 9th Street, Modesto
in conjunction with the California Tomato Growers Association 67th Annual Meeting
For info on educational portion, contact Scott Stoddard
(209) 385-7403 csstoddard@ucanr.edu
For info on CTGA luncheon meeting and exhibition:
(916) 925-0225 or ctga@sbcglobal.net

Cherry Research Review
Tuesday, January 28, 2014, time TBA
Robert J. Cabral Agricultural Center
2101 E. Earhart Ave., Stockton, CA
Info: Joe Grant jagrant@ucanr.edu (209) 953-6115

Lodi Grape Day
Tuesday, February 4, 2014
Info: Paul Verdegaal psverdegaal@ucanr.edu
(209) 953-6119

Northern San Joaquin Valley Almond Day
Thursday, February 6, 2014, 8 am to 12 pm
Robert J. Cabral Agricultural Center
2101 E. Earhart Ave., Stockton, CA
Info: Brent Holtz baholtz@ucanr.edu (209) 953-6124
No registration required

Farm to School education in action.

Local Evaluation of Processing Tomato Varieties 2013

This year, our local mid-maturity processing tomato variety trial was located southeast of Tracy in a furrow-irrigated field. The trial was transplanted on April 30th and machine harvested on September 4th (127 days). Many thanks to Lucero Farms and Del Terra Farms for their generous cooperation and to the California Tomato Research Institute and the participating seed companies for their financial support. Later in the winter, the full UC Statewide Variety Evaluation Report with combined results of five trials will be available from the UCD Vegetable Research and Information Center website (or I can mail you a copy): http://vric.ucdavis.edu/veg_info_crop/tomato.htm

Brenna Aegerter, Vegetable Crops Advisor

REPLICATED VARIETIES

Variety	Yield [y] (tons/acre)		Soluble solids (° Brix)		pH	Color	Disease resistance
H 1161	55.09	a	6.20	a	4.22	22.75	VFFNP
H 5608	54.30	a	5.38	def	4.34	20.50	VFFNP SW
HM 1892	52.69	ab	5.70	cd	4.34	23.75	VFFNP
H 1175	51.69	ab	5.05	f	4.39	20.00	VFFN
N 6407	51.68	ab	5.83	bc	4.30	24.50	VFFNP SW
N 6402	50.91	abc	5.98	abc	4.34	22.50	VFFNP SW
N 6404	50.86	abc	5.83	bc	4.36	23.00	VFFNP SW
AB 2 (Std)	48.20	bcd	5.65	cde	4.27	21.75	VFFP
AB 0311	47.81	bcd	6.18	a	4.24	22.25	VFFNP SW
H 8504 (Std)	45.08	cde	5.35	ef	4.21	22.75	VFFNP
HM 1893	43.83	de	5.40	de	4.22	22.00	VFFN SW
SUN 6366 (Std)	43.54	de	5.93	abc	4.41	21.50	VFFNP
H 1170	39.38	e	6.13	ab	4.31	20.50	VFFN

y Means in the same column followed by the same letter are not significantly different.

OBSERVATIONAL VARIETIES

Variety	Yield (tons/acre)	Soluble solids (° Brix)	pH	Color	Disease resistance
N 6410	59.89	5.9	4.36	23	VFFN
HMX 2897	54.41	5.5	4.33	21	VFFNP SW
UG 16609	53.06	5.6	4.26	23	VFFNP SW
HMX 2898	51.52	6.0	4.20	26	VFFNP
H 1293	51.44	5.7	4.54	20	VFFNP SW
C 324	47.96	5.3	4.41	22	VFFNP SW
H 1285	47.87	5.4	4.29	21	VFFNP SW
BQ 296	45.61	5.6	4.25	22	VFFNP SW
H 1292	44.55	5.9	4.45	19	VFFNP SW
C 322	43.43	5.0	4.40	22	VFFNP SW
IVF 5268	42.91	5.8	4.33	22	VFFNP
HMX 3908	41.25	5.3	4.27	22	VFFN SW
ISI 31060	39.71	4.9	4.65	22	VFFNP SW
BQ 313	38.46	5.4	4.44	21	VFFNP SW
BQ 311	38.20	5.6	4.37	20	VFFNP SW
BQ 295	37.77	5.5	4.39	21	VFFNP SW
HMX 3907	37.73	5.6	4.37	21	VFFFN

Register before November 15 to save $10!

2013 Mite ID and Management Workshops

Register online at ucanr.edu/sites/Mite_ID_Workshop/
Thursday, November 21, Modesto
Friday, November 22, Tulare
8:30 AM to 12:45 PM

sponsored by:
UC Agriculture and Natural Resources,
Cooperative Extension and Statewide IPM Program

Who should attend: Pest Control Advisors and IPM Private Applicators

- **Register online ASAP to ensure a seat!**
- **Each workshop is limited to 50 people.**
- **$60 fee increases to $70 after November 15.**
- **Limited number of scholarships are available for UC ANR advisors**

Join us for one of these workshops to learn about:

- Mite identification, anatomy, sex, life cycle and comparison to other arthropods
- Mite Classification for *Tetranychidae, Tenuipalpidae, Tarsonemidae, Acaridae, Eriophyidae* and *Phytoseidae* families
- Hands-on identification for identifying spider and predatory mites at various developmental stages
- Mite Control with biological and chemical control, common miticides and their key characteristics and use. Info on production, packaging, shipping and release of predatory mites

Full agenda is posted on the event website.

Contacts for more information

Registration or Logistics:
UC ANR Program Support Unit
anrprogramsupport@ucanr.edu
Angela Oates, 530-752-2442

Program:
David Haviland, 661-868-6215
dhaviland@ucdavis.edu
Peter Goodell, 559-646-6515
pbgoodell@ucanr.edu

Workshop Locations

Thursday, November 21: UCCE Stanislaus, 3800 Cornucopia Way, Suite A, Modesto
Friday, November 22: UCCE Tulare, 4437-B S. Laspina St., Tulare

Continuing Education

California Department of Pesticide Regulation: 4 hours

University of California Agriculture and Natural Resources

Thanks to our cooperators!

Every year, the advisors here at UC Cooperative Extension conduct applied research trials in fields, orchards, and vineyards. Many of these trials span multiple years. These trials would not be possible without the commitment, generosity, and patience of cooperating growers on whose farms they are conducted. We extend our deepest thanks to the following individuals and organizations that cooperated with us this past season. Please forgive us if we omitted your name!

Bob Aberle
Joey & Marty Adrian
Arnaudo Farms
Joe Bacchetti
John & Mark Bacchetti
Josh, Gary & Brent Barton
Bill Bechtold
Ed & Anthony Bruno
Michael Carr
Louis Casale
Celli Farms
Tony Chiappe
Stephen Colbert
Dino Del Carlo
Delicato Vineyards
R & J Dondero
Andy Dugo
Jeff & Greg Ferrari
Skip Foppiano
Gallo Vineyards
Jim Jerkovich
Jeff Klein
Cathy Lagorio Farms
Brett Lagorio
Stanton Lange
Lange Twins
Ronn & Lance Leffler
Kyle Lerner
Robert Longstreth
Lucero Farms
Matt Lund
Don Lutz
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Notes from the Field

November 2013

The University of California working in cooperation with San Joaquin County and the USDA.