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UCCE

Field Crop Notes
Tulare County

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Irrigating Field Crops in a Water-Short Year

Friday, March 21, 2014
Tulare County Agricultural Building Auditorium
4437 S. Laspina St., Tulare, CA
8:00 am – 12:00 pm

8:00 am **Registration**

8:15 **Presentations begin**

Irrigation strategies for alfalfa, corn & blackeyes
Carol Frate, Farm Advisor, Tulare County

End of season irrigation strategy for small grains
Steve *Wright, Farm Advisor, Tulare County*

Irrigation strategies for cotton
Dr. Robert Hutmacher, Extension Specialist, Dept. of Plant Sciences, UCD, stationed at UC West Side Research and Extension Center, Five Points

Getting the most from your irrigation system
Dr. Larry Schwankl, Extension Specialist, Dept. of LAWR, UCD, stationed at Kearney Agricultural Research and Extension Center, Parlier

BREAK

Forage and grain sorghum water use and stress responses
Dr. Robert Hutmacher, Extension Specialist, Dept. of Plant Sciences, UCD, stationed at UC West Side Research and Extension Center, Five Points

Sorghum varieties, yield and quality
Dr. Jeff Dahlberg, Extension Specialist & Director, Kearney Agricultural Research & Extension Center, Parlier

ADJOURN

(All the speakers are hoping, that by the date of this meeting, we will have had enough rain and snow that no one will feel the need to attend.)

2013 Tulare County Silage Corn Variety Trial Results

The 2013 silage corn variety trial was planted to moisture on beds on June 20, in a field with fine sandy loam soil. The previous crop was winter forage. Plots were 8 rows wide for the length of the field, a bit short of a ¼ mile. Each variety was replicated three times.

To estimate plant population, seedlings were counted for an 8.7 ft section in each row at three locations through the field for a total of 24 different counts for each plot. Although plant populations ranged from 31,764 to 33,222 plants per acre, there were no statistical differences among the varieties (Table 1).

Table 1. Plant population, plant height and ear height, and lodging ratings, 2013 silage corn trial, Tulare County, CA.

Brand	Plant Population per Acre	Ear Height (ft)		Plant height (ft)		Lodging Rating Sept 23 1=none; 10= complete		Lodging Rating Oct 10 1= none; 10=complete	
Integra 9682 VT3P	31,930	5.7	bc	12.0	bc	1.0	a	1.4	a
DK 6469 VT3P	32,555	4.8	e	9.5	f	1.1	a	1.0	a
NuTech 5H-122	32,945	5.6	bcd	12.0	b	2.1	ab	2.5	ab
DnyeGro 57VP75	33,139	6.2	a	12.6	a	4.5	c	5.0	c
Baglietto 5517 RR	32,250	4.7	e	11.6	cd	1.2	a	1.0	a
Eureka 7649 VT2P	32,055	5.4	cd	11.4	d	1.5	ab	1.6	ab
Croplan 7927 VT3P	32,750	6.1	a	12.4	ab	2.4	b	3.1	b
Mycogen TMF 2L825	33,222	5.3	d	11.9	bcd	1.5	ab	1.3	a
B-H 8830 VTTP	32,514	4.7	e	10.7	e	1.1	a	1.0	a
Syngenta NK 82V3111	31,764	5.8	b	12.7	a	5.8	d	7.5	d
Grand Mean	32,627	5.35		11.7		2.23		2.6	
Probability	0.35	0.00		0.00		0.000		0.000	
LSD .05	NS	0.28		0.45		1.00		1.53	
Coefficient of Variation %	2.83	3.14		2.24		26.33		34.72	

Means are the averages of 3 replications. Values within a column followed by a common letter do not differ at the 5% level of probability using Duncan's Multiple Range Test.

Lodging ratings: 1 = no lodging; 10 = 100% lodged

Spider mites were controlled by a ground application of Onager at 1 pt/A. Glyphosate plus a 2 oz/A rate of Status, applied by ground, controlled weeds. Eighty pounds of nitrogen (N) were side dressed before lay-by and manure water was used in some irrigations.

Tasseling occurred mid-August. Daytime temperatures during pollination were in the mid-90's with an occasional spike to 100^{o}F but night time temperatures were mild. Irrigations were timely and there was little to no stress on plants during pollination.

In mid-September **plant height and ear height** to the base of the primary ear were taken. Results are presented in Table 1. At the time, ears were large and heavy. A few days later, on September 21, a very strong windstorm blew through the area, causing **lodging** in several plots. Another windy event occurred in early October but very little additional lodging occurred. Comparing height and lodging data (Table 1), it is obvious that the tallest varieties had the biggest problem with falling down. It is not uncommon to have a squall or thunderstorm in September/October and the possibility of a windy weather occurrence in these months should be considered when choosing a variety for a later planting date.

On October 11, 2013, the field was harvested by custom choppers. With 3 choppers and trucks of different sizes, some plot yields were calculated based on the harvest weight of 4 rows and yields from other plots were calculated based on 8 rows. With 3 choppers it was also a bit hectic and yield data from 3 plots were lost. Analysis of yield data utilized missing plot calculations.

Samples for moisture and quality were collected from each plot at the silage pile by taking several small handfuls from different areas of the just-dumped pile of chopped corn. Moisture samples were put in zip lock bags. These samples were weighed and put into a drying oven the same day. Samples for quality were vacuum sealed at the silage pile and sent to Cumberland Valley Lab for quality analysis. Always keep in mind when evaluating both yield and quality results that the amount of chopped corn that can be handled in a drying oven and lab is relatively small compared to the total biomass harvested in each plot. Having three replications to average for a final value of moisture and quality gives more confidence in the final estimate given in the tables but it is still based on a relatively small sample.

Table 2. Yield summary, 2013 silage corn trial, Tulare County, CA.

Brand	Tons/Acre as Harvested		Moisture Percent at Harvest		Tons Per Acre Dry Matter	Tons per Acre Adjusted to 70% Moisture
Integra 9682 VT3P	30.2	abc	63.0	def	11.2	37.2
DK 6469 VT3P	27.0	de	59.0	g	11.1	37.0
NuTech 5H-122	31.4	ab	65.7	b	10.8	36.0
DnyeGro 57VP75	30.7	ab	64.6	bcd	10.8	35.9
Baglietto 5517 RR	28.8	bcd	63.1	def	10.5	35.2
Eureka 7649 VT2P	30.5	ab	65.3	bc	10.5	35.1
Croplan 7927 VT3P	32.0	a	67.7	a	10.4	34.6
Mycogen TMF 2L825	30.9	ab	66.3	ab	10.4	34.5
B-H 8830 VTTP	28.0	cd	63.7	cde	10.2	34.1
Syngenta NK 82V3111	25.1	e	61.7	f	9.6	32.0
Grand Mean	29.27		63.9		10.52	35.07
Probability	0.00		0.00		0.067	0.067
LSD .05	2.290		2.30		NS	NS
Coefficient of Variation %	4.54		2.05		4.77	4.76

Means are the averages of 3 replications. Values within a column followed by a common letter do not differ at the 5% level of probability using Duncan's Multiple Range Test.
Moisture samples were collected at the silage pile, sealed, and put in the dryer on the same day.

Yield results are shown in Table 2. Statistics are run on data to give us an idea of how sure we are if varieties are truly different from each other or if the differences could be due to chance. “Chance” might include some varieties in a part of the field with a sand streak, an irrigation set that was delayed, or just the inherent variability in a field. In Table 2, if the yield from a variety is followed by the same letter as another variety, it means that those varieties are the same and the difference in their yield is more likely due to chance than one variety being “better” than the other. But if the varieties do not have the same letters then we are 95% confident that there was a real difference between the varieties. Looking at Table 2, we are 95% confident that there were differences in the “as harvested” yield among the varieties. For example, Eureka 7649 produced 30.5 tons per acre as measured at the silage pile and its weight is followed by “ab.” DK 6469’s “as harvested” yield at the field was 27.02 followed by “de,” so there are no letters in common between these 2 varieties. From this we can say we are 95% confident that the yield, as measured at the field, was significantly higher for the Eureka variety than for the DK variety. (The footnote below Table 2 states that the probability used in the statistics was 5%, meaning we would accept a 5% risk that we are wrong or, in other words, a 95% confidence level that the difference is real).

But to evaluate silage trials, one has to remember that moisture content greatly influences weight and a few days difference in maturity at harvest can make a big difference in yield as measured at the silage pile. Looking at the next column in Table 2, “Moisture Percent at Harvest,” it is obvious that the varieties differed significantly in their moisture content when the harvest occurred. We know this in part because the range of moisture goes from a low of 59% to a high of almost 68%. In addition, we know the differences are (statistically) significant because there are letters after the moisture values and they are not the same for each of the varieties. We try to test varieties of the same maturity but they are never all the same on the harvest date. It is unfair and unwise to decide what variety to plant looking just at the field weight without taking into account the moisture, an indication of maturity.

So how do we make a fair comparison? We can calculate the dry matter (which is everything that isn't water such as sugars, starch, fiber, protein, etc.) by taking the percent moisture at harvest and subtracting it from 100% to get the percent of dry weight. Multiplying the yield at harvest by the percent dry weight and dividing by 100, we get the Tons/Acre of Dry Matter.

For example, Integra 9682 had 63% moisture at harvest. 100% – 63% moisture leaves the dry matter at 37%.

(37/100) x 30.2 = 11.2 Tons/A of Dry Matter.

However, yields are often discussed based on a standardized basis of 70% moisture. Once we have the dry matter we can calculate what the weight would be at 70% moisture. The equation for that step is to take the dry matter and divide it by 0.30.

Tons/Acre Dry Matter/0.30 = Tons/Acre at 70% Moisture

(11.2 T/A Dry Matter)/0.30 = 37.3 Tons/Acre adjusted to 70% Moisture
(This value differs just a tad from the table because numbers have been rounded off in the table).

Unfortunately, simply adjusting all the yields to 70% moisture by an equation does not solve the problem of comparing varieties because it favors varieties that are drier on the harvest date. This is because a drier variety has all of the advantage of having developed more starch in the kernels due to its advanced maturity when harvested and then, with the adjustment calculation, moisture weight is added to get to 70% moisture. Wetter, less mature corn is at a disadvantage because it did not have enough time to fill the kernel, as compared to the more mature corn, by the time of harvest and less moisture weight is added to get to 70%. (If a variety has more than 70% moisture at harvest, weight is actually subtracted to give a 70% standard value). In this year's trial, all the varieties were less than 70% moisture at harvest but the adjustment calculation still favors drier varieties over less dry varieties.

Table 3. Protein and fiber analysis, 2013 silage corn trial, Tulare County, CA

	Fiber % DM								Carbohydrates		Proteins % DM			
Brand	ADF		NDF		Lignin		NDF Digestibility (30 hr) % NDF		Starch % DM		Crude Protein		Rumen Degr. Protein	
Integra 9682 VT3P	25.9	b	39.4	abc	3.2	bc	54.8	a	32.6	cde	7.6	de	5.3	cd
DK 6469 VT3P	23.6	a	37.5	ab	3.0	ab	53.8	ab	37.4	a	7.5	e	5.2	cd
NuTech 5H 122	24.9	ab	37.6	ab	3.1	b	50.6	c	34.6	abc	7.7	cde	5.5	bc
DyneGro 57VP75	25.6	b	40.2	bcd	3.5	c	51.3	bc	31.2	de	8.2	abc	5.9	ab
Baglietto 5517 RR	25.5	b	38.9	abc	3.1	ab	55.1	a	32.2	cde	8.1	abcd	5.8	ab
Eureka 7649 VT2P	25.5	b	39.4	abc	3.2	b	54.4	a	30.5	e	8.2	ab	5.9	a
Croplan 7927 VT3P	25.5	b	38.9	abc	3.2	bc	50.6	c	32.7	cde	7.5	e	5.3	cd
Mycogen TMF 2L825	28.2	c	42.3	d	3.4	c	50.8	c	29.8	e	7.0	f	5.0	d
BH 8830 VT2P	25.6	b	40.5	cd	3.2	bc	53.9	ab	33.8	bcd	7.5	e	5.3	cd
Syngenta NK 82V3111	23.5	a	37.1	a	2.8	a	55.8	a	36.0	ab	8.3	a	5.7	ab
P-Value (0.05)	0.001		0.023		0.010		0.000		0.002		0.000		0.001	
LSD	1.63		2.63		0.25		2.13		2.97		0.43		0.34	
Grand Mean	25.4		39.3		3.2		53.2		33.0		7.7		5.5	
CV %	3.8		3.9		4.6		2.3		5.2		3.3		3.6	

Means are the averages of 3 replications. Values within a column followed by a common letter do not differ at the 5% level of probability using Duncan's Multiple Range Test.

Samples for quality analysis were collected at the silage pile, vacuum sealed and mailed to Cumberland Valley Lab in Maryland.

Looking at dry matter values and tonnage adjusted to 70% moisture, there were no differences among any of the varieties. When evaluating corn trial results, one has to rely on his or her experience and consider the maturity (moisture) at harvest and how maturity influences the results. Other characteristics such as plant and ear height, lodging, and quality should also be considered.

Quality is an increasingly important factor when selecting a variety. High quality going into the silage pile does not guarantee it will be high quality after ensilage but, if it is not high quality going in, it definitely will not be high quality coming out. Keep in mind that differences in maturity at harvest are also important when looking at quality data. More mature corn of the same variety will have more lignin, fiber and starch than when that same variety is less mature. Digestibility of fiber will decline as the plant becomes older. Quality data for this trial are summarized in Tables 3 and 4. Statistical analysis was not run on the mineral values or pH contents as these values were very similar. Each nutritionist seems to have his or her own system for determining what makes the best feed so you may want to share these results and confer with your nutrition consultant when selecting varieties to plant.

Table 4. Energy calculations and mineral analyses, 2013 silage corn trial, Tulare County, CA

	Energy and Index Calculations		Minerals % DM					
Brand	TDN (% DM)	Milk per Ton[1] (lbs/Ton)	Ash	Ca	P	Mg	K	pH
Integra 9682 VT3P	71.0 bcde	3185 ab	4.7	0.2	0.2	0.1	1.3	3.9
DK 6469 VT3P	72.5 a	3019 b	4.7	0.2	0.2	0.2	1.2	3.9
NuTech 5H 122	72.0 abc	3192 ab	4.8	0.2	0.2	0.1	1.3	3.8
DyneGro 57VP75	70.8 cde	3183 ab	4.8	0.2	0.2	0.2	1.4	3.9
Baglietto 5517 RR	71.2 abcde	3223 a	5.1	0.2	0.2	0.2	1.4	3.9
Eureka 7649 VT2P	70.8 cde	3215 a	5.2	0.2	0.2	0.2	1.4	3.8
Croplan 7927 VT3P	71.4 abcd	3225 a	4.8	0.2	0.2	0.1	1.3	3.8
Mycogen TMF 2L825	69.8 e	3100 ab	5.0	0.2	0.2	0.2	1.2	3.8
BH 8830 VT2P	70.8 cde	3056 ab	4.9	0.2	0.2	0.2	1.3	3.8
Syngenta NK 82V3111	72.4 ab	3170 ab	4.6	0.2	0.2	0.1	1.3	3.9
P-Value (0.05)	0.029	0.045						
LSD	1.46	177.6						
Grand Mean	71.2	3140.5						
CV %	1.7	0.4						

Means are the averages of 3 replications. Values within a column followed by a common letter do not differ at the 5% level of probability using Duncan's Multiple Range Test.
Samples for quality were collected at the silage pile, vacuum sealed and mailed to Cumberland Valley Lab in Maryland.
[1] Milk per Ton calculated by Cumberland Lab from the University of Wiconisn Milk 2006 for Corn Silage program.
Ca- Calcium, P- Phosphorus, Mg- Magnesium, K- Potassium

Spider Mites In Silage Corn: Damage and Management

(*This article is condensed from a proceedings article of the 2013 Western States Alfalfa and Forage Symposium. The original article, as well as other articles and some videos of presentations from the meeting are available at:* http://alfalfa.ucdavis.edu/+symposium/2013/index.aspx)

Spider mites are a common pest in San Joaquin Valley corn. There are some management strategies to reduce the impacts of these pests on corn. One in particular is to avoid stressed corn, especially water stress. Spider mite populations increase rapidly on stressed corn. Minimizing dust and controlling weeds can also reduce spider mite pressure.

Predatory insects and mites also help to keep spider mite populations under control. Thrips, are early season predators feeding mainly on eggs. Spider mites provide an important food source for minute pirate bugs (*Orius tristicolor*), big-eyed bugs (*Geocoris* spp.) and other general predators. Naturally occurring predatory mites also help reduce populations. When possible, maintain beneficial insect and predatory mite populations by avoiding applications of broad spectrum insecticides for other pests.

Table 1. List of miticides for use against spider mites in corn.[1]

Miticide	Active Ingredient	Company	Mode of Action	Resistance Category
Comite	propargite	Chemtura	Contact on juveniles and adults	12C
Oberon	spiromesifen	Bayer	Contact on all but most effective on juveniles	23
Onager	hexythiazox	Gowan	Growth regulator, eggs are sterile, contact toxin on eggs & juveniles	10A
Zeal	etoxazole	Valent	Contact on eggs, inhibits molting, eggs are sterile	10B
Miteus*	fenpyroximate	Nichino	Contact on eggs juveniles & adults	21

*Labeled as Portal in Texas, Oklahoma, New Mexico, and Kansas. Expected registration in CA is spring 2014 under the name of Miteus. Because it has an established tolerance, this miticide could be included in a trial and the corn harvested but until it is registered in CA it cannot be used commercially.
[1]Adapted from a table produced by David Haviland, UCCE Farm Advisor, Kern County.

Despite good management, in most years the application of a miticide is needed and justified. UC IPM guidelines suggest that if spider mite colonies are observed on lower leaves before lay-by, a miticide should be applied by ground. This recommendation is based on the fact that spider mites are almost always a problem and that ground application with drop nozzles is much more efficient than air application in getting the pesticide to the areas where spider mites are located (lower leaves, underneath side).

Current miticides registered in California for use in corn are listed in Table 1 along with Miteus which has been submitted to the California Department of Pesticide Regulation. California registration is expected in April or May of 2014.

In 2010, 2012 and 2013, large scale trials on a commercial field were conducted in Tulare County to evaluate miticides. The two spotted spider mite was the most predominant, if not the only, spider mite in these trials and all trials were conducted on non-brown midrib (BMR) varieties. Plots were either 12 rows (2012 and 2013) or 24 rows (2012) wide and a quarter of a mile long with 4 replications in a randomized complete block design. Applications were made with a commercial high clearance sprayer using drop nozzles at 20 gpa. A nonionic surfactant (NIS) was used with all miticides except Comite. In 2010 plots were sprayed on June 23 when plants were 5-6 ft tall; in 2012 applications were made on May 31 when plants were 4-5 ft tall; and in 2013 miticides were applied on May 23 when plants were about 4 ft in height. Harvest was on August 3, August 14, and August 6, in 2010, 2012 and 2013 respectively.

Due to the size of the trials, in most years only one rate of each miticide could be tested and the rate included in the trial was suggested by the miticide's company. As new miticides were registered, they were included in trials. The table below summarizes which materials and rates were used in each year.

Table 2. List of treatments for 2010, 2012 and 2013 spider mite trials, Tulare County, CA.

Treatment	Rate per Acre in Trials	Maximum Label Rate/Application	2010	2012	2013
Untreated			Yes	Yes	Yes
Comite	3 pts	3 pt	Yes	Yes	Yes
Oberon 2SC	12.8 fl oz	16 fl oz	Yes	Yes	--
Oberon 2SC	16 fl oz	16 fl oz	Yes	--	Yes
Onager	16 fl oz	24 fl oz	Yes	Yes	--
Onager	20 fl oz	24 fl oz	--	--	Yes
Zeal	2.5 oz	3 oz	--	--	Yes
Zeal	3.0 oz	3 oz	--	Yes	--
Miteus SC	2 pt	2 pts	--	--	Yes

To assess spider mite populations, the fourth or fifth leaf from the ground was randomly selected at weekly intervals from the two center rows of each plot. Leaves were collected 50-100 ft from either end of the field, placed in paper bags and refrigerated until counted, usually on the same or the following day.

Figures 3, 4 and 5 show graphs of the spider mite counts (juveniles plus adults) for 2010, 2012, and 2013 respectively. In some years the counts peaked higher in the untreated checks than in other years and likewise in some years the counts remained high for a longer time. In 2010, the lower leaves in the untreated check turned dry and spider mites moved into higher leaves compared to 2013 where counts in the untreated check seemed to decline due to predatory mites and other beneficial insects.

Fig. 3. Average number of spider mites (adults+juveniles) per leaf, based on 16 leaves, 2010 Tulare County Trial, Tulare, CA. (WAT means weeks after treatment)

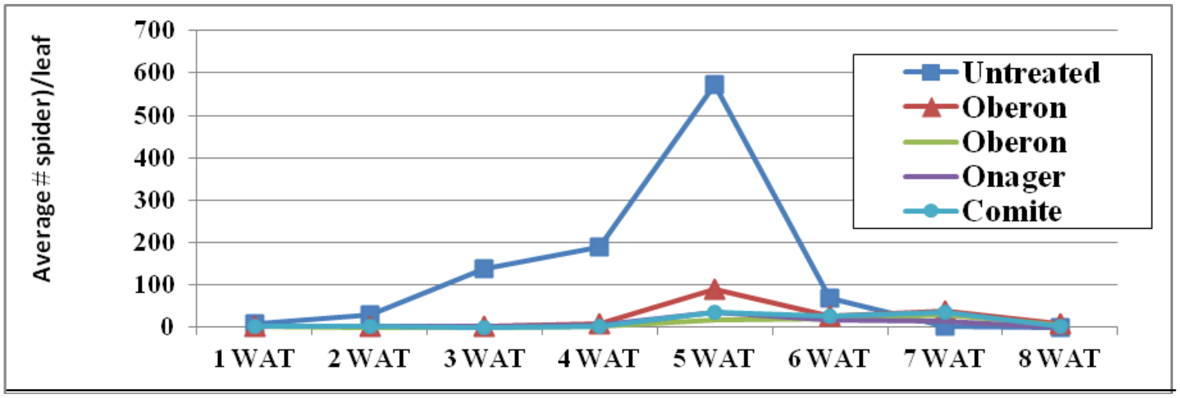


Figure 4. Average number of spider mite (adult+juvenile) per leaf, based on 12 leaves, 2012 Tulare County Trial, Tulare, CA. (WAT means weeks after treatment)

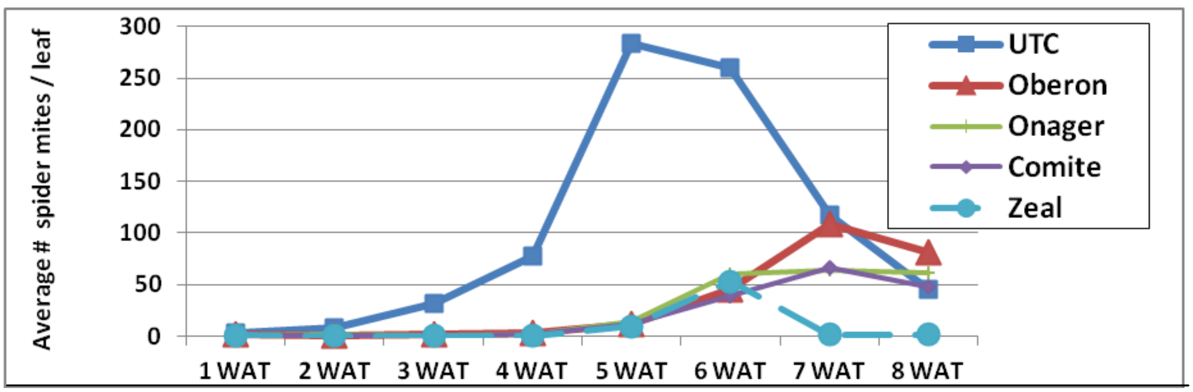
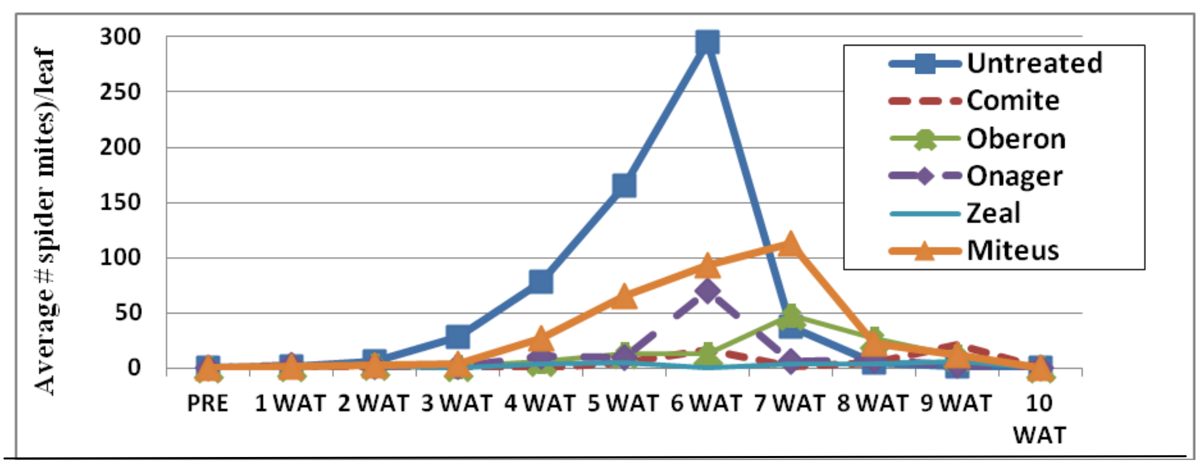


Figure 5. Average number of spider mites (adult+juvenile) per leaf, based on 16 leaves, 2013 Tulare County Trial, Tulare, CA. (WAT means weeks after treatment)



Yields, shown in Table 3, were obtained by weighing silage trucks and collecting moisture samples at the silage pile. In 2010 and 2012, there were no differences in moisture at harvest among treatments and every miticide treatment produced at least 5 tons (adjusted to 70% moisture) more per acre than the untreated control (UTC). Among the miticides there were no differences.

In 2012, all but one of the treatments produced significantly more (3.9 – 9 tons) per acre than the untreated check. Comite and Zeal applications, which were at maximum label rates, produced higher yields than Oberon and the UTC. Onager out-produced the untreated check but did not yield better than Oberon. In this trial, Oberon and Onager were applied at mid-label rates.

In 2013, spider mite pressure was less than in earlier trials and the range from lowest to highest yield was only 3 tons/acre (70% moisture) Only one treatment (Comite) produced statistically more than the untreated check (UTC). The high label rate of Comite produced yields significantly higher than the UTC, Oberon (high label), Zeal (mid-label), and Miteus treatments.

Table 3. Yield results from 3 years of spider mite trials, Tulare County, CA[1]

		Percent Moisture at Harvest			Tons/A adj. to 70% Moisture		
Treatment	**Rate per Acre**	**2010**	**2012**	**2013**	**2010**	**2012**	**2013**
Untreated	--	67.8	59.6	65.9 ab	33.0 b	32.4 d	39.4 bc
Comite	3 pts	68.0	64.2	64.1 c	38.9 a	37.7 b	41.6 a
Oberon 2SC	12.8 fl oz	68.2	63.0	--	39.4 a	34.3 cd	--
Oberon 2SC	16 fl oz	67.4	--	66.2 ab	38.4 a	--	38.6 bc
Onager	16 fl oz	67.9	62.8	--	39.3 a	36.3 bc	--
Onager	20 fl oz	--	--	66.2 ab	--	--	40.2 ab
Zeal	2.5 oz	--	--	67.1 a	--	--	38.3 bc
Zeal	3.0 oz	--	64. 1	--	--	41.4 a	--
Miteus SC	2 pt	--	--	64.7 bc	--	--	38.2 c
Probability		*>50*	*0.41*	*0.03*	*0.02*	*0.00*	*0.02*
LSD (.05)		*NS*	*NS*	*0.02*	*3.86*	*3.17*	*1.98*
Coefficient of Variation (%)		*2.95*	*5.59*	*1.7*	*6.62*	*5.61*	*3.3*

[1]Values within a column followed by a common letter do not differ at the 5% level of probability.

Spider mites can also impact the pre-ensilage quality of corn (Table 4). In 2010, the individual miticide treatments did not reduce the percent acid detergent fiber (% ADF), but when analyzed as a group they significantly reduced it from 30.1% for the UTC to an average of 28.2% ADF for the miticide treatments. The difference that year in percent neutral detergent fiber (%NDF) was not significant. In 2012, all miticide treatments except Oberon (mid-label rate) had significantly reduced %ADF and %NDF than the UTC. In 2013 there were no differences in % ADF or % NDF among any of the treatments.

Summary

In 2 of 3 years, spider mites when untreated reduced corn silage yield and quality compared to miticide treatments.

It is difficult to directly compare miticides because different rates were used in trials; some treatments were applied at the top of the label and others at less than the maximum rate allowed. In this location, Comite at 3 pt/A performed well each year. Onager performed quite well at low and mid-rate treatments in 2012 and 2013 respectively. Zeal also looked very good. Based on these trials and other UC trials at the West Side Research and Extension Center in Fresno County, there is concern that there may be some spider mite populations that have developed tolerance to Oberon. Miteus reduced spider mite counts compared to the untreated plots but there was no yield response.

Table 4. Fiber analyses from 3 years of spider mite trials, Tulare County, CA.

		Acid Detergent Fiber (%)			Neutral Detergent Fiber (%)		
Treatment	**Rate per Acre**	**2010**	**2012**	**2013**	**2010**	**2012**	**2013**
Untreated	--	30.1	32.3 a	26.1	47.6	50.7 a	39.1
Comite	3 pts	28.4	27.3 bc	25.3	46.0	43.1 bc	38.8
Oberon 2SC	12.8 fl oz	28.0	30.3 ab	--	44.4	47.7 ab	--
Oberon 2SC	16 fl oz	28.5	--	26.4	46.0	--	38.9
Onager	16 fl oz	27.9	28.0 bc	--	45.0	43.5 bc	--
Onager	20 fl oz	--	--	26.2	--	--	40.8
Zeal	2.5 oz	--	--	26.1	--	--	39.5
Zeal	3.0 oz	--	25.8 c	--	--	40.4 c	--
Miteus SC	2 pt	--	--	26.8	--	--	40.0
Probability		*0.33*	*0.01*	*0.69*	*0.26*	*0.01*	*0.51*
LSD (.05)		*NS*	*3.25*	*NS*	*NS*	*4.90*	*NS*
Coefficient of Variation (%)		*5.59*	*7.26*	*4.90*	*3.08*	*6.98*	*4.12*

It is important for pest control advisors and growers to be alert to areas where resistant populations may be occurring and to take steps to avoid selection pressure for resistance. The mode of action for each of the miticides tested in these trials is different which provides the opportunity to rotate materials and minimize the risk of developing resistant spider mite populations and the loss of effective miticides.

This trial could not have been conducted without the cooperation of the grower, spray application by Vieira Custom Spraying, harvest by D&G Chopping and Martin Trucking, and financial support from Chemtura, Bayer, Gowan, Valent, and Nichino America companies. Thank you to Katie Wilson, Walter Martinez, Kerista Hernandez, and Yvonne Lopez for their help and dedication in collecting and counting spider mites.

University of California
Cooperative Extension
Tulare County
4437B S Laspina St
Tulare CA 93274-9537

Nonprofit Org
US Postage Paid
Visalia CA 93277
Permit No. 240

Field Crop Notes

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Meeting: Irrigating Field Crops in a Water-Short Year, March 21, 2014

2013 Tulare County Silage Corn Variety Trial Results

Spider Mites In Silage Corn: Damage and Management

Carol Frate, Farm Advisor