Field Notes
San Joaquin County
November 2018

University of California
Agriculture and Natural Resources

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Dormant Weed Control in Almond Orchards

Weeds have a tremendous capacity to spread within an orchard. The first line of defense is identifying the weeds you need to control, then selecting the best herbicides or cultural practices to control those weeds. Increased glyphosate use has resulted in a spread of resistance in fleabane, marestail, ryegrass, and junglerice. We are even finding Gramoxone-resistant fleabane spreading throughout the Central Valley. If you use the same herbicide repeatedly each year, you may select for tolerant weed species and reduced herbicide effectiveness. Alternating products with different modes of action at least every year will improve results and ensure herbicide long term viability. The UC Weed Science blog (http://ucanr.edu/blogs/UCDWeedScience/) and the Weed Research and Information Center (http://wric.ucdavis.edu/) are good places to determine the modes of action of different herbicides, what weeds they control, recommended rates, and in what crops they are registered to be used. The UC IPM web site has charts that show which weeds are controlled by what herbicides, and it has an excellent weed photo gallery that includes many weed species commonly found in California for easy identification and reference (http://www.ipm.ucdavis.edu/). Consider buying the handy shirt-pocket sized Weed ID cards produced by UC ANR which can be ordered at http://anrcatalog.ucdavis.edu/Details.aspx?itemNo=3541. A free online weed ID tool is also available at http://weedid.wisc.edu/ca/, and current CA tree and vine registrations are available from http://ucanr.org/t&v-registrations.

A fall/winter pre-emergent herbicide program followed by post-emergent materials in the spring and/or summer is an effective weed management strategy in most orchards. A post-emergent-only program is often less effective and more costly, especially in orchards where glyphosate-resistant weeds are present. The traditional combination of Surflan or pendimethalin (Prowl, etc.) plus Goal has only been partially effective on fleabane in certain orchards. Growers experiencing problems controlling fleabane and marestail with traditional pre-emergent herbicides (Surflan + Goal) alone may want to consider using tank mixes of other recently registered herbicides such as Alion, Matrix, Pindar GT, Chateau, and Broadworks. Pre-emergent herbicides should be applied to bare ground. Weed control is reduced when dead weeds or leaves interfere with herbicide delivery to the soil. Where weeds are already present in the orchard, tank-mix effective post-emergent materials with the pre-emergent herbicide.

Some growers may prefer multiple post-emergent treatments rather than pre-emergent treatments, particularly if orchard access is limited during the dormant season. Roundup, Touchdown, Gramoxone, Shark, Venue, Rely, Goal, and certain 2,4-D formulations are registered for use in almond orchards. Glyphosate is moderately effective on purple nutsedge with repeated applications prior to the six-leaf growth stage. Yellow nutsedge can be managed by using 4 qts/A of glyphosate at two application timings. Sandia has shown excellent results to control nutsedge, but it is not registered on almond. (Sandia is registered for pistachio and walnut.) The key to nutsedge control is repeated applications before it is able to regenerate new nutlets and before larger tree size allows for orchard floor shading. Care should be taken to avoid resistance in weed species by repeated use of the same herbicide year after year. Cost comparisons between pre- and post-emergent programs often show that the expense of repeated contact application equals or exceeds the cost of the pre-emergent treatment, especially if you have noxious weeds like fleabane and marestail, which germinate for eight months of the year. Herbicide application equipment should NEVER be used for treating tree foliage! Manufacturer labels providing essential information about the proper use and application rate for all pesticides can be accessed at http://www.agrian.com or http://www.cdms.net. NOTE: Before using any herbicide always check labels for any use restrictions applicable to your area or soil type. Below are descriptions of various pre-emergent and post-emergent herbicides.

Pre-emergent Herbicides

Prowl H_2O (pendimethalin) herbicide provides excellent control of grass and broadleaves, especially those germinating in the spring and summer time. Surflan (Oryzalin) and Prowl are similar in their weed spectrum and residual properties. Prowl H_2O and Surflan remain stable on the soil without rainfall for 21 days. Apply them at the higher label rates (4-6 quarts per sprayed acre) for extended weed control. Another strategy is to treat early in the season (November/December) for winter weeds with glyphosate (Roundup, Touchdown), Gramoxone with a soil residual herbicide such as Chateau,

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Matrix, Alion, or Pindar GT, and then wait to apply the Surflan or Prowl until later in February or March to achieve summer-long weed control.

Chateau (flumioxazin) is a long-lasting pre-emergent herbicide available for tree, nut, and vine crops. Applied between 8-12 oz. per treated acre, Chateau enhances burndown of small broadleaf weeds and provides residual control of difficult weeds such as fleabane and horseweed (marestail) and a host of other winter weeds as they germinate. This has made Chateau an excellent herbicide for use in the fall/early winter during the dormant period. This time frame also avoids phytotoxicity to emerging bud tissue in the early spring, especially on young trees. The addition of Rely (glufosinate), Roundup (glyphosate), Treevix (saflufenacil), or Gramoxone (paraquat) is needed to control emerged weeds, especially fleabane and marestail.

Matrix FNV (rimsulfuron) is a pre-emergent herbicide active on many winter broadleaf and grass weeds, including fleabane, malva, willow weed, and marestail. Its broad spectrum activity on grasses and broadleaf weeds makes it a good fit for an early fall application (November/December). It should be tank mixed with a contact herbicide, like Roundup, Rely, Gramoxone, or Treevix. Matrix is applied at 4 ounces of product per broadcast acre. A second application or use of another pre-emergent herbicide is generally needed in the spring for extended summer weed control. Matrix is very safe on young trees and will control glyphosate resistant ryegrass and junglerice.

Alion (indaziflam) is a herbicide registered in tree nuts. It is a pre-emergent, long-lasting soil residual herbicide, exceptional in controlling grasses and many broadleaf weeds. It is effective on both winter and summer weeds, including fleabane, marestail, sowthistle, and willow weed. At least 1/4 inch of water is needed to set and activate soil residual. Since it is strictly a pre-emergent herbicide, it requires a tank mix with a post-emergent herbicide for emerged weeds; Rely, Shark, Goal, Touchdown, Roundup, and Gramoxne are all compatible. Alion is a brand new chemistry and has shown excellent results. It has an inhibiting cell wall formation mode of action. This mode of action will have an important role in future weed control strategies of weed resistance management. Dr. Brad Hanson, Extension Weed Specialist at UC Davis, performed a number of trials where Matrix and Alion were tank mixed together and had even better efficacy in combination (UC Weed Science Blog at http://ucanr.org/blogs/UCDWeedScience/).

Pindar GT (oxyfluorfen and penoxsulam) is two herbicides, having pre- and post-emergence activity for use in tree nuts and fruits. Applied in November/December, it provides residual control lasting into spring/early summer. It is especially effective on filaree, malva, willow weed, sowthistle, and many other winter broadleaf weeds. If weeds have emerged, it is recommended to combine it with a post-emergent herbicide, like Roundup, Rely, or Gramoxone. If heavy grass pressure is anticipated in the orchard, the addition of Prowl or Surflan will provide long term grass weed control. Within 14 days of application, a ½ inch of water is needed to set and activate the herbicide.

Trellis (isoxaben) has been recently registered for use in bearing almonds and other nut and fruit crops. It is a pre-emergent herbicide controlling many winter and summer broadleaf weeds. Applying in the fall/winter will provide 4-5 months of control. It has no post-emergent activity, therefore, it must be tank mixed with Roundup, Rely, or Gramoxone for emerged weeds. The Trellis mode of action is unique; it inhibits cellulose development, making it a good rotational herbicide to manage weed resistance. If grass weeds are an issue, the addition of a pre-emergent grass herbicide - Prowl or Surflan - will be needed.

Broadworks (mesotrione) was recently registered in nut (almond, walnut, pistachio) and certain fruit crops. It is primarily a pre-emergent herbicide to control broadleaf weeds, hence the name Broadworks. It does have post-emergence activity on certain broadleaf weeds that are small, but it will require a post-emergent tank mix partner for complete burndown of weeds. Broadworks controls some of the more difficult broadleaf weeds in orchards, such as fleabane, marestail and malva, but it needs to be mixed with another pre-emergent herbicide that will control grasses. We have found it to be compatible with Alion, Prowl, Matrix, Surflan and Chateau.

Post-emergent Herbicides

Rely (glufosinate) herbicide has become a mainstay for growers needing a broad spectrum burn down herbicide to control tough weeds like filaree, willow weed, or glyphosate-resistant fleabane and marestail. In recent years, the development and spread of Roundup resistant weeds is forcing a change from Roundup Ready corn and soybean varieties to Liberty Link varieties, which require the use of glufosinate herbicide (Rely, Liberty). With the heavy use expected in corn states, Rely can occasionally be in short supply for California growers. There is a new glufosinate manufacturing plant on-line which should avoid interruptions in product. There are also generic brands of glufosinate available. We have found a Rely + Roundup combination to be very effective across most weed species.

Treevix (saflufenacil) is a post-emergent contact herbicide offered for almond, nuts, and fruit crops. It is recognized as an excellent post-emergent herbicide for some of our toughest broadleaf weeds. However, Treevix is selective on broadleaf weeds and should be mixed with glyphosate or Gramoxone to control emerged grasses. Like all contact herbicides, treating small weeds 1 to 6 inches tall with complete spray coverage is important. Treevix is excellent in burning down fleabane, marestail, and willow weed, especially in cooler temperatures beginning in fall through spring time. It is not a soil residual herbicide; therefore, it will need to be tank mixed with soil active herbicides for long term control.

Brent Holtz, Almond Advisor and County Director

Mick Canevari, Farm Advisor Emeritus

Old Pest-New Problem: Infestation of Pacific Flatheaded Borer in Walnuts in the Northern San Joaquin Valley

During late August 2018, a few walnut growers and PCAs reported the infestation of a pest which has been almost unheard of by walnut growers. The insect is called the Pacific flatheaded borer. The larval stage of this beetle insect has a greatly enlarged and flattened thorax (not the head!) (Fig. 1). Between August and October, we visited more than ten walnut orchards with this problem in several locations, particularly on the east side of San Joaquin County and the northeast side of Stanislaus County. We observed the infestation in young (2 years) to mature (15-20 years) orchards, irrespective of the walnut variety – Howard, Chandler, and Tulare. Although I received 3-4 phone calls in the past about this insect, all of those calls were about flatheaded borer infestation in young trees, both walnut and cherry. This year's finds are different, as the infestation appears to be much more widespread and severe across a bigger geographic area. The flatheaded borers are known to cause damage to weaker, wounded, and sunburn-susceptible parts of the tree. However, in our observation, the damage was not limited to wounded and sunburn-damaged branches, and this is concerning for walnut growers. The damage was more or less random throughout the tree ranging from small twigs (pencil-sized), branches (2-4 inches in diameter), limbs and the trunk.

Biology of flatheaded borer. The insect belongs to the beetle family 'Buprestidae,' the members of which are wood borers. Adults are ½ to ¾ inch long, with brown and gray markings on the wing covers, and an oval head and wedge-shaped body (Fig. 2). We don't have much information about the seasonal phenology and life cycle of this insect in walnuts in California. Based on information from other parts of the country, adults emerge from April through August, with the majority of them emerging in June and July. Female beetles deposit approximately 100 eggs singly in the weaker portions of the wood (i.e., sunburned, freshly pruned, etc.), bark crevices or depressions. Freshly hatched larva bore into the bark, feed on the cambium layer of the wood initially, and reach the xylem eventually. The larvae are cream-colored and legless. They construct pupal chambers and molt into the final instar (i.e. prepupae stage) for overwintering. Pupation occurs in the spring and early summer, and then the adult emerges. There is one generation per year, but the life cycle may be longer (1-3 years) in cooler areas, as reported in some literature. At least 70 forest and other tree species of 21 plant families have been reported as hosts, including alder, birch, ash, ceanothus, oak, boxelder, mahogany, maple, poplar, sycamore, willow, apple, pear, beech, elm, cotoneaster, peach, plum, avocado, loquat, cherry, currant, fig, apricot, and walnut.

Damage symptoms and monitoring. Although literature suggests that adults may be seen on sunny sides of the tree trunk during the summer, we never spotted adult beetles in our field visits. There is precedence for using different colored sticky traps to capture adult beetles of a similar kind, but there isn't one specific to the Pacific flatheaded borer. Since finding the optimal trap type is critical to studying the emergence pattern of this beetle, we are planning to conduct these studies in the next season. At this point, the best way to find whether the flatheaded borer has infested the orchard is by doing visual examination of the tree and looking for the following signs:

- Brown sap oozing from under the bark on the trunk, limbs, and lower branches (Fig. 3).
- Presence of visual wounds on the tree branches and limbs that are prone to sunburn (Fig. 4). Locate flagged branches and look for infestation signs on those.
- Use a knife to peel the bark of a suspected branch and look for feeding channels packed with frass (sawdust-like insect waste) and cream-colored larva underneath the bark (Fig 5).
- Look for D-shaped exit holes of the beetle on the bark (Fig 6).

Management. The infestation may be reduced by adopting cultural practices that encourage vigorous, healthy plants; although, the borer seems to attack healthy trees as well. Young trees should be protected by applying white latex paint or by using mechanical covers over the trunk (e.g. trunk guards). Orchard sanitation – the removal of the weakened, injured, dead and flagged branches – is highly recommended during the late fall and winter, as the mature larvae overwinter on the infested wood. To my knowledge, there is no insecticide registered to target this pest in walnuts in California, and we will begin investigating potential insecticides next year.

Jhalendra Rijal, IPM Advisor, San Joaquin, Stanislaus, and Merced counties

Fig. 1. Pacific flatheaded borer larvae.

Fig. 2. Pacific Flatheaded borer adult.

Fig. 3. Brown sap oozing from the trunk is a symptom of the pest.

Fig. 4. Visual wounds that indicate pest damage.

Fig. 5. Peel the bark away to look for the pest.

Fig. 6. Exit wounds caused by the pest.

2018 Evaluation of Fungicides for Control of Tomato Powdery Mildew

A trial was conducted in a commercial fresh market tomato field (cv. 'Valleycat') located southeast of Stockton. The field was transplanted July 6th and was furrow-irrigated. Each plot consisted of a single plant row per bed with 20-inch spacing within the row and 60-inch spacing between rows; plots measured 35 feet long and were replicated four times. The trial area was managed by the grower similarly to the rest of the field except that no sulfur or mildew fungicides were applied to the test area. Experimental fungicide applications were initiated early in the progression of the disease; however, there were symptoms present on a few leaves when applications began. The first application was on August 21st, the second application following 13 days later on September 3rd, and the third application following 10 days later on September 13th. All fungicides were applied in a water volume equivalent to 25 GPA (first application) or 45 GPA (second and third applications). Applications were made with a CO_2 backpack sprayer (operating at 34 psi at the boom) and a handheld boom with four nozzles (hollow cone TXVS-18 nozzles), two of which were on drops. A non-ionic surfactant was added to all treatments (0.25% Latron B-1956). No phytotoxicity symptoms were observed on foliage or fruit. Plots were rated for the percentage of the foliage that was affected by powdery mildew (exhibiting mildew symptoms, sporulation or mildew-induced necrosis). Disease pressure was low during the first few weeks of the trial, but by the last two weeks, the pressure ramped up fairly quickly, reaching an average of about 60 percent of the foliage affected in the non-treated plots. Most products performed well, limiting the damage to 10 percent or less of the foliage affected. Note that multiple programs gave identical, very good results and so are listed alphabetically in table 1. Rally (myclobutanil) did very well in this trial, which suggests that the tomato mildew pathogen may have shifted back to being very sensitive to this product, likely since we have moved away from using it in recent years.

The trial also included some products for which California tomato registration is pending. The results on these products are included in a full report which is located on my website (see https://ucanr.edu/sites/veg_crop_sjc/Pest_Management/). Always read the label before applying pesticides.

Our great appreciation is extended to Mike Carr (Pacific Triple E), PCA Bill Vignolo (Simplot), and the grower/landowner for their generous cooperation.

Brenna Aegerter, Vegetable Crops Advisor

Table 1. Impact of fungicide programs on powdery mildew severity. There were no differences among products on fruit yield and quality (data not shown). Always read the label before applying pesticides.

Product(s), rates and timings*	Active ingredient(s)	Powdery mildew severity (%) 14-Sep		25-Sep		1-Oct	
Rally 4 oz (ABC)	1.6 oz myclobutanil	2.5	d	2.5	g	2.5	f
Rhyme 7 fl oz (ABC)	1.8 oz flutriafol	2.5	d	2.5	g	2.5	f
Rhyme 7 fl oz (AC) alt. Priaxor 8 fl oz (B)	1.8 oz flutriafol alt. 1.4 oz fluxapyroxad + 2.8 oz pyraclostrobin	2.5	d	2.5	g	2.5	f
Quadris Top 8 fl oz (AC) alt. Rally 4 oz (B)	1.67 oz azoxystrobin + 1.05 oz difenoconazole alt. 1.6 oz myclobutanil	2.5	d	2.5	g	4.4	f
Luna Sensation 7.6 fl oz (ABC)	2 oz fluopyram + 2 oz trifloxystrobin	2.5	d	2.6	g	4.4	f
Priaxor 8 fl oz + Serifel 4 oz (ABC)	1.4 oz fluxapyroxad + 2.8 oz pyraclostrobin + 0.4 oz *Bacillus amyloliquefaciens* strain MBI600	2.5	d	4.4	fg	4.4	f
Priaxor 8 fl oz (ABC)	1.4 oz fluxapyroxad + 2.8 oz pyraclostrobin	2.5	d	4.4	fg	4.4	f
Priaxor 8 fl oz (AC) alt. Rally 4 oz (B)	1.4 oz fluxapyroxad + 2.8 oz pyraclostrobin alt. 1.6 oz myclobutanil	2.5	d	4.4	fg	6.3	ef
Fontelis 24 fl oz + Rally 4 oz (AC) alt. Vivando 15.4 fl oz (B)	6 oz penthiopyrad + 1.6 oz myclobutanil alt. 4.8 oz metrafenone	2.5	d	6.3	efg	8.1	ef
Fontelis 24 fl oz (AC) alt. Priaxor 8 oz (B)	6 oz pethiopyrad alt. 1.4 oz fluxapyroxad + 2.8 oz pyraclostrobin	4.5	cd	8.1	defg	9.0	ef
Quadris Top 8 fl oz (ABC)	1.67 oz azoxystrobin + 1.05 oz difenoconazole	2.5	d	6.3	efg	10.0	def
Vivando 15.4 fl oz (ABC)	4.8 oz metrafenone	2.5	d	8.1	defg	10.0	def
Fontelis 24 fl oz (ABC)	6 oz pethiopyrad	4.4	cd	12.8	cde	21.8	bcd
non-treated control	---	12.8	a	42.5	a	61.0	a
	Mean	4.0		8.7		12.4	
	LSD	3.43		7.08		11.80	
	CV (%)	60.73		57.87		67.11	

* 1st application (A) on August 21st, 2nd application (B) on September 3rd, and 3rd application (C) on September 13th.
Values represent the means of four observations; means in the same column followed by the same letter are not statistically different, according to Fisher's protected least significant difference test (*P = 0.05*).

Field Corn Variety Trial Results

Table 1 shows the results of the 2018 UCCE Delta field corn variety trial, located on Tyler Island (see page 7). Three replicate blocks of fourteen varieties were planted on May 9th by air planter. The fourteen varieties included twelve varieties submitted by seed companies and two submitted by the grower. All varieties were glyphosate tolerant. Each plot consisted of four 30-inch beds on an average row length of 1166 feet. Seed was planted approximately two inches deep and six inches apart down the row. 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 about 60 inches, and approximately 55,600 acres in the Delta are described by the Rindge classification. The previous crop in the field was corn. Subsurface irrigation by "spud ditch" was employed three times. Anhydrous ammonia was applied pre-plant (110 units N/acre), and 8-24-6 with ½ percent of zinc was knifed in at planting (additional 32 units N/acre). Weed control was by cultivation and glyphosate herbicide program, and Zeal miticide was applied. The field was harvested on October 19th.

Stand counts were made approximately two weeks after planting. The stand was assessed in the center two rows of each four-row plot, counting the plants along a 10-foot length. Bloom was assessed over the week of July 16th. While planting occurred on the same day as in 2017, the days to bloom was 68 in 2018, averaged across varieties, compared to 65 in 2017. This amounts to an approximate accumulation of 1230 growing degree days (GDD) in both years. In general, the temperatures were lower in 2018 compared to 2017. Over the course of the season, there were four days above 100ºF, compared to a total of fourteen days over 100ºF during the 2017 season. (Temperature data is from the neighboring Staten Island CIMIS station, www.cimis.water.ca.gov.)

We monitored disease incidence and plant lodging in late September. Disease incidence, particularly Fusarium ear rot, was higher in 2018 compared to the two previous years. A sign of Fusarium ear rot is white fungal mycelium around the kernels (Fig.1). The disease is usually introduced to the ears by corn earworm or by thrips that travel down the corn silks at pollination. Incidence may be reduced in varieties with longer husks that prevent insect infestations. Planting earlier in the season may also reduce incidence, as the crop may reach pollination before insect pests are prevalent. Seed company representatives have indicated that Fusarium ear rot incidence was high in other parts of the state as well.

The table presents mean values for the three replicates. The statistical method used to compare the means is called Tukey's range test. 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"). Similarly, a variety whose mean yield is followed by the letters "ab" is not different from a variety whose mean yield is followed by the letters "bc". Eleven varieties have a letter "a" following their mean yield, which means that those eleven varieties all performed similarly in the trial. In other words, based on this research, we cannot attribute numerical differences to varietal differences. The variety that had the lowest yield in the trial also had the lowest stand count. This may have been the result of the planter settings. Seed inventory records indicate that a standard bag of this variety weighed 54 pounds for 80,000 seeds; whereas, bags of other varieties weighed 39 to 44 pounds for 80,000 seeds. This larger-sized seed may not have dropped consistently from the planter in order to achieve the desired plant stand. Growers should contact the seed company with further questions.

Across varieties, there were also statistical differences in stand count, days to bloom, Fusarium ear rot, head smut, ear height, grain moisture, and bushel weight. 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 the diseases, the variability among the three replicates was very high.

Special thanks go to the cooperating growers, Steve and Gary Mello, and the participating seed companies.

Michelle Leinfelder-Miles, Delta Farm Advisor

Fig. 1. Fusarium ear rot incidence was higher in 2018 than in 2017. Signs of it include white fungal mycelium.

Table 1. 2018 UCCE Delta field corn variety trial

Entry Name	Company Name	Stand Count* (Plants/A)	Days to Bloom*	Fusarium Ear Rot* (%)	Head Smut* (%)	Common Smut (%)	Plants Lodged (%)	Ear Height* (in)	Moisture (%)	Bushel Wt. (lbs/bu)	Yield‡ (lbs/acre)
SX 5543VT2P	Balietto Seeds	34267 a	68 ab	9 bcd	0 bc	0	0	55 cde	16.1 ab	61.2 abcd	15652 a
INT 6533VT2PRO	Integra	31363 ab	67 b	7 bcd	2 abc	0	0	56 cde	15.5 abc	60.9 abcde	15488 ab
ES 7514VT2P	Eureka Seeds	33106 ab	68 ab	9 bcd	0 c	0	0	53 e	15.8 ab	61.5 ab	15413 ab
LG 5643VT2RIB	LG Seeds	34848 a	68 ab	21 ab	1 abc	0	0	56 cde	14.9 bcd	59.7 e	15295 ab
DKC 62-08	Grower entry	33396 a	69 ab	3 de	2 abc	0	0	62 ab	14.8 bcd	60.4 bcde	15018 abc
CP 5678VT2P	Croplan	34267 a	69 a	5 cde	1 abc	0	0	52 e	15.7 abc	61.1 abcde	14740 abc
A 646-12STXRIB	Agrigold	31944 ab	69 ab	4 cde	3 abc	2	0	57 bcde	16.5 a	61.5 ab	14730 abc
DKC 67-44RIB	DeKalb	34558 a	68 ab	8 bcd	3 abc	0	0	59 abc	14.5 cd	61.4 abc	14637 abc
LG64C30TRC	LG Seeds	32815 ab	68 ab	2 e	4 abc	0	1	63 a	15.0 bcd	61.5 ab	14055 abc
LG 5701	Grower entry	32815 ab	69 a	14 bc	2 abc	0	0	54 de	16.1 ab	60.4 bcde	14001 abc
CP 5335VT2P	Croplan	33977 a	69 a	3 de	7 a	1	0	54 de	15.2 abc	60.7 abcde	13821 abc
INT 6400SS	Integra	33977 a	68 ab	7 bcde	0 c	0	0	62 a	13.9 de	59.7 de	13678 bcd
A 648-46VT2PRO	Agrigold	33106 ab	69 a	8 bcd	4 ab	0	0	59 abcd	15.1 bcd	61.9 a	13248 cd
DKC 62-20RIB†	DeKalb	28459 b	67 ab	41 a	3 abc	0	0	56 cde	13.0 e	59.9 cde	11909 d
Average		**33064**	**68**	**10**	**2**	**0**	**0**	**57**	**15**	**60.8**	**14406**
Coefficient of Variation (%)		**3**	**1**	**40**	**53**	**-**	**-**	**2**	**2**	**0.5**	**4**
Significant variety effect (P value)		**0.0024**	**0.0039**	**<0.0001**	**0.0010**	**N/A**	**N/A**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**

Results for each variety are expressed as the average across three replications.
* Data were transformed for analysis. Arithmetic means are presented.
‡ Yield adjusted to 15% moisture.
† Larger seed size and planter settings may have caused lower stand and yield. Contact company representative for more information.

Announcements / Calendar of Events

Alfalfa and Forage Symposium
November 27-29, 2018
Grand Sierra Resort, Reno, Nevada
For more information and to register, visit http://calhay.org/symposium/.

California Rangeland Conservation Coalition Summit
Tuesday, January 15, 2019
9:00am to 3:00pm
Cabral Agricultural Center, 2101 E. Earhart Ave., Stockton, CA
Contact: Theresa Becchetti, tabecchetti@ucanr.edu

SJC and Delta Field Crops Meeting
Thursday, January 17, 2019
8:00am to 12:00pm
Cabral Agricultural Center, 2101 E. Earhart Ave., Stockton, CA
Contact: Michelle Leinfelder-Miles, mmleinfeldermiles@ucanr.edu

North San Joaquin Valley Almond Day
Tuesday, January 29, 2019
8:00am to 12:00pm
Modesto Centre Plaza, 1150 9th Street, Modesto, CA
Contact: Brent Holtz, baholtz@ucanr.edu

Northern San Joaquin Valley Processing Tomato Production Meeting
Thursday, January 31, 2019
8:00am to 11:00am
Modesto Centre Plaza/Doubletree Hotel, 1000 L Street, Modesto, CA
Held in conjunction with the California Tomato Growers Association 72nd Annual Meeting
For information on the educational portion, contact Brenna Aegerter, (209) 953-6114 or bjaegerter@ucanr.edu.
For information on the CTGA luncheon meeting and exhibition: (916) 925-0225 or ctga@sbcglobal.net

67th Lodi Grape Day
Tuesday, February 5, 2019
8:00am to 12:00pm, Doors open at 7:30am.
Hutchins Street Square, 125 S. Hutchins Street, Lodi, CA
Morning session is free. Lunch is $30 (early bird fee).
Lunch speaker TBA.
Contact: Paul Verdegaal, psverdegaal@ucanr.edu

Principles of Fruit and Nut Tree Growth, Cropping and Management
February 25 to March 7, 2019
Please visit http://fruitandnuteducation.ucdavis.edu/education/principles/ for more information on the program, and please contact fruitsandnuts@ucdavis.edu or 530-752-4279 with questions.

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Notes from the Field

November 2018

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