



Cold and Dry Thoughts for 2014: Grapes

Below average cold, below average rainfall, increasing costs, more regulations and tougher competition; we seem to be experiencing our own modern day Iliad. But it could always be worse and baseball opening day is only 55 days away.

Dry conditions have taken front page attention to the recent cold weather. As no rainfall is in sight, questions are beginning to occur on growers' response. With that in mind, I have put down some bullet points from local experience and after talking with Dr. Andy Walker:

- Mid-winter irrigations are good idea now, if not already.
- Irrigation in and of itself won't start growth; as average temperatures need to be above 50°F on an on-going basis. And soil temperatures are slower to respond to warming, especially after this cold winter. Temperature trumps water availability with regard to vine growth.
- Usually budbreak for Chardonnay occurs at about 300 growing degree days (GDD) in Lodi, which is March 15th over the long term. This year we currently have 100 GDD as of January 24th, 2014. We seem to be gaining about 4 GDD per day as the daily maximums are 10 to 12 degrees F ABOVE normal, but minimums are 8 to 10 degrees BELOW average.
- The bigger problem is roots are still active, although at a very low rate. Dry soils create dry roots that can result in erratic budbreak, delayed push (or maybe advanced?), odd shoot growth similar to B deficiency (this is Barnes's Syndrome of drought induced B deficiency. This induced B deficiency is real and can also affect fruit set.
- Other nutrients can also be affected; as we may see potassium deficiency like symptoms during the season and even nitrogen uptake and utilization may be affected.

- Irrigations of at least 24 to 36 hours, depending on soil texture and depth. Split applications over a few days may help. Then wait for the next rain.
- If only a week or 10 days have passed before a rain approaches, irrigate again but only "half irrigation" (12 to 24 hrs) maybe.
- If several weeks have passed and rain is coming, irrigate right before the rain with another 24 to 36 hrs plus.
- If no rain in 21 to 30 days, irrigate "fully" (24 to 36 hrs) again. Irrigations should be more accurately considered in acre inches so the number of hours depends on vine spacing, but for consideration here hours should do.
- Irrigate every 3 to 4 weeks if no rain shows up; until budbreak.
- Irrigate on a reduced ET schedule on the low side of about 50 to 60% for reds and the high side for whites.
- If applying residual herbicide now, irrigate berm immediately after to help "set" the herbicide.
- During any hot spells later on, apply as much water as possible (100%ET), as vines make progress towards harvest.
- All of the above depends on soil texture and depth, and cover crop presence/absence and grower/winery goals.
- Add 15 to 20% for cover crop or non-cultivation (resident vegetation) sites.
- The other odd thing about the Winter of 2014 is; this is the one year everyone probably should have pruned their *Eutypa* sensitive varieties a month ago! But at this point pruning late may help delay budbreak slightly. Or prune to long spurs now and make the final cuts as vines begin to push.

All of these points are my view as a Farm Advisor. (As such, batteries are not included and may require some assembly.)

Good Luck in 2014,

Paul Verdegaal, UC Farm Advisor

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Vegetable Crops—Update on Variety Trials and Curly Top Virus

I want to share some background on our decision to end the UC statewide tomato variety trial program which operated for 41 years. The program began in 1973 with a goal of standardizing fruit quality analysis from UC field trials. Former UC farm advisors Mel Zobel, Ray King, and Don May from Yolo, San Joaquin and Fresno counties, respectively, together with UCD breeder-geneticist Allen Stevens established the uniform processing tomato variety evaluation program and the UCD fruit quality lab. Initial funding was provided by growers through the predecessor of the California Tomato Research Institute.

Over the years, testing of varieties has increased across the industry, including tests conducted by the seed companies developing the varieties, by processors and by the seed retailers. In recent years, our UC tomato team conducted 6 to 8 variety trials annually. The seed retailers Ag Seeds Unlimited and Timothy, Stewart & Lekos, however, developed dedicated, ambitious, and detailed variety evaluation programs, surpassing 100 trials annually across the Central Valley. Exposing the prospective varieties to a high number of different field settings to cover a range of environmental conditions is crucial to more accurately assess the 'strengths and weaknesses' of the genetic material. Our UC group is not positioned to expand to the high number of tests needed to develop a stronger variety evaluation program. The time has come to step aside to the skillful program of variety evaluations that the industry is providing to growers and processors. There is plenty of work for UC advisors; we're simply redirecting our research effort to work on other problems. Some of that work may include looking at varieties as they interact with particular problems such as virus or soilborne disease.

For growers, because variety yield performance is sensitive to environmental influence, the final test is on your own ranch. The variety evaluation by others is simply a guide. I reported on our 2013 results from a Tracy-area trial in our last newsletter (http://cesanjoaquin.ucanr.edu/newsletters/Field_Notes_Newsletter49214.pdf) or you can find the full report on all five 2013 trials at <http://ucanr.edu/u.cfm?id=89>

Lately, people have been asking about what the situation looks like with respect to curly top disease and beet leafhoppers (BLH) in tomatoes. Last year, as we tried to make sense of the high beet leafhopper populations that vector the virus, part of the reasoning was that the drought and rapid dry down of the foothill vegetation may have contributed to a larger than usual migration of BLH to the valley floor. This winter, as we are looking at an even more severe rainfall deficit, there has been some concern that it might make the BLH situation even worse. However, I am told that early surveys of the western foot-

hills of the southern San Joaquin Valley have revealed low populations of BLH and few host plants upon which they can feed and reproduce. This is good news, but they are still early in the survey process.

The California Department of Food And Agriculture Curly Top Program staff is currently working to identify and gain access to grazing lands in the foothills west of the Tracy area. They have not conducted surveys of this area in recent years because in past surveys no BLH had been found here. Apparently BLH generally do not thrive with the type and density of vegetation normally found in this area. In the meantime, growers and PCAs may be wondering if treatment of tomatoes or other host crops might be necessary this year. I clearly do not have a crystal ball. What I can say is, that at this point we do not have any evidence that curly top will be a problem in San Joaquin County this year, though it is still early. However, if you are inclined to apply preventative applications, then imidacloprid (Admire and others) applied near planting time would be the suggested approach.

To receive e-mail updates from the Curly Top Program, contact Jennifer Willems at jennifer.willems@cdfa.ca.gov and ask to be added to their contact list. I will also strive to keep everyone updated via PCAs.

Brenna Aegerter, Farm Advisor

On-Line Book: Party-Directed Mediation

The third edition of *Party-Directed Mediation: Facilitating Dialogue between Individuals* is now on-line as free PDF download. This book explains two mediation models in depth. The first model is used to deal with conflicts among peers; the second, disputes between superiors and subordinates.

Party Directed Mediation is an effort to present practical, sound, research-based ideas hopefully leading to the improved management of deep-seated interpersonal conflict as well as multiethnic conflicts. While many of the concepts were originally developed through research in agriculture and agri-business firms, the methods (Party-Directed Mediation and Negotiated Performance Appraisal) have since drawn the interest of a wide range of people throughout the world. The methods used require more time than traditional mediation, but are particularly well suited to volunteer mediators, intercultural conflicts when issues of saving face are important, and other conflicts in which emotional factors are high.

This approach is especially geared to help parties who will continue to live or work together after the mediator

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goes home, and need to learn interpersonal negotiation skills for handling future differences.

The third edition is full of photographs and important refinements. The full URL is <http://www.cnr.berkeley.edu/ucce50/ag-labor/7conflict/> or alternatively, try <http://tinyurl.com/3kzu5>. The hard copy of the book will go on sale later on this year.

Gregorio Billikopf

Landscaping with Native Oaks

One of our greatest horticultural treasures in the Central Valley is the wealth of heritage oaks that remain as majestic centerpieces of our urban landscapes. Whether in business districts, parks or home gardens, there is nothing that lends a sense of comfort, security, and beauty to a place like the spreading canopy of a mature tree. A conscientious landscape manager or home owner will do well to learn the management practices that preserve these beauties in good health for as long as possible. Sadly, the cause of most old oak failures is the mismanagement of their environment by people.

Common Reasons for Tree Failure

Massive root cutting for trenches, footings, or pavements- The loss of water-absorbing roots and anchorage causes stress, canopy loss, instability, and contributes to decline and an early death.

Extensive traffic over the root zone- Compaction (which can also be caused by excessive foot traffic) reduces air exchange capacity for roots, and impermeable paved surfaces **reduce the amount of water and air available in the root zone**. Additionally, the increased heat from the pavement is fatal to roots near the surface.

Excessive warm weather irrigation- This usually occurs when a lawn or landscape is installed under an older tree in heavy soil, and is then watered heavily throughout the summer. The warm wet soil, to which the tree is not accustomed, is an ideal environment for the root-rot fungi to which oak tree roots are susceptible, especially *Armillaria* and *Phytophthora*. Loss of roots may be slow, and it may be many years before the irreparable damage is noticed.

Managing Existing Trees

Assess the health of trees- Trees that show signs of dieback may be restored by correcting the conditions that have led to their decline. If you are fortunate enough to have healthy trees, do everything you can to preserve conditions conducive to continued vitality. Mature native oaks do not require or benefit from regular

pruning. Only remove hazard or diseased branches or those hanging too low over walks, streets, or buildings. If very mature trees require crown reduction to reduce weight on aging branches, always use a certified arborist and insist that pruning be done to ANSI 300 Standards.

Preserve the root zone- Though the root zone may have been compromised by pavement or buildings, work with the area you have available. Where possible, remove turf under the canopy and replace with organic mulch 3-4 inches thick, but do not pile the mulch against the trunk. If other landscape plants are used under oaks, they should be very low water-use plants kept away from the trunk to minimize the risk of trunk rot from watering this area.

Supplement water when necessary- Although our native oaks vary in the kind of soil they tolerate and the amount of water they need, they are all accustomed to cool season rain and summer drought. Because our rainfall can be unpredictable from year to year, irrigation should be provided during unusually dry fall or spring conditions. Blue oaks (*Quercus douglasii*), for example, are adapted to shallow, poorly drained soils in the hot foothills, and may tolerate some urban conditions without supplemental water better than valley oaks (*Quercus lobata*). Since valley oaks are accustomed to shallow water tables and deep, loamy soils, they may benefit from supplemental deep monthly irrigation in exposed, dry urban settings, or where their roots have been restricted by surrounding hardscape. Never irrigate right next to the trunk; keep the water closer to the drip line, where most of the tree's water-absorbing roots are found.

Using Oaks in New Plantings

If we plan our landscapes with an eye to the future, we can use our native oaks in thoughtful applications so future generations can enjoy the same lovely trees that have graced our valley cities for so long.

Select the best species for the application- Consult print and online resources for mature size, cultural requirements, growth habit, deciduousness, and other attributes. It is important to anticipate the needs of the tree canopy and roots as it grows to full size.

Shop for high quality container stock- Do not purchase or plant trees with girdling, matted, or rotting roots. Go for the smallest sized tree that will suit your purposes: trees are healthiest when they can establish their root system on site, and larger trees may take up to 5 years to develop adequate roots before the canopy begins to add growth. Look for trees that have temporary branches left on the lower trunk and that have sufficient taper to stand upright without a stake.

Plant with care- Fall is the best time to plant, while the soil is still warm to jumpstart root growth, but cooler tem-

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peratures and fall rains minimize stress. Keep the root crown 1-2 inches above the surrounding soil level to prevent crown rot which can happen if the tree settles below grade and water puddles next to the trunk. Use only native soil for backfill, and add a 3-4 inch layer of organic mulch to at least a 2-foot radius, but keep it very thin next to the trunk. Fallen leaves can be left as natural mulch. If the planted tree will not stand straight on its own, or is in a high wind area, stake using proper technique. Build a shallow basin to hold water around the root zone for the first year.

Establish carefully- Irrigate sufficiently during the first few years to allow the development of a deep, healthy root system. Slow, deep watering is preferable, with a dry-down allowed between irrigations. The irrigation zone should expand each year to provide water to the actively growing root system; avoid leaving a drip line two inches from the trunk! Prune young trees for the first few years to develop a central leader and good branch structure.

Manage for the future- Be prepared to adjust the irrigation, mulch diameter, and permanent branches as the tree grows. Keep these things in mind when choosing species, planting, and establishing the landscape and future generations will enjoy the same rich oak heritage we have now.

Recommended Reading from

<http://anrcatalog.ucdavis.edu>

Oaks in the Urban Landscape: Selection, Care, and Preservation by Costello et al.

Living Among the Oaks (free download)

Planting Landscape Trees (free download)

Some Plants Compatible with Native Oak Trees

When planting under oaks, it is advisable to keep plants near the drip line, and at least 10 feet from the trunks of mature trees. If incorporating companion plants into a new design, plant sparingly and bear in mind that as the tree grows it will shade out plants that need full sun. These can then be replaced with more shade-tolerant species. California native species naturally associated with oaks are usually good choices. The plants listed on the website below tolerate or prefer at least partial shade in the San Joaquin Valley and will perform on a relatively low water regime.

Free download: <http://www.californiaoaks.org/ExtAssets/CompatiblePlantsUnder&AroundOaks.pdf>

Karrie Reid, Environmental Horticulture Advisor

Dormant Weed Control in Tree Nut Crops 2014

Current dry weather has preempted most normal winter weed germination and growth while prolonged periods of dry soil has caused some early weeds to desiccate and die. In most tree and vine herbicide trials conducted so far this winter--the untreated controls look similar to herbicide treatments, very clean and without weeds. What to do at this point poses some interesting questions. Will it rain? Most of us are worrying more about irrigating our almond trees this summer than controlling weeds right now.

If you have some weed growth that germinated with rain in December, or with fall and winter irrigations, you may want to apply a post-emergent herbicide now in order to prevent hard to kill weeds from becoming established. The warm weather could allow these weeds to establish and become more difficult to control, impacting the success of later herbicide applications by increasing trash on the berm and reducing coverage.

If you have solid set or micro irrigation systems and available water, you could apply pre-emergent herbicides and incorporate them with a light winter irrigation. A lower concentration or rate could be used in February, compared to a November rate, and the chance of crop injury for some materials applied close to bud break will be reduced. The dinitroaniline herbicides, such as Prowl or Surflan, would be a good choice to be set with winter irrigations since this chemistry controls many of our summer weeds and grasses and is very soil stable under multiple rain events and continuous irrigations. The dinitroaniline herbicides however, do not adequately control our more troublesome and persistent weeds such as fleabane and horseweed, and to some extent willow weed and malva that can germinate well into spring and early summer. If you are battling these weeds you can consider other pre- and post-emergent herbicides in order to control them while they are small.

Growers with drip-irrigation (surface or buried) or furrow-run flooded orchards are going to have an awfully hard time getting decent activation of pre-emergent herbicides on dry berms. Applying herbicides under different spray patterns (solid and spot sprays) will have to be considered by each farm operator. Hopefully, we will get some rain in February that will still allow pre-emergent herbicides to be used effectively and provide good control into early summer. But without rain we will have to reduce herbicide rates for smaller or no weeds and a reduced time of residual control. This may be the year to stock up on post-emergent herbicides!

Manufacturer labels providing essential information about the proper use and application rate for all pesti-

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cides 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.

Dr. Brad Hanson, Extension Weed Specialist at UC Davis, has created a UC Weed Science Blog at <http://ucanr.org/blogs/UCDWeedScience/>. UC Davis also has a UC Weed Research and Information Center: <http://wric.ucdavis.edu/>, a Weed Identification tool: <http://weedid.wisc.edu/ca/>, and current CA Tree and Vine Registrations: <http://ucanr.org/t&v-registrations>

For a full length newsletter article on dormant weed control in tree nut crops from last winter, go to http://cesanjoaquin.ucanr.edu/newsletters/Field_Notes_Newsletter44986.pdf (see pages 8-9). Or, call or come in and ask for the November 2012 Field Notes newsletter.

Mick Canevari, Farm Advisor Emeritus
Brent Holtz, Pomology Farm Advisor and UCCE County Director
Brad Hanson, Extension Weed Specialist, UC Davis



Calendar of Events

Pesticide Safety Train-the-Trainer Workshop

Wednesday, February 12, 2014, 8 a.m. - 5 p.m.
Stanislaus County Ag Center, Harvest Hall
3800 Cornucopia Way, Modesto, CA
Participants who complete this training will become qualified to provide pesticide safety training to fieldworkers and pesticide handlers, as required by California state regulations. Attendance is limited to 30 people. Payment is by credit card only. Cost is \$150 per person. No refunds given, but substitutions are welcome. Register online:

www.ipm.ucdavis.edu/events

Contact: Maria Alfaro at (530) 750-1252 or malfaro@ucanr.edu.

For additional information on workshops being conducted throughout California, visit <http://www.ipm.ucdavis.edu/IPMPROJECT/workshops.html>

Vegetable Crops Research Update

Friday, February 14, 2014, 8:30 to 11:45am
UC West Side Research and Extension Center
17353 W. Oakland Ave., Five Points, CA 93624
Agenda: <http://cefresno.ucanr.edu/files/180074.pdf>
contact: Tom Turini (559) 375-3147 taturini@ucanr.edu

SJC and Delta Rice Growers Meeting

Monday, March 3, 2014, 1 - 4 pm

Cabral Agricultural Center, 2101 E. Earhart Ave., Stockton
Agenda: <http://ucanr.edu/sites/deltacrops/Announcements/>
contact: Michelle Leinfelder-Miles (209) 953-6100

Quad County Walnut Institute

NEW DATE: March 6, 2014, 8:30 - noon
Cabral Agricultural Center, 2101 E. Earhart Ave., Stockton
Contact: Joe Grant (209) 953-6100

Stay up-to-date with UCCE blogs

As advisors, we strive to work on locally-relevant issues that are important to you. We strive to stay informed of the issues, learn solutions to problems, and then communicate those solutions so that we all can learn from them. One of the ways we communicate is through this newsletter; another way is by holding meetings. We will continue to use these methods to communicate with you, but we recognize that they have their limitations. For example, when we learn information that we want to communicate quickly, waiting until our next newsletter or meeting may mean that the information is no longer relevant. For this reason, many UC Cooperative Extension (UCCE) advisors and specialists are turning to blogs as a means of communicating timely information.

A blog, or web log, is a website where people post information in concise entries on a frequent basis. A blog also provides the opportunity for readers to provide comments in response to blog entries. There are currently over 100 blogs produced by members of UCCE. These blogs provide information on a range of topics related to our mission, including 4-H, food, landscaping, natural resources, and agriculture. Most blogs are written in English, but there are several written in Spanish. You can view the range of blogs at this website: <http://ucanr.edu/blogs/>

In terms of agriculture, there are blogs devoted to specific crops, like alfalfa, rice, almonds, and grapes, among others. There are also blogs devoted to weed science and pest management. Advisors and specialists highlight what they are currently seeing in the field and strategies for solving timely problems. They also announce upcoming meetings and new publications. For example, last year, agronomy and pest management advisors in the southern San Joaquin Valley started seeing higher-than-normal aphid outbreaks in alfalfa. They posted this on Alfalfa and Forage News, and this gave us a heads-up on what we eventually saw in San Joaquin County.

Subscribing to a blog is an easy way to stay connected on the issues. To subscribe, first go to the website above and find a blog of interest. Click on the blog's title, and this takes you to the blog homepage. When you are on the homepage, find the subscribe box in the right, shaded column. Enter your email address, and click the envelope symbol. You will be sent an email asking you to validate

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the subscription. Once you have clicked the validate link in that email, you're done! When a new post is made to that blog, you will receive an email notification.

Again, we recognize that this may not be the preferred means of receiving information for some of you, but with the prevalence of smartphones, this is a great way to get information when you are on the go or in the field. Take a look, and let us know what you think.

Rice Variety Trial Results

Tables 1 and 2, respectively, show the results of the 2013 San Joaquin County rice variety trial and a 5-year yield summary of very early maturing commercial varieties. Results from the entire statewide trial are reported in the Agronomy Progress Report, available from my website, <http://ucanr.edu/sites/deltacrops/Rice/>. The statewide trials are a cooperative effort of the California Cooperative Rice Research Foundation, Inc., the United States Department of Agriculture, and the University. The trials compare advanced breeding lines with commercial varieties and evaluate preliminary breeding lines for their adaptability to California. The San Joaquin County test site is located in the Delta. It is a test site for very early maturing varieties because San Joaquin County is cooler than other rice growing regions of the state. The varieties were drill-seeded on May 5 at a rate of 120 pounds/acre and harvested on October 17.

When interpreting the results, consider the following. The mean represents the average of all varieties. The CV, or coefficient of variation, is a measure of variability of the data in relation to the mean. The LSD (0.05), or least significant difference at 95%, is used to compare means of different varieties. When the difference between two varieties exceeds the LSD value, we are 95% certain that the two varieties performed differently; the results are not due to random chance. For example, the LSD of the grain yield at 14 percent moisture is 480. This means that if the yields of two varieties differ by at least 480 lbs/acre, then we can conclude that the two varieties yielded differently. In this case, the top nine ranking varieties in Table 1 had statistically similar yields. In Table 2, yield means are averaged across all locations and years and compared to M-104, a standard very early variety. Over the five years, and across the four locations, M-206 and L-206 yielded 2.9 and 0.1 percent, respectively, higher than M-104.

Michelle Leinfelder-Miles, Farm Advisor, Delta Crops

Table 1. 2013 San Joaquin very early rice variety test (advanced lines and varieties)

Variety	Grain Type	Grain Yield at 14% Moisture lbs/acre	Grain Moisture at Harvest (%)	Seedling Vigor (1-5)	Days to 50% Heading	Lodging (1-99)	Plant Height (in)
08Y3269	M	8580 (1)	19.0 (2)	5.0 (1)	113 (16)	1 (1)	31 (4)
10Y3286	M	8470 (2)	17.6 (7)	5.0 (1)	98 (3)	1 (1)	32 (5)
M206	M	8410 (3)	17.8 (4)	5.0 (1)	100 (5)	1 (1)	32 (8)
11Y2022	MPQ	8290 (4)	17.5 (8)	5.0 (1)	102 (9)	1 (1)	34 (15)
08Y3126	M	8280 (5)	19.1 (1)	5.0 (1)	101 (7)	1 (1)	34 (14)
M105	M	8220 (6)	16.7 (9)	5.0 (1)	97 (2)	1 (1)	33 (11)
L206	L	8180 (7)	13.5 (16)	5.0 (1)	101 (8)	1 (1)	29 (1)
M104	M	8140 (8)	17.6 (6)	5.0 (1)	96 (1)	1 (1)	32 (6)
M202	M	8140 (9)	17.9 (3)	5.0 (1)	109 (15)	1 (1)	33 (12)
09Y2036	S	7990 (10)	16.3 (10)	5.0 (1)	103 (11)	1 (1)	36 (16)
S102	S	7960 (11)	13.7 (15)	5.0 (1)	98 (4)	1 (1)	33 (9)
CH202	SPQ	7950 (12)	16.1 (11)	5.0 (1)	100 (5)	1 (1)	31 (2)
CH201	SPQ	7790 (13)	14.9 (14)	5.0 (1)	104 (13)	1 (1)	31 (2)
11Y1005	L	7740 (14)	15.0 (12)	5.0 (1)	103 (12)	1 (1)	33 (13)
CM101	SWX	7680 (15)	14.9 (13)	5.0 (1)	102 (10)	1 (1)	32 (7)
10Y1008	Lsr	6950 (16)	17.8 (5)	5.0 (1)	104 (14)	1 (1)	33 (9)
MEAN		8050	16.6	5.0	102	1	32
CV		4.2	4.1		0.8		4.5
LSD (.05)		480	1		1		2

S = short; M = medium; L = long; PQ = premium quality; WX = waxy; SR = stem rot resistant; LA = low amalose.

Subjective rating of 1-5, where 1 = poor and 5 = excellent seedling emergence.

Subjective rating of 1-99, where 1 = none and 99 = completely lodged.

Numbers in parentheses indicate the relative rank in the column. 6

Table 2. Grain yield (lbs/acre at 14% moisture) summary of very early rice varieties by location and year (2009-2013).

Location	Year	Calmochi					
		M-104	M-202	M-206	101	S-102	L-206
Biggs (RES)	2009	7180	8080	8940	7640	8230	9710
	2010	-	10470	11290	9470	9380	10200
	2011*	-	-	-	-	-	-
	2012	10260	10050	10420	8500	9370	10020
	2013	9710	8380	8610	8580	9120	9970
Location Mean		9050	9245	9815	8548	9025	9975
Sutter	2009	10040	9070	9390	7870	8480	10160
	2010	8270	6520	7890	9500	9360	8050
	2011*	-	-	-	-	-	-
	2012	8990	8810	9320	7500	8470	9570
	2013	9510	9990	9710	8340	9300	9700
Location Mean		9203	8598	9078	8303	8903	9370
Yolo	2009	11770	11400	12570	10760	11930	10880
	2010	8050	7890	8210	7190	7520	8230
	2011	10020	9590	10230	9320	9050	9490
	2012	9610	8930	9900	7450	8400	9060
	2013	9420	9260	9790	7830	8380	9000
Location Mean		9774	9414	10140	8510	9056	9332
San Joaquin	2009	8530	8720	8440	7650	7480	8120
	2010	8360	7760	7560	8070	7950	8170
	2011	8800	9090	9330	7850	7760	8340
	2012	8460	7490	8990	7880	8180	7570
	2013	8140	8140	8410	7680	7960	8180
Location Mean		8458	8240	8546	7826	7866	8076
Loc/Years Mean		9125	8869	9389	8282	8684	9134
Yield % M-104		100.0	97.2	102.9	90.8	95.2	100.1
Number of Tests		17	18	18	18	18	18

*Test locations not included in 2011 due to very high yield cvs.

New Rulings for Piece-rate Paid Employees

When hourly paid workers take their legally authorized and permitted California IWC mandated rest breaks, it is the *employer* who pays for these rest breaks. Up to now, when employees were paid by production or piece-rate and took a break, it was the *employees* who ended up paying for it—as they ceased to earn while taking these breaks. This explains why workers paid by the hour have no trouble stretching their break time. It also explains why some piece-rate paid workers historically have skipped theirs.

As it turns out, recent 2013 California rulings now require that employers pay for these rest breaks. Farm Bureau associate counsel and labor law specialist Carl Borden

explains that now: “employers in California must pay employees, in addition to their piece-rate earnings, at least minimum wage for all non-piece-producing work time” (*Ag Alert*, 4 September 2013, p. 19).

I believe it is in the employer’s interest to pay for the time used in breaks (e.g., see *Labor Management in Agriculture*, 2nd edition, 2003, p. 105). Besides the employee good-will earned I suspect that the cost of these paid breaks will be more than made up for by savings related to increased productivity and reduced instances of work-place illness and injury.

In addition to these rest breaks, according to Robert P. Roy, general counsel for the Ventura County Agricultural Association, other non-productive periods that need to be

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compensated include: “heat illness prevention cool-down breaks, required daily exercises, donning and doffing required safety clothing or equipment, travel time between fields, company-controlled standby or waiting time and company meetings such as for safety training or job training.”

There are at least three general options for complying with these new rulings. From my corner, only the first two options are beneficial while the third hurts both the farm enterprise and the people they employ. Properly designed piece-rate pay systems are vital in helping California agriculture compete internationally. Whatever approach is used needs to protect effectively designed incentive pay systems.

I. Add a separate wage for rest periods. Keep track of non-productive time (such as break periods) and pay an additional wage rate equal to or greater than the minimum wage. For instance, if employees earn two ten minute breaks a day, add at least one third of an hour at the minimum wage level for that day. In order to take full advantage of these rest breaks, make sure that employees take them and are not just paid for them. This pay approach is particularly useful for compensating employees for non-break related non-productive time periods (e.g. employee training, company-mandated downtime).

II. Add a separate productivity equivalent for rest periods. Employees take their breaks, but are paid proportionally to what they would have earned if they had kept working on a piece-rate basis. This option means that very highly productive employees earn more for their rest periods than slower ones. (Everyone, of course, must earn at least a minimum wage equivalent for this time.) It is as if the farm employer told the workers: “While you take your rest period you can pretend you are out there working, except you are actually taking a break.” Once again, it is imperative that employees take these break periods.

Research I have conducted shows that many workers are weary of showing employers what they really can do under piece rate. They fear that pay rates will be reduced if they earn too much. This approach of paying a productivity equivalent for rest periods helps employers drive the message that increased productivity is a win for both employees and management. This pay approach would not be sustainable, however, for compensation of other non-productive time, nor would it be sustainable if rest periods were longer.

III. Hourly wage plus production bonus. On the surface, this seems like the simplest way to deal with the new regulations. Farm employers would pay by the hour (at least the minimum wage) and add a production bonus over that. Over the years I have known numerous farm employers who have implemented such an hourly wage plus production bonus. The long term results tend to be disastrous.

The faster workers end up subsidizing the slow ones. Few employers have done the math, and even fewer have designed such pay schemes on purpose: to try and punish their best employees (see, *Designing an Effective Piece Rate*, 2008, <http://nature.berkeley.edu/ucce50/ag-labor/7research/7calag06.htm>). Option III is not sustainable and will increase worker dissatisfaction.

Concluding thoughts

I believe that piece-rate pay, when properly designed, has the potential for greatly increased productivity with resulting benefits for both employer and employee. Multiple principles need to be carefully balanced in order to maintain such a system. Any competitive advantages that may be obtained through an incentive pay system, such as piece-rate pay, may be easily lost through unintended side effects—this is why I am often weary of changes brought about by rule of law.

I feel that paying for a short break through either Option I or II may well help farm employers attract and retain good workers and motivate performance. For short rest breaks, I have a preference for Option II, proportional payment related to employee productivity. Two advantages are (1) rewarding particularly fast and effective employees and (2) overcoming historical worker perceptions about piece-rate pay. For heat illness prevention cool-down breaks, for longer breaks, and for other types of non-productive time compensation, I prefer Option I—adding a separate wage to the piece-rate pay earnings.

Despite the apparent ease in bookkeeping associated with Option III—payment of a base hourly wage plus a productivity bonus—I believe that this option will create much worker discontent, especially among the more productive workers. Under this system, the greater the employee productivity, the less that workers are paid for their efforts.

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