UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

HIGH DESERT CROP NOTES

LOS ANGELES AND
SAN BERNARDINO COUNTIES
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In this issue:

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Site-Specific Nutrient Management for Alfalfa and Onion Production in California: Soil Fertility and Cost Analysis Comparison

Andre Biscaro and Steve Orloff

Note:
This article emphasizes the importance of identifying the soil variability that occurs in your fields and managing soil fertility accordingly. Please note there was a wide range in soil nutrient levels in some of the fields. Managing those differences is possible and can improve yields and the quality of your crop. Why over-fertilize some areas of your field? Why under-fertilize others? This technology will help avoid that. If you are interested in using variable rate fertilizer application for your crop, please contact Farm Advisor Andre Biscaro.

Definition of terms:
Site-Specific Management (SSM): technique that identifies soil and crop spatial variability to better manage and optimize inputs;
Soil Spatial Variability: variation of soil properties within the field (e.g. soil fertility);
Soil Grid Sampling: soil sampling based on a grid pattern established for a field in order to identify spatial variability;
Soil Sampling Density: number of soil samples collected for a certain area (per acre basis);
*Variable Rate (VR) Fertilization***:** fertilization method that identifies soil fertility spatial variability and that applies fertilizers in different rates throughout the field in order to avoid over and/or under fertilization;
Uniform Rate (UR) Fertilization: conventional fertilization method that treats the entire field uniformly with respect to fertilizer application.

Introduction

Crop production and especially nutrient management have become more costly over the years, and implementation of site-specific crop management (SSM) has the potential to help growers achieve input optimization, better yields and consequently increased efficiency and savings. Site-Specific Management consists of considering the variability of soils and crop in order to optimize inputs. Variable Rate fertilization is the most common SSM practice used due the relative ease of accessing soil fertility variability, and due to the significant impact that fertilization has on yields. Herbicides, insecticides, fungicides, growth regulators, water and seeds can also be applied/managed according to existing field variability, however, accurate assessment of the variability of weeds, diseases and insects, e.g., can be challenging.

Objective

In order to explore the potential benefits of Variable Rate fertilizer application for Antelope Valley (AV) soils, two projects have been conducted with the following objectives:

- Assess Phosphorus (P) and Potassium (K) variability in alfalfa and onion fields;
- Compare fertilizer usage and cost differences between Uniform Rate (UR) and variable rate application methods;
- Compare three soil sampling densities (A = 1 sample/3acres, B = 1 sample/6acres and C = 1 sample/12acres) in order to establish a pattern for future soil sampling in the AV. Fewer samples would obviously save money, but would they adequately reflect the variability in a field?

Although alfalfa and onion were the crops chosen for this study because they are dominant crops in the AV, variable rate application of P and K fertilizers is a common practice of many other crops.

Material and Methods

Five alfalfa fields located in the AV, near Lancaster, CA and in the Intermountain Region, near Yreka, CA, were sampled in a grid pattern (Figure 1), with 1 soil sample collected for every 3 acres. Six onion fields located in the AV were sampled also in a grid pattern, with sampling density of 1 sample for every 5 acres.

Overall, 283 soil samples were collected on 1005 acres from 11 alfalfa and onion fields, and analyzed for phosphorus (Olsen-P) and potassium (Extractable K).

The respective P and K maps were created in a GIS (Geographic Information System) through the interpolation of the soil analysis results.

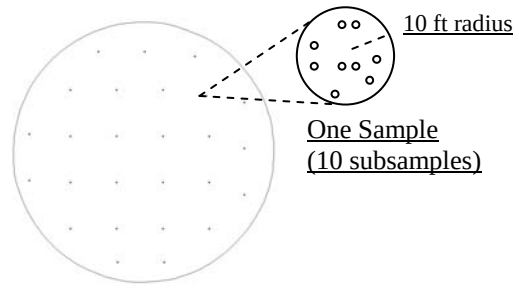

Figure 1. Soil sampling grid in a center pivot field of 124 acres.

Results and Discussion

Soil fertility data for the onion fields, located near Lancaster, CA is summarized on Table 1.

It is important to emphasize that the fertility of a field is much better assessed by the Variable Rate method due to many more soil samples collected compared to the Uniform Rate method. For a particular field, N1 for example, K levels assessed with the Uniform Rate method is represented by only two samples/values: 160 and 180ppm (Table 1). For the same field, the Variable Rate method used 19 soil samples in order to identify soil K variability, which ranged between 96 to 219 ppm (note this range is much greater than that found with the Uniform Rate method). This is a clear example that soil fertility varies throughout the field, and that sampling in a grid can identify such variability.

Fertilizer usage for both Uniform Rate and Variable Rate methods were calculated based the grower's current nutrient management plan.

The following three tables (Tables 1, 2 and 3) summarize soil fertility, fertilizer usage and cost summary for the onion fields located near Lancaster. Please, note that values are shown by field, which are named based on their location: N1, N2 and N3 (North Fields), and S1, S2 and S3 (South Fields).

Onion Fields Data

Table 1. Soil phosphorous (P) and potassium (K) assessment for six onion fields: Uniform Rate (UR) and Variable Rate (VR) methods.

	Soil Fertility (ppm)					
	UR	VR (range)	UR	VR (range)	UR	VR (range)
	North Fields					
	---------- N1 ----------		---------- N2 ----------		---------- N3 ----------	
P	25, 32	19 - 40 (21)	16, 17	6 - 17 (11)	14, 15	8 - 13 (5)
K	160, 180	96 - 219 (123)	161, 161	118 - 276 (158)	100, 221	82 - 236 (154)
	South Fields					
	---------- S1 ----------		---------- S2 ----------		---------- S3 ----------	
P	8, 5	3 - 6 (3)	8	7 - 9 (2)	10	6 - 8 (2)
K	170, 90	52 - 420 (368)	70	58 - 92 (34)	70	76 - 116 (40)

Table 2. Fertilizer usage and cost summary for the North Onion Fields, located near Lancaster, CA.

		Application Method			
Fertilizer Type	*Field (acres)*	**UR**	**VR**		
		---------- Lbs----------			**Cost Summary ($)**
Potash †	N1 (91)	0	2,670		
Potash	N2 (62)	15,500	8,229	*Potash Diff.*	Potash
Potash	N3 (58)	5,810	781	*(UR – VR)*	balance
	Subtotal	***21,310***	***11,680***	***9,630***	**5,296**
Phosphate ††	N1 (91)	20,370	19,186		
Phosphate	N2 (62)	17,707	20,057	Phosphate Diff.	Phosphate
Phosphate	N3 (58)	17,430	18,967	*(UR – VR)*	balance
	Subtotal	***55,507***	***58,210***	***-2,703***	**-729**
†Potash = 0-0-50 ($ 0.55/Lb)					
††Phosphate = 11-52-0 ($0.27/Lb)				***P and K Balance ($)***	**4,567**

Table 3. Fertilizer usage and cost summary for the South Onion Fields, located near Lancaster, CA.

		Application Method			
Fertilizer Type	*Field (acres)*	**UR**	**VR**		
		---------- Lbs ----------			**Cost Summary ($)**
Potash†	S1 (124)	14,880	19,016		
Potash	S2 (44)	13,350	12,692	*Potash Diff.*	Potash
Potash	S3 (15)	4,530	3,428	*(UR – VR)*	balance
	Subtotal	***32,760***	***35,136***	***-2,376***	**-1,307**
Phosphate††	S1 (124)	43,400	44,515		
Phosphate	S2 (44)	15,575	15,230	Phosphate Diff.	Phosphate
Phosphate	S3 (15)	4,907	5,132	*(UR – VR)*	balance
	Subtotal	***63,882***	***64,877***	***-995***	**-268**
†Potash = 0-0-50 ($ 0.55/Lb)					
††Phosphate = 11-52-0 ($0.27/Lb)				***P and K Balance ($)***	**-1,575**

On Table 1 and 4, values under the UR column represent the soil fertility of a specific field assessed with only one, two and three composite soil samples, according to grower's usual procedure. Values under the VR column shows the lowest and the highest fertility values for a specific field, with the fertility range of that field shown in parenthesis. A significantly greater number of soil samples (1 sample/5 acres) were collected for the Variable Rate compared to the Uniform Rate method.

Differences of fertilizer usage and costs between the Uniform Rate and the Variable Rate methods are summarized on Tables 2 and 3, where balance = UR – VR (by fertilizer); if positive it indicates fertilizer savings due to VR.

As it would be expected, differences of fertilizer usage between UR and VR varied according to each field, their location (north or south) and fertilizer type (potash or phosphate).

The use of the VR method in the North Fields resulted in the savings of 9,630 Lbs ($5,296) of potash, as observed in Table 2. Phosphate usage for the UR and VR methods was very similar.

For the South Fields (Table 3), there was a greater use of potash and phosphate due to the VR method. This fact emphasizes that soil fertility for those fields would be overestimated with the UR method, potentially leading to yield reductions due to a nutrient deficiency in portions of those fields.

Alfalfa Fields Data

Tables 4, 5 and 6 summarize soil fertility, fertilizer usage and cost summary for the alfalfa fields located in the Intermountain Region and AV. Sampling density for the Variable Rate method for the alfalfa fields was 1 sample/3 acres. Data is summarized by field, which are named based on their location: IR1, IR2 and IR3 (Intermountain Region Fields), and L1 and L2 (Lancaster Fields).

Table 4. Soil phosphorous (P) and potassium (K) assessment for five alfalfa fields: Uniform Rate (UR) and Variable Rate (VR) methods.

	Soil Fertility (ppm)					
	UR	VR (range)	UR	VR (range)	UR	VR (range)
	Intermountain Region Fields					
	---------- IR1 ----------		---------- IR2 ----------		------ IR3 -------	
P	5.8	4 - 12 (8)	5	3 - 11 (8)	3	2 - 6 (4)
K	75	53 - 112 (59)	82	54 - 123 (69)	58	43 - 208 (165)
	Lancaster Fields					
	---------- L1 ----------		---------- L2 ----------		----------	
P	20	14 - 27 (13)	19,14,17	7 - 30 (23)	---	---
K	93	67 - 137 (70)	108, 160,138	75 - 187 (112)	---	---

Although fertilizer usage between the UR and VR methods was very similar for the alfalfa fields in the AV (Table 6), potash and phosphate rates for the VR method significantly varied for fields L1 (50 to 250Lbs/acre for potash, and 58 to 115Lbs/acre for phosphate) and L2 (0 to 167Lbs/acre for potash, and 58 to 192Lbs/acre for phosphate). Potash and phosphate recommendation maps for field L2 can be observed on Figure 2.

Table 5. Fertilizer usage and cost summary for the Intermountain Region alfalfa fields.

		Application Method			
Fertilizer Type	*Field (acres)*	**UR**	**VR**		
		---------- Lbs ----------			**Cost Summary ($)**
Potash†	IR1 (134)	23,096	22,265		
Potash	IR2 (84)	8,450	13,876	*Potash Diff.*	Potash
Potash	IR3 (64)	21,379	16,691	*(UR – VR)*	balance
	Subtotal	***52,925***	***52,832***	***93***	**39**
Phosphate††	IR1 (134)	37,203	30,274		
Phosphate	IR2 (84)	22,731	19,766	Phosphate Diff.	Phosphate
Phosphate	IR3 (64)	17,270	16,817	*(UR – VR)*	balance
	Subtotal	***77,203***	***66,857***	***10,346***	**3,207**
†Potash = 0-0-60 ($ 0.42/Lb)					
††Phosphate = 11-52-0 ($0.31/Lb)				***P and K Balance ($)***	**3,247**

Table 6. Fertilizer usage and cost summary for the Antelope Valley alfalfa fields.

		Application Method			
Fertilizer Type	*Field (acres)*	**UR**	**VR**		
		---------- Lbs ----------			**Cost Summary ($)**
Potash†	L1 (90)	7,445	8,318	*Potash Diff.*	Potash
Potash	L2 (234)	12,386	10,282	*(UR – VR)*	balance
	Subtotal	***19,831***	***18,600***	***1,231***	**523**
Phosphate ††	L1 (90)	5,203	5,801	Phosphate Diff.	Phosphate
Phosphate	L2 (234)	20,386	19,620	*(UR – VR)*	balance
	Subtotal	***25,589***	***25,421***	***168***	**52**
†Potash = 0-0-60 ($ 0.42/Lb)					
††Phosphate = 11-52-0 ($0.31/Lb)				***P and K Balance ($)***	**575**

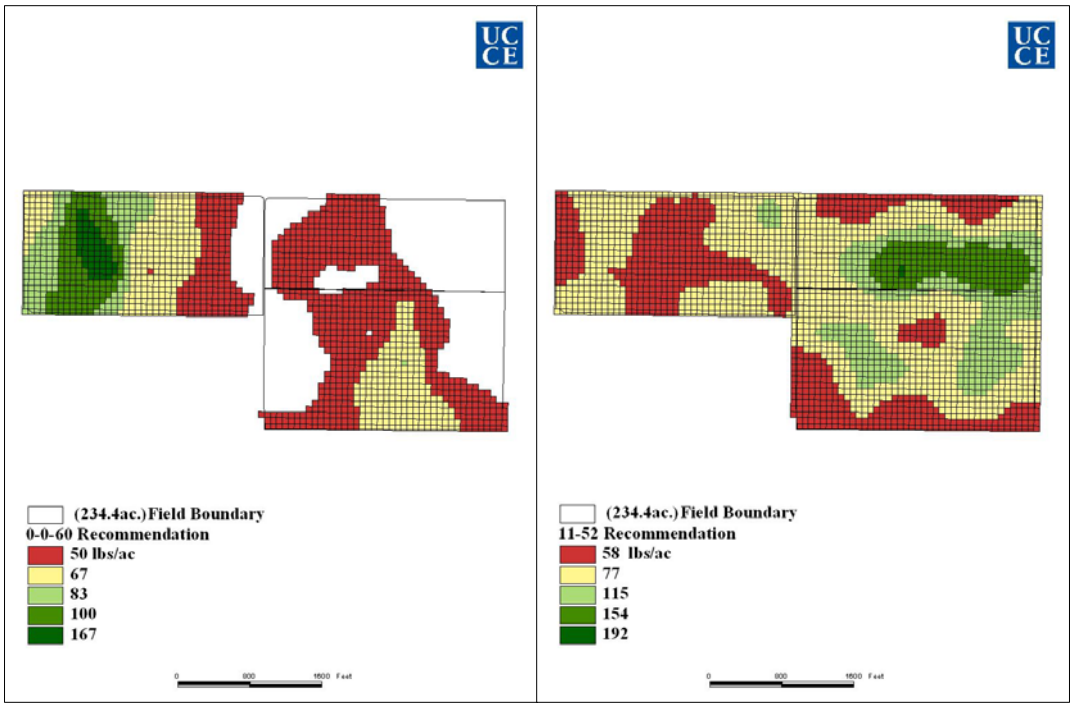

Figure 2. Recommendation maps for potash (left) and phosphate (right) for an alfalfa field (L2) located in the Antelope Valley.

Conclusions

Onion fields

- Soil P and K variability and fertilizer savings varied according to specific field and their location (north or south); P and K variability and fertilizer savings were greater in the North Fields.
- Savings with potash due to VR application in 210 acres of three fields located in the north was $5,296.
- Greater potash and phosphate usage in the South Fields due to the VR method indicate that grid sampling helped to identity portions of the field where soil fertility was overestimated with the UR method.

Alfalfa fields

- Most of the soil phosphorus (P) and potassium (K) variability and fertilizer savings due to VR occurred in the fields located in the Intermountain Region;
- There was a great similarity between the maps created based on sampling densities A (1 sample/3 acres) and B (1 sample/6 acres) – data not shown; this indicates that for these fields sampling every 6 acres was sufficient.
- Total fertilizer savings due to VR application in all 5 alfalfa fields (610 acres) was $3,823.

Overall conclusions

Although the same amount or even more fertilizer was used with the VR method in several alfalfa and onion fields, application rates (Lbs/acre) varied significantly within most of those fields.

Whether or not Variable Rate application results in an actual fertilizer savings or not is secondary. Sometimes there will be savings and sometimes not. It depends on whether sampling for the Uniform Rate generally over or underestimates the fertility level. The important point is that with grid sampling for a Variable Rate application the fertilizer application better matches the actual fertility level of the field. Portions with high fertility level receive little or no fertilizer and fertilizer is saved. And, very deficient areas receive more fertilizer and therefore will yield more. The standard practice of a uniform application across a whole field does not account for the variability in fertility that we know exists in almost all fields.

Alfalfa Cultivar Choice

(Adapted from the 2009 Kearney Field Day Handout, September 2, 2009, by Shannon Mueller, Dan Putnam and Craig Giannini)

When planting a new field, you are at a crossroads; you will need to live with your decision for many years. Why not take a few minutes to consider which variety makes the most sense?

UC Variety Testing Program

The University of California testing program is the most comprehensive in the western US, and provides unbiased information that can be used to judge performance of alfalfa varieties. We have plots ranging from Tulelake and Scott Valley (Intermountain), to Davis and Kearney (Central Valley), El Centro (Imperial Valley) and starting this year in Lancaster (High Desert).

Factors for Choosing Alfalfa Varieties:

1. Choose group of high yielding certified varieties from relevant trials. Look at multi-year trial results (please, see table on next page – data from Kearney Ag Station would be the most suitable for the High Desert at this time);
2. Determine Fall Dormancy requirements and preference;
3. Determine Pest Resistance requirements for your area (emphasize those you expect); see Table 2;
4. Consider Biotech Traits (e.g. Roundup Ready);
5. Look for evidence of better Persistence;
6. Consider Forage Quality;
7. Consider Price/Availability, and of course, free hats.

Cost and Price: is it Important? You bet!

However, look at the value of production FIRST, and other benefits like pest resistance, persistence and quality, and THEN look at the price of the seed.

There is the potential for hundreds of dollars difference between varieties in gross return considering only variety choice and the effect on production. Compare that with only about $40/acre difference in seed costs ($2.00/lb difference).

The chart below is at only $100/ton prices – even larger differences would be expected with higher prices!

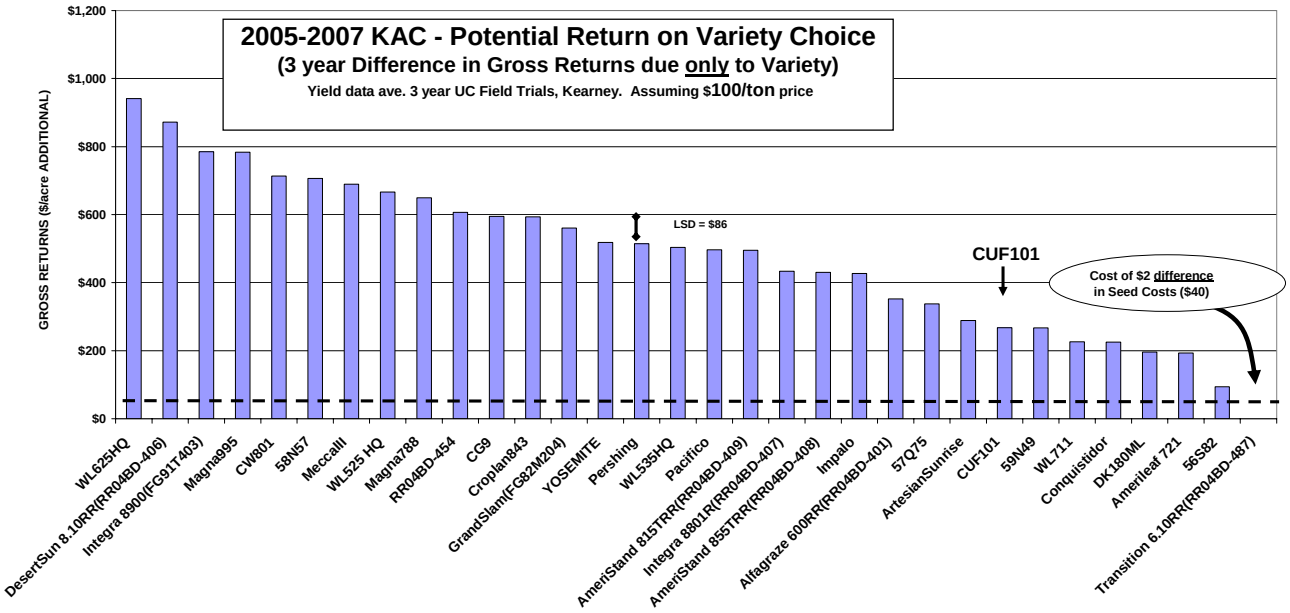

Table 1. 2005-2007 YIELDS, UC KEARNY ALFALFA CULTIVAR TRIAL. TRIAL PLANTED 3/15/05

	FD	2005 Yield		2006 Yield		2007 Yield		Average			% of CUF101
		Dry t/a									%
Released Varieties											
WL625HQ	9.2	11.3	(1)	15.0	(5)	14.4	(1)	13.6	(1)	A	121.3
DesertSun 8.10RR	8.4	10.9	(2)	15.1	(3)	14.0	(2)	13.4	(2)	AB	119.2
Magna995	9	9.9	(29)	15.5	(1)	13.7	(6)	13.1	(4)	ABCD	116.7
Integra 8900	9	10.7	(6)	14.9	(7)	13.6	(7)	13.1	(5)	ABCD	116.6
WL525 HQ	8	10.5	(10)	14.2	(19)	13.8	(5)	12.8	(6)	ABCDE	114.5
CW801	8	10.3	(13)	15.1	(4)	13.0	(14)	12.8	(7)	ABCDE	114.3
58N57	9	10.7	(4)	14.1	(21)	13.4	(8)	12.7	(8)	ABCDEF	113.8
MeccaIII	9	10.1	(19)	14.7	(10)	13.2	(10)	12.7	(9)	BCDEFG	113.1
Croplan843	8	9.9	(32)	14.2	(20)	13.8	(4)	12.6	(11)	BCDEFG	112.6
Magna788	7	9.8	(34)	14.9	(8)	12.7	(19)	12.5	(16)	CDEFGH	111.4
CG9	9	10.2	(16)	14.1	(23)	13.0	(12)	12.4	(19)	CDEFGHI	111.0
Saltana(SW9332)	9	10.0	(25)	14.0	(26)	13.2	(9)	12.4	(20)	CDEFGHI	110.9
WL535HQ	8.2	9.9	(31)	14.0	(28)	13.1	(11)	12.3	(24)	DEFGHI	110.0
Pacifico	8	9.7	(39)	14.0	(27)	12.8	(16)	12.2	(28)	EFGHIJK	108.7
GrandSlam	8	10.0	(28)	14.1	(25)	12.5	(30)	12.2	(29)	EFGHIJK	108.6
YOSEMITE	8	9.8	(33)	14.1	(22)	12.4	(31)	12.1	(30)	EFGHIJK	108.3
Pershing	8	10.0	(24)	13.9	(31)	12.4	(32)	12.1	(31)	EFGHIJK	108.1
Integra 8801R	7.8	9.7	(40)	13.9	(30)	12.7	(17)	12.1	(32)	EFGHIJK	108.0
AmeriStand 855TRR	8.5	10.0	(27)	13.5	(35)	12.1	(36)	11.9	(36)	FGHIJKLM	106.2
AmeriStand 815TRR	7.4	10.1	(20)	13.5	(37)	12.1	(39)	11.9	(37)	GHIJKLM	106.1
Alfagraze 600RR	6.4	10.1	(21)	13.2	(41)	12.4	(33)	11.9	(38)	GHIJKLM	106.0
57Q75	7	9.8	(36)	13.0	(44)	12.1	(38)	11.6	(41)	HIJKLMN	103.8
Impalo	9	9.6	(41)	13.8	(33)	11.3	(46)	11.6	(42)	IJKLMNO	103.3
ArtesianSunrise	7	9.4	(45)	13.3	(39)	11.5	(44)	11.4	(43)	JKLMNO	101.9
Conquistidor	8	9.2	(50)	13.0	(45)	11.8	(42)	11.3	(44)	KLMNO	101.3
WL711	10	9.4	(46)	12.9	(47)	11.7	(43)	11.3	(45)	KLMNO	101.2
CUF101	9	9.6	(44)	12.8	(50)	11.2	(47)	11.2	(47)	LMNOP	100.0
59N49	9	9.6	(43)	12.8	(51)	11.2	(48)	11.2	(48)	LMNOP	100.0
DK180ML	8	9.2	(51)	12.9	(46)	11.1	(50)	11.1	(50)	MNOP	99.1
Amerileaf 721	7	9.3	(49)	12.8	(49)	11.2	(49)	11.1	(51)	MNOP	99.0
56S82	6	9.0	(53)	12.2	(53)	11.1	(52)	10.8	(53)	OP	96.1
Transition 6.10RR	6.1	9.4	(47)	11.5	(54)	10.5	(54)	10.4	(54)	P	93.3

Trial seeded at 25 lb/acre viable seed on Hanford fine sandy loam soil at the Univ. of Calif. Kearney Agricultural Center, Parlier, CA.

Entries followed by the same letter are not significantly different at the 10% probability level according to Fisher's (protected) LSD.

FD = Fall Dormancy reported by seed companies.

Look at Pest Resistance Ratings!

Look for the best package for your region, and remember:

1. Resistance is not absolute (it is only a % of the plants); **2.** Even highly resistant varieties can be overwhelmed by a severe pest infestation; **3.** Pest resistance is often the <u>only</u> economic measure against some pest problems; **4.** Think of Pest Resistance as you do auto insurance – not important every year, but can be very important when those problems arise.

Table 2. Suggested minimum alfalfa cultivar pest resistance and fall dormancy ratings for alfalfa pests found in six California climate zones.

Zone	Fall Dormancy	Spotted Alfalfa Aphid	Pea Aphid	Blue Alfalfa Aphid	Phytophthora Root Rot	Bacterial Wilt	Fusarium Wilt	Anthracnose	Stem Nematode	Root Knot Nematode	Verticilium Wilt
Inermountain	2--4	S[1]	R	MR	R	R	HR	R	R	R	R
Sacramento Valley	4--8	MR	HR	HR	HR	MR	HR	R	R	R	R
San Joaquin Valley	6--9	R	HR	HR	HR	MR	HR	R	HR	HR	R
Coastal	5--7	MR	HR	HR	HR	MR	HR	R	HR	HR	R
High Desert	4--7	R	R	R	R	MR	HR	MR	HR	HR	R
Low Desert	8--9	HR	HR	HR	HR	S	HR	HR	R	HR	S

Resistance Abbreviations		Percent resistance[1]
HR	Highly Resistant	>51%
R	Resistant	31-50%
MR	Moderate Resistant	15-30%
LR	Low Resistant	6-14%
S	Susceptible	<5%
T	Tolerance	--

[1] Percent of plants in a population resistant to a given pest

Basic Computer Technology Class

The adoption of new agricultural practices and technologies are every day more dependent on the use of computers and software. In addition, the internet has become a valuable source of information and an essential communication tool, and its use can greatly benefit a grower's production system.
In order to bring the local ag community up to speed with basic computer skills, the UCCE will offer a one-day class (approx. 4 hours) that will cover topics like "accessing computer configuration", using basic software like Word, Excel, PowerPoint and Internet Explorer. Instructions on how to create and use an e-mail account will also be part of the program.
We plan to use a computer lab facility located in Lancaster, which has approximately 25 computers, which needs to be scheduled in advance. This course will be free of charge, and will be scheduled according to your needs. Please call our Admin. Assist. Jennifer Dana (661-723-4477), and let her know which month and day of the week works better for you, so we can schedule this class at a convenient time for most of you.

2009 Western Alfalfa and Forage Conference – Save the date!

This year's Conference will take place in Reno, NV on Dec 2-5. Please, note that registration and hotel room rates are drastically reduced, and that there are many presentation topics addressing our current rough financial situation.
NEW! Pre-conference Hands-On Alfalfa Diagnostics Workshop.
For more details, please see attached document or contact your Farm Advisor, Andre Biscaro (661-723-4480, asbiscaro@ucdavis.edu).

2009 Private Applicator Seminar

This year's seminar will be held on November 18, 2009 at 8:30 am. Location is at the North County Fire Training Center located at 42110 6th St. West, Lancaster (parking at the rear of building). Presentations given may include updates on Equipment Safety, Laws & Regulations, Exotic Pests detection, new products/chemicals, and a live spray application demonstration. Please note, if you would like to attend, an RSVP is requested and you can call the Los Angeles County Agricultural Commissioner's office at (661) 723-4485. Continuing Education Credits have been requested from CDPR.

HIGH DESERT CROP NOTES

DATED MATERIAL

University of California
Cooperative Extension
335-A East K-6,
Lancaster, CA 93535

2009 Western Alfalfa & Forage Conference

December 2–4, 2009

Grand Sierra Resort Casino, Reno, NV

"Improving Your Odds of Profitability"

Sponsored by the Cooperative Extension Services of California, Nevada, Idaho, Oregon, Arizona, and Washington

PCA and CCA Credits Offered

Description: ***This has been a difficult year for alfalfa producers with dismal prices, low sales volume and challenging weather conditions in many areas. This conference is aimed at improving profitability in years like this. The program covers many aspects of alfalfa and forage crop production, from economics to pest management, irrigation and utilization. It is suitable for anyone interested in improving their knowledge of this key segment of western agriculture. The conference features a commercial exhibit area, with 60-80 exhibitors, and is preceded by a special half-day 'Hands-on Diagnostic Workshop' (limited enrollment). Attendance at our previous conferences in Reno ranged from 550 to 700 participants, and 60-80 exhibitors. REGISTER NOW to ensure your place at this conference.***

Wednesday, December 2, 2009 -Hands-On Alfalfa Diagnostic Workshop (limited participation)

12:30 – 1 pm Workshop Participant Sign-In

1 – 5:30 pm Diagnostic Workshops will provide attendees with intensive hands-on experience diagnosing important problems in alfalfa production. Small groups will work closely with experts in each area.

Participants will rotate through each of the following sessions:

- **Soils & Fertilizers –Analysis, Sampling and Interpretation**
- **Diseases & Nematodes – Identification and IPM Measures**
- **Weed Identification and Management**
- **Insect Identification and IPM Practices**

4:00 – 9 pm Exhibitor Setup

6 :00– 8 pm Registration

Thursday, December 3, 2009

6:00 - 8 am Exhibitor Setup

6:30 - 8 am Registration

Morning General Session

Alfalfa Industry and Market Trends

8:00 am Welcome – Steve Orloff, Symposium Chair, UC Cooperative Extension, Yreka, CA

8:05 Trends in the Alfalfa Industry: Is it really as bad as it looks? – Dan Putnam, Extension Forage Specialist, UC Davis, Davis, CA

8:25 Dairy Outlook: What is the future of dairies in the West? – Bill Van Dam, Alliance of Western Milk Producers, Sacramento, CA

8:50 How Dairies are Dealing with the Current Economic Situation: Impact on forages – Mireille Chahine, Extension Dairy Specialist, University of Idaho, Twin Falls, ID

9:15 What Happened to All the Horses and What Are They Eating? – Anne Rodiek, Professor, Dept of Animal Science and Agriculture Education, Cal State University, Fresno, CA

9:40 Discussion

9:50 Break

Improving Profitability

10:20 am Reducing Inputs to Improve Profits: Good or bad idea? – Steve Orloff, Farm Advisor, UCCE, Yreka, CA

10:40 Adapting Cutting Management to Market Conditions – Glenn Shewmaker, Forage Specialist, University of Idaho, Twin Falls, ID

11:00 Panel Discussion: Marketing Your Hay in a Low Priced Year – Dick Schader, Red Rock Ranch, Macdoel, CA; Philip Bowles, Bowles Farming, Los Banos, CA; Norman Beach, San Joaquin Valley Haygrowers Assn., Tracy, CA

11:30 Surviving Difficult Times: Lessons learned from those who have and have not – Bob Boyle, Northwest Farm Credit Services, Salem, OR

11:50 Discussion

12 - 1:30 pm BANQUET LUNCH

Afternoon Breakout Sessions

Breakout Session I. Pest Management in Alfalfa

(Organizers: Rachael Long, Farm Advisor, UCCE, Woodland, CA and Phil Petersen, Area Extension Educator, WSU, Ephrata, WA)

1:30 pm Conventional and Organic Methods for Insect Pest Control in Alfalfa Production- Rachael Long, Farm Advisor, UCCE, Woodland, CA

1:50 Control Strategies for Some Difficult to Control Weeds – Mick Canevari, Farm Advisor Emeritus, UCCE, Stockton, CA

2:10 Vertebrate Pest Control in Alfalfa – Michael Slater, Wildlife Biologist, USDA Animal and Plant Health Inspection Service Wildlife Services, La Grande, OR

2:30 Alfalfa Nematodes and their Management – Saad Hafez, Extension Professor, Nematology, University of Idaho, Parma, ID

2:50 Discussion

3:00 Break

Breakout Session II. Soils and Irrigation

(Organizers: Larry Schwankl, Irrigation Specialist, UC Davis, Parlier, CA and Rob Mikkelsen, Western Director, International Plant Nutrition Institute, Merced, CA)

1:30 pm How Do You Know Your Lab Results Are Any Good? – Dirk Holstege, Director DANR Analytical Laboratory, UC Davis, Davis, CA

1:50 Site Specific Fertilization of Alfalfa Fields: Improved yield at lower costs? – Andre Biscaro, Farm Advisor, UCCE, Lancaster, CA

2:10	Center Pivot Management – Howard Neibling, Extension Water Management Engineer, University of Idaho, Twin Falls, ID
2:30	Subsurface Drip Irrigation in Alfalfa: A grower's initial experience – Cannon Michael, Bowles Farming, Los Banos, CA
2:50	Discussion
3:00	**Break**

Breakout Session III. Bio-Energy and Alternative Forages

(Organizers: Steve Fransen, Forage Agronomist, WSU, Prosser, WA; Jay Davidson, Area Forage and Alternative Crops Specialist, UNCE, Fallon, NV)

1:30 pm	Overview of Bio-Energy Crops and the Conversion Process – Birgitte Ahring, Director Bioproducts, Sciences and Engineering Laboratory, WSU Tri-Cities, Richland, WA
1:50	Agronomics of Switchgrass for Biofuel in the West – Steve Fransen, Forage Agronomist, Washington State University, Prosser, WA
2:10	Annual Warm-Season Grasses for Bio-Fuel Production in the West – Mike Ottman, Extension Agronomist, University of Arizona, Tucson, AZ
2:30	Teff Grass: A new alternative – Don Miller, Director of Product Development, Producer's Choice Seeds, Nampa, ID
2:50	Discussion
3:00	**Break**

3:30 – 5 pm Repeat Concurrent Sessions

5:00 - 6 pm Exhibitor's Reception

7:00 pm State Haygrower's Organization Dinner Meeting- *Representatives from state haygrower's associations and national associations – contact your state haygrower's organization for further information.*

Friday, December 4, 2009

6:15 am CAFA Breakfast

General Session

Water Issues

8:00 am	Future of Agricultural Water in the West – Dan Keppen, Executive Director, Family Farm Alliance, Klamath Falls, OR
8:25	The impact of Drought on Crop Choice and Water Marketing – Richard Howitt, Agricultural Economist, UC Davis, Davis, CA
8:50	Coping with Low Water Years: What strategies can you use? – Blaine Hanson, Irrigation Specialist, UC Davis, Davis, CA
9:15	Discussion
9:25	**Break**

Innovations and Future Developments

9:55 am	The Future of Alfalfa and Forage Crops – Maria Monteros, Noble Foundation, Ardmore, OK
10:20	Low-Lignin Alfalfa: Redefining the Yield/Quality Tradeoff – Dan Undersander, Extension and Research Forage Agronomist, University of Wisconsin, Madison, WI
10:45	What's New from the Alfalfa Industry - (series of brief presentations from the alfalfa industry discussing new innovations and product development)
12:00 pm	**ADJOURN**

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General Registration Form

2009 Western Alfalfa & Forage Conference (one form per person-please print clearly)

Name	Company/Ranch	
Address	City, State, Zip Code	County
Phone	E-mail **(important).** Confirmation is by e-mail only.	
☐ Pre-Conference Hands on Alfalfa Diagnostic Workshop $50.00	☐ Early Registration (before 11/2/09) $125.00	
☐ Extra: Guest Banquet Lunch Ticket $35.00 Guest name:	☐ Late Registration (received by 11/23/09) $150.00	

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I am a (Check one) (___Hay Grower), (___Hay Industry), (___Seed Grower), (___Seed Industry), (___Other)

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Mail your check, payable to "UC Regents," to Karen Nephew, UCCE, 1720 S. Maple Avenue, Fresno, CA 93702. Registration information/questions, contact Karen Nephew by phone at 559-259-4907, or e-mail to sznephew@plantsciences.ucdavis.edu. Note: All registration fees will be higher for on-site registration. Refunds subject to $25 processing fee. No refunds will be issued after November 23.

Hotel Reservations: Reserve your hotel room at the Grand Sierra Resort and Casino (online at Grand Sierra Reservations or by phone at 800-648-5080). Be sure to mention **Western Alfalfa Conference** and reserve by November 18, 2009 to obtain the outstanding conference rate of $44 per night. Luxury rooms and suites are available at a higher rate. Check our website for the extras the hotel will provide to registered guests!