

Western Alfalfa and Forage Symposium

December 11-13, 2013
Peppermill Hotel and Casino
2707 S. Virginia Street, Reno, NV 89502

This year the annual Alfalfa Symposium will be held jointly with other western states from December 11-13 in Reno, NV. There will be sessions on corn, sorghum, and other forages. This is a great opportunity to hear speakers from other production areas and other states in a not too far location. The pre-symposium workshop on farm management covers a wide range of topics including enterprise budgets, compensation packages, dealing with in-laws, and transition between generations. Please see the detailed agenda and registration information on pages 6-8.

What Alfalfa Variety to Plant?

Carol Frate, Farm Advisor Tulare County

A key decision when establishing a new stand of alfalfa is choosing which variety to plant. Yield is one of the most important factors to consider when choosing a variety. To help with this decision, University of California Extension Specialist Dan Putnam conducts alfalfa variety yield trials in several locations in the state, ranging from Tule Lake near the Oregon border to the Imperial Valley in the south. There are now 4 trial locations in the Central Valley, two of which are in Fresno County. The Kearney Agricultural Research and Extension Center near Parlier has sandy loam soils and the West Side Research and Extension Center near Five Points has clay soils. (The other 2 trials are near Modesto and Davis. They mostly contain varieties that are a bit more dormant than varieties usually grown at this end of the San Joaquin Valley). If the field to be planted has sandy or loam soils, look more closely at the Kearney results; if the soils have more clay, pay more attention to the West Side results.

Yield results are available on the internet at the UC Alfalfa Workgroup web site: <http://alfalfa.ucdavis.edu/>. (If you are not an internet user or have trouble getting this information, please contact our office at 684-3314 for help).

Once at the web page, follow the directions below:

- On the horizontal brown bar near the top of the page, go to “Variety Selection.”
- A drop down box appears – click on “Parlier (Kearney)” or whatever trial location you choose.
- From there, you can choose the trial of your choice for that location.

On the results page, the varieties are listed in order from highest yield to lowest. You will note that there are letters to the right of the yield column. If the yields from two varieties are followed by the same letter, then statistically those two varieties yielded the same. In other words, the difference in their yield is probably due to chance and not due to one of the varieties simply being better. If two varieties do not have any of the same letters following their yields, it means that there is a 95% chance or better that one variety yields higher than the

other. Never look at just one year of results. Some varieties yield really well in the first year and then decline quickly. Others start slowly but produce high yields in following years.

After yield, most growers want a variety with high quality. The UC trials do not include quality rankings for several reasons. One is that quality depends greatly on maturity and differences in dormancy among the entries in a trial will tend to favor varieties that have more dormancy. Another reason is the high cost of testing every variety at every cutting. Several years ago, Dr. Putnam ran quality tests for several trials. There were not enough differences among the varieties to make it worth the time and money to collect samples, process them and run lab analyses. Finally in the “real” world, harvest management, including the number of days between cutting and how dry the alfalfa is when raked and baled, has far greater influence on quality than small genetic differences among varieties.

After yield the next thing to consider is the **pest resistance** package that comes with a variety. The best place to find this information is the web site for the National Alfalfa Alliance (<http://www.alfalfa.org/>). (If you are not an internet user or have trouble getting this information, please contact our office at 684-3314).

Once at the internet site follow these directions:

- On the green bar just below the logo, go to “education.”
- A drop box appears - click on “Alfalfa Variety Leaflet.”
- Click on “Click here to view 2013 Variety Leaflet.”

The leaflet is organized by dormancy class. Around Tulare County varieties with 8 or 9 dormancy are most common. These are listed towards the end of the leaflet; however, be sure to look at the front of the booklet (page 2) for an explanation of the resistance ratings.

When considering resistance, remember that alfalfa varieties have more genetic variation than other crops. With an alfalfa variety that is labeled as “highly resistant,” the guarantee is that at least 50% of the plants were rated as resistant in the test for that pest or disease. But that also means that perhaps as many as 40% or more of the plants were not resistant. So choosing varieties that are rated as “highly resistant” to a particular disease or pest is very helpful but does not guarantee that the pest or disease will not appear in the field and possibly cause damage.

Remember that genetic resistance is a critical tool for reducing risk to Phytophthora root rot and nematodes (stem nematode and root knot nematodes) which are not easily controlled by other means. If the field to be planted has clay soils or doesn’t drain well, choose a variety with high resistance to Phytophthora; if the field has sandy soils, choose a variety with high root knot nematode resistance.

For more details on reading and interpreting yield trial results or choosing varieties based on resistance characteristics, connect to a video link of a presentation on this subject at:

<http://lecture.ucanr.org/Mediasite/Play/773d8c440096402a8321e00266d178691d>; or download an in-depth article from last year’s California Alfalfa Symposium at: <http://alfalfa.ucdavis.edu/+symposium/2012f/index.aspx> . (If you are not an internet user or having trouble getting this document, please contact our office at 684-3314 for help).

Return of Corn Stunt?

Carol Frate, Farm Advisor Tulare County

Corn stunt is a corn disease caused by the spiroplasma *Spiroplasma kunkelii*. When young corn becomes infected plants are severely stunted. Several ears may form on the stalk but they have few kernels. When infection occurs at a more mature growth stage, the main symptoms are reddening of the top leaves (sometimes they just dry up) and an ear that may have as many kernels as a healthy ear but the individual kernels will be poorly filled. In the early 2000’s this disease caused significant yield and quality reductions in late planted corn.

The spiroplasma pathogen is carried from diseased plants to healthy plants by the corn leafhopper, *Dalbulus maidis* (see Photo 1). Adults are about 1/8 inch in length, and light tan in color with 2 black spots at the front of their “head.” Don’t confuse them with the potato leafhopper which is bright green and found occasionally in corn. Corn leafhoppers survive winter by hiding out in wheat, alfalfa, triticale and other plants. Although corn leafhoppers may feed on these other crops, they do not reproduce on them. They also survive winter on volunteer corn – even volunteers that appear to be killed by frost. The spiroplasma survives the winter inside infected leafhoppers and also in infected volunteer corn. Volunteer corn plants serve as a source of the pathogen for uninfected leafhoppers.

With the arrival of spring and warmer temperatures, corn leafhopper adults fly from their winter “hideouts” and begin feeding and laying eggs on newly emerged corn. As they feed they can infect corn seedlings with the spiroplasma. These infected seedlings can then serve as sources of the pathogen for other leafhoppers which in turn spread the disease to other corn plants, and the cycle keeps repeating during the season as the corn leafhoppers reproduce and multiply. Late season corn is more at risk because there are many more leafhoppers to spread disease as the season progresses. In recent years, corn leafhoppers have not been as numerous as they had been during the years when the disease was more common.

Therefore I was bit surprised two weeks ago when I noticed high numbers of corn leafhoppers in a trial I was evaluating. I then looked at numerous corn fields in various parts of Tulare County and I could easily find them in every field I checked. I also looked at volunteer corn seedlings coming up in recently harvested fields. All of the volunteer plants had leafhoppers and some were “loaded.”

Why are there more leafhoppers this year than in the recent past? It could be “normal” population cycles that insects have and for which there is no one answer. Could it be due to a parasite and/or predators that had low populations this year, allowing the corn leafhopper population to grow? Were winter conditions more favorable for survival? Did the dry warm spring and really warm June result in an extra generation or two? Are these insects developing tolerance/resistance to seed treatments (Cruiser, Poncho) that we think can control them when plants are small? At this time there is no research on corn leafhopper population dynamics in California so we can only wonder why.

It will be interesting to see what symptoms, if any, show up on late corn still to be harvested. It will depend on how many leafhoppers are carrying the corn stunt spiroplasm. The increase in leafhopper population has occurred late in the season so the impact on yield and quality will hopefully be small.

Symptoms to look for:

- The leaves at the top of the plant turn reddish and/or dry out prematurely (see Photo 2). Infected plants should have an ear but it may have missing kernels and/or individual kernels will be poorly filled and “loose” on the cob (see Photo 3). (If there is no ear, there is a good chance the problem is not corn stunt. Whenever a corn plant has no ear, the upper leaves will redden).
- Evidence of leafhoppers – either the leafhoppers themselves or the exoskeletons of leafhoppers. It is possible to have corn stunt and not see much or any evidence of leafhoppers because it only takes one leafhopper to infect a plant. However, the more leafhoppers there are, the higher the chance that the symptoms are due to corn stunt.

Whether corn stunt symptoms are observed this fall or not, it is important to reduce the overwintering population in order to minimize the risk of corn stunt for next year. To reduce the chances of corn leafhoppers surviving winter and the chances of the corn stunt pathogen becoming more widespread in next year’s corn, it is very important to get rid of volunteer corn this fall and winter. The sooner the better!

Common Corn Smut

Carol Frate, Farm Advisor Tulare County

Based on comments from several growers and seed company reps, there have been some fields this year with significant amounts of common corn smut. This disease is caused by the fungus *Ustilago maydis* (also called *Ustilago zaeae* in some publications). It can be found in most years but is usually not widespread or severe within a field. (There is another corn smut disease called head smut which is caused by a different fungus. It is similar to common smut but less common. Based on symptoms, I believe the smut we are seeing is common smut.)

What are the symptoms of common smut? The most noticeable symptoms are large swellings or galls that replace the kernels in the ear. At first the galls are covered with a whitish-silvery membrane but as the galls mature they are filled with black fungal spores. The galls eventually split open releasing the spores (see Photo 4). In the 1960's a researcher estimated that a medium size gall could contain more than 2 billion spores! Spores produced this year are not thought to cause disease this year – these are the spores that will survive the winter and be the source of spores for next year or the year after. They can survive for several years.

Galls can also appear on tassels, leaf midribs, and stalks. They tend to occur where there is an injury or where plant cells are rapidly dividing. Often they will be on the stalk where the rudimentary ears below the primary ear would be located.

How does corn become infected? When conditions are right, the overwintered spores – or spores they produce – are wind-blown or splashed onto plants. Any above ground part of the plant can be infected but young, actively growing parts are more susceptible. If spores land on the ear silks, the fungus can grow down the silks and infect the ovaries (kernels), resulting in the obvious galls seen on the ears.

This disease has been studied for decades but the exact environmental conditions for infection have not been clarified. Injury, high temperatures, water stress, humidity, manure and wind have been noted as helping to increase disease levels. Once a kernel is fertilized it is no longer susceptible but anything that delays or inhibits fertilization of the kernels, such as high temperatures, will increase the chance of ear infections.

What can be done to prevent smut in the future? Because smut is present at some level every year, there are always plenty of spores to cause infection no matter where a field is located. Rotating crops will not guarantee disease-free fields. Seed treatments are not effective for this disease. The best approach is with variety resistance. All commercial field corn varieties have some resistance but there are differences among the varieties in the degree of resistance. This disease is not of great economic importance on a regular basis even in the Corn Belt. And, as mentioned above, the exact conditions that are best for disease development have not been determined and are hard to duplicate in tests. Therefore, it is difficult for seed companies to screen for common smut. It takes a year where smut is prevalent to note that a variety may be more prone to disease than others. And a variety with noticeable smut one year may have little or no smut under different conditions in another year. But your best bet is to ask the seed representatives about smut resistance.

My advice to anyone who is concerned by the level of corn smut in their field this year is to note the variety. If it has been a variety that performed well in the past, don't give up on it but don't rely on it exclusively either. Plant other corn varieties and keep notes on where smut is observed in future years.

A common question is whether or not it is safe to feed corn with smut to cows. Several studies have shown that this fungus is not toxic*. In some of these studies it is amazing how much smut was fed to the animals! With dry feed, the spores may be a dusty nuisance but with silage that shouldn't be a problem. Although safe for animal consumption, the quality of the feed may be reduced.

(*Interestingly, immature common smut galls, referred to as huitlacoche, have been eaten – by humans – in Mexico since before the Aztecs and they are still considered a delicacy. Recipes with huitlacoche are used in

high end Mexican restaurants in Los Angeles and other cities. In some areas, growers intentionally try to infect their corn in order to sell smut galls).



Photo 1. Adult corn leafhoppers (*Dalbulus maidis*) are tan with 2 spots at the front of their head. (Photo courtesy of UC IPM).



Photo 3. Ear of corn plant with late infection of corn stunt disease. Note the gaps between the poorly filled kernels.



Photo 2. Reddened tops indicated corn plants infected late with the corn stunt pathogen, *Spiroplasma kunkelii*.



Photo 4. Corn smut galls at the tip of the ear have broken open showing the black spores that will survive winter and be a source of disease next year. Lower galls have not yet opened. (Photo courtesy of UC IPM.)

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2707 S. Virginia Street, Reno, NV 89502

866-821-9996 or 775-826-2121

Wednesday, December 11

Pre-Symposium Farm Management Workshop

(requires separate registration)

1:00-5:00 p.m. Farm Management Workshop: Tools for Enterprise Budgeting & Workshop on Designing and Building a Family Business

1:00-1:45 Developing Tools for Enterprise Budgets—How to scope out the profitability of your farm enterprise. — *Karen Klonsky, University of California, Davis, CA*

1:45-5:00 Workshop: "If We Huff and Puff, Will We Blow Your House Down?" Workshop on designing and building a family business, and avoiding the many pitfalls of family farming. In many years of working with farm and ranch families, Joline Brown shares her in-depth knowledge of the basic business blueprint and vision, dealing with economic pressures, compensation packages, in-laws, transition between generations, and developing a foundation that will survive whatever wolf is at your door — *Jolene Brown, Nationally Renowned Author and Family Business Consultant, West Branch, IA*

3:00-5:00 Registration for Symposium

5:30-6:45 Symposium Welcome Reception: Refreshments and no-host bar

Symposium Day 1 – Thursday, December 12

6:00-8:00 a.m. Registration

Main Session—Economics and Industry Trends

8:00 to 10:00 a.m.

Hay Market Situation in Western States—*Seth Hoyt, The Hoyt Report, Ione, CA*
(sponsored by California Alfalfa & Forage Association)

National and Regional Dairy Trends and Impacts of Feed Prices—*Robert Hagevoort, New Mexico State University, Clovis, NM*

Hay Exports and Dynamics of a World Hay Market—*John Szczepanski, Forage Export Council, Portland, OR*

Long Term Trends and the Future of the Alfalfa & Forage Industry—*Mike Ottman, University of Arizona, Tucson, AZ*

Main Session – Water and Environment Issues

10:30 to 12:00 p.m.

Climate Changes, Drought, and Potential Irrigation Challenges for Alfalfa—*Rick Allen, University of Idaho, Kimberly, ID*

What Alfalfa Genetics are needed for a Water-Limited Future?

- *Don Miller, Cal-West Seeds, Nampa, ID*
- *Peter Reisen, Forage Genetics Int'l, Nampa, ID*
- *Ian Ray, New Mexico State University, Las Cruces, NM*
- *Dan Gardner, S&W Seeds, Five Points, CA*

12:00 p.m. Banquet Luncheon.

Will Cooperative Extension be there in the Future?--Why Western Forage Growers Need to Pay Attention—*Bill Frost, Director Cooperative Extension, University of California Division of Agriculture and Natural Resources*

Breakout Session I. Mini-Symposium: Corn, Sorghum and the Art of Silage Making

(Session does NOT repeat.)

1:30 to 5:00 p.m.

Fundamentals of Silage Making—*Steve Fransen, University of Washington, Prosser, WA*
Corn Silage: What are the Key Practices for Reducing Losses?—*Noelia Silva-del Rio, University of California Veterinary Medicine Teaching & Research Center, Tulare, CA*
Control of Spider Mite in Corn—*Carol Frate, University of California Cooperative Extension, Tulare, CA*
Managing Pivot Sprinklers for Corn or Sorghum Irrigation—*Steve Hines, University of Idaho, Twin Falls, ID*

3:00 – 3:30 BREAK

Management of Manures in Corn or Sorghum Silages—*Robert Flynn, New Mexico State University, Artesia, NM*
Opportunities and Management of Sorghum as a Bioenergy Crop—*Brent Bean, NextSteppe, Inc., Hereford, TX*
Variety Choice and Novel Genes for Sorghum—*Jeff Dahlberg, University of California, Parlier, CA*
Using Grain and Forage Sorghum in Dairy Rations in an Environment of Limited Water Resources—*Steve Martin, Dairy Nutrition and Management Consulting, LLC, Fort Collins, CO*

Breakout Session II. Pest Management in Alfalfa

(Session repeats)

1:30 to 3:00 p.m. and repeated from 3:30 to 5:00 p.m.

An Update on Tools for Effective Management of Pocket Gophers in Alfalfa—*Roger Baldwin, University of California, Davis, CA*
Diseases and Nematodes in Alfalfa—What are your Options?—*Don Miller, Producer's Choice Seed, Nampa, ID*
Weed Management Strategies in Alfalfa—*Earl Creech, Utah State University, Logan, UT*
Spring Aphid Management in Alfalfa—Challenges and Questions—*Larry Godfrey, University of California, Davis, CA*

Breakout Session III. Production of Miscellaneous Forages

(Session repeats.)

1:30 to 3:00 p.m. and repeated from 3:30 to 5:00 p.m.

Nitrogen Fertility of Grass Forages versus Interseeded Legumes—*Joe Brummer, Colorado State University, Fort Collins, CO*
Dual purpose Cover Crops/Forages—*Christi Falen, University of Idaho, Shoshone, ID*
Evaluation of Brassicas for Fall Forage—*Luis Villalobos, Colorado State University, Fort Collins, CO*
Use of Fenugreek for Forage—*Anowar Islam, University of Wyoming, Laramie, WY*

5:00-6:30 p.m.

EXHIBITORS' RECEPTION Visit exhibits and learn about new products.
Refreshments and no-host bar

5:15 p.m.

AUCTION California Alfalfa & Forage Association Auction to benefit California's voluntary grower representative group.

Symposium Day 2 – Friday, December 13

Producing a Quality Hay Product

8:00 to 9:50 a.m.

What is the Ideal Hay for Horses? — *Laurie Lawrence, University of Kentucky, Lexington, KY*
Strategies for Preventing Hay Fires—*Glenn Shewmaker, University of Idaho, Twin Falls, ID*
Hay Harvesting Equipment and Harvest Strategies for Quality—*Dan Undersander, University of Wisconsin, Madison, WI*
Standardizing Forage Quality and Testing Across Markets—*Dan Putnam, University of California, Davis, CA*

Diagnosing and Improving Alfalfa Production

10:20 a.m. to 12:15 p.m.

Poisonous Plants in Hay—*Bryan Stegelmeier, USDA Agricultural Research Service, Logan, UT*
Potential Advancements in Management of Irrigation Systems—*Larry Schwankl, University of California, Davis, CA*
Diagnostic Case Studies: How to Diagnose Problems in the Field—*Steve Orloff, University of California Cooperative Extension, Yreka, CA (presentations by panel of experts)*

12:15 p.m. ADJOURN

See <http://ucanr.edu/sites/Alfalfa/> to register and for more details on the agenda and lodging

Registration Includes: Welcome Reception on Wednesday night, lunch on Thursday, and the Exhibitor's Reception on Thursday night. It also includes coffee and break refreshments and a copy of the proceedings on a CD.

For the Pre-Symposium Farm Management Workshop (Wednesday, Dec. 11): \$45.00

For both days of the Symposium: \$195.00 (\$225 after Nov. 25 and \$250 at the door).

If you do not have access to the internet, call (530) 752-2442 or (530) 752-6996 to register.

Lodging: Contact the Peppermill Hotel & Casino
(Mention you are with the Western Alfalfa and Forage Symposium)

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866-821-9996 or 775-826-2121

Continuing education hours, both PCA and CCA, are being requested but are not yet approved. As soon as they are approved, they will be listed at the following website:
http://ucanr.edu/sites/Alfalfa/Continuing_Education_2013/



For those not attending the Western Alfalfa and Forage Symposium, the meeting announced below may be of interest:

‘Improved Soil Function’ – Focus of December 11 Workshop

Jeff Mitchell, UC Extension Specialist

The University of California’s Conservation Agriculture Systems Innovation (CASI) Center is providing a workshop for Central San Joaquin Valley producers at the UC West Side Research and Extension Center at the corner of Oakland and Lassen Avenues in Five Points at 11:00 a.m. on Wednesday, December 11. With this event, CASI hosts Colorado farmer, Brendon Rockey, and North Dakota NRCS Conservationist, Jay Fuhrer, who will talk about the soil management systems they’ve been developing that increase the resilience and function of soil for crop production. In recent years, there are a number of farmers and researchers around the country who have been working with adding diverse, multi-species crops into rotation mixes and both Brendon and Jay are leading experts in these types of systems. CASI is pleased to be hosting them and we invite your participation at our meeting on December 11. Lunch will be provided following their discussion.



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October 2013

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Improved Soil Function – Focus of December 11 Workshop

Carol Frate, Farm Advisor

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