



## Corn Production Meeting Tuesday, June 5, 2007

8:30–11:30 a.m.

Tulare County Agricultural Auditorium  
Cooperative Extension Office  
4437B South Laspina Street, Tulare

**Registration: 8:00 a.m.**

**Program: 8:30 a.m.**

**Corn Growth and Development** – Carol Frate, Agronomy Farm Advisor, UCCE Tulare County

**Corn Leafhopper and Corn Stunt Disease in the San Joaquin Valley** – Charles G. Summers, Entomologist, UC Davis and Kearney Agricultural Center, Parlier

**Management of Spider Mites and Insect Pests in Corn** – Larry Godfrey, Extension Entomologist, UC Davis

**Fusarium Ear Rot and Stalk Rot** – Mike Davis, Extension Specialist, Plant Pathologist, UC Davis

### **BREAK**

**Nutrient Uptake in Corn** – Marsha Campbell-Mathews, Agronomy Farm Advisor, UCCE, Stanislaus County

**Relative Value of Corn Harvest Options (Silage, Earlage, Grain)** - Shannon Mueller, Agronomy Farm Advisor, UCCE, Fresno County

**Yield and Nutritional Value of Grain-type versus Forage-type Sorghum for Silage** -Carol Collar, Dairy Farm Advisor, UCCE Kings County

**No pre-registration required. No fee to attend.**

*For additional information, contact:*

Carol Frate - (559) 685-3303

Jerry Higginbotham or Shannon Mueller – (559) 456-7285

Carol Collar - (559) 582-3211 ext. 2730

Marsha Campbell-Mathews (209) 525-6800

This meeting will be repeated in the afternoon from 1:30 – 4:30 p.m. at the Merced County UC Cooperative Extension Office, 2145 Wardrobe Avenue, Merced.

## Early Corn Nipped by Frost

Scattered, early-planted corn fields around Tulare and Kings counties were hit by frost in the third week of April. Unusually cold temperatures affected corn plants that were close to a foot tall while leaving small, short corn untouched. Taller corn might have been more susceptible to frost damage because the soil was drier and many fields had been cultivated, leaving a dry soil mulch at the surface which would radiate little heat. It is also possible that unusual conditions resulted in temperatures being cooler slightly above the soil surface than right at ground level. In some cases an individual plant had symptoms while nearby plants were untouched. But in several fields, widespread areas were affected. The majority of plants survived and no long term damage is expected.

## Cowpea Aphid in Alfalfa

The cowpea aphid made an unexpected appearance in many alfalfa fields this past January – a time when aphids are usually not a problem. This dark colored aphid, a relatively new pest to alfalfa in the San Joaquin Valley, causes stunting and leaf curling. A number of alfalfa fields that had foliage burned back by herbicides were very slow to regrow and, upon closer inspection, it was discovered that feeding damage by the cowpea aphid was delaying regrowth. Even before Egyptian Alfalfa Weevils needed treatment, many fields had to be sprayed for this aphid.

The cowpea aphid has also been known to reach damaging levels in alfalfa in late spring, summer, and fall. Very little research has been conducted so, until more knowledge is gained, the treatment or action threshold for the blue alfalfa aphid is the threshold being used for cowpea aphid. We don't know why it has recently become a problem on alfalfa and we don't know if it is the same strain of cowpea aphid that can build up damaging populations in blackeye cowpeas. But we do know that we need to be watching for the cowpea aphid throughout the year.

## The Struggle for High Quality Alfalfa

Alfalfa quality is a large and complex topic so for the purpose of this newsletter, just a few basics will be covered.

### Measurement of Alfalfa Quality

A forage sample is taken to a lab with the belief that it accurately represents the stack of hay from which it came. If the sample is taken incorrectly, then lab results don't even matter! Although it is no fun coring hay bales, a representative sample should be compiled from at least 20 cores taken randomly from the stack.

### Quality Components

TDN (total digestible nutrients) is the term most often used to describe hay quality. TDN is actually a value calculated from the laboratory analysis for acid detergent fiber (ADF). Several years ago, it was discovered that different labs were using different equations to calculate TDN. Hay samples that had the same ADF percentage could be reported as having different TDN values if labs used different equations. Because hay pricing is often based upon TDN values, this can have a significant economic impact. Although most forage testing labs are now using a standard equation, it might be more appropriate to use the value measured in the lab (ADF) instead of a calculated value (TDN). As the industry makes this transition, we will all become accustomed to reports of ADF instead of TDN.

Table 1 shows the categories in the USDA Quality Guidelines for alfalfa hay (which by definition has no more than 10 percent grass) and the relationship between ADF, TDN based on 100 percent Dry Matter and TDN based on 90 percent Dry Matter. TDN based on 90 percent Dry Matter has been the standard for decades. The box beneath Table 1 refers to physical characteristics of the hay that should be used in addition to test results to describe hay quality. The terms supreme, premium, etc. match the terminology in the USDA Hay Market Report which can be accessed on the internet through a link on my alfalfa page: <http://cetulare.ucdavis.edu/agriculture/alfalfa.htm>

or directly at <http://www.ams.usda.gov/lsmnpubs/index.htm>

### Producing Quality Alfalfa Hay

The question everyone asks is: how do I produce dairy quality (premium or supreme quality) hay? There is no easy answer. High quality (high digestibility, low ADF) is associated with the maturity of the alfalfa at the time it is cut. As alfalfa grows, yield increases, but it reaches a point where the quality decreases as maturity and yield increase. Because quality is related to maturity, more dormant varieties, which regrow after cutting more slowly than nondormant varieties, tend to be higher in quality for any given cutting interval than nondormant varieties. However, yield tends to be less for more dormant varieties than for less dormant (nondormant) varieties.

It is impossible to look at standing hay and know the quality. Furthermore, weather during curing, and conditions during raking and baling, make it even more difficult to predict hay quality. So we rely on cutting interval to help determine quality. When temperatures are mild, and growing conditions are good, a cutting interval of 28 days should produce high quality alfalfa. In our summer heat however, this interval often results in cuttings with quality lower than what dairy producers want.

Some growers cut at intervals of 24-26 days in mid-summer in order to produce high quality hay. This strategy results in lower yields, and if this short interval is repeated cutting after cutting, it may also reduce stand life. I recommend that if some cutting intervals are shortened to 26 days or less, at least one interval should be longer – even 30 days or longer, where the objective is not to produce dairy quality hay but to give the crop a chance to replenish crown and root reserves needed for vigorous regrowth. This cutting can be targeted for dry cow hay or horse hay. (Most horses do not need dairy quality hay). If using the short cutting interval strategy, remember that the worst scenario is cutting early for quality with the associated yield reduction and then having the tests come back showing that it

is not “dairy quality” hay. This could be because of conditions during curing, raking and baling or because environmental conditions were such that even with the shorter interval, the crop just wasn’t dairy quality at harvest.

When calculating the number of days between cuttings, remember not to mark the calendar until the alfalfa begins to regrow following harvest. Typically, if irrigations are managed correctly, the alfalfa starts to regrow quickly, often before the bales are removed from the field! But if the soil is dry, regrowth is delayed until irrigation occurs, and the number of days until the next harvest should be counted from the date of irrigation, not from the date of cutting.

Also remember, that as long as the crop has sufficient nutrients for good growth, there is no magic ingredient to improve quality. If fields have received manure, there is hardly any chance they have a micronutrient deficiency.

The best strategy to follow in hay production may be different for a dairy producer using his/her own hay than for a grower selling hay to a dairy. For the latter, one needs to consider if the price differential for higher quality hay will make up for the reduction in yield that comes with shorter intervals and/or planting more dormant varieties.

For further information and discussion, there are a number of articles on alfalfa quality at the UC Alfalfa Workgroup website that can be accessed through my web site: <http://cetulare.ucdavis.edu/agriculture/alfalfa.htm> or directly at: <http://alfalfa.ucdavis.edu/>

### **Certified Weed Free Alfalfa Hay Program – a Marketing Niche for Summer Alfalfa?**

The National Park and National Forest Services would like hay that is being packed into the parks and forests to be certified weed-free so as not to introduce weeds to these areas. With the proximity of Sequoia and Kings Canyon National Parks and Sequoia National Forest, opportunities to supply packers with weed free

hay may provide a market for clean hay that is not dairy quality. The certified weed-free hay program is still rather new so the market would have to be developed but it could turn out to be a profitable outlet for clean hay that doesn't make "dairy quality." However, advance planning is necessary as a potential field needs

to be inspected prior to harvest and there are record keeping requirements. For more information, contact the Tulare County Agricultural Commissioner's Office at 559-685-3323. Rafael Garcia is the contact person for this program.

**Table 1.** *USDA Quality Guidelines for alfalfa hay (not more than 10 percent grass). Guidelines used for reporting economic data across the United States, and adapted in 2002 (2003 USDA Livestock, Hay & Grain Market News, Moses Lake, WA). Guidelines are used along with visual appearance to determine quality. All figures are expressed on 100 percent DM except as noted.*

Category	ADF	*TDN	*TDN (90% DM)	CP (Crude Protein)
-----%-----				
Supreme	<27	>62	>55.9	>22
Premium	27-29	60.5-62	54.9-55.9	20-22
Good	29-32	58-60	52.5-54.5	18.2
Fair	32-35	56-58	50.5-52.5	16-18
Utility	>35	<56	<50.5	<16

TDN based upon calculation from ADF using the 'Western Equation:  $TDN = \{82.38 - (0.7515 \times ADF)\}$  according to Bath & Marble, 1989. 90% DM is  $TDN \times 0.9$ .

**Physical Descriptions of Hay Quality to be used in combination with lab tests for alfalfa hay quality categories (USDA-Market News):**

**Supreme:** Very early maturity, pre-bloom, soft fine stemmed, extra leafy. Factors indicative of very high nutritive content. Hay is excellent color and free of damage.

**Premium:** Early maturity, i.e., pre-bloom in legumes and pre head in grass hays, extra leafy and fine stemmed-factors indicative of high nutritive content. Hay is green and free of damage.

**Good:** Early to average maturity, i.e., early to mid-bloom in legumes and early head in grass hays, leafy, fine to medium stemmed, free of damage other than slight discoloration.

**Fair:** Late maturity, i.e., mid to late-bloom in legumes, head-in grass hays, moderate or below leaf content, and generally coarse stemmed. Hay may show light damage.

**Utility:** Hay in very late maturity, such as mature seed pods in legumes or mature head in grass hays, coarse stemmed. This category could include hay discounted due to excessive damage and heavy weed content or mold. Defects will be identified in market reports when using this category.

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

Nonprofit Organization  
US Postage Paid  
Visalia, CA 93277  
Permit No. 240

# Field Crop Notes

## May 2007



### Table of Contents

- Corn Production Meeting  
Tuesday, June 5, 2007
- Early Corn Nipped by Frost
- Cowpea Aphid in Alfalfa
- The Struggle for High Quality Alfalfa
- Certified Weed Free Alfalfa Hay Program-  
a Marketing Niche for Summer Alfalfa?

Carol Frate, Farm Advisor

The University of California prohibits discrimination or harassment of any person on the basis of race, color, national origin, religion, sex, gender identity, pregnancy (including childbirth, and medical conditions related to pregnancy or childbirth), physical or mental disability, medical condition (cancer-related or genetic characteristics), ancestry, marital status, age, sexual orientation, citizenship, or status as a covered veteran (covered veterans are special disabled veterans, recently separated veterans, Vietnam era veterans, or any other veterans who served on active duty during a war or in a campaign or expedition for which a campaign badge has been authorized) in any of its programs or activities. University policy is intended to be consistent with the provisions of applicable State and Federal laws. Inquiries regarding the University's nondiscrimination policies may be directed to the Affirmative Action/Staff Personnel Services Director, University of California, Agriculture and Natural Resources, 1111 Franklin Dr, 6<sup>th</sup> Floor, Oakland, CA 94607, (510) 987-0096.