

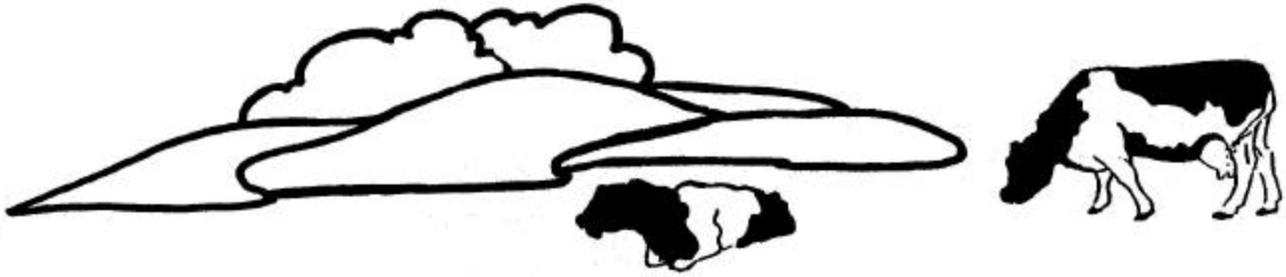


DAIRY NOTES

UNIVERSITY OF CALIFORNIA

COOPERATIVE EXTENSION

KINGS COUNTY



March 2002

680 N. Campus Drive, Suite A
(559) 582-3211, ext. 2730

website: <http://countyofkings.com/kingsce>
email: ccollar@ucdavis.edu

Hanford, CA 93230
Fax (559) 582-5166

Cold Injury to Winter Forage

Many wheat fields in Kings and Tulare counties, and also in counties further north began to appear yellow after the first week of February. Oats and other cereal forages also showed these symptoms. Upon closer inspection, leaves and tillers (branches) were becoming necrotic and in some cases plants were dead or dying. UC Cooperative Extension farm advisors in these counties and specialists at UC Davis visited fields, observed symptoms, and consulted resources for answers. They concluded that most symptoms were probably due to cold injury.

The fields hit hardest were those that were in the stem elongation stage between mid-January and early February. Fields that were planted in October and early November were probably in that stage by mid-January. Later planted fields were not affected because the sensitive growing points beneath the soil surface were protected from the cold. These younger fields may be yellow due to temporary nutrient deficiencies caused by low root activity in cold soil, but they should “green up” with warmer temperatures.

Wheat is very susceptible to cold injury during stem elongation when the growing points of the plant begin to surface above ground. Freezing

temperatures can cause the collapse and death of growing tissues immediately above and below the nodes (nodes are also called joints – the swollen areas of the stem). This damage leads to death of tillers and entire plants. Initial symptoms of the damage are yellow leaves. If leaf sheaths are stripped to reveal the stem nodes, sections of discolored and collapsed stem between the nodes can be found. The damaged section is usually 1-3 inches long and it may be at the base, at the top, or in the middle of the stem between nodes, depending on which part was in an active state of elongation when the frost occurred.

Frost damage to young, developing grain heads usually is not apparent until after heading is complete, but it can occur anytime after the onset of stem elongation. If plants in the affected fields survive, the heads may have been damaged and kernels may not form. The entire head or just portions of the head could be affected. Even if the grain head appears normal, grain yield may be reduced if the flag leaf is damaged from the cold. Most of the energy used for grain filling comes from the photosynthetic activity of the flag leaf, which is the last leaf to emerge from the plant.

How cold was it this winter? In the Kings-Tulare area, temperatures dipped as low as 23-25° F on several mornings in rural areas. Temperatures fell

below freezing at one weather station for 13 out of 17 days from mid-January to early February. On some days there were over 8 hours of below freezing temperatures. In addition, November and early December were relatively warm, allowing early-planted wheat to advance to the stem elongation stage by mid-January.

Growers and dairy producers should evaluate any damage and consider early harvest if it appears that there will be little grain formed. Winter forages in the south San Joaquin Valley are typically harvested after grain formation when the kernels are at the soft dough stage. This usually occurs around mid April to early May. However, if grain production is greatly reduced because of cold damage, then there is no point in waiting until soft dough stage. Nutritional value of the leaves and stems declines rapidly with advancing maturity. If the crop goes to late April with little or no grain produced, the feeding value of the resulting silage will be very poor. It would be best to harvest damaged fields as soon after heading as possible. Winter forage harvested just before heading (boot stage) or at early heading stage always has superior feeding value to soft dough stage forage. However, high levels of nitrate can sometimes be a problem in early harvested winter forage, especially if fields received heavy applications of fertilizer or manure. Plants that are stressed from cold injury also can contain high nitrate levels, compounding the problem this year. **Dairy producers should sample any early harvested forage and test it for nitrate before feeding.** Nitrates can be toxic at high levels. Moisture level of the forage is also higher at this early stage, so field wilting is required after swathing to bring the moisture level down to about 65% before it is chopped.

Corn Stunt Disease Update

Last season was a severe corn stunt disease year for the South Valley. The bacteria-like organism that causes the disease (*Spiroplasma kunkelii*) is

carried from diseased corn to healthy corn by corn leaf-hoppers. Corn leafhoppers only feed on corn, and corn is the only host for the spiroplasma organism. Even though previous research has shown that leafhoppers can survive many months without feeding, it has been assumed that leafhoppers could not over winter here because we don't grow corn in the winter.

We have been busy for the last several months trying to learn more about this problem. One of the things that we have learned is that **corn leafhoppers can indeed over winter here**. Dr. Charlie Summers, entomologist at the UC Kearney Ag Center in Parlier has been sucking up live corn leafhoppers with his "D-Vac" machine all winter from areas around Kings and Tulare counties. Some areas have also been monitored with yellow sticky cards to determine the presence of leafhoppers. Corn leafhoppers have been found on volunteer corn plants, in corn stubble, and at the weedy margins of fields that were planted to corn last season. All of the leafhoppers that they have been finding are females although we do not yet know the significance of this.

Another thing that we have learned is that **the corn stunt spiroplasma organism can also over winter here**. A field near Hanford that was planted to corn last summer had many volunteer corn plants come up in the fall. I sampled those plants and others that I found in various fields around the county on Dec. 1st and sent them to CDFA in Sacramento to be tested for the corn stunt spiroplasma. All the samples were positive for the pathogen. On February 8th I found some volunteer corn from one of these fields that had been disked. At first glance all of the corn looked dried up and dead, but upon closer inspection, some plants had survived the disking and these had green, juicy tissue at the base of the stalks. I sent these corn plants to Sacramento and they also tested positive for the pathogen. So in spite of the cold weather that we had during the last two weeks of January, leafhoppers survived and the disease organism was present in green corn tissue as late as

the first week of February. The next step is to determine if the leafhoppers that have been found are carrying the corn stunt spiroplasma. That effort is underway.

Last August we sampled dozens of weeds, field crops and trees near affected corn fields to determine if there could be another host for corn stunt spiroplasma in addition to corn. None of the samples turned up positive for the pathogen. So we still believe that corn is the only host. We don't know why the problem was so bad last year, nor can we say that we will even see corn stunt disease in the coming season. Nevertheless, efforts to track the disease have begun. We are enlisting the help of PCA's and seed company representatives to put out yellow sticky cards on stakes adjacent to corn fields as the planting season begins. We intend to conduct weekly monitoring of the cards to learn when leafhoppers arrive, and then monitor the fields for disease symptoms. With this information, computerized maps will be generated using GIS (Geographic Information System) technology. We need many more PCA's, seed representatives and growers to help us with this effort. In return, those who help will be able to access weekly maps of the spread and distribution of the leafhopper and the disease. Such information may be useful in planning your management of the situation. Call us if you would like to help with this effort.

At this time none of the commercially available corn hybrids adapted to our area have resistance to corn stunt disease that we know of. Green house screening of corn hybrids is underway to try to find genetic resistance. Unfortunately, that information will come too late for planting decisions this year. There are no chemical controls for corn stunt disease. Controlling leafhoppers seems like an obvious strategy, but this may not be a promising endeavor. Leafhoppers may not be carrying the disease in a "normal" year. If they are carrying the disease, then by the time the leafhoppers are seen, the corn may already be infected. There are also logistical problems associated with trying to penetrate a dense corn canopy with a chemical

spray. Leafhoppers like to stay on the underside of leaves, so it would be difficult to get an effective kill. Nevertheless, chemical products for leafhopper control will be tested this season.

There is no danger of acquiring the disease from corn seed that you plant. The pathogen is spread ONLY by the leafhopper and can not be spread through the seed. It appears that many growers are geared up to plant early this season. It is true that corn planted in April -May last year escaped the disease or had milder symptoms than corn planted in June and July. That may be because it takes a while for the infected leafhoppers to build large enough populations to do their damage. But don't let all the warm weather that we have had for the last several weeks lull you into a false sense of security about planting *too* early. For best germination, soil temperatures need to be in the 58 to 60° F range with an outlook for warming weather. If the seed sits in cold, wet soil, you can expect a poor stand.

If you would like to review past issues of this newsletter that describe corn stunt disease in more detail you can go to my website and click on the September 2001 issue. If you have other questions for those of us at UC Cooperative Extension who have been involved in studying the problem you can call me in Kings County at 559-582-3211 extension 2730. In Tulare County you can call Carol Frate at 559-685-3303. You can also call Dr. Charlie Summers at the UC Kearney Ag Center. His number is 559- 646-6564.

There was no UC Cooperative Extension corn silage variety trial conducted in Kings County last summer, but I have attached the results from the UCCE Tulare trail for you to review as you make planting decisions. Results from previous years of variety testing in Kings County years can be found on my website.



Remembering Herbert (Herb) S. Etchegaray

Former Kings County Farm Advisor, Herb Etchegaray passed away at his home on February 18, 2002. He worked for UC Cooperative Extension for 33 years and served as the Dairy Advisor until he retired in 1978.

As Farm Advisor, Herb conducted many applied research projects. Some of the studies on dairy manure pond sealing were conducted under Herb's watchful eye right here in Kings County during the late 1960's. Herb also did a lot of forage work. He conducted variety trials with corn, winter forages and pasture grasses.

In addition to his extension work, Herb wrote two books, "*How the U.S. Navy Almost Lost the Pacific War*" and "*Kings University Agricultural Liaison*". He was active in the Rotary Club, played viola in the Kings County Symphony Orchestra and enjoyed gardening.

In lieu of flowers, friends who wish may send remembrances to the Kings Symphony Orchestra, P. O. Box 943, Hanford, CA 93232.

41st Annual UC Dairy Cattle Day March 20th at UC Davis

This year's UCD Dairy Day program includes discussions on Johnes disease, animal welfare, and preparing for emergency diseases (like foot and mouth). The Animal Science Department's new UC Cooperative Extension Air Quality Specialist, Dr. Frank Mitloehner will be introduced, and there will be presentations by graduate students about their research projects. A panel discussion about what county environmental regulations will look like in 2003 will conclude the morning session. Kings County's Director of Planning will participate on the

panel along with his counterparts from Tulare (George Finney) and from Merced (Jeff Palsgaard). After lunch at the UCD Dairy there will be demonstrations on locomotion scoring, foot trimming and rumen fistulated cattle in research. Call our office for a flyer containing more information, or go to the UC Davis Department of Animal Science website at <http://animalscience.ucdavis.edu/> to learn more.



Kings County DHIA Annual Awards Dinner – April 4th

The Kings County Annual Awards Dinner will be held on Thursday April 4th at the Civic Auditorium in Hanford. The doors open for social hour starting at 6:30 pm. Dinner is at 7:30 pm followed by the awards program. For tickets or information, contact Ed Vink at the DHIA office, 582-2010.

Dairy Herdsman Shortcourse at Cal State University Fresno- April 22 - 24

Attached to this newsletter is a flyer for a dairy herdsman class that will be offered next month. The class was held last October and was so popular that we decided to do it again. If you are interested, review the flyer and get your registration in right away, because last time we had to put people on a waiting list.



Carol Collar, UC Farm Advisor
Dairy, Livestock & Forages

2001 Tulare County University of California Cooperative Extension Corn Silage Variety Trial - Yield Summary¹

Cooperator: Alex Garcia

Harvester: Edwin Vercauterin

Field Location: Rd 168 between Avenues 144 and 136.

Soil Type: Foster loam and Cajon fine sandy loam

Planted: May 21, 2001 on 30-inch beds; harvested September 6, 2001.

Weed control: Banvel @ 3/4 pt/A by ground on June 6

Spider mite control: 3 pt/A Comite plus foliar by helicopter on July 3

Aphid control: Lorsban 4E @ 2 pt/A with buffer and spreader by helicopter on July 18

Brand	Percent Moisture at harvest	Yield as harvested tons/acre	Adjusted Yield 70% moisture tons/acre	Plant Population ² number of plants/acre	Plant Height (ft)	Ear Height (ft)
Baglietto 5630	73.5	41.2 a	36.4 abcd	34,170	12.1	6.7
NK 91-R9	71.8	40.7 a	38.3 a	33,650	14.0	7.1
TS 518	73.8	40.6 a	35.7 abcd	33,313	12.3	6.2
Dairyland 11907	73.7	40.0 a	35.1 abcd	30,813	12.2	6.2
Pioneer 31G98	71.2	38.2 ab	36.8 ab	32,147	11.7	6.4
Cargill 9027	70.8	36.7 bc	35.8 abcd	32,273	12.5	6.2
SeedTec 7638	71.1	36.0 bcd	34.6 abcde	30,773	12.5	6.3
Asgrow RX897	70.8	35.9 bcd	34.9 abcde	32,667	11.8	6.3
UAP 9110	71.5	35.8 bcd	34.3 bcde	32,313	11.8	6.3
DeKalb 743 (field variety)	70.6	35.8 bcd	35.1 abcd	32,043	11.9	6.2
Simplot Seeds 2643 IMI	71.8	35.7 bcd	33.5 bcdef	32,690	12.3	6.9
Farmers Warehouse 8070	68.5	34.7 cd	36.6 abc	32,567	12.2	7.0
ABI 9696	71.5	34.1 cd	32.6 def	29,897	11.6	5.9
DeKalb 687	70.3	33.0 d	32.9 cdef	34,877	10.9	5.8
Garst 8288	67.6	29.1 e	31.3 ef	27,397	11.5	5.4
Croplan 743	64.3	27.5 ef	32.9 cdef	32,567	11.4	6.1
PGI/MBS 801	64.7	25.9 f	30.3 f	30,960	12.3	5.6
Guttwein 2622	69.9	25.1 f	25.3 g	21,940	10.2	5.0
Coefficient of variability	1.5	4.8	5.8		2.87	5.1
LSD P=0.05	1.7	2.8	3.2		0.57	0.52
average	70.4	34.8	34.0	31503	12	6.2

¹ Reps I and II were 8-row plots; Rep III were 4-row plots; plots extended for the length of the field. Values followed by a common letter do not differ significantly at the 5 % level of probability using Duncan's Multiple Range.

² Plant populations counted on June 6 (reps I and II) and June 8 (rep III).

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