UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION
KINGS COUNTY

DAIRY NOTES

November 2006

680 N. Campus Drive, Suite A website: **http://cekings.ucdavis.edu** Hanford, CA 93230
(559) 582-3211, ext. 2730 *email: ccollar@ucdavis.edu* Fax (559) 582-5166

Dairies and Air Quality – An Update

The following was prepared by a group of UC Cooperative Extension, academic, regulatory and dairy industry leaders to inform the dairy community and public about very important activities related to dairies and air quality. Dairy producers, especially those within the San Joaquin Valley, should pay close attention to upcoming deadlines for ensuring compliance with new regulations.

- California is leading the way in continuing to improve the science surrounding dairy air emissions. Determining emissions from dairies is complex due to variability among dairy operations that can impact emissions, as well as the need to evaluate the direct emissions from cows, feed, manure and various dairy processes.

- Research efforts are focusing on developing and validating research methods, as well as better understanding the emission sources at California dairies, so effective emission reduction approaches can be developed. Interim emission factors are being used while actions to continually improve and focus the science are undertaken.

- Preliminary findings from new, ground-breaking research on emissions from California dairies are reinforcing the need for sound science based regulation. Through cooperation of California regulatory agencies, research institutions and the dairy industry, understanding of these emissions has increased dramatically over the past two years so that informed decisions about best management practices and appropriate control technologies can be made with more confidence.

- The Air Resources Board (ARB), the San Joaquin Valley Air Pollution Control District (SJVAPCD) and the dairy industry's environmental coalition, Dairy CARES, collaborated on and co-funded two critical projects that are now providing important insight for use in determining Best Available Control Technologies (BACT) and Best Available Retrofit Control Technologies (BARCT) requirements. These projects include:

    - A study at UC Davis, led by Dr. Frank Mitloehner, which focused on emissions from cows housed in environmental chambers
    - A study at two operating dairies in the San Joaquin Valley, led by Dr. Chuck Schmidt, in which measurements were made at many locations on and around the dairy facilities.

- These studies have been finalized but it is too early to estimate overall emissions and additional research may be necessary. However, preliminary reports suggest new considerations:

- Fermented cattle feed (silage) appears to be one of the largest, and perhaps largest, source of dairy-related volatile organic compound (VOC) emissions.
- Manure in drylot corrals appears to be another important source of VOC emissions on some dairies.
- Emissions from manure storage ponds, also known as lagoons, and direct emissions from the cows themselves, appear to be far less significant than previously thought.

- ARB and SJVAPCD are taking immediate steps to begin addressing the implications of this important new knowledge. Means of including this new information in the ongoing development of regulations for dairies are being sought. The information will be used to develop cost-effective control measures that will ensure reduced emissions and cleaner air, while minimizing unnecessary economic impact to the state, regional and local economy.

- Longer-term research is also being undertaken. At the January 2006 hearing of the ARB, the Board approved a project with UC Davis to begin development of a process-based dairy emissions model which is designed to model emissions at individual dairies and to further improve understanding of biological processes that result in dairy emissions. Additional research focusing on appropriate methods for storing and managing feed, best management practices for corrals and other innovative control methods is already underway.

- The SJVAPCD is taking all appropriate steps to be in full compliance with Senate Bill 700 (Florez). All new and modifying dairies are currently required to implement the most effective control strategies (BACT). A new regulation, Rule 4570 was enacted by SJVAPCD in August 2006. This rule requires that existing dairies within the district that have more than 1000 cows must apply for air quality permits and submit plans for management practices to reduce air emissions by **December 15, 2006**. Many producers already have air permits from the district. Under Rule 4570, additional steps must now be taken to submit Emissions Mitigation plans to be in compliance with the air permit.

- Workshops will be held in November throughout the San Joaquin Valley for dairy producers to learn more about necessary forms to meet the December 15 deadline. See the following announcement for dates and times.

Workshops to assist San Joaquin Valley dairies with <u>new</u> air rules

These free workshops will be held in Kings, Kern, Tulare, Fresno, Madera, Merced, Stanislaus and San Joaquin counties. Flyers with more detailed information were mailed to dairies in all of these counties recently. For Kings County producers, there will be two sessions offered at the UCCE office on November 28th. You may attend sessions on other days in neighboring counties if the Hanford session does not fit your schedule:

<u>Kings County (two workshops)</u> 10 am -12 noon and 2 pm -4 pm Tuesday, Nov. 28 UC Cooperative Extension office 680 North Campus Drive, Hanford	**<u>Tulare County (two workshops)</u>** 10 am -12 noon and 2 pm -4 pm Wednesday, Nov. 15 UC Cooperative Extension office 4437 South Laspina Street, Tulare
<u>Fresno County</u> 10 am -12 noon, Thursday, Nov. 9 Veterans Memorial Hall 3085 W. Mt. Whitney Ave., Riverdale	**<u>Kern County</u>** 10 am -12 noon, Wednesday, Nov. 8 UC Cooperative Extension office 1031 S. Mount Vernon Ave., Bakersfield

Winter Forage Planting Considerations

A brief recap of results from recent tests may be of interest to growers and dairy producers gearing up for planting the winter crop. Small grain variety tests were conducted at multiple locations throughout California last season, coordinated by UC Extension Specialist Lee Jackson. The results from Kings and Tulare Counties were mailed to growers in October. Dairy producers interested in this information can request it from our office, or go to an Agronomy Progress Report containing more detailed results at http://agric.ucdavis.edu/crops/cereals/cereal.htm or on the Kings County website at http://cekings.ucdavis.edu.

For dairy purposes, the best silage varieties are often also the high yielding, early maturing grain varieties containing high grain protein and resistance to disease and lodging. For growers, a dual purpose variety gives options, particularly when grain prices are high and silage prices low or vice versa. Choose more than one variety or type to reduce the impacts of weather, disease, harvest schedules, and economics.

Stripe rust: The 2006 season was wet and cool, resulting in a late maturing crop with high disease pressure from stripe rust, septoria tritici, and leaf rusts. Some areas were also hurt by February frosts. Wheat and triticale varieties have different levels of genetic resistance to stripe rust, and as several new races of rust develop, the resistance breaks down. Stripe rust is a disease that can drastically diminish crop yield and quality.

Following are observations on stripe rust resistance from the 2006 UC statewide variety tests:

Highly Susceptible: Dirkwin, Bonus, Brooks, Cavalier, Yecora Rojo, Stander, Plata, Summit Blanca Grande.

Susceptible: Anza, Express, Solano

Moderately Susceptible: Clear White, Trical 96

Moderately Resistant: Joaquin, Dash- 12, Trical 116, Trical 98

Resistant: Trical 105, Trical 118; Cal Rojo, PR 1404, Patwin (tested as 1419), Expesso (1500), Blanca Fuerte (1523, Mica (1340)

Dr. Lee Jackson of the University of California Cooperative Extension in coordination with UCCE farm advisors, recently released the following management information that can be used by growers and dairy producers to minimize losses from the disease.

Stripe Rust Management Plan for 2007

1. **Plant varieties suitable for your growing region and intended market**. Avoid using susceptible varieties or be prepared to apply a fungicide if you plant a susceptible variety. Refer to the small grains website (http://agric.ucdavis.edu/crops/cereals/cereal.htm) for variety information.

2. **Diversify your plantings**. Plant more than one variety in case new races of the stripe rust pathogen infect the crop in your region.

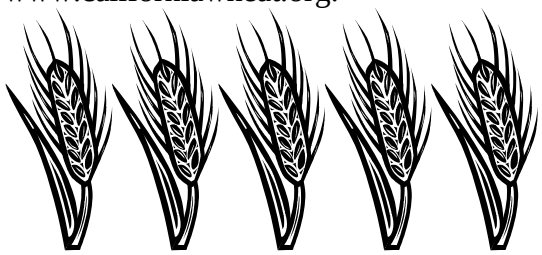
3. **Monitor your crop carefully during the growing season in order to detect the first infections early enough to plan for effective fungicide application(s).**
   - Initial infections in the Central Valley can occur as early as January or as late as April.
   - A trigger-point for fungicide application for effective disease control of susceptible varieties under conducive weather conditions is when 10% of plants show symptoms of infection or when 'hot spots' of disease are detected in the field.

4. **Pay attention to reports of stripe rust in other areas of California and surrounding areas.**
   - Infection in other areas is an early-warning for your area since spores of the stripe rust pathogen are wind-borne and can be disseminated over long distances (hundreds of miles) to cause infection.
   - The California Wheat Commission's Weekly Bulletin is a good source of this information.

5. **Monitor weather conditions.** Cool, wet conditions (50-60 degrees F with intermittent rain, fog, or dew) are most favorable for infection, spore production, and spore dispersal.
   - Keep in mind, however, that races of the stripe rust pathogen now present in California can cause disease at higher temperatures and drier conditions than in the past.

6. **Apply an effective fungicide (follow label directions) if necessary to minimize yield loss.**
   - Application timing is critical since available effective fungicides have residual activity of no longer than about 3 weeks.
     - If the initial application is made too early, (before infection is detected) the protective activity of the fungicide will be gone before disease appears. Losses then will occur if disease subsequently develops.
     - If the initial application is made too late (after disease is well established and severe), the fungicide will not prevent loss (the damage has already been done).
   - Protection of the flag-leaf from infection and protection of the plant during the grain-fill period is the goal.
   - Under continuing severe disease pressure, more than one application may be necessary to adequately protect susceptible varieties.
   - Label restrictions for timing of application vary by fungicide class (triazoles and triazole/strobilurin combinations vs strobilurins). The following are examples of permissible fungicide application timings:
     Tilt (Syngenta) - No later than Feekes 8 (flag-leaf completely emerged)
     Stratego (Bayer) - No later than Feekes 8
     Quilt (Syngenta) - No later than Feekes 8
     Headline (BASF) - No later than Feekes 10.5 (heading completed, beginning of flowering)
     Quadris (Syngenta) - No later than Feekes 10.5

Further information about stripe rust may be obtained by contacting Dr. Lee Jackson, lfjackson@plantsciences.ucdavis.edu , UC Cooperative Extension Farm Advisors, or the California Wheat Commission website, www.californiawheat.org.



Grant funding opportunity for dairy methane digester projects

Applications are now available for funding for the construction of anaerobic digestion projects on California dairies. The applications can be downloaded from the Western United Resource Development website www.wurdco.com. The California Energy Commission has extended the funds provided through the successful Dairy Power Production Program (DPPP). The program to date has funded ten methane digester projects with an estimated generating capacity of 2.5 megawatts.

Grant funds will be awarded on a first-come, first-served basis to projects that meet review criteria and pass technical due diligence review. It is anticipated that applications for funding will exceed the total amount of available funding, so applicants are urged to submit their application packets as early as possible. Dairy owners are encouraged to submit their applications by Nov. 10, 2006. **Applications must be postmarked no later than Nov. 15, 2006**. Funding is available through buydown grants that will cover up to 50% of the capital costs of a digester system, based on estimated power production, but not to exceed $2,000 per installed kilowatt.

Western Alfalfa & Forage Conference

December 11-13-2006, John Ascuaga's Nugget, Reno, NV

The ever popular annual California Alfalfa & Forage Symposium will be combined with the Western Alfalfa and Forage Conference this year. The event is sponsored by the Cooperative Extension Services of: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming. The three day program includes a tour on Sunday, Dec. 11th highlighted by a visit to the "Top Gun" military training facility as well other visits to sites that showcase Nevada's agriculture and water systems. Educational programs on Dec. 12th and 13th will feature topics that include emerging issues and market trends, water, economics and profitability, pest management, irrigation and soils, harvest technology and forage quality, and risk management . The complete program and registration materials can be found at the UC Davis California Alfalfa and Forages website at http://alfalfa.ucdavis.edu/.

Useful website: This website also contains a wealth of other useful information for alfalfa and forage growers as well as dairy producers. Check out the California Forage Update, which is new this year. The Forage Update is an email information newsletter produced as a joint effort of the California Alfalfa & Forage Association (representing thousands of California forage growers) and the Alfalfa and Forage Systems Workgroup of the University of California Cooperative Extension. Timely news and brief regional reports related to management and conditions for alfalfa and other forage crops are easy to read and helpful for staying in touch with what is happening around the state.

Carol Collar
UCCE Dairy and Forage Advisor
Kings County

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University of California
Cooperative Extension
Kings County
680 N. Campus Drive, Suite A
Hanford, CA 93230

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