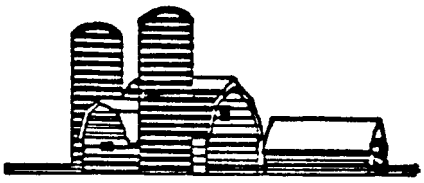
COOPERATIVE EXTENSION UNIVERSITY OF CALIFORNIA

21st Century Dairying



A dairy newsletter for Fresno and Madera Counties

May 2007

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Dairy Cattle Reproductive Shortcourse

Enclosed are registration materials for a Dairy Cattle Reproductive Shortcourse scheduled for June 20-21, 2007 at the Center for Irrigation and Technology Conference Room, (CIT) at California State University, Fresno.
You can also register on-line at http://cefresno.ucdavis.edu/Dairy/ where you can pay with a Visa or MasterCard.

Please register early as the course fills up rapidly. For further information on the short course contact Gerald Higginbotham, UCCE Fresno/Madera County dairy advisor, at (559) 456-7558.

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In This Issue

Corn Production Meeting
June 5, 2007

8:30–11: 30 AM Tulare County Cooperative Extension Office (Registration at 8 AM)
4437 S. Laspina St. Ste. B
Tulare, CA 93274

OR

1:30–4:30 PM Merced County Cooperative Extension Office (Registration at 1 PM)
2145 Wardrobe Avenue
Merced, CA 95340

Agenda

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, University of CA, Davis
Fusarium Ear Rot and Stalk Rot – Mike Davis, Extension Specialist, Plant Pathologist, University of CA, Davis
Break
Nutrient Uptake in Corn – Marsha Campbell and 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 (Tulare County) – (559) 685-3303

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

Carol Collar (Kings County) – (559) 582-3211
Marsha Campbell-Mathews (Stanislaus County) – (209) 525-6800

Dairy Cow Claw Trimming School
June 6-8, 2007
Location: Winton, Ca.

Held on a commercial dairy, this intensive 3-day course offered in both Spanish and English will include lecture, hands-on training and one-on-one instruction. In a limited class size setting, (12 students), attendees will be trained and understand how to properly trim in the Dutch Method of functional hoof trimming.

In addition, students will be able to diagnose and treat most common lesions that cause lameness and cow discomfort.

Registration deadline is May 25, 2007.

To enroll contact:

Steve Berry, DVM, MPVM
University of California, Davis
Department of Animal Science
1 Shields Avenue
Davis, CA 95616-8521

Phone: (530) 752-1279
Mobile: (530) 304-1068

Predicting and Controlling Stable Flies on California Dairies

A new publication entitled, "Predicting and Controlling Stable Flies on California Dairies" has recently been published.

The stable fly *(Stomoxys calcitrans)* is a serious pest of confined livestock, and is becoming a pest of pastured livestock as well. This publication will help you learn to identify the pest and manage infestations.

This publication can be downloaded free at:

http://anrcatalog.ucdavis.edu/InOrder/Shop/ItemDetails.asp?ItemNo=8258

Feeding Dairy Cows during Heat Stress

Gerald E. Higginbotham, Ph.D
Dairy Advisor
Fresno/Madera Counties
University of California Cooperative Extension

Hopefully the deadly heat wave of July 2006 is still fresh in many dairy producers minds. Now is the time to think where changes can be made on the dairy to lessen the impacts of hot weather on dairy cows. Besides changing the cow's environment to lessen the effects of heat stress, dairymen may also modify their feeding program in order to give their animals additional relief during hot weather. The main objective of feeding cows during heat stress should be to maximize feed intake.

Voluntary intake of dry matter during hot weather has been shown to decrease to about 55% of that eaten by cows which are in the comfort zone. The comfort zone is from about 40 °F to 75 °F. Dairy cows, as all animals do, continually produce heat. As an animal digests feed, heat is generated by the body. In heat stress conditions, cows will voluntarily reduce feed consumption in order to reduce the amount of heat that is generated. The roughage portion of the ration is the main source of generated heat. If given a choice, cows will generally consume more concentrate in relation to roughage during heat stress periods. This is due to less heat being generated in the digestion of concentrates than to alfalfa hay.

One mechanism by which dairymen can use to increase feed intake during hot weather is to provide palatable feedstuffs. Feeds which are somewhat wet in nature are relished by cows. Dry, dusty feeds are not as preferable during hot days. For this reason, wet feeds such as wet brewers or distillers grains, wet citrus pulp, corn silage, winter forage, alfalfa haylage or green chop should be utilized during hot weather.

It is important to remember that wet feeds can mold easily, therefore, a load should be consumed within 5-7 days. If one is unable to utilize wet feeds in their ration, simply adding 10-20% water to a mixed dry feed can do wonders for feed intake during hot weather. When feeding a wet ration, it is important to keep the total ration matter above 55%. Feeding too wet a ration can cause depressions in dry matter intake so moisture content of a ration should not be ignored. One should also clean the feed bunk area frequently in order to prevent mold buildup.

The time that you feed your cows during heat stress can also influence feed intake. In periods of hot weather it is recommended to feed 60 to 75% of the mixed ration after 6:00 p.m. The remaining 25 to 40% is to be fed before 6:00 a.m. Cows do very little eating during the day in heat stress conditions so more feed needs to be offered in the cooler hours of the day. Feed that is in the sun all day is not very palatable to the cow.

Possible Feed Additives

Buffers

If a total mixed ration is not currently being fed, you are probably offering forages (hay and silage) separate from the concentrate portions of your ration. In this type of feeding program, cows in hot weather will generally consume more grain in relation to hay or silage. As mentioned previously, forages generate more body heat than concentrates, so cows naturally decrease forage consumption during hot weather.

Decreases in forage intake will lead to rations containing over 60 to 65% concentrate. This will lead to digestive upsets known as rumen acidosis. This is due to the pH of the rumen becoming too acidic which leads to the growth of undesirable rumen bugs. Generally, symptoms such as cows off feed, low butterfat test or loose manure may indicate an acidosis problem.

To help achieve optimum rumen fermentation during the summer, rumen buffers are generally recommended. Buffers, by definition, are substances that resist changes in acidity (pH) of a solution to which they are added.

They are included in dairy rations to maintain a desired rumen pH of 6.2 to 6.5. Buffers are generally viewed as insurance against possible feeding problems.

Choice of concentrates can also influence rumen pH. Rapidly fermentable feeds such as corn, barley, wheat, hominy and bakery waste can rapidly drop the pH in the rumen with subsequent digestive upsets. Slower fermentable feeds such as wheat millrun, beet pulp, citrus pulp, soybean hulls and rice bran should be included to avoid any possible chances of rumen acidosis. If at all possible, try to maintain levels of 21% acid detergent fiber in total ration dry matter.

Fat

Feeding fat sources such as oilseeds (whole cottonseed) animal tallow, animal-vegetable blends and rumen protected fats can be quite beneficial during heat stress. Feeding of fats increases the energy density of the ration enabling one to decease slightly the amount of concentrate which is fed. Research has shown lactating cows can utilize energy from dietary fat much more efficiently than energy from body fat or from concentrates. When feeding fat, be careful not to feed over approximately 6-7% total fat in the ration dry matter. Higher levels can affect palatability and fiber digestion by rumen microbes. Several ration adjustments should be considered when fat is added:

1. Feed adequate amounts of fiber to maintain rumen digestion.

2. Higher levels of calcium (0.8 to 1.0 percent) and magnesium (.25 to .30 percent) levels in the total ration dry matter.

3. Add one percent of a low rumen-degraded protein for each three percent additional fat in the ration dry matter. Since fat does not influence energy levels in the rumen, supplemental protein should also be available to the cow and not the rumen microbes.

Minerals: Sodium (Na) and Potassium (K)

A need for considerably higher Na and K levels for lactating cows during hot weather than previously recommended has been reported by Florida and Texas researchers. Chloride is a third mineral studied for its relationship to heat stress, but the general consensus is that most diets are sufficient to compensate for increased requirements due to hot weather. Raising dietary Na from .18 to the .4 to .5% range of DM resulted in up to a 10% increase in milk yields. The need for more Na in heat-stressed cows was attributed to increased urinary secretion of Na which was associated with lower K in serum and urine and depressed plasma aldosterone, which controls Na secretion.

In studies at Texas A & M University increasing K to 1.53% of dietary DM resulted in greater feed intake and higher milk yields. The increased dietary requirement of K in heat-stressed cows was attributed to greater excretion of K in sweat in hot compared to cool weather. Also, less forage is eaten in hot weather, which usually decreases K content of the ration. Positive responses in milk yields have been obtained in cows fed as high as 1.5% K (of DM).

Fungal Cultures

Four studies at the University of Arizona have shown reduced rectal temperatures and respiratory rates as well as increased milk yields in cows fed an *Aspergillus oryzae* extract. Control cows were generally lower in feed intake than Amaferm-fed cows. We examined the addition of *Aspergillus oryzae* during hot weather on a commercial dairy in Fresno County. Cows fed *Aspergillus oryzae* had lower rectal temperatures compared to controls for 9 of 12 weekly determinations. Treated cows also had significantly higher percentages of milk protein and SNF.

In another trial conducted under hot summer conditions in Arizona, cows fed yeast culture produced 2.0 pounds more milk per day than controls. Moreover, milk was of higher protein and lower somatic cell content.

The higher milk yields in cows consuming fungal additives have been associated with better rumen utilization of fiber, perhaps due to increased numbers of cellulolytic organisms and more stable rumen conditions. However, the reason for rectal temperature and respiration rate reductions during heat stress periods needs clarification.

Level and Type of Protein

Feeding excessive levels of protein is not only expensive but can provide an additional energy drain to the animal. The nitrogen from excess protein which is not utilized by the animal is excreted in the urine with an associated energy cost.

Studies that we conducted at the University of Arizona showed that high protein diets of high rumen degradability are detrimental to cows subjected to hot summer temperatures. Three trials involving 60 cows subjected to hot summer conditions (from May to September) in Tucson, Arizona resulted in lower milk yields and feed intakes when cows were fed 19% protein of high degradability compared to a 19% protein diet of lower degradability or the two 16% protein diets (of normal and high degradability). When these diets are compared at moderate temperatures, protein level and degradability affected cows much differently than in hot weather.

Results from this study show that one should avoid rations high in protein of high degradability. This is due to the energy expenditure by the animal in handling nitrogen from excess protein.

Summary

Milk production decreases during heat stress primarily because of reduced feed intakes. Energy deprivation is magnified during heat stress because of increased in maintenance requirements. Several cooling systems now available for relieving heat stress result in improved feed consumption, higher milk production and better reproductive performance.

Diets high in grain and low in forage reduce heat stress for high producing dairy cows because of lower heat of digestion. However, milk fat is depressed and digestive disorders increase during hot summer conditions when forage intake is severely limited, either voluntarily or through restriction. Feeding of buffers and/or supplemental fat often allow for feeding high concentrate rations without the undesirable effects. Several by-product feeds (beet pulp, soy hulls, citrus pulp, etc.) might also aid in keeping milk and milk fat at acceptable levels during heat stress.

Work at the University of Arizona shows that milk yields and feed intakes are decreased in heat-stressed cows fed diets high in protein of high degradability; whereas, cows in moderate temperatures reacted differently to protein alterations of their diets. Milk yields were higher in heat-stressed cows when Na and K in the diet were increased. Feeding of fungal cultures (both from *Aspergillus oryzae* and *Saccharomyces cerevisiae)* modified heat stress effects while increasing milk yields and feed intakes.

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21st Century Dairying

In this Issue

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