



Penn State Cooperative Extension Capitol Region Dairy Team

FEEDING PRACTICES THAT REDUCE HEAT STRESS

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Hot summer temperatures with high humidity have reduced dry matter intake in many herds.

Previous columns have addressed evaporative cooling, body sprinkling and good air movement to improve the feeding area and entice cows to eat during hot weather.

Feed intake can be reduced 8-12 percent or more during hot weather, with production losses of 3-20 percent or more when temperatures go above 90 degrees. Cattle sweat only 10 percent as much as man, so the cow is challenged to reduce body temperature, and the panting behavior she exhibits increases her

maintenance requirement by 20 percent.

Increased maintenance requirements and reduced volatile fatty acid production in the rumen during hot weather cause the cow to experience energy deficiency.

Feeding adjustments are needed to increase the nutrient density of the cow's diet without overfeeding starch or underfeeding fiber and minerals to maintain energy intake and electrolyte balance.

Because the cow is eating less dry matter, maintain adequate fiber intake to prevent acidosis problems. Neutral detergent fiber levels should be maintained at 28-30 percent of TRDM (total ration dry matter).

Watch butterfat test levels closely to avoid fat test depression classic sign of acidosis problems often resulting from insufficient NDF intake or excessive nonstructural carbohydrate. Consider feeding two to three pounds of good quality grass hay.

Since the cow is losing minerals, compensate for higher body losses. Potassium should be maintained at 1.5 percent of TRDM (total ration dry matter). To avoid excessive chloride (no more than .30-.35 percent TRDM), potassium carbonates may be the ingredient of choice.

Magnesium should be at .30 percent of TRDM and added sodium should be .50 to .60 percent of TRDM. This added sodium level can be achieved from salt

fed at .50-.60 percent TRDM (39.3 percent sodium) or when less concentrated materials like sodium bicarbonate (27.3 percent sodium) or sesquicarbonate (28.2 percent sodium) are fed, the feeding rate must be .80 to 1.00 percent TRDM.

When dry matter intake is below 90 percent of normal intake, feed a higher fat ration to increase energy density. Do not exceed 5-7 percent of TRDM from all fat sources. Use unprotected fat such as oilseeds to reach the five percent fat level, and then consider protected fats to reach the higher seven percent fat in the TRDM.

Water is always the most essential nutrient, so consider adding extra water to the TMR, silage, or haylage if dry matter intake drops seriously. Cows prefer to drink warm water, but chilled drinking water can reduce body temperature when offered as the only source of water. Chilling water is probably unnecessary except where well water exceeds 86 degrees or where water can't be kept cool by shade.

Feeding times may also need to be adjusted during hot weather. Offer feeds during early morning hours from 4 a.m.-6 a.m. or late from 9 p.m.-10 p.m. Feed smaller amounts more frequently during the day.

Remember ensiled forages have shorter bunk life during hot weather. Do not remove forages from the silo in advance of feeding, and feed more frequently to prevent dry matter losses and heating in the bunk.

Finally, feed additives have been effective in some studies. Yeast culture or live cell yeast, niacin, dried brewers yeast, fat soluble vitamins (A, D, and E) and *Aspergillus oryzae* have all shown positive milk responses in some studies.

For additional information, request DAS 96-24 "Reducing Heat Stress On Dairy Cows" from your local Extension Office, or visit <http://www.das.psu.edu/dcn/catnut/DAS.ndex.html> and download a copy. Also see the April 25, 2001 issue of *Hoard's Dairyman*, page 305 for tips on reducing heat stress.

Agriculture Insights

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NEW INFORMATION AND TECHNOLOGY ENHANCING AGRICULTURE

A key component in achieving optimum yields in your fields is soil quality. Although Lancaster has rich soils and obtains high yields, we can not become complacent when new information and technology is discovered that enhances soil quality.

In an effort to highlight the latest farming practices, technology and equipment needed to help farmers positively impact their bottom line while respecting the environment, Cedar Meadow Farm has partnered with The Lancaster Chamber of Commerce and Industry, the Lancaster Conservation District, and the Pennsylvania Association of Sustainable Agriculture to offer the free 8th annual Farm Field Day Wednesday, July 25 from 10 a.m. to 3 p.m. at Cedar Meadow Farm.

This year's theme is "Beyond Conservation — Exploring the Soil Food Web." The event will focus on how the soil can function at its optimal potential specifically on micro-management levels.

The event is hosted by Steve Groff, owner of Cedar Meadow Farm, a nationally recognized expert on soil conservation and no-till farming. Along with the many local and national agriculture experts that will be sharing the latest farming techniques, there will be equipment demonstrations focused on conservation practices.

Three specific areas that will be highlighted at the event are: tillage and carbon loss, high tech irrigation scheduling and the unveiling of remote image sensing of crops, fields and farms.

Intensive tillage, primarily moldboard plowing, has caused significant decreases in soil carbon on a significant number of farms, which degrades soil properties vital for sustainable crop production.

Donald C. Reicosky, Soil Scientist for the USDA-ARS, North Central Conservation Research Laboratory, Morris, MN, will be speaking during the field day on conservation tillage tools and carbon dioxide loss.

Reicosky's research demonstrates that as soil carbon decreases, erosion and compaction increase, while infiltration and water-holding capacity decrease. Consequently, soil fertility decreases resulting in reduced crop growth.

Conservation tillage equipment is an important management tool for producers. It improves residue management and lowers carbon dioxide release when compared to moldboard plowing.

Reicosky will share his research data during the event along with local equipment companies that will be demonstrating conservation tillage and no-till equipment that preserves carbon in the soil.

The 21st century has brought about the use of electronic real-time soil moisture probes, real-time evapotranspiration and rainfall sensors to accurately schedule irrigation for optimal plant growth.

This technology can then be tied into real-time irrigation water control sensors, which automatically irrigates crops precisely when needed. Paltin International Inc., a company dealing with real-time water monitoring systems for irrigation scheduling, has been working with Steve Groff in monitoring soil water profile dynamics under irrigation and tillage methods using real-time soil moisture probes, real-time evapotranspiration and rainfall sensors.

The results of Cedar Meadow Farm's research and the equipment used will be on hand during the event.

The unveiling of a unique pilot project that utilizes wireless remote control helicopters and parafoils to shoot images of crops, fields and farms will be a new feature at this year's Farm Field Day. This aerial video photography can be used to detect the specific location of crop stress, insect infestations and nutrient deficiencies.

This technology will enable farmers to treat these affected areas, rather than the entire field. Bolar Heli Systems and Nutrient Solutions in Agriculture will conduct this exciting demonstration.

Some other learning stations that will be at the field day include: a rainfall simulator to determine soil erosion rates and phosphorus runoff, two soil pits, cover crop research, small scale organic no-till equipment, backhoe excavations immediately following deep tillage passages and a fiber crop research plot.

There will be over 30 exhibitors from the ag industry to showcase products and services. There will also be a stream exploration for children and fresh vegetables and food will also be available.

The 8th Annual Farm Field Day will be held on July 25 from 10 a.m. to 3 p.m. at Cedar Meadow Farm, Holtwood, PA. There is no cost to attend and registration is not required. For directions or more information on the event, visit www.cedarmeadowfarm.com, or contact Brent Landis at The Lancaster Chamber at blandis@lcci.com or 717-397-3531, ext. 134.

BUSINESS PAGE

APPEARS IN SECTION C

See the latest in equipment and material news, promotions and new hires, and burgeoning ag ventures on the business news page located in Section C this issue!

Cattle Feeders Summer Workshop Scheduled For July 26

NEW HOLLAND (Lancaster Co.) — Penn State Cooperative Extension and several cattle oriented agribusiness companies invite interested people to participate in the annual Cattle Feeders Summer Workshop scheduled for Thursday, July 26 at Yoder's Restaurant, New Holland. The event begins at 6 p.m. with a free ice cream social catered by the workshop sponsors, while the educational meeting gets under way at 7 p.m.

Because of the serious situations of respiratory sickness experienced by Pennsylvania cattle

feeders last autumn, this year's workshop will focus on "Protecting the Health of Feeder Cattle."

In preparation for the workshop, Penn State Cooperative Extension conducted producer interviews on six Lancaster County farms to evaluate feeder cattle receiving and processing practices. Reports from the field during the last quarter of 2000 indicated unusually high mortalities and labor intensive treatments. So what went wrong?

At this year's summer workshop, the survey findings will be presented as "case scenarios" evaluating the differences, similarities, and effectiveness of feeder cattle receiving programs. Dr. Arlen Mills, Penn State Cooperative Extension Veterinarian based in Lebanon County, will present the "case scenarios." Before coming to Pennsylvania, Dr. Mills practiced veterinary medicine for 20 years in Ohio working with many beef producers.

An additional presentation on immunology will be offered by Dr. John Lynch, veterinarian with the Technical Services Group of Intervet, Inc. Dr. Lynch has 20 years of experience as a veterinary consultant with beef cow/calf, stocker, and feedlot operations in both the U.S. and Mexico.

Join us for a fun and educational evening! Yoder's Restaurant is located on Route 23 northeast of New Holland.

Penn State encourages persons with disabilities to participate in its programs and activities. If you anticipate needing any type of accommodation or have questions about the physical access provided, please contact Chet Hughes at (717) 394-6851 in advance of your participation or visit.

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