Michigan Dairy Review

Michigan Cattle and Electronic Identification

In less than a year Michigan dairy and beef farmers will be dealing with a new set of cattle identification regulations outlined in Michigan’s mandatory cattle electronic identification program. The requirement for radio frequency tags raises questions and getting the answers can ensure your farm weather the transition smoothly.

Ben Bartlett
Extension Dairy Educator
The Upper Peninsula

The Michigan Agriculture Commission recently approved a mandate that all cattle leaving the farm on or after March 1, 2007 will be required to be tagged with radio frequency identification (RFID) ear tags as part of the new electronic identification (EID) program.

The driving force behind this ruling is Michigan’s ongoing statewide tuberculosis eradication program. A fast and accurate animal tracking system will aid eradication efforts and increase confidence in Michigan’s ability to control and eradicate TB in its cattle herds. The ability to quickly and accurately track animals will encourage other states to be as generous as possible when deciding if and under what restrictions to allow our cattle into their states. EID will directly benefit Michigan’s cattle industry by aiding our TB disease management capacity.

Why is mandatory cattle identification necessary?

RFID tags are also a part of the National Animal Identification System (NAIS). The national system is being consid-

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Tim Hood, a Van Buren county dairy producer, uses a radio frequency identification (RFID) ear tag reader to identify an animal while employee Roger Shugars looks on. When the reader is within several inches of the RFID ear tag the animal’s health and breeding history automatically appear on the PCDART software-equipped personal digital assistant in Hood’s left hand. Hood says that with the new 15-digit tags and PCDART the bovine tuberculosis check he underwent last summer, “went really slick,” but he believes there are kinks that still need to be worked out of the system. He says he’d like to be able to add ownership transfers to his animals’ records and to see the RFID ear tag system integrate better with existing technology on his farm to better reach its full-potential as a management tool.

How the tags work

By understanding how the RFID ear tag works we can sort out some of the rumors surrounding their use. An RFID reader transmits via its antenna an electromagnetic radio frequency signal to a passive RFID tag. The reader then receives the 15 digit animal identification number back from the tag. The reader is only effective within 30 inches of the tag. Passive RFID tags, such as those to be used in Michigan’s animal identification program, have no battery or internal source of energy and cannot send information without a reader. The tags are designed for single use and must be tamper evident.

Reading Tags

Photo by Jacob McCarthy
in Michigan will only have one number). For small herds with minimal record keeping systems, this will be the most cost effective and practical option. The third option, for larger herds or people who handle a lot of data, is to use a RFID reader that will cost from $300 to $1500. This will allow you to automatically record the animal identification number in the reader, a personal digital assistant, computer, scale, or other data collection device. (Many low-cost readers only read the number and you still have to manually record it.) After data are collected, it can be loaded into a software program that can store and manipulate information.

Possible benefits of the program

Although developed to assist TB eradication efforts, the Michigan EID program has other potential benefits, as well. For people who want to fully utilize production information, RFID will be a very powerful tool. Using RFID tags and readers will decrease recording mistakes, usually 1 per 300 keystrokes, and put data easily into software programs that can generate a great amount of useful management information. Many cattle producers who have a notebook full of data haven’t had time to turn that data into useful and profit-enhancing information. Using EID and a good software program could help people manage the data they collect.

Michigan can, if producers work together, develop marketing programs such as age and source identification or others that provide a production or genetic history of cattle that can increase their value. This can expand our marketing options to places that, like Japan, require imported beef to be under 20 months or to buyers who prefer their beef be source verified, such as McDonald’s Corporation.

While some people have claimed that the EID program is anti-small farmer, an argument can be made that it benefits all producers. Many people want to know who produced their food. EID is being used in Europe to keep track of ownership and allow the customer to know whose cattle they are buying. Michigan producers don’t have this capacity yet, but RFID tags and animal tracking greatly expand the potential. Producers may see benefits regardless of herd size as the mandatory EID program in Michigan may have marketing bonuses.

In the short term, most producers will experience more cost and frustration than profit and benefits with RFID ear tags. Michigan cattle producers should focus their energy and ideas on finding ways to enhance their day-to-day management and to increase the value of their cattle. Michigan cattle producers have a real opportunity to be forerunners in data management and marketing.

See next page for more valuable EID information and page 23 for a schedule of free informative workshops to be held in August throughout Michigan.
Electronical Identification Facts

Kathy Lee
Extension Dairy Educator
Northwest Lower Michigan

Official identification for cattle in Michigan will change on March 1, 2007. At that time, all cattle of all ages must be identified with official radio frequency identification (RFID) ear tags prior to movement from premises. RFID will allow for faster intra- and interstate animal tracking for disease control and eradication programs. The premises and animal identification requirements are consistent with the National Animal Identification System (NAIS) under development.

Beginning March 1, 2007, metal ear tags will no longer be acceptable as official identification for cattle in Michigan.

Premises Registration

To place a RFID tag order, producers need a Premises Identification Number. The Premises ID Number is assigned by USDA to each premises (location) that houses livestock. Its numbering format is seven alphanumeric characters, e.g., A123R69.

Michigan TB tested herds have been assigned a Premises ID Number. Michigan Department of Agriculture (MDA) sent a letter to these producers in late February that listed the herd’s Premises ID Number and details about the mandatory RFID program. If you misplaced the letter from MDA or need to obtain a Premises ID Number, you may contact the Michigan Department of Agriculture at 866-870-5136. The following information is required to obtain a Premises ID Number: name of owner; address where cattle are housed (actual road or street address, not a PO box number); city, state, and zip code; and type of livestock on premises (dairy, beef, feedlot).

How many premises shall you register? One or more, depending on whether or not you commingle animals. If you have two herds that are kept separate and never commingled, or located in non-contiguous counties that are miles apart, you may want two Premises ID Numbers.

RFID Ear Tags

RFID ear tags are a form of electronic identification. The tag has a microchip with a unique series of numbers. The numbers can be read by a microchip reader. The 15-digit number also will be printed on the front and back of each RFID tag to be read visually. The first 3 characters in the number will be 840, which is the U.S. country designation. The 15-digit animal identification number is a lifetime number assigned to an individual animal. The tag is never changed unless lost. If this occurs, the animal will be retagged at its current premises.

RFID ear tags can be ordered by calling Michigan Department of Agriculture at (866) 870-5136. The cost of the tags is $2 each and the applicator is $20. Be sure to request an applicator when ordering tags for the first time, as the applicator is specific to RFID ear tags.

The official application site for the tags is the left ear of the animal. The left ear is on your left when viewing the animal from behind. Detailed application instructions are provided with the RFID tags.

Additional information can be accessed at <http://www.michigan.gov/mda> or by calling 517-373-1077.

RFID Tools

Pictured are, clockwise from top, a radio frequency identification tag reader, front and back halves of a RFID ear tag and a personal digital assistant, which can be linked to the reader and a personal computer. Beginning March 1, 2007, all Michigan cattle leaving premises must be fitted with the tags, but opting to employ a reader, PDA, and computer may provide additional herd management options.

Photo by Jacob McCarthy
Responding to Interpersonal Conflicts in Dairy Farms

Bill the herdsman has been watching two milkers bicker over how to push the cows into the parlor and how to prepare udders. What should he do?

A. Joke about them bickering like an odd couple.
B. Advise them that fighting may lead to suspension.
C. Try to find out what is causing the quarrel and whether anything can be done about it.

adapted from Rosenberg et al., 2002

Vera Bitsch
Dept. of Agricultural Economics

Conflicts are a part of both our personal lives and our work, whether we are taking an active part in it as a party to the conflict or as a formal or informal mediator, or as an observer. Although this article will focus on workplace conflicts, many of the approaches suggested also will work in the community, the family, or with other conflict situations. On a dairy farm both personal and work conflicts can impact the well-being of everybody involved, as well as the bottom line. Because people on a farm are often close to each other, personal relationships and work may not be kept separate easily.

A herdsman or owner may perceive some of his or her employees as “coming with baggage” or at times be overwhelmed by being asked to help with issues in an employee’s personal life. Being informed of problems unrelated or only indirectly related to work and being asked for help or support is actually a sign of great trust. This trust opens the door to good working relationships and developing a productive, long-term employee.

Building Trust

Trust is a prerequisite to addressing conflicts in a productive manner and increases the chances of bringing them to a positive solution. To improve employee satisfaction with supervision and develop trust, focus on a couple of things. First, a supervisor needs to interact frequently with his or her employees. In most farms, this is not an issue, because many supervisors are working supervisors and do not distance themselves from the employees they supervise. The interaction between the supervisor and each employee should be primarily positive. Then employees will expect mostly positive feedback. Otherwise, they may become defensive and unwilling to listen.

Second, supervisors and owners are typically setting the example for the type of behavior that is expected of employees. Being unfriendly and unapproachable will set a grumpy tone and communicate that “this is what it is like to work here.” Expecting employees to “do as I say, not as I do” is not effective. With respect to following safety protocol or biohazard procedures managers may have experienced that workers tend to model their behavior after their supervisors’ behavior. A similar process is likely to happen regarding politeness and work climate.

Third, listening to employees is another prerequisite of competent management. This skill is necessary to create a productive and content workforce. There are five steps to active or empathic listening.

Let the other person do most of the talking.
Be open and non-judgmental.
Ask open-ended questions.
Avoid premature conclusions or advice.
Assist or advise only when asked to. When we open our ears and minds to others we are able to lead them and help them develop their potential.

Prepare Before Approaching a Difficult Situation

Success requires preparation, whether involved in a conflict or wanting to intervene as a neutral party. As a party to a conflict, preparation starts with yourself by asking, “What did I contribute to this situation? What did I do that created this problem? What did I not do that could have prevented this from happening or improved the situation?” Also ask yourself whether you are ready to deal with the problem at this time and what the consequences may be. Don’t allow yourself to be dragged into a discussion before you are ready. As a supervisor, you know that there is a fine line between giving yourself enough time to prepare and waiting too long for a good opportunity to address a problem.

Trust is a prerequisite to addressing conflicts in a productive manner and increases the chances of bringing them to a positive solution.
The Michigan Agriculture Environmental Assurance Program (MAEAP) is a voluntary program created in 1998 by multiple Michigan governmental, industry, and university entities to assist livestock producers with nutrient management. Becoming verified through MAEAP requires Michigan Department of Agriculture (MDA) verification that the farm has an accurate and complete Comprehensive Nutrient Management Plan (CNMP) and that the producer has or will implement the pollution prevention practices presented in the CNMP. The process leading to MAEAP verification involves a close examination of farm nutrient management practices, especially manure management, through the development of a CNMP. When a CNMP is written, the plan often accounts for issues the livestock producer may not have considered previously, such as manure nutrient content, maintaining manure application records, and commercial fertilization practices.

Carrie Vollmer-Sanders  
Sandra S. Batie  
Christopher Wolf  
Dept. of Agricultural Economics

To determine the effectiveness of MAEAP, interviews were conducted with 29 operators of livestock farms that were MAEAP-verified or nearly MAEAP-verified as of January 1, 2005. The operators interviewed represented 63% of all MAEAP-verified livestock operators at that time. The farms in the study represented a wide range of sizes and livestock species. Farm-specific CNMPs also were evaluated to determine the environmental changes that resulted from MAEAP verification. Summary characteristics of the operations interviewed are described in Table 1. The average value is provided as well as measures of variation (standard deviation, minimum and maximum value) for each category of operation. Although we cannot assume that the expenses and experiences of these operations are representative of all Michigan farms of each respective type, the information collected is representative of the majority of verified farms as of January 1, 2005. In many cases, the average values are discussed but note that there is a wide dispersion of values in most cost categories.

While the research project also examined environmental consequences and operator attitudes, this article focuses solely on the costs associated with becoming MAEAP verified. The costs were categorized in several ways. First, costs were either related to writing the CNMP (for example, plan-writer fees, tests of soil and manure, or management time) or changes made to implement the plan. The changes could further be sub-divided into the cost of capital investments (for example, buildings, gutters, manure storage, or machinery and equipment) and operating expenses (such as record-keeping or additional manure hauling costs). Finally, cost-share funds, such as the Environmental Quality Incentives Program (EQIP), were available to offset eligible investments in capital improvements and these funds are included in our analysis.

Total expenses are expressed in an annualized basis or as a total over the time from verification through 2008. Because the expenses included operating expenses as well as long-term capital investments, the capital investments were annualized to make comparisons among operations. Machinery and equipment costs were annualized with a 7-year straight-line
depreciation, whereas other capital investments were put on a 20-year straight-line depreciation schedule. Operational costs were summed to annual values. Permanent operational cost changes were totaled by summing the costs in inflation adjusted terms through 2008. The initial CNMP writing fee was incurred only once, but the fee to update the CNMP was considered an annual operational cost. The annualized costs were calculated based on the ending year of 2008. All costs were inflation adjusted to 2004 dollars (the time of data collection) to make expenses comparable over time.

Finally, the costs were examined by farm species and size. Farm size was reflected by separating the operations into Animal Feeding Operations (AFOs) and Concentrated Animal Feeding Operations (CAFOs) where CAFOs had at least 1000 animal units. One animal unit was defined as: 1 feeder calf, heifer, or steer; or 0.7 mature dairy cows (whether a milking or dry cow); or 25 pigs weighing over 55 pounds; or 0.5 horses; or 10 sheep or lambs; or 55 turkeys; or 100 laying hens or broilers when the facility has unlimited continuous flow watering systems; or 30 laying hens or broilers when the facility has liquid manure handling system.

**CNMP Writing**

The average producer cost to write the CNMP for MAEAP verification, not including the value of cost-share of free plans, across all farm types and sizes was $2,531. The complete cost to write a CNMP was, in some cases, subsidized by EQIP cost-share or reduced (or even free) writing costs (for example, a writer in need of experience for their own certification as a professional plan writer). Producer CNMP writing costs were related positively to the number of animal units in the operation. Comparing across farms with different livestock species, the average dairy CNMP cost $4,082—over $2,500 more than any other species. This higher cost reflected the large number of variables involved in the plan such as milk house waste, silage leachate, and the large amount of cropland in the dairy operations examined. The average total cost of a CNMP including the value of cost share was $5,165 for all farms examined. Thus, the average producer interviewed paid about half of the total cost.

**Cost of Implementing Operational Changes**

Operational changes included such activities as manure spreading, supervision, record keeping, commercial fertilizer purchases, equipment use, fuel, utilities, insurance, manure testing, soil testing, and ration changes. The average operation examined changed seven practices in their management routine.

Many producers had cost savings, which helped to offset the costs of implementing the CNMP. The greatest average savings was in annual nitrogen fertilizer costs. The largest savings to a single producer was $55,000. The largest increase

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### Table 1. Descriptive statistics of interviewed MAEAP-verified livestock farms

<table>
<thead>
<tr>
<th>Operation</th>
<th>Dairy</th>
<th>Poultry</th>
<th>Swine</th>
<th>All farms</th>
<th>CAFO¹</th>
<th>AFO²</th>
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</thead>
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<tr>
<td>Operations Surveys</td>
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<td>5</td>
<td>13</td>
<td>31</td>
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<tr>
<td>Crop acres</td>
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<td></td>
<td></td>
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<td></td>
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<td>Average</td>
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<td>957</td>
<td>1,138</td>
<td>1,427</td>
<td>789</td>
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<td>1,044</td>
<td>1,096</td>
<td>891</td>
</tr>
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<tr>
<td>Maximum</td>
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<td>3,200</td>
<td>3,300</td>
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<td>3,200</td>
</tr>
<tr>
<td>Animal units</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>1,994</td>
<td>7,808</td>
<td>1,146</td>
<td>2,424</td>
<td>3,999</td>
<td>510</td>
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<tr>
<td>Standard Deviation</td>
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<td>7,058</td>
<td>1,003</td>
<td>3,685</td>
<td>4,420</td>
<td>310</td>
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<td>Minimum</td>
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<td>405</td>
<td>160</td>
<td>47</td>
<td>1,100</td>
<td>47</td>
</tr>
<tr>
<td>Maximum</td>
<td>3,660</td>
<td>17,873</td>
<td>4,054</td>
<td>17,873</td>
<td>17,873</td>
<td>1,058</td>
</tr>
</tbody>
</table>

¹ CAFO is “concentrated animal feeding operation” defined as equal to or more than 1,000 animal units.
² AFO is “animal feeding operation” defined as less than 1,000 animal units.

See MAEAP on Page 12
Compost: Current Practices and Market Demand Potential in Michigan

A study by Michigan State University Extension aimed at testing the feasibility of a possible regional agricultural by-products composting facility found that many Michigan nurseries, landcapers and farms are interested in increasing compost use, but also need more information about composting and its benefits.

Manure is a fact of life on a dairy farm, and there is a need to find way to recycle it. Land application is currently the primary method farmers employ to utilize manure nutrients on the farm. However, with guidelines limiting the amount of manure Michigan farmers can apply to cropland, the question of what to do with excess manure must be addressed.

Many farmers have expressed a strong interest in exploring alternative sustainable manure treatment methods, especially composting, to help manage manure that can no longer be applied to land. A recent study aimed in part at evaluating whether market conditions might be conducive to forming a regional agricultural by-products composting facility was conducted in response to that interest. It identified landscape firms and nurseries as possible players in the compost market, but found additional research and education regarding compost use on farms is needed.

The Michigan State University Extension study was conducted in the spring of 2004. Over 1,000 respondents, made up of 276 landscape firms, 311 nurseries and 437 farmers from across Michigan, returned completed surveys. The majority expressed interest in compost to replenish soil nutrients as well as eliminate waste generated as a result of “doing business”, but expressed a need for more information about compost.

Compost Demand Potential

The survey indicated the cost of green waste disposal by Michigan landcapers and nurseries is approximately $30 million annually. This is true even though landcapers generate nearly one million cubic yards of compost using their own green waste, while nurseries generate 151,000 cubic yards for a total of about 1.1 million cubic yards of compost production within these two industries.

Two-thirds of landcapers surveyed indicated interest in purchasing compost, while interest was reflected by about half of nurseries and a slightly lower proportion of farmers. Total demand potential among these three groups is estimated at $200 million annually or 17 million cubic yards. Of this, nearly 90% of the demand potential is in the agriculture sector.

Landscapers currently make their own compost and they produce an average of approximately 380 cubic yards annually. About half of Michigan’s 9,000 landscape firms generate green waste in their operations at an average of approximately 700 cubic yards annually, the survey indicated. The cost of disposal averages approximately $6,100 per firm. Just over half of green waste generators currently make their own compost and they produce an average of approximately 380 cubic yards annually.

More than one-third of landscape firms generate green waste in their operations at an average of approximately 700 cubic yards annually, the survey indicated. The cost of disposal averages approximately $6,100 per firm. Just over half of green waste generators currently make their own compost and they produce an average of approximately 380 cubic yards annually.

Over 60% of landscape firms indicated interest in using compost purchased from an external source. The average price they are willing to pay is $11.60 per cubic yard. Landscape firms indicated interest in using compost purchased from an external source. The average price they are willing to pay is $11.60 per cubic yard.

Landscape Firms

Many farmers have expressed a strong interest in exploring alternative sustainable manure treatment methods, especially composting. Landscape Firms

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More than one-third of landcapers are compost users and their average annual usage is approximately 250 cubic yards. The majority prefer to purchase their compost in bulk, rather than bag. While spring is the single most popular time of year for compost use, compost also is used extensively in other seasons.

The most popular usage applications of compost among landcapers are as a soil amendment and as a mulch on new and existing installations of planter beds and around trees. Use of compost as a topsoil component to improve soil health is another popular application. More than one-third of landcapers intend to increase their use of compost.

Over 60% of landscape firms indicated interest in using compost purchased from an external source. The average price they are willing to pay is $11.60 per cubic yard. Landscape firms that produce their own compost believe it to be of satisfactory quality. On average, landscape firms have a higher potential demand than they produce each year. It is important to note, however, that landscape firms fear quality variances if they purchase from external sources. Landscape firms that produce their own compost believe it to be of satisfactory quality. On average, landscape firms have a higher potential demand than they produce each year. It is important to note, however, that landscape firms fear quality variances if they purchase from external sources.
ers believe that producing compost for sale would not be economical for them.

Nursery Firms

Nearly 60% of Michigan’s nurseries generate green waste, at an average of about 364 cubic yards annually. Cost of disposal averages about $2,245 per firm. About half of the green waste is composted on site.

Three-quarters of nurseries are familiar with compost and about half currently purchase pre-mixed media. The most popular elements of the mix are hardwood, field soil, peat and pine bark. The majority of nurseries believe that producing compost for sale is not economical. They would consider using compost if the economic benefits could be demonstrated.

Nearly half of nursery firms indicate interest in using purchased compost product. The average price they are willing to pay is $12.17 per cubic yard. One in five say they expect to increase their use of compost.

Agriculture

Thirteen percent of Michigan’s 9,200 larger farms (those represented in this study) currently are compost users. Two-thirds purchase their compost in bulk.

The three most important product specifications are cost and quality relationship, pH and nutrient availability.

On average, farmers are willing to pay $12.10 per cubic yard for purchased compost. Price ranks third as an obstacle, behind availability and product knowledge factors.

Approximately four in ten farmers estimate they would use an average of 10.5 cubic yards of compost per acre. Nearly one in five said they intend to increase their use of compost.

Farmers believe that producing compost for sale is not economical for them but they would consider using more compost if the economic benefits could be demonstrated. They do not know much about composting, including the economic issues. They do not consider compost to be their primary nutrient source.

Discussion and Conclusions

This study was conducted to inform Michigan farmers about issues associated with marketing compost and to investigate whether market conditions might be conducive to forming a regional agriculture by-products composting facility. The results estimate potential market demand for compost to be at least $200 million in the State of Michigan.

Disposal of green waste is a $30 million burden annually for landcapers and nurseries. While some operators in these two groups make and use their own compost, it is evident that substantial opportunity for a business solution exists. Two-thirds of landcapers want to use compost but only one in four produce the material on their own and only about four in ten are current users. This is a substantial gap and reflects favorable demand conditions.

In terms of scale, agriculture owns by far the largest piece of the demand pie—nearly 90%. Nearly half of large-scale farmers want to use compost. Landcapers account for most of the rest of the demand potential, with the remainder of the demand expected from nurseries.

Indications are that significant numbers of operators would like to increase their use of compost. This desire was reported by 36% of landcapers, 20% of nurseries and 17% of farmers. Noteworthy obstacles to increased use appear to be linked to a lack of knowledge about the science and the economics of compost production and some concerns about product quality and consistency.

Can compost be produced for a selling price of $12 per cubic yard? The three respondent groups in this study indicated a willingness to pay approximately this amount (their responses varied by less than 5% from each other). However, the current selling price for compost begins at $15 per cubic yard in western Michigan.

As important as price is, the most productive response is to find ways to add value to justify the desired pricing rather than reducing the price. Many marketers apparently fail to do this, perhaps lacking the courage to go with their rational price decision, lacking the energy to search for value-added options and opportunities, or taking the path of least resistance by lowering the price.

Second, it is instructive that price ranks third among farmers. The findings suggest that farmers are unfamiliar with compost production and use, and that vigorous informational and educational initiatives are needed. This will provide ample opportunity to demonstrate the cost-justified benefits of composting.

For more information

A full copy of this report can be obtained by going to <http://web2.msue.msu.edu/compost>, clicking on the “Publications” button and looking for the title of this report.
Oxidant Stress and Inflammation in Over-conditioned Cows

Assessing the body condition score (BCS) of dairy cows can be an aid to evaluate the effectiveness of dairy feeding programs. Body condition score changes throughout the lactation cycle and corresponds to changes in the cow’s energy balance (1). For example, the energy requirements for milk production beginning from early lactation and continuing to peak lactation often exceed the available energy from feed intake. As a consequence, body lipid reserves are mobilized to compensate for the shortage in energy needed to meet milk production demands and dairy cows lose condition. The net shortage in energy input relative to energy output is called negative energy balance (1). While adequate body fat reserves can promote milk production and health during times of negative energy balance, numerous studies have shown that obese cows have much higher risks of poor conception rates, metabolic problems, and increased susceptibility to a variety of infectious diseases (2-4).

Oxidant Stress, BCS, and Obesity

Similar to dairy cattle, obesity in humans is linked to a number of metabolic and infectious diseases. Recent studies have shown a correlation between high body mass index, body weight loss, and the development of oxidant stress in humans (5). Oxidant stress is a pathological state that results from an imbalance between the production of reactive oxygen species (ROS) and availability of host antioxidant defenses to convert ROS to less harmful molecules (6). The term ROS refers to oxygen-centered free radicals (including hydrogen peroxide, superoxide, and fatty acid hydroperoxides) that are produced during normal cell metabolism. These ROS have important physiological functions including the regulation of gene expression and contributing to the microbiidal activity of phagocytes. However, excessive accumulation of ROS during increased metabolic demands or during inflammation can cause damage to nucleic acids, proteins and lipids. Therefore, oxidant stress can contribute to disease pathogenesis by causing damage to cells and enhancing inflammation in affected tissues. Indeed, evidence in humans suggests a positive correlation between obesity and a chronic low-grade inflammatory state (5).

Visceral fat is a source of several pro-inflammatory cytokines, including tumor necrosis factor (TNF). The enhanced expression of this cytokine in obese patients can induce a pro-inflammatory environment and facilitate oxidative damage, leading to initiation and progression of disease (5).

It also has been suggested that oxidant stress in transition dairy cows is a contributing factor to increased susceptibility to a variety of disorders including retained placenta, udder edema, milk fever, mastitis, and poor reproductive performance (7). While the mechanisms relating oxidant stress to dairy cattle disease susceptibility are not completely understood, recent studies showed a relationship between high BCS, greater BCS losses, and increased oxidant stress in transition cows (8). However, no information is available to establish a relationship between obese dairy cattle with oxidant stress and a pro-inflammatory state, which may be an underlying mechanism of increased disease susceptibility.

The Study

Recent studies at MSU’s College of Veterinary Medicine investigated the relationship between BCS with measures of oxidative status and TNF production in mid-lactation dairy cows. Cows were selected based on either a normal (2.5-2.7) or a high (>3.5) BCS using the standard 5-point scaling system. Plasma or peripheral blood mononuclear cell samples were analyzed for indices of oxidant stress and for the expression of TNF.
**8 Ways to Beat the Summer Pasture Slump**

Doo-Hong Min  
Rich Leep  
Dept. of Crop and Soil Science

There is typically a slump for cool-season forages during the summer due to hot and dry weather conditions. Major symptoms of drought-stressed plants are slow or stunted growth, yellow-brown leaf color, and sometimes curled grass leaves or wilted legume stems. This will negatively affect plant growth and ultimately animal performance, resulting in economic loss. Here are several ways to beat summer slump for forages and pastures in Michigan.

1. **Plan ahead.** Nobody knows exactly what kind of summer weather we will have but producers should prepare for the worst scenario from hot and dry weather conditions. A forage feed inventory should be performed to identify what feeding options are available based on the farm’s available resources. Planning in advance is very important. In the case of an extended drought, grazers should create a sacrifice area, field, or lot and supplement livestock with stored forages and grain. This will keep livestock off the remaining pasture paddocks to reduce damage to pasture forage from hoof traffic and will allow faster recovery when dry conditions are over. Livestock producers should not wait too long to begin supplemental feeding as animal performance and pasture forage health will decline quickly. When given the choice, livestock will continue to graze fresh forage versus eating stored forage, so a sacrifice lot is necessary.

2. **Leave 3 to 4 inches residual.** Close grazing in early spring leaving a 2-inch residual helps pastures prepare for summer slump by encouraging grasses to tiller and send off sideshoots from the collar, thickening the stand. As the summer slump approaches, leave more residues (approximately 3 to 4 inches). This leaves a little more of a solar collector on the plants to help them recover faster by storing more root reserves and helps shade the ground so that it won’t dry out as fast.

3. **Stretch grazing rotations.** In spring, pasture paddocks are rotated more frequently (every 20 days) due to fast plant growth resulting from optimal temperature and precipitation. However, hot and dry summer conditions result in slower forage growth. Therefore, paddock rotations should be stretched to every 35 to 40 days. This will give each paddock more time to recover and allow for more residues to cover the soil.

4. **Graze hay fields as needed.** During the summer slump period, grazers can bring other hay fields into pasture purpose if they start to run out of pasture. Under drought conditions, all hay crop yields will be reduced, thereby increasing harvest costs like fuel and labor per ton of feed. Grazing can reduce these variable costs for one or two “cuttings” of the crop. In general, legume species such as alfalfa perform better than grasses due to a deeper tap root system resulting in better water use efficiency during dry weather. At the same time, take precautions to prevent bloat incidence.

5. **Consider warm-season annuals or perennials.** When cool-season forages had severe summer slump in 2005, warm-season annuals (sorghum-sudangrass or millets) and perennials (switchgrass) were still able to grow. It is always important to have warm-season as well as cool-season forages in your dairy and beef operations to reduce the risk of poor crop growth due to unpredictable weather conditions. Since there are some dormant seeds, switchgrass seeds should be pre-chilled to break dormancy (if less than 40%) and consider using 10 lb. of pure live seed (PLS) per acre for conventional plantings. For example, 10 lb of pure live seed per acre is equal to 14.65 lb/A of actual amount of seeds (i.e., 14.65 lb/A = 10 PLS / (.975 x .70), where the purity is 97.5% and the germination is 70%.

6. **Watch your fertilizer.** Putting any nitrogen fertilizer on dry ground with dormant stands during hot, dry weather is not recommended and can be a waste of time and money. However, nitrogen fertilization just before the end of a drought period will be very helpful for drought-damaged forages to recover faster once the rain comes back. Fertilizing pasture with nitrogen, phosphorus, and potassium at green-up and after first and second grazing cycles prior to dry conditions will help it survive a drought better than poorly fertilized pasture by having healthy stands and roots.

7. **Restore drought-damaged pasture.** Drought effects tend to be more noticeable on coarse-textured sandy soils than on fine-textured clay soils. This is the same trend on poorly managed pastures. That’s why it is important to have optimal grazing and rest periods and fertilization before pasture starts to revive from drought damage quickly. Do not graze too early or overgraze drought-damaged plants. If pasture is grazed soon after the drought is over, there won’t be enough plant materials left for photosynthesis. Therefore, it is crucial to give forage plants an opportunity to replenish their energy reserves and establish new root growth after drought stress.

8. **Extend the grazing season.** Last thing to consider is to replace lost summer forage yield due to dry weather. Consider a fall annual forage crop like brassicas (forage rape, turnip, or kale) or small grain forage to extend the grazing season and reduce the need for supplemental feeding of harvested forage. Often this can be done with little or no additional fertilizer, thereby keeping establishment costs very low. If the total cost to establish the crop is less than the cost to purchase equivalent replacement forage for feeding, then the situation is a win-win for the livestock and the producer.
in commercial fertilizer cost was $45,000, due to deficient nutrients in the cropland soils. No producer attributed a decrease in their crop yields to the decreased amount of commercial fertilizer applied during the period analyzed. Less commercial phosphorus fertilizer, additional sales of manure, and lower insurance premiums also decreased average producer costs.

The largest operational change expenses were increased fuel use, feed additives (which occurred only in poultry and swine farms), and additional energy and utilities. Fuel cost changes ranged from -$15,580 to $45,000. Some producers increased fuel use due to incorporating manure after application or hauling manure a longer distance based on manure and soil tests. Producers that realized a fuel cost savings due to spreading less commercial fertilizer either began irrigating the liquid layer off the top of the lagoon, or switched to a spreader that knifed in manure, which eliminated tractor time required for incorporation.

**Cost of Capital Investments**

In addition to the management changes, many producers were either required to make capital investment changes to economically handle complementary operational changes or to receive cost-share. Manure storage was the largest expense for CAFOs. Large operations spent about twice the amount of money annually on capital investments as did small and medium operations. CAFOs made more capital investment changes that were not eligible for EQIP cost-share such as new machines or equipment. Ten producers, seven of whom were CAFO operators, purchased machines or equipment to handle the extra distance and amount of manure transported. Often the older equipment took a long time to empty the lagoon or pit or required additional trips back and forth from manure storage to the field. Attributing all of these costs to MAEAP verification, as was done in this study, may bias these costs upwards, because machine purchases were not mandatory to become MAEAP-verified.

**Total Producer Costs**

Average total producer costs (not on an annual basis) were $104,423 and ranged from $36,531 on the average swine farm to $286,456 on the average poultry farm (Table 2). The standard deviation (or variation) was quite large in every category reflecting the wide dispersion of producer expenditures related to MAEAP verification. Costs are standardized by animal unit to account for farm size.

**The Role of Cost-Share**

Livestock producers who applied for MAEAP verification were eligible for cost-share assistance through EQIP, administered by the Natural Resources Conservation Service (NRCS). Three farmers specifically described difficulties they incurred when applying for EQIP cost-sharing. Some operators were hesitant to apply for EQIP money either because it took too much time to complete the lengthy application or the producer did not want to inform governmental agency staff about what changes they were making on the farm. Whereas 23 producers received cost-share to write the CNMP, only eight received EQIP cost-share for the capital investment changes. It should be noted that funds from EQIP could not be used for the cost of any of the management changes, machinery, or equipment. For nine producers, the changes they needed to make in their operations were not eligible for cost-share funds.

Average total cost-share allocated to the interviewed operators through EQIP, including the value of free CNMP writing, was $16,177. Eighty-five percent of the AFOs received some form of cost-share to assist with the cost of writing the CNMP or adding specific capital investment changes including manure storage, drainage, gutters, fences, buildings, roofs, grass waterways, buffers, and drives or berms. On average, AFOs received $113 per animal unit to assist with costs, whereas

<table>
<thead>
<tr>
<th>Table 2. Average total producer costs to become MAEAP verified</th>
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</thead>
<tbody>
<tr>
<td><strong>Average Producer Costs</strong></td>
</tr>
<tr>
<td>CNMP</td>
</tr>
<tr>
<td>Operational change</td>
</tr>
<tr>
<td>Investment</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Standard deviation</td>
</tr>
</tbody>
</table>

¹ CAFO is “concentrated animal feeding operation” defined as equal to or more than 1,000 animal units.
² AFO is “animal feeding operation” defined as less than 1,000 animal units.
CAFOs received an average of $7 per animal unit. Swine producers received the lowest amount of cost-share on average. Per animal unit, however, the swine producers received $26.70 in cost-share, nearly three times the amount dairy and poultry producers received per animal unit.

**Farm Size and MAEAP Costs**

Examining annual producer cost per animal unit facilitates comparison among farms by size and species (Table 3). Poultry producers had the largest average annual cost to become MAEAP-verified at $12.89 per animal unit. Dairy operations paid the least per animal unit for verification at less than half that of poultry producers ($5.97/animal unit). Even with the substantial amount of cost-share received per animal unit, AFOs, on average, paid more than three times the amount CAFOs paid to become MAEAP-verified and maintain verification ($12.11 compared with $3.75 per animal unit).

Another way to put the costs on a similar basis across farm size is to assess the total producer costs as a percentage of gross farm revenue. Costs associated with MAEAP verification were nearly the same percentage of gross farm revenue across all farm sizes and species produced. On average, the CAFO operators spent 0.40% of their annual gross farm revenue on implementing the CNMP, whereas the AFO operators spent 1.20%. However, there was more variation in percent of gross farm revenue for the smaller operations. One AFO operator spent 6.79% of annual gross farm revenue on capital and managerial changes to become MAEAP-verified, whereas another AFO operator saved 0.28% of annual gross farm revenue by becoming MAEAP-verified.

**Summary**

This study examined the costs of MAEAP verification for the farms that self-selected into early adoption. Total net cost to become verified compared with gross farm revenue for dairy producers was 0.38%. Dairy operators spent the least amount of money per animal unit annually ($5.97) to become MAEAP verified. Furthermore, many of the farmers interviewed spoke of other benefits they had received from participation. One producer said that using his manure helped the farm be more profitable, and his row crops benefited through increased soil fertility. Because not all the changes reported by producers were required by the MAEAP’s CNMP, such as some equipment purchases or storage lagoons larger than necessary to meet Generally Accepted Agricultural Management Practices (GAAMPs), the reported total costs to become MAEAP-verified were biased upwards from the minimal necessary to be verified. However, these costs were often offset by cost-share funds that were available and, in some cases, initial adopters had cost-savings such as free or reduced CNMP writing costs.

**For more information**

An extended version of this report with additional tables and analysis is available at the Michigan Dairy Review Web site at <www.mdr.msu.edu>.

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**Table 3. Average annual producer costs per animal unit**

<table>
<thead>
<tr>
<th>Average Producer Costs</th>
<th>Dairy</th>
<th>Poultry</th>
<th>Swine</th>
<th>All farms</th>
<th>CAFO1</th>
<th>AFO2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004 Dollars per animal unit</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Average</td>
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<td>6.16</td>
<td>7.53</td>
<td>3.75</td>
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<tr>
<td>Standard Deviation</td>
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<td>15.25</td>
<td>10.64</td>
<td>12.07</td>
<td>8.49</td>
<td>14.36</td>
</tr>
<tr>
<td>Minimum</td>
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<td>-0.31</td>
<td>-8.14</td>
<td>-24.74</td>
<td>-24.74</td>
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<td>Maximum</td>
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<td>2004 Dollars per animal unit</td>
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<td></td>
<td></td>
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<tr>
<td>Average</td>
<td>6.35</td>
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<td>7.71</td>
<td>10.48</td>
<td>4.06</td>
<td>18.27</td>
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<tr>
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<td>13.92</td>
<td>18.61</td>
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</tr>
<tr>
<td>Maximum</td>
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<td>38.13</td>
<td>49.40</td>
<td>77.82</td>
<td>13.20</td>
<td>77.82</td>
</tr>
</tbody>
</table>

1 CAFO is “concentrated animal feeding operation” defined as equal to or more than 1,000 animal units.

2 AFO is “animal feeding operation” defined as less than 1,000 animal units.
Conflict (Continued from Page 5)

When intervening in a conflict, this principle can be applied to helping others prepare. In dispute resolution, conflict parties often meet separately with the facilitator before getting together. This is called a pre-caucus. The pre-caucus decreases emotional tension, and helps people clarify what issues need to be brought to the table. Once the parties to a conflict have come together, the next step is to create a safe climate. Promoting psychological and physical safety will increase the chances of a mutually acceptable solution. When not feeling safe, people may react defensively, be unwilling to contribute, or even use verbal or physical violence. Creating a climate of mutual respect and shared purpose is the best preparation for developing win-win solutions that benefit everybody involved.

Clearly Define the Problem
Being explicit about what seems to be the problem is necessary before considering solutions. A herdsman who is upset about an employee not cleaning the milking parlor properly may be tempted to say, “You are lazy.” This is not a description of the problem, but is an assumption about the individual’s character, which may or may not be based on facts. Each party to a conflict needs to stick to the facts and avoid using inflammatory comments. Facts are what can be seen, heard, or measured. If a concern, such as someone being inconsiderate, is part of the problem, then this can be stated in a tentative way or as a question. For example, Susan feels that Juan’s comment about the food she had for lunch was addressed at her being overweight. She closes her opening statements with, “You seemed to be saying, I shouldn’t eat that much. I felt hurt by that. Or did you mean to say something else?’”

Two things are accomplished here. First, conflict parties need to agree on facts and this is often possible by keeping the emotions and character statements out of the discussion. Second, ending with a question allows the other party to tell their side of the story and often provides opportunity to clarify misunderstandings. Listening to a different perspective is not necessarily easy and the longer the conflict has been brewing the more difficult it becomes to take a step back.

List Potential Solutions
While the last step will be to agree on a plan that is beneficial to everybody involved, the next step is to generate a number of options that satisfy as many interests at stake as possible. Most conflicts have more than one potential solution and the more open-minded the conflict parties are in approaching the process and the more options they create, the more likely they will find a creative solution that contributes to everybody’s well-being and success. One way to develop options is based on the Harvard Negotiation Method (Fisher et al., 1991).

Harvard Negotiation Method
Being involved in a conflict is stressful for most people and when under stress, many people resolve to focusing on solutions that have worked for them in the past. This is known as taking a stance. We revert to what has been a useful solution to this problem, historically, and we do not consider alternatives. Fisher and coworkers point out that typically this leads to bargaining over positions and the result is likely an unsatisfactory compromise. This approach is not only inefficient, as it does not lead to looking for win-win solutions and new ways to approach a problem, but also endangers relationships.

Instead of sticking to historical solutions and pitching positions against each other, the Harvard Negotiation Method suggests focusing on the underlying interests of each party involved in the conflict. Interests are the needs and desires of the individual. A position is supposed to satisfy these interests, fears, thoughts, and concerns. Getting as many of these interests on the table as possible will greatly benefit the process of finding creative solutions.

Susan’s position may be not to share a shift with Juan. She is concerned about being harassed or disrespected. Her need is to work with someone she can chat with and have a good time. Juan’s position may be that Susan is not pulling her weight. His concern may be to go home earlier when they are done milking cows, because he is coming back for a night shift. He also may want to improve his English skills. There may be an opportunity here to improve the well-being of both of these people, beyond keeping them in separate shifts.

Based on the list of options created by focusing on the underlying interests, both parties can then agree on a plan. The plan needs to work for both sides; that is, the plan needs to have a good chance of being accomplished and not favor one party at the expense of the other. The plan needs to meet at least one, or more shared goals or needs. It should also meet one or more individual needs which are compatible with the other person’s needs. The objective of choosing the plan is to build trust, momentum, and confidence in the process of working together.
The process comes to a conclusion with outlining and agreeing on the next steps. The conflict parties need to summarize their conclusions, addressing the details. Being explicit, in terms of what will happen, when, by whom, and how the follow-up will take place, increases the probability of success. All parties involved share the responsibility of following through with the agreed on solution. This type of process creates better solutions and also increases trust and improves relationships, which often deteriorate during conflicts. On a farm, the bottom line will also benefit, because employees can concentrate on working productively and are not distracted by smoldering conflicts.

Conclusion
Conflicts are pervasive in the workplace and in employees’ and managers’ personal lives. Traditional approaches to conflicts favor a confrontational stance, which endangers relationships and leads to unsatisfactory compromise or resolution avoidance. This results in productivity losses and an unhealthy work climate. Preparing for conflict resolution with an open mind, bringing all relevant facts to the table, and developing many options that meet the interests of parties involved will increase the potential to find win-win solutions that benefit everybody in the farm.

Further Reading
Additional information on how to successfully deal with conflict and improve listening skills can be found in the following books.
For information on labor management in Michigan visit the author’s website: <http://www.msu.edu/user/bitsch>.

Oxidant
Cows with a high BCS had significantly lower overall antioxidant potential when compared with normal BCS cows. This study identified for the first time that high BCS was associated with reduced levels of certain selenium-dependent antioxidant enzymes even when cows were supplemented with maximal allowable levels of selenium.

Conclusion
Changes in the oxidative state of over-conditioned cows also were accompanied by a significantly higher expression of TNF. Results from this study suggest that cows with a high BCS can experience oxidant stress in the absence of altered energy status such as that associated with the transition period. Increased TNF expression may be related to the pro-oxidant state of over-conditioned cows and possibly be a contributing factor to the enhanced susceptibility to disease in high BCS dairy cattle. While this study underscores the importance of monitoring BCS as a means to assess how well the diet meets the demands of milk production, it also emphasizes the need to consider total antioxidant requirements of dairy cattle at all stages of lactation.

References
When the Michigan State University Dairy Store opened up a new location in the MSU Union, it got more than just a 700-square-foot room with an east facing picture window on the north end of campus. It got some serious built-in traffic.

Thousands of people pass through the union building and Associate Professor of Food Science and Human Nutrition John Partridge said he believes that exposure along with the quality products the Dairy Store sells will make the new location as successful as the Dairy Store in S. Anthony Hall where cones have been scooped since 1955.

He and Jon Engstrom, Dairy Food Complex Manager, have been considering expanding the store for several years and had been in serious negotiations with MSU Union management for over a year before opening the new location there May 20.

As with the main store, located at 1140 S. Anthony Hall, the new Dairy Store at the Union specializes in ice cream and other dairy products produced in the Department of Food Science & Human Nutrition’s Dairy Foods Complex. The new location offers 12 flavors of ice cream while the main dairy store has room for 32 as well as cheese, beverages, soups and sandwiches.

Although initial sales have been low, likely due to the grand opening closely following the end of the Spring semester and departure of many students, Partridge said that as a hub of university activity, the union offers a unique sales opportunity.

“We think it’s going to get a lot of traffic, especially with any special events the union has,” he said. “For example, there’s a big Boy Scout jamboree in July and their headquarters will be in the union. There are going to be 4000 Boy Scouts on campus and Boy Scouts like ice cream.”

Plans for a new MSU Federal Credit Union branch in the same building also have the potential to bolster sales at the dairy store, he said.

The main Dairy Store dips approximately 600 cones on an average day, Partridge said, and he doesn’t see that number changing much just because there is another location. “I expect what we’ll see (at the union location) will be just additional business,” he said. “I’m not worried about that.”

Both locations of the MSU Dairy Store feature foods produced in the Dairy Foods Complex, a facility of the university’s Department of Food Science and Human Nutrition, which makes them a unique part of the food science program, Partridge said.

“The dairy store is the outlet for products which are made in our dairy plant. Having an operating dairy production facility allows us to do a lot of teaching in the area of not only dairy processing but also operations and food engineering.”

Partridge said the plant offers a real-world opportunity for students to experience processing methods.

“Our plant is designed just like a big plant. What they see for technology here…although smaller, is exactly as they would see it in the industry.”

And not just students of food science reap the benefits of dairy processing and sales at MSU, Partridge said.

“We have a lot of students who take the specialization in food technology. They come from a wide variety of majors and they all get valuable experience at the dairy plant,” he said. “They are in Agricultural Economics, Food Science, Biosystems Engineering, Packaging, etc.”

Ice cream flavors including Final Four Fudge Dribble and Sesquicentennial Swirl are scooped primarily by student employees at each dairy store location. The store employs about 20 students, all of whom can gain valuable experience in retail food service and management, as well.

“Anybody that works there is going to learn sanitary techniques and some of the senior supervisors get the opportunity to do hiring and scheduling from a management standpoint, so there’s the opportunity for developing skills,” Partridge said.

And because each scoop of ice cream employees dip brings in money for the Department of Food Science’s instruction, research, extension and outreach efforts, everybody wins, Partridge said.

“All returns exceeding expenditures go right back into the program and the department. We’ve supported students with internships, assistantships and updated process systems, so it’s a good situation for everybody.”
Twelve MSU undergraduates with an interest in dairy competed in Dairy Challenge events during the winter and spring, culminating in participation in the 5th annual North American Intercollegiate Dairy Challenge held at Twin Falls, Idaho March 31 through April 1, 2006. Michigan State University has partnered with the dairy industry to host the MSU Dairy Challenge since 2000.

The innovative competition tests students’ skills and knowledge of all aspects of a dairy business in an interactive, educational and challenging event. It encourages students to apply theory and learning to a real-world dairy farm, while working as part of a team.

Day one of the Dairy Challenge begins with each team receiving selected farm records and then walking through the farm operation. After the farm visit, each team has the opportunity to interview the farm manager. Then, each team completes a farm analysis and develops a presentation with recommendations for herd management.

Day two is presentation day, when teams present their recommendations to a panel of five judges. Students field questions from the judges, and then receive oral feedback from the judges on their presentation. Presentations are evaluated by the judges, and the day concludes with placing of the teams and presentation of awards.

Twelve MSU undergraduates participated in the MSU Dairy Challenge February 10 and 11. This year’s contest farm was Crandall Dairy Farm LLC, owned by Larry and Gloria Crandall, Brad and Monica Crandall, and Mark and Sara Crandall. The winning undergraduate team received a $900 cash scholarship and consisted of: Garrett Landel, a senior in Agribusiness Management from Waldron; Guthry Laurie, a senior in Agribusiness Management from Cass City; Matt Oesch, a junior in Agribusiness Management from Alto; and Megan Pickler, a junior in Agribusiness Management from Mount Pleasant. The runner-up team, which received a $400 cash scholarship, consisted of graduates of the Ag Tech Dairy Management Program: Ryan Bentheim from McBain; Nate Elzinga from Zeeland; Aubrey Lettinga from Wayland; and Mary TenBrink, a sophomore in Animal Science and a graduate of the Ag Tech Dairy Management Program from Coopersville. The team placing third and receiving a $200 cash scholarship was: Jennifer Ackerman, a senior in Animal Science from Vassar; Jodi Crossgrove, a senior in Animal Science from Archbold, OH; Mitch Fabus, a senior in Crop and Soil Sciences from St. Johns; and Pete Serne, a junior in Agribusiness Management and graduate of the Ag Tech Dairy Management Program from Lowell.

Judges for the contest were: Julie Ainsworth, Northstar Cooperative; Dr. Dave Beede, MSU Animal Science; Dr. Mark Fox, Deckerville Veterinary Clinic; and Charlie Rawlings, Cargill Animal Nutrition. The judges compiled their own recommendations during the farm evaluation, which were presented along with a gift of appreciation to Crandall Dairy Farm.

Jennifer Ackerman, Garrett Landel, Megan Pickler and Mary TenBrink were selected by the judges to represent MSU in the North American Intercollegiate Dairy Challenge in Twin Falls, ID. Four-person teams from 26 four-year college programs in the U.S. and one team from Canada each evaluated one of three dairy farms in the vicinity of Twin Falls. The MSU team earned a Silver placing in their farm division and enjoyed the opportunity to experience the dairy industry in Idaho.


The Department of Animal Science is grateful to Crandall Dairy Farm and to the contest judges for generous donation of their time and effort and appreciates the continuing sponsorship by Cargill Animal Nutrition. Appreciation is extended to the Halbert Family’s Frederick Pierce Halbert Memorial Endowed Scholarship Fund and to MMPA for funding the MSU team’s travel to the national Dairy Challenge in Idaho. Special thanks go to Dean Ross, MSU Extension Dairy Team, and Doug Brook of Northstar Cooperative for their continued assistance in coordinating the MSU Dairy Challenge.
Food Animal Veterinarians for the Future

Roy Fogwell  
Dept. of Animal Science

At Michigan State University there is now a pathway into the College of Veterinary Medicine (CVM) that could increase the number of food animal veterinarians in Michigan and assist Animal Science students interested in becoming food animal vets gain entrance to CVM. Production Medicine Scholars is a rigorous academic option within the Department of Animal Science focused on improving scientific and financial knowledge to enhance livestock production and medicine. Successful applicants will desire to be veterinarians working with food animals, such as cattle, poultry, sheep, or swine.

Michigan State University approved recently an undergraduate program that will prepare students for a career in herd-based production medicine and agricultural veterinary practice. In addition to current pre-veterinary requirements, students enrolled in Production Medicine Scholars will study farm finance, statistics, and advanced sciences. There will also be a requirement that these students have direct experience with husbandry and management on farms. Even if students do not attend veterinary college, with the additional study in finance, science, and farm experience, this program represents an excellent education.

The Production Medicine Scholars program will provide an additional pathway for admission into the CVM professional veterinary medicine program. Each year, up to 10 students who have addressed the requirements may be granted, through a competitive selection process, admission to the professional veterinary medicine program. For each class of about 100 veterinary students, there may be at least 10 students interested primarily in food animals. Application to CVM can be made midway through the bachelor’s degree program, but successful applicants can start the professional program only after completion of their 4-year degree in Animal Science. Accepted students must maintain a 3.2 grade point average through their undergraduate studies. Typically Production Medicine Scholars participants will be accepted into CVM 1 to 2 years before they actually start the professional program.

In addition to the academic requirements, Production Medicine Scholars will participate in field trips, seminars, and special clinical experiences.

Students who are interested in production livestock agriculture and veterinary medicine as a career should consider enrollment in the Production Medicine Scholars option. However, this academic option should not be viewed as an easy path to gain acceptance into the professional veterinary medical program. The academic requirements for Production Medicine Scholars participants are high, the level of work is rigorous, and the standards for admission into CVM are uncompromised.

The Department of Animal Science will coordinate this undergraduate program. The major field of study of all Production Medicine Scholars participants will be Animal Science. There will be forthright discussions about professional goals and high academic performance will be required.

Requirements for Production Medicine Scholars to apply to CVM include:

- Completion of at least 27 credits of required pre-veterinary courses and at least 10 credits from additional courses required for the Production Medicine Scholars.
- Confidential evaluations from the faculty mentor in Animal Science or other faculty members.
- Three additional letters of recommendation, at least one of which must be from a veterinarian.
- Completion of either the Medical College Aptitude Test (MCAT) or the Graduate Record Exam (GRE).
- Students selected for the CVM professional program through the Production Medicine Scholars pathway will have a Scholastic Indicator Score within the range of the class admitted in the previous year. Scholastic Indicator Score is a numeric combination of overall grade point average, pre-veterinary science grades, grades in last 45 credits, and MCAT or GRE score.
- Applicants must have at least 240 hours of veterinary experience. At least 160 of these 240 hours must be associated with livestock. Veterinary experience should emphasize the clinical practice of veterinary medicine rather than research or public service.
- Production Medicine Scholars participants must have a strong commitment to livestock agriculture. This can be demonstrated with youth activities, family experiences, employment, extracurricular activities, or other forms of service or activities within the livestock industry. It is not necessary to be raised on a farm to qualify. There are many ways that students from diverse backgrounds may demonstrate a commitment to livestock agriculture.

Students at Michigan State University who are majoring in Animal Science may wish to enter the professional veterinary medical program without involvement in Production Medicine Scholars. These students may apply through the regular veterinary admission process.

All candidates for the professional veterinary medical program, including Production Medicine Scholars participants,
will be selected for admission into CVM entirely by the Com-
mittee on Student Admission that is based in CVM. Except for
letters of reference that students solicit from various faculty
members, the Department of Animal Science will have no
direct role in the admissions process to CVM.
The Departments of Animal Science and Large Animal
Clinical Sciences are very excited about this new educational
opportunity for future veterinarians. In addition, we are enthui-
astic and optimistic that this program will address partially
the current shortage of production medicine veterinarians.
If you have questions or seek more information about Pro-
duction Medicine Scholars please visit the academic programs
section within the MSU Department of Animal Science web
site at <http://www.canr.msu.edu/dept/ans/> or contact Roy
Fogwell at fogwell@msu.edu or 517-432-1385.

Ensure the Safety of Your Computerized
Financial and Farms Records

Dean Ross
Extension Dairy Educator
Southeast Michigan

The level of security for computerized financial and
farm records can be a weak link in the operation of
your farm. Loss of these records through fire or damage could
be disastrous even on the best-managed farm. Because the
records you use to manage your farm are important, time spent
ensuring their safety is time well spent. The following is a list
of suggested practices to help secure and protect computerized
farm records.

Backup data files and store them off-site
Files from bookkeeping, dairy records, and other impor-
tant computer software should be backed-up on a regular sched-
uled basis. Copy these files to some type of mobile storage
such as a floppy disk, zip disk, flash memory, or portable hard
drive and store them in a location separate from the computer.
This will provide a permanent set of records to reload should
the computer become disabled. Storing them off-site will
protect these important files from damage due to fire, water or
catastrophic accidents. They provide an opportunity to retrieve
irreplaceable records that might otherwise be lost completely.
Be sure more than one key person knows their location. DHIA
records should be retrievable from the DHIA Processing Center
but would only be up to date at the last test day. Some health
and other records not uploaded to the Processing Center as part
of test day activities would also not be available.

Maintain computer “biosecurity.”
● Always assume everyone else’s computer is infected
with a computer virus and act accordingly. Never accept
disks or programs without checking them first using a
current version of an anti-virus program. Never use
software or demos with doubtful origins.
● If you lend a disk to anyone, virus check it when you get
it back, before you use it again. Most recent programs
should do this automatically.
● Software manufacturers regularly release “patches”
to fix program bugs or improve security. Download
and apply these patches regularly to keep the software
up-to-date.
● Remove all floppy disks after use.
● Never boot your machine with a disk in the disk drive,
unless it is a known “clean” bootable system disk.
● Always scan any program or document download onto
your machine before you open or read it.
● Keep your anti-virus software up-to-date. Download
updates at least weekly. Renew this service annually.
● Where possible use an Internet firewall to prevent un-
wanted network traffic from entering or leaving your
computer. If your computer operates using Windows
XP, enable the firewall within the software.

To learn more about computer security visit CERT Co-
ordination Center’s web pages on home computer security at
<http://www.cert.org/homeusers/homecomputersecurity>.

Reference
Portions adapted from:
Stone, D. Computer Viruses, Trojan Horses and Logic Bombs. 1999.
edu/wp/crime/viruses.htm>.
Michigan Milk Market Update

Christopher Wolf  
Dept. of Agricultural Economics

Lower milk prices are hitting farmers harder because of increased input prices. Fuel and fertilizer prices were much higher this year than last year. The milk-to-feed price ratio has also settled below 3.0 for Michigan and the US (Figure 1). The decline in this ratio has thus far been primarily driven by declining milk prices. However, the increase in input prices is likely to result in increased feed prices. A milk-to-feed price ratio between 2.5 and 3.0 is generally thought of as a level that does not encourage expansion compared with when the ratio is above 3.0, but it is not yet at a level low enough to trigger major cow liquidation.

Milk cow numbers in Michigan have steadily increased, climbing from 297,000 in April of 2004 to 317,000 in April 2006 (Figure 2). US milk cow numbers did not begin climbing as early but did increase 160,000 cows from February 2005 to May 2006. A large number of heifers are available for continued herd growth. However, lower milk prices and higher feed prices will lead to more rigorous culling of the national herd in the future.

The last time milk prices declined drastically was in 2002 following a strong milk price year in 2001. In that case, class III prices declined to near support levels for about 18 months. Does the market anticipate the same case in price level and duration this time? The most recent USDA dairy outlook forecasts milk production to increase throughout 2006 and for the first two quarters of 2007. The USDA does not foresee a significant decline in milk cow numbers until the third quarter of 2007. Helping to some degree to offset the continued expansion in milk production is a strong forecast for dairy product disappearance. The domestic economic outlook is strong and lower retail dairy product prices will spur increased consumption. A weak US dollar also will make US dairy exports competitive. Thus, the USDA is forecasting the all milk price to average between $12.35 and $12.85/cwt in 2006, down from $15.14/cwt in 2005. Similarly, Class III price is expected to average $11.25 to $11.75/cwt, down from $14.05/cwt in 2005. The futures market generally concurs with the USDA forecast with respect to not expecting much further erosion of milk prices. Current futures prices will likely rebound in Class III prices this summer with a traditional autumn peak above $12.25/cwt.

At this time there are no big milk price rallies expected. Although dairy production growth is slowing, it remains strong and butter and cheese stocks are above their 5-year average.
Dairy nutritionist Steve Good’s mid-Michigan farm contacts have allowed him to expand globally and share his professional knowledge.

Good, a 1990 graduate of MSU with Bachelor of Science degrees in Animal Science and Crop and Soil Sciences, is an employee of Vita Plus, a Midwest employee-owned company providing vitamin and mineral nutrition for all classes of livestock.

On a 5-day business trip to The Netherlands and England in December, 2005, Good saw first hand how Dutch farmers operate and produce milk. A personalized tour of several dairy farms was arranged by some of his Michigan clients who are relocated Dutch farmers and their families and friends in Holland.

“It was very interesting to see how people operate dairy farms in another part of the world— I learned that there are (farming) challenges everywhere and you need to learn to adapt to the environment,” Good said.

“Some of the greatest challenges facing Holland’s dairy producers include urban expansion and environmental regulations. As a result, many farmers are considering relocation to the United States, Poland, or Denmark,” Good said.

While Good was in Holland, he visited farms northeast of Amsterdam and observed that most are typically family-owned and diverse with herds ranging from 60 to 80 cows along with other livestock, such as sheep and hogs. One farm he visited had a robotic milking system.

Good has been a dairy nutritionist for 15 years, working with about 50 primarily family-owned farms of all sizes in eastern Michigan.

“I have some of the best clients in the world. They are very professional dairy farmers and very successful. They are always looking to improve upon what they have done,” he said.

As a dairy nutritionist, a key aspect of his job is to, “provide new technology and improve ways of producing milk,” he said. His responsibilities include ration formulation, scheduling farm visits and checking forage inventories, sampling forages for quality analysis, scoring cows’ body condition, writing Dairy Herd Improvement Association evaluations, and trouble-shooting as needed.

Added perks to his job include the ability to arrange his own schedule, to work independently and to be outdoors instead of at a desk job.

Good credits his success to the experience he gained growing up on a dairy farm along with the education he received at MSU. There were a lot of good professors preparing him for a career as a dairy nutritionist, he said. Although he graduated from MSU 15 years ago, he still consults with his former professors on nutrition and management issues. “They are readily accessible when I have questions,” he said.

Good is not the only MSU graduate in his family. His father Jerry and brother Jim are also MSU alumni. Jim, a former MSU Extension employee, returned to the family farm in Caledonia, where he and Steve grew up, to operate the farm with his father. Steve said that growing up on a dairy farm, where his family milked 170 Red and White Holsteins, placed him firmly in an agricultural career track. He was attracted to MSU because of its strong Animal Science program.

His only advice to Animal Science students thinking about becoming dairy nutritionists is to, given the diversity of multicultural clients that he comes in contact with, take classes that focus on people skills.

Future career plans?

Good and his wife Jackie, also a MSU graduate (a Bachelor of Science degree in Crop and Soil Sciences, 1990) live in Sandusky, with their four young children. Good says he has no plans for a career change anytime soon.

“I plan to continue to do what I do best”.

Editor’s Note: If you know of a MSU animal/dairy-related alumni who you would like to see featured in our column, please e-mail Jake McCarthy at mccar244@msu.edu and include contact information.
2006 Great Lakes Manure Handling Expo

KEEP IT IN THE ROOT ZONE

July 2006

July 27, 2006

Berlyn Acres, St. Johns, Mich.

Directions: From the intersection of US-127 and M-21, go west on M-21, through St. Johns, for 8 miles. Turn north on Wacousta Road for 1.5 miles. The field demo site is 2500 North Wacousta Rd., St. Johns, Mich.

Topics

• Economics of Manure — We’ll look at both sides of the ledger, including the nutrient value of manure and hauling costs associated with this resource.
• Nutrient Management — Learn to put these resources to work for crop production while protecting the environment and following state nutrient management plan provisions.
• Conservation Practices — How do they affect soil infiltration, holding capacity and macro pores in tile-drained fields? Can you use cover crops and low-disturbance tillage for nutrient recycling and runoff control?
• Manure Handling — Discover innovative methods for dealing with sand bedding and using other technologies such as GPS for in-field accuracy and record keeping.
• Odor Control — Explore opportunities for handling and applying manure to reduce odors.
• Composting — Get practical information on farm-scale manure composting and achieving the right mix on your farm.

For more information call the Clinton County MSU Extension office at 989-224-5240. www.rootzone.msu.edu

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Sponsored by
Michigan State University Extension
Purdue University Extension
Ohio State University Extension
Midwest Professional Nutrient Applicators Association
Calendar of Events
July - September

2006 Great Lakes Manure Handling Expo
July 27, 8am-5pm
Berlyn Acres
St. Johns
Contact: 989-224-5240
www.rootzone.msu.edu

Field Day - Dairy, Beef & Crops
July 29, 10:30am-3:30pm
Upper Peninsula Experiment Station- Chatham
Contact: Herb Bucholtz, 517-355-8432, or UP
Experiment Station, 906-439-5114

Environmental Best Management Practices
(BMP) Farm Tour
Co-sponsored by MSU Extension, NRCS, Ottawa
Conservation District, GSP, MAEAP
August 18, 9:15am-12:30pm
Begins at Dietrich’s Ridgeview Orchards
Conklin, MI
Contact: 616-846-8250 for details and directions.

Forage Field Day
Sponsored by MSU Extension Forage Area of
Expertise Team and the Michigan Grazing Lands
Conservation Initiative
August 9, 10am-2:30pm
Eisenga Potato Farm
Marion, MI
Contact: 231-832-6139. RSVP before August 7

MAEAP Phase I Meeting
Livestock Systems
September 14, 9:30am-3pm
Belding Community Building
Contact: Phil Taylor 517-543-2310 or Bill Robb
616-846-8250

Workshop Series for Mandatory Cattle Identification

A series of educational workshops covering transitioning to Michigan’s electronic identification program will be held in August and open to the public. Kevin Kirk of the Michigan Department of Agriculture will provide a comprehensive overview of the program, which will be followed by questions and answers.

There is no cost to attend the workshops and pre-registration is not required.

The workshops are being organized by the Michigan Holstein Association (MHA) in cooperation with Michigan State University (MSU) Extension. Anyone wanting more information on the sessions is asked to call; their local MSU Extension dairy educator; Kathy Lee, MSU Extension, at 231-839-4667; or Sara Long, MHA membership committee chairperson, at 989-834-9656.

Schedule of Meetings
August 1, 10am-12pm. Jackson County MSU Extension Office, 1715 Lansing Avenue, Jackson
August 4, 4-6pm. Hillsdale County Fairgrounds, 4-H Kitchen/Dining Hall, Hillsdale (barbeque dinner will follow).
August 8, 10am-12pm. Brown Dairy Equipment, 6500 W. Gerwoude Street, McBain (light lunch will follow).
August 9, 10am-12pm. Ogemaw County MSU Extension Office, 205 S. Eighth Street, West Branch.
August 14, 10am-12pm. Clinton County RESA, 1013 S. Business 127, St Johns.
August 15, 10am-12pm. Franklin Inn, 1070 E. Huron Avenue, Bad Axe.
August 17, 10am-12pm. Coopersville Farm Museum, 375 Main Street, Coopersville.
August 21, 10am-12pm. Bavarian Inn Lodge and Conference Center, 1 Covered Bridge Lane, Frankenmuth.
August 23, 10am-12pm. Newaygo County MSU Extension Office, 817 S. Stewart Avenue, Fremont.

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