Hot Dogs and Laws from Washington

N. Kent Ames
Dept. of Large Animal Clinical Sciences

It has been said that there are two things you should never watch being made —— hot dogs and the law. Currently, I am getting a close look at the latter. I am on a 1-year sabbatical leave from Michigan State University, living in Washington, D.C. and working in the office of Senator Gordon Smith (R-Oregon) as a Congressional Science Fellow (See related sidebar at end of article).

My first lesson in Washington was that the role of Congress is to prevent passage of laws. The framers of the Constitution designed a laborious, slow, and often inefficient system to protect U.S. citizens from a multitude of frivolous legislation. In the 108th Congress about 8,500 bills were introduced, but only about 425 actually were enacted into law.

Policy, Politics, and Procedure

To pass legislation in the U.S. Congress, three elements are required — policy, politics, and procedure. Any of the three can and will stop legislation. A bill designed with the very best policy that responds to a specific issue such as drought relief for farmers may never be enacted if the politics are not in order. However, good policy, the right politics, combined with the proper procedure will pave the way for meaningful and useful legislation.

100 Years of Cow Testing

Ted Ferris
Dept. of Animal Science

It started in Michigan. The dairy industry celebrates the 100th anniversary of DHIA March 14-19 in Lansing. NorthStar Cooperative DHI Services hosts part of the celebration in conjunction with the national DHIA meeting.

Cow testing associations originated in Denmark in 1895 and the first U.S. organization was in Fremont, Michigan in 1905. Helmer Rabild from the Michigan Dairy and Food Department, Henry Rozema, and 30 other dairy farmers of
COW TESTING, CONTINUED FROM PAGE 1

Newago County planted the seed that has grown into the DHIA record system we have today. The foundation of cow management was initiated by the first set of monthly records. Also resulting are some of the best genetics and milking herds in the world. Numerous individuals, universities, and organizations have contributed to this success as well.

Upcoming articles in the April and July issues of the Michigan Dairy Review will describe the pioneers involved, the early development of cow testing, the first state summary of the dairy herd performance, and developments in later years.

From NorthStar Cooperative DHI

The National DHIA Annual Meeting, March 14-19, will be held at the Holiday Inn - Lansing West Conference Center.

Celebraiton Activities

Friday, March 18 and Saturday, March 19: Farm tours of Snows Dairy in Mason, the Ron and Dave Smith’s farm in Mason, Green Meadow Farms in Elsie, and a farm museum with over 1,500 primitive tools and antique farm machinery.

Saturday, March 19: A trip is planned to Bronner’s Christmas Store and Zehnder’s Restaurant in Frankenmuth with the DHIA banquet in the evening followed by the annual scholarship fund-raising auction.

The deadline for registration to attend the National DHIA Annual Meeting and any of the anniversary activities is February 18, 2005. Contact DHIA at 614.890.3630. Overnight reservations can be arranged by calling the Holiday Inn at 517.627.3211 and should be made by February 10, 2005. For more information contact: Nicole Mackinder, NorthStar Cooperative, Telephone: 1.800.631.3510 Fax: 517.351.5610, northstarcooperative@mindspring.com

Make Your Voice Heard

Join, participate, and make your voice heard in local, state, and national organizations. Commodity groups, political action groups, and advocacy groups are found in all areas of all states. The congressional office in which I work is planning a trip to Oregon to meet with industry leaders to learn about issues and opinions important to them. A case in point, which may be germane in Michigan, is the Oregon wolf management plan. Environmentalist want a very restrictive plan, whereas cattle ranchers want to protect their livestock and their livelihoods. Sound familiar?

As a U.S. citizen you have the right and responsibility to let your elected representatives know what issues and priorities are important to you, and why. Steven Covey in his book, “Seven Habits of Highly Effective People”, makes two important points. First, understand the difference between what is urgent and what is important. We tend to spend a lot of our time attending to urgent business and bypass or never get to the important issues. Secondly, do not prioritize your schedule as you are told to do. Instead schedule your priorities. Decide what is important to you, make that a priority, and schedule time to address the issue. You should schedule your priorities and take the time to communicate them with your elected representatives at federal, state, and local levels of government.

Presently, 25 to 35 year-old lawyers with minimal background and understanding on many issues often craft law in the U.S. They are clamoring for relevant information. You are a valuable source of information as a constituent, a consumer, and a business person. If your life and U.S. policy are important to you, get involved. To become better informed, log onto http://www.thomas.loc.gov/, or call or write your congressional representatives. Your opinions are important and will make a difference.

Oh by the way, I still eat hot dogs.

HOT DOGS, CONTINUED FROM PAGE 1

collectivists. Thus, if you are a constituent who wants your opinion heard, you should get involved.

Although our democratic system may not be perfect, it is far better than the second best form of government. When you hear the term “by the people” take heed for they are talking to you. The biggest threat to our form of government is apathy. The very minimum involvement should be to register and vote. It is your right and your duty. Certainly as a voter in the swing state of Michigan, you understand this concept.

Dr. Ames, Professor in the Department of Large Animal Clinical Sciences, College of Veterinary Medicine at MSU began a 1-year sabbatical leave in September working as a Congressional Science Fellow (CSF) in the office of Senator Gordon Smith (Oregon). Ames’ experience is sponsored by the American Veterinary Medical Association. The purpose of the Congressional Science Fellows Program, facilitated by the American Association for the Advancement of Science, is to provide a unique public policy learning experience, to demonstrate the value of science-government interaction, and to bring technical backgrounds and external perspectives to the decision-making process in Congress. Each Fellow shares scientific expertise by working as an employee for a congressional representative. Ames’ current e-mail address is: Kent_Ames@gsmith.senate.gov.
Karen Plaut New Animal Science Chair

Karen Plaut, a noted animal science researcher and teacher from the University of Vermont, has been named Chair of the Department of Animal Science. Her appointment was effective January 1, 2005.

She succeeds Margaret Benson, who has served as Interim Chair for the last 2 years, and Maynard Hogberg, who served as Chair from 1984 to 2002.

Benson has returned to the Department of Animal Science faculty. Hogberg, who retired from MSU, now chairs the Department of Animal Science at Iowa State University.

At the University of Vermont, Plaut was the Chair of the Department of Animal Science and a professor of animal science with a secondary appointment as professor of pathology in the College of Medicine. She also served as associate director of the Vermont Space Grant Consortium.

Plaut has a distinguished record of achievement in teaching, research and outreach. She has taught courses ranging from introductory animal science to reproductive physiology and endocrinology. Her research focuses on mammary development and lactation in domestic animals and humans, and on the relationship between normal mammary development of the dairy cow and breast cancer in humans.

She was honored by the University of Vermont College of Agriculture and Life Sciences with the Joseph E. Carrigan Teaching Award (1997) and the Hub Vogelman Award for Excellence in Research and Scholarship (2002). Her work also has been recognized by the American Cancer Society-Vermont Division, NASA, the American Dairy Science Association, and the National Institutes of Health (NIH). She has served on peer review panels for the U.S. Departments of Agriculture and Defense, the California Breast Cancer Research Panel, the National Institute for Environmental Health Sciences, and the NIH. In 2002, Plaut was invited to join the European Academy of Sciences.

Plaut received her doctoral degree in animal science from Cornell University, her master’s degree in animal nutrition from Pennsylvania State University, and her bachelor’s degree in animal science from the University of Vermont. She pursued postdoctoral studies at the National Cancer Institute at the NIH. In 1998, she took a 2-year leave of absence from the University of Vermont to be the lead scientist for NASA's Biological Research Project for the international space station. She is a member of the American Dairy Science Association, the American Society of Animal Science, and the American Society of Gravitational and Space Biology.

Looking Forward, Working Together...

I am excited about this opportunity to be Chair of the Department of Animal Science at MSU. Having come from Vermont, where dairying represents 75% of the agricultural income of the state, I have spent a lot of time with the dairy industry. In addition, part of my research program has been geared towards studies of mammary development in heifers and cows.

It is clear that the world is changing in ways that will impact agriculture tremendously. On the one hand, the U.S. Census Bureau predicts that the world’s human population will grow to 9.2 billion people by 2050. This assumes a growth rate of less than 1.0% after 2015. This is estimated to impact the need to increase food production by 300, 80, 70 and 30% in Africa, Latin America, Asia, and North America, respectively. At the same time, the way in which we feed the world is coming into question. Agriculture is under increasing pressure to assure land, air, and water quality and to meet socially acceptable standards of farming.

In 1862, 60% of all jobs were connected to agriculture, and 80% of the population lived in rural communities. Today less than 2% of the population is involved in agriculture, and 80% of the population is urban. The success of our agricultural industry is marked by the fact that with less than 2% of the
total U.S. population engaged in agriculture, we still produce enough food to feed much of the world, although the distribution of that food is still challenged.

So what opportunities are there for dairying in the future? We must continue to feed the world, but the needs of various groups are changing. The future is about choice. There are many ways you can take advantage of the growing population and changing demographics in order to be successful dairy farmers. Some farmers will expand their herd size, others may choose to utilize organic farming practices, and some may choose to utilize primarily pasture for their animals. Other farmers may choose to capitalize on using manure and (or) methane for electricity generation, make and sell compost for gardens, or capitalize on agri-tourism by utilizing their farm as a “bed and breakfast” with a working dairy farm. In the face of all these different ways of farming, there are many commonalities. All dairy farms rely on the cows, the land, air, water, and the sun for successful enterprises.

So, how can MSU’s Department of Animal Science help you? We have a three part mission.

Research. We are here to provide new knowledge and help you obtain information about dairy management, and land, water and air quality management, as well as to explore new opportunities for a successful future. For example, this may include developing new techniques in genetic mapping to predict which cows may make a protein that enhances the value of milk, investigating alternative feed sources, and developing non-antibiotic approaches to combat disease. It may include investigating new technology such as robotic milking, automated calf and cow feeding, investigating how to utilize pasture to improve growth rates of heifers, or determining how to better utilize nutrients to lessen the impact on the environment. Not all the research we do will be utilized by farmers. For a university to look toward the future, we must invest in new ideas of which some will be successful and some will not. It is often said that if 90% of the people agree with what you are doing, you are not doing anything innovative. Our obligation is to provide answers for critical questions for today and provide information for new ideas for the future.

The Partnership-Extension. The important thing is that when our ideas or ideas from other universities can be applied to your farm, we must bring those ideas to you so that you can be in a leadership position for the dairy industry. We need you to help us determine what works on the farm and to be willing to try new ideas to continue to move our industry forward. In addition, it is imperative that we listen to you so that we can do research that is important for you or find answers to questions that are of immediate concern to you. Our obligation to you is to work with you to find answers to the questions that are most pressing for the dairy industry of today and look for emerging opportunities in the future.

Teaching. The future relies on our young people who remain in agriculture or develop an interest in agriculture. Through 4-H, many youth are exposed to agriculture which helps to maintain an interest in animals. However, three-fourths of the students in the 4-year program in the Department of Animal Science are interested in horses and (or) becoming a veterinarian. Many of these students’ interests stem from growing up with pets in an urban environment. We have an opportunity to expose them to the dairy industry through the university farms as well as through internships on your farms where they can experience various production methods. This allows both urban and rural students to develop an appreciation for dairying. Some of these students will become involved in the dairy industry and others will not. Our obligation to the students, with your help, is to teach them the science of agriculture and foster an appreciation for animal agriculture so that they can be strong supporters for the dairy industry in the future.

Working Together. As we move forward, each one of you will continue to establish the way of farming that works best for you. Different methods of farming will come under attack at various times but we must all work together to make sure our dairy industry meets air, land, water and animal care expectations and provides products that meet consumer’s needs and interests to make our businesses sustainable for the future. We must also recognize that each farm has unique needs and may have a unique market. We have to support each other in these endeavors and support agriculture as a whole because our individual voices have become smaller, and it is through working together that we shall ensure a sustainable dairy industry for the future.

In this endeavor, I shall help to foster the goals of dairy research, teaching and extension by listening to you and ensuring that the Department leads the way in addressing your issues as well as important issues for the future.

Please feel free to e-mail me with any thoughts or questions at kplaut@msu.edu.

MSU Colleges Expand Relationship with Green Meadow Farms, Elsie

Tom Herdt
Dept. of Large Animal Clinical Sciences

Michigan State University and its Colleges of Veterinary Medicine and Agriculture and Natural Resources have enjoyed a long and beneficial relationship with Green Meadow Farms, Inc. in Elsie. This relationship recently expanded with the creation of the Dairy Veterinarian Training Center at Green Meadow Farms (DVTC). This educational and research center was created with the generous assistance of Purina Mills LLC (a wholly owned subsidiary of Land O’ Lakes).

The objective of the DVTC is to train veterinary students, graduate veterinarians, and other agriculture professionals to serve the dairy industry. Green Meadow Farms, Inc. is an
intensively managed dairy operation with over 3,000 lactating cows. The farm’s modern facilities, large cow numbers, sophisticated record keeping system, and proximity to MSU make it ideal for the DVTC. The focal point of the DVTC will be a new, modular-construction building located between the maternity barn and the hospital barn at Green Meadow Farms’ Riley Road facility. The building will house a computer laboratory and classroom for instruction, a kitchenette and over-night quarters for a small number of students, and faculty offices.

The facility will be located in the heart of one of the busiest areas on the farm, allowing students ready access to hands-on activities such as monitoring fresh cow health, observing and assisting calvings, surgery, reproductive examinations, breeding, milking management, and laboratory analyses. These activities will allow veterinary students to develop the diagnostic and technical skills necessary to provide clinical services to dairy farms. In addition, students will be involved in management-level training, using the computer laboratory and other resources to learn critical skills in information gathering and analysis. These skills are crucial for veterinarians as they expand their roles as members of the management teams on modern and progressive livestock farms.

Faculty members directing activities at the DVTC are Dr. Lou Neuder DVM, associate professor; Dr. Will Raphael DVM MS, assistant professor; and Nanda Joshi Ph.D., research associate, all members of the Department of Large Animal Clinical Sciences (LCS). Additional LCS faculty members, including Dr. Dave Sprecher, Dr. Ron Erskine, Dr. Phil Sears and others, will have very active roles at the DVTC.

Training Programs at the DVTC

Current programs at the DVTC include basic clinical instruction for students in their last year of veterinary training, advanced instruction for students with a strong career interest in dairy and (or) food animal practice, and internship instruction for graduate veterinarians. Programs at the DVTC will evolve as it progresses in its development, and additional advanced courses will be available to students of various backgrounds. Already, other veterinary schools, in addition to MSU, are interested in sending students to take advantage of special opportunities at the DVTC. In addition, continuing education for practicing veterinarians, and other agricultural professionals is planned for the DVTC.

Research at the DVTC

The DVTC will be available for research projects that are compatible with the operation of a commercial dairy farm. Research access to the DVTC will be available to MSU faculty, and corporate sponsors of the facility. The large number of cows and the well-developed, computerized record system make the DVTC an ideal place for certain kinds of research.

Corporate involvement in the DVTC

An exciting aspect of the DVTC is the direct involvement of industry in the training of students. Purina Mills LLC is the inaugural sponsor of the DVTC and will be involved with MSU faculty in formulating nutrition-training programs at the facility. We expect the interaction of students with Purina representatives, as well as those from other companies, to aid in bringing timely and highly practical information directly to students who are about to begin their careers. We hope that with additional corporate sponsors, we will be able to offer a wider variety of specialized courses.

Time Line for the DVTC

Programs at the DVTC are already under way. The building is scheduled for completion in the spring of 2005. Interested persons are invited to stop by the farm. Tours are available on request. Please contact Dr. Nanda Joshi at joshi@dcph.msu.edu or 517-355-8725.

Michigan Dairy Heifer Replacement Project - 2005 Michigan Dairy Expo

A new and exciting opportunity for 4-H and FFA members across the state of Michigan is being developed. The Michigan Dairy Heifer Replacement Project allows youth to learn more about the dairy industry through the selection, raising, breeding, and marketing of dairy heifers. In 2004, two Michigan youth participated in the second year of the project and the two heifers sold averaged $1975 for each youth.

While the primary goal of this project is for each youth to gain dairy knowledge and experience, each youth also will have the opportunity to earn money through the sale of their dairy replacement heifers. The 2005 Michigan Dairy Expo will host a sale of replacement dairy heifers after the All-Michigan Dairy Youth Show. Dairy producers from across Michigan will have the opportunity to purchase high-quality dairy replacement heifers. Listed below are the project guidelines and rules.

Youth Eligibility
• Youth must be at least 9 and no older than 19 years of age on December 31, 2005.
• Youth must exhibit the heifer in the All-Michigan Dairy Youth Show at Michigan Dairy Expo.
• Youth may enter two heifers in the project, but may only sell one at Michigan Dairy Expo.

Heifer Selection
• Any dairy breed of heifer is permitted.
• Registered or grade heifers are permitted.
• Dam of heifers must meet minimum lactation production
records which will be included in the sale catalog.

- Holstein 18,000 lb
- Jersey 12,000 lb
- Brown Swiss 16,000 lb
- All other dairy breeds 14,000 lb

- Sire of heifers must be registered.
- Heifers must be born between June and October of 2003.

**Heifer Reproduction and Health**

- All animal health requirements to exhibit cattle at Michigan Dairy Expo must be met.
- Heifer must be due to calve between September 1 and December 1, 2005.
- Heifers must be bred artificially.
- All heifers will be confirmed pregnant by a veterinarian prior to sale.

**Heifer Enrollment**

- All heifers will have to be entered by April 15, 2005.
- Official entry forms can be obtained from county MSU Extension offices or the State 4-H Dairy Office.
- Each entry form will include official identification and a picture of each heifer.
- Each entry form will include a short written description of the project by each youth.
- No heifer substitutions will be allowed after April 15, 2005.
- If two heifers are entered by one youth, youth must select the sale heifer by June 15, 2005 and notify the Extension Dairy Youth Specialist.

**Sale Information**

- All youth and heifers must meet all project requirements to participate in the sale.
- A sale catalog listing youth and heifer information will be prepared.
- Sale heifers will be identified at Michigan Dairy Expo with neck chains and stall signs.
- Sale advertisement will be done across the state.
- A sale committee of dairy producers, leaders, volunteers, and dairy cattle merchandisers will assist Michigan Dairy Expo conducting the project and sale.
- A 10% commission on each heifer sold will be used to assist with sale and Michigan Dairy Expo costs.
- Sale will take place on Tuesday, July 19, 2005, in the early evening at the MSU Pavilion.

For additional information, contact Joe Domecq, Extension Dairy Youth Specialist, at (517)353-7855 or domecqjo@msu.edu.

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**Alumni Profile**

**Ben Church at Holstein Association USA**

*Pam Jahnke  
Dept. of Animal Science*

You might expect someone with a dairy farm background to be the spokesman and the creative force behind the public relations and marketing activities for the Holstein Association USA, Inc., a national breed association, but this would not be so with Benjamin Church.

Church, who earned his bachelor’s of science degree in agriculture and natural resources communications at Michigan State University, graduated in 2001, and is the manager of communications for Holstein Association USA, Inc., serving 35,000 members across the country.

“I really enjoy my position at Holstein. It allows me the creative outlet in the dairy industry that I crave,” said Church during a recent phone interview from his office in Brattleboro, Vermont. Working with dairy producers and utilizing his creative side were the two criteria that he had when searching for his current job.

Church, 25, does everything from writing press releases, to creating exhibits for traveling trade shows, to editing *The Holstein Pulse*, a color publication that he developed after being hired 2 years ago. He also creates advertising campaigns and oversees the Association’s web site at http://www.holsteinusa.com. The Association is the world’s largest dairy cattle breed organization. The non-profit group maintains the records for all Registered Holsteins.

“Our mission is to provide information for farmers that they can use to manage higher producing and more durable cows,” he said.

**Agricultural Interest Sparked by “Hobby Farm”**

Church’s initial interest in agriculture was sparked when his father, a General Motors employee, purchased a “hobby farm” in Tecumseh, Michigan. Church was encouraged by a neighbor to become involved with 4-H activities, including the State 4-H Dairy Judging Teams. Pretty soon, Church was raising Holstein heifers along with some beef cattle that he purchased. It was those experiences that led him to MSU.

“I wanted to do something in agriculture, but I wasn’t quite sure what that would be,” Church said.

After he enrolled at MSU, he joined the MSU Dairy Club and served as its president in his senior year. In his sophomore year, Church did an internship working in the Communications Department at Northstar Select Sires in Lansing, causing him to switch his major to agriculture communications. As an upperclassman, he worked with the Holstein herd at the MSU Dairy Cattle Teaching and Research Center, pushing cows.

Church said he was well-prepared for his first job in the dairy industry--largely due to his interpersonal relationships.
with Joe Domecq, academic specialist, and Miriam Weber Nielsen, assistant professor, both of whom work in the MSU Department of Animal Science. It was Domecq who suggested the internship. And, Weber Nielsen, who Church had as a instructor, solicited his help in projects such as creating brochures for promoting Departmental Animal Science activities.

MSU Connections Prove Invaluable

“MSU provided me with valuable connections in an industry that I am involved in, and it helped me gain tremendous mentors — Joe and Miriam — whom I still see at dairy industry functions,” he said. Church continues to find those connections between his work and MSU.

Through his daily contact with Holstein breeders, Church has met some of those breeders responsible for breeding the Holstein cows he had contact with at the MSU Dairy Center. In addition, the state of Michigan has been using the Holstein Association’s National Farm Animal Identification and Records (FAIR) in their bovine-TB eradication efforts in northern Michigan. “I am able to return to Michigan every once in a while for work-related travel, which is really nice,” he said.

Church found another link to MSU when he was asked to be on the publicity committee for the North American Intercollegiate Dairy Challenge (NAIDC), a premier competition among dairy college students in dairy farm evaluation. While a student, Church was a member of the MSU team that won the contest in 2001. One of his mentors, Weber Nielsen, was instrumental in developing the contest that is now one of the “big events” for dairy students throughout the country.

“His job has been a tremendous growth opportunity for me,” he said. He feels he has gained valuable marketing and management skills from working with John M. Meyer, the CEO of Holstein Association USA, Inc. “John has challenged me to thoroughly research every decision, and examine all the pros and cons of each issue. The Association has members with every size of dairy, and we have to be constantly thinking about what is in the best interest of our membership in its entirety.”

His advice for future animal science students?

“Get involved as much as you can to really learn from the people around you, because there are some great mentors at Michigan State in the Department of Animal Science who can become lifetime friends and (or) contacts.”

For someone from a non-rural background, Benjamin Church has immersed himself in a life of agriculture. He still jokes with his father about what he would have done with his life if his father hadn’t purchased that Tecumseh farm.

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 Pam Jahnke at jahnkep@msu.edu and include contact information.

Health Management

BSE Enhanced Surveillance Testing, What It is All About

Dan Grooms
Dept. of Large Animal Clinical Sciences

Thirteen months ago, the first case of bovine spongiform encephalopathy (BSE) or “Mad Cow” disease was found in the United States. That single case initiated many changes in the U.S. cattle industry. One of the changes initiated was the implementation of an enhanced BSE surveillance program. Under this program, the United States Department of Agriculture, Animal and Plant Health Inspection Agency (USDA:APHIS) set as a goal to test more than 200,000 cattle over a 12 to 18 month period. The program was designed to target cattle defined as being high-risk for being affected by BSE. These cattle include: nonambulatory cattle; cattle exhibiting signs of a central nervous system disorder; cattle exhibiting other signs that may be associated with BSE, such as emaciation or injury; or, dead cattle.

In order to reach as many high-risk cattle as possible, samples are being taken from farms, slaughter facilities, rendering facilities, livestock auctions, veterinary clinics, and public health laboratories. The testing program also includes a limited number of random samples from apparently normal, aged animals. The sampling of apparently normal animals will come from 40 U.S. slaughter plants that handle about 86 percent of the aged cattle processed for human consumption each year in the United States. Carcasses from these animals will be held and not allowed to enter the human food chain until test results show the samples are negative for BSE.

Under the enhanced surveillance program, sampling of 201,000 animals would allow USDA:APHIS to detect BSE at the rate of 1 positive in 10 million adult cattle with a 95 percent confidence level assuming that all of the positives are in the targeted high-risk population. If 268,500 animals were sampled, APHIS could detect BSE at the same rate with a 99 percent confidence level. In other words, the enhanced program could detect BSE even if there were only five positive animals in the targeted population in the entire country.

Samples are being tested at the USDA:APHIS National Veterinary Services Laboratory (NVSL) and at other approved network laboratories. Initially, a rapid-screening test, called...
Antibiograms for Antibiotics: Dairy Use?

James Averill
Dept. of Large Animal Clinical Sciences

Antibiotic resistance has become a major concern in both human and veterinary medical communities. Many organizations have made strong statements on antibiotic resistance including the World Health Organization, the Centers for Disease Control and Prevention, and the Food and Drug Administration. There is concern that the use of antibiotics in animal agriculture is contributing to antibiotic resistance in humans. It is reasoned that bacteria commonly found in livestock, such as *E. coli*, are and can be transmitted to humans. These bacteria are believed to be carrying genes for resistance to antibiotics, and when humans come in contact with or consume animal products containing resistant bacteria they too may become ill. With these bacteria being resistant there is a chance for treatment failure, which may lead to death of humans.

How to Reduce Spread of Antibiotic Resistance

This concern has triggered research, educational, and surveillance programs to be developed for minimizing further development of antibiotic resistance. A national surveillance program is in place for monitoring resistance in animals, but only to a limited number of bacteria and does not take into account regional differences. Unlike human medicine, veterinary medicine does not have surveillance at the state, county, or township levels. **Antibiograms (a list of bacteria and their susceptibility to a group of antibiotics)** are being used in human medicine to help physicians make more educated decisions for empirical therapy (selection of an antibiotic based on personal experience). Antibiograms have proven to be invaluable tools in preserving antibiotics because hospitals are able to monitor emerging resistance and control when and how certain antibiotics are used.

**Very Few New Antibiotics Are Being Developed**

Very few if any new antibiotics are on the horizon for livestock, and the importance of preserving currently available drugs has become a necessity. To help address this concern an antibiogram (Tables 1 and 2) has been developed using data on microbial isolates from cattle from 1997 to 2002 at the Diagnostic Center for Population and Animal Health at Michigan State University. The bacteria of interest are *Escherichia coli* (*E. coli*), *Salmonella* spp, *Mannheimia haemolytica*, *Pasteurella multocida* (*P. multocida*), *Streptococcus agalactiae*, *Streptococcus uberis*, *Staphylococcus aureus* (*S. aureus*), and *Klebsiella pneumoniae* (*K. pneumoniae*). These bacterial cultures have been tested for susceptibility to multiple antibiotics, ranging from 7 to 10 antibiotics.

The gastrointestinal (GI) bacteria (*E. coli* and *Salmonella* spp) were the most resistant bacteria in these antibiograms (Table 1). *Salmonella* Newport was resistant to all antibiotics except gentamicin and tribrissen; a similar trend was seen with *Salmonella Typhimurium* where ceftiofur (Naxcel®) also was effective. When evaluating antibiotic resistance to the *Salmonella* species over the 5-year period, there was a significant trend over time towards resistance for ceftiofur and cephalothin. This could be due to multiple reasons and it is hard to say with any certainty, but the heavy use of ceftiofur in the dairy industry is a probable reason because studies have shown that the more an antibiotic is used the more resistance to it will develop. *E. coli* susceptibility is higher than that for *Salmonella*. For analyzing *E. coli* resistance over time, cephalothin was the only drug to have significantly increased over the 5-year period. From the GI antibiogram one would likely come to a conclusion that ceftiofur, gentamicin, and tribrissen would be the antibiotics of choice when treating scours. Well, when using antibiotics your first drug of choice should always be a older generation antibiotic (i.e., Penicillin). With ceftiofur being a newer antibiotic it should be saved for severe infections, and additionally, *Salmonella* species have increased resistance over the 5-year period to this drug which, reinforces the fact that ceftiofur should not be considered a first drug of choice in treating scours. Gentamicin has been prohibited from use in cattle due to the long drug withdrawal time, as clearance from the kidneys takes 18 months. This leaves tribrissen as the only drug to use for diarrhea. The problem is that tribrissen is not labeled for food animal use and requires extra label drug use by a veterinarian. Given that *E. coli* and *Salmonella* are susceptible
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Nutrient Management

Manure Application on Tile-Drained Cropland

Tim Harrigan
Dept. of Biosystems and Agricultural Engineering

M uch of the productive cropland in the Great Lakes region has been improved with drain tile for sub-surface drainage. Most of this land is in animal production areas where animal manure is applied to the land as part of an important nutrient use and manure treatment program.

On some fields, land-applied manure quickly enters sub-surface drains by preferential flow through macropores—large, continuous openings in soil formed by plant roots, cracks, earthworms, and other natural processes. Nutrients and contaminants that escape from application sites through sub-surface drains are not recycled in the cropping system and can degrade surface waters.

To address this issue, a group of researchers, extension educators, and Natural Resource Conservation Service (NRCS) personnel from Michigan and Ohio organized a conference held in Columbus, Ohio in early November, 2004. The conference brought together stakeholders in an educational and networking effort to better understand the nature and scope of the challenge, to share guidelines and suggestions for improved management of livestock manures, and to identify research needs and extension opportunities to ensure continued development of sustainable livestock systems. Conference attendees included farm managers, regulatory and technical service providers, extension personnel, and researchers from the Great Lakes region.

A summary of the conference follows.

Scope of the Challenge

William Boyd, leader of the NRCS animal waste utilization team in Greensboro, NC presented information about the potential scope of the challenge.

- Across the U.S., about 72,000 farms have excess manure (based on land area and manure nutrient levels for crop production). More than 250,000 farms need a Comprehensive Nutrient Management Plan (CNMP).
- In the Great Lakes region (excluding Pennsylvania and New York), only seven counties have excess manure. But that

to only a few antibiotics, one might rethink using antibiotics for treating diarrhea. Fluid therapy and preventive medicine are likely to be the best way to manage GI infections.

Antibiograms

In general, the antibiogram (Table 1) for respiratory diseases in cattle, P. multocida and Mannheimia haemolytica, shows that the bacteria are susceptible to most antibiotics. When looking at resistance over time a statistically significant trend does occur for P. multocida to tetracycline, going from 100 to 67 percent susceptible from 1998 to 2002, respectively. Tribrissen shows a numeric trend towards resistance, but at this time the trend is not statistically significant. No trend towards resistance has been observed for Mannheimia haemolytica at this time. In conclusion, these data greatly differ from that of the GI bacteria in that the commonly used antibiotics used to treat respiratory disease are still effective except for tetracycline in some cases.

The mastitis antibiogram (Table 2) covers the years 1997 thru 2000. Like the respiratory pathogens, a generalization can be made that the bacteria are susceptible to a majority of the antibiotics, although S. aureus has a lower susceptibility to ampicillin and penicillin. Streptococci are highly susceptible to all antibiotics except S. agalactiae which is highly resistant to gentamicin. As for the coliforms, E. coli and K. pneumoniae, they are susceptible to most antibiotics. Analysis found no trend for resistance over time for the mastitis pathogens to any of these antibiotics. This does not mean that prudent use of antibiotics can cease. An area that can be improved upon is to stop the use of antibiotics for treating coliform mastitis. These bacteria may show susceptibility in a laboratory test, but with susceptibility testing a ‘susceptible’ result does not always lead to a clinical cure, which is the case with mastitis due to E. coli or K. pneumoniae infections. Instead, coliform mastitis should be treated with anti-inflammatory agents and fluids.

Summary

Antibiograms may help dairy producers make more educated choices about which antibiotic might work when culture results are not available. Information gathered from an antibiogram is helpful in establishing standard operating procedures on a farm for employees to know when and which antibiotics should be used. The down side to antibiograms is that they are not readily available to farmers or veterinarians. With farms expanding, large operations are finding that having an antibiogram for their farm is beneficial economically because older generation drugs are just as effective as newer more expensive ones.

So the next time you are about to give a calf an antibiotic for a cough, think about the respiratory antibiogram and think about which drug you should use. Should I use tetracycline, sulfa, or ceftiofur? The longer we can preserve the antibiotics available to us, the longer effective therapy will remain.
number increases to 41 counties if drained cropland is assumed not available for land application. Many of the most productive counties in Michigan are included.

On-Farm Manure Application

Martin Shipitalo, USDA-ARS, and Frank Gibbs, Ohio NRCS reported on work with on-farm manure application.

- Injected manure in no-till cropland has appeared in sub-surface drains within minutes of application. Earthworm holes were the primary transmission routes.
- Tillage disrupted macro pores, delayed manure movement and greatly decreased bacterial concentration in the effluent.

Ohio Violations

Jim Hoorman, The Ohio State University water quality educator reviewed Ohio Department of Natural Resource records of 98 manure violations in 2000-2003.

- Violations occurred throughout the year, predominantly in October-December. About two-thirds occurred on wet ground or in rainy weather.
- Reported application rates ranged from 1,400 to 47,500 gallon/acre. But, in cases where Soil and Water Conservation Districts were able to verify rates, operators had applied about twice the rate reported to investigators.
- Violations occurred most often because of: 1) excessive rain or saturated soil; 2) over-application; 3) poor management of storage facilities; 4) ponding of surface applications or excessive irrigation; and, 5) tiles lines already flowing at the time of application, or a tile plug that failed.

Management Challenges

Tim Harrigan, Department of Biosystems and Agricultural Engineering, Michigan State University (MSU) addressed retention of manure in the root zone for nutrient recycling and removal of contaminants.

- Managing tillage intensity, amount of manure applied, and timing of application as well as expanding the land and cropping base available for application are opportunity areas.
- Manure management must be farm- and field-specific. Discovering and adopting the right amount of tillage that will simultaneously prevent overland flow, minimize odor, distribute manure throughout the root zone, and inhibit movement to sub-surface drains are essential. Soil conservation practices that stabilize soil will help keep manure in the proper place also.
- The allowable agronomic rate may not be the right application rate. Agronomic rates are based on manure nutrient content and annual crop nutrient requirements, not necessarily the ability of the soil to process the manure. With dilute manure slurries low in nutrients, the volume applied in one pass can be too high to be retained in the root zone.
- Farm managers must manage manure intensively, similar to the way they manage cropping and feeding programs. A process of application, observation, and evaluation will provide insights into cropland’s response to manure application and its ability to process and capture manure in the root zone.

Canadian Experience

Bonnie Ball Coelho has considerable experience in manure application on tile-drained cropland in Ontario as a researcher with Agriculture and Agri-Food Canada. She described her work over a wide range of application rates and methods.

- Pre-till the soil, use injector tools with lots of tillage and mixing action, or drop manure behind rolling tines. A closer injector spacing with more injector tines is better because the effective rate per tine is less.
- High risk soils typically are fine-textured soils with night crawler burrows. Sandy loams are lower risk.
- On high risk soils, manure movement to tile can be minimized by applying when soil is dry and tiles are not flowing, for example at side-dress time. Side-dress time also is a good time to apply liquid manure because roots are absorbing water and nutrients actively.
- Apply the right rate. In Ontario, side-dressing with swine manure at 6,000 gallons/acre with a 30-inch injector spacing did not lead to a tile discharge.

Controlled Drainage

Larry Brown, Department of Food, Agriculture and Biological Engineering at The Ohio State University, discussed controlled drainage structures and other alternatives for managing manure applications in artificially drained cropland. Practices included:

- Installing head control structures at each outlet to prevent effluent from leaving the field.
- Integrated systems that include drainage, water table management, reservoirs, constructed wetlands, buffer strips, and other conservation practices.
- Harvesting drainage waters for treatment and reuse as irrigation water supplies.

Current Guidelines

Bill Bickert, Department of Biosystems and Agricultural Engineering at MSU, moderated a session with each state and Ontario sharing current guidelines for managing manure on drained cropland to provide the basis for developing comprehensive, unified and consistent guidelines for use throughout the region. Some of the states (MN, WI, IL, IA and IN) did not have specific guidelines, and recommendations varied considerably among the reporting states.

- Ohio recommended a combination of tillage, rate management, and tile blocks. Application rates are suggested based on available water-holding capacity in the upper 8 inches of soil up to a maximum 13,000 gallons/acre.
- Ontario offered a range of options: 1) on untilled ground, apply at rates lower than 3,600 gallons/acre; 2) pre-till within 7 days of application; or, 3) apply when tiles are not flowing or
tiles are blocked (for at least 72 hours), or when tiles discharge to a holding pond. Farm managers are to observe tile outflow and stop application if any discoloration of effluent occurs.

- Michigan recommendations included use of soil conservation practices to prevent overland flow, and adoption of a process of application, observation, and evaluation to discover the right amount of tillage and the right application rate on a field-by-field basis.

### Research Priorities

Several focus groups were formed to establish regional guidelines for manure application on drained cropland, and to develop research and extension priorities. The top ranked research needs included:

1. To better understand the fate and transport of pathogens in land-applied manure and practical environmental impacts of preferential flow.
2. To characterize soils relative to the propensity for preferential flow based on easily identifiable criteria such as texture and water-holding capacity.
3. To characterize manure slurries relative to the propensity for preferential flow based on easily identifiable criteria such as percent solids, fiber content, and flowability.

### Extension Education Priorities

The top extension and education priorities developed by program participants included:

1. Develop management guidelines that are easily understandable and capable of integration into whole-farm systems.
2. Develop CNMPs that are easier to understand and apply, and develop a training and certification program with continuing education credits for manure applicators.
3. Develop information sheets, demonstration projects, and related materials to help farmers and technical service providers better understand preferential flow hazards, site-specific risk assessment, recommended application procedures, and environmental impacts of manure violations.

### Business Management and Finances

**2003 Michigan Dairy Farm Financial Summary**

Christopher Wolf  
Dept. of Agricultural Economics

Financial results for 2003 show that Michigan dairy farms began a recovery from the dismal outcomes of 2002. This article presents 2003 results for dairy farms throughout Michigan with comparisons to the previous 3 years. To be included, farms must have produced at least 50 percent of gross cash farm income from milk and dairy animal sales. The farms in this database and analysis were located throughout Michigan. Records came from Michigan State University’s Telfarm/MicroTel project, the Farm Credit Service system, or from AgriSolutions in Michigan. The values were pooled into averages for reporting purposes. The farms are larger than the average Michigan dairy farm.

In 2003, the average dairy farm in the database had 196 cows and an average of 20,638 pounds of milk sold per cow. Milk price, based on gross income rather than “mailbox” milk price, averaged $12.59/cwt. This value was slightly larger than the 2002 value but still far below the record prices of 2001. The 2004 average milk price will exceed the 2001 value. Table 1 describes selected average farm statistics from the MSU business analysis summaries of 2000 through 2002.

Keeping in mind that all farms across years are not exactly the same farms, it is illuminating to compare average income statements from 2000 through 2003 (Table 2). The goal of an income statement is to calculate profit, which is best measured by net farm income. Net farm income is the return to operator unpaid management, labor, and capital invested. Net farm income is the return to operator unpaid management, labor, and capital invested. Net farm income in 2003 averaged $57,519 (Table 2). This average somewhat obscures a very large range in net farm income values among farms in the database for 2003. For example, the farms in the top 25 percent of the net farm income distribution averaged $119,553 while those in the bottom 25 percent...
To put profits in perspective, we calculated profitability ratios (Table 3). Rate of return on assets (ROA) is the farm operating profit (equal to net farm income plus interest expense less value of operator labor and management) divided by average total farm asset value (assets valued at current market value). Rate of return on assets measures how much profit the farm business’s assets generated. The average 2003 dairy farm ROA was 4.3 percent, which was improved over 2002 but still far below 2000 and 2001 (Table 3). Return on equity shows a similar story. Operating profit margin, another profit measure, is the operating profit (as defined in ROA above) divided by gross revenues. Operating profit margin measures the dollars of profit generated per dollar of revenue. In 2003, Michigan dairy farms generated 14.9 cents of profit per dollar of revenue. Asset turnover measures the efficiency with which farm assets generate revenue and is calculated by dividing gross farm revenues by average asset value. This value declined slightly in 2002 and 2003 to an average of 29 percent compared with 2000 and 2001.

The bottom line was an average net farm income that improved from 2002 but still under-performed relative to record high in 2001. The milk price increase that occurred in late 2003 was unable to offset dismal prices earlier that year. Further, the industry had quite a financial hole to crawl out of from 2002. It appears that 2004 will be a much stronger financial year for Michigan dairy producers.

The entire 2003 Michigan Dairy Farm Business Analysis Summary along with previous year’s are available at http://msue.msu.edu/aoe/farm.
Milk Market Update: 2005 Situation and Outlook

Christopher Wolf
Dept. of Agricultural Economics

By the time you read this, 2004 will be the highest average milk price year on record (without adjusting for inflation). The Class III price for 2004 averaged $15.39/cwt. With holiday sales filled, stocks will be rebuilt. Furthermore, the market has been encouraging milk production growth for some time. The milk-to-feed price ratio recently exceeded 3.5, which is substantially higher than the 2002-2003 average (Figure 1). Any value in excess of 3.0 encourages expansion. Only the high soybean prices earlier in the year moderated the ratio in those months.

Milk Prices May Not Be As High As In 2004

It seems likely that milk prices in 2005 will not reach the heights of 2004, although we cannot rule this out. The most important factors that will contribute to the 2005 milk price relate to the ability of milk production to react to the recent high milk prices. Milk cow numbers in the US reached a low point at 8.987 million in March of 2004. Since that time they have rebounded to 9.038 million as of October. This value would be higher if Canadian replacements could be imported. With at least several more months (and potentially a year or more) before the border opens to replacements, US dairy herd growth will continue to come from within.

The Cooperatives Working Together (CWT) program took bids in October to purchase herds with the goal of removal of 49,000 cows with 870 million pounds of annual milk production. Bids were accepted in November and the program announced that it would purchase 51,757 cows, which produced 931 million pounds of milk last year. The removals will take place through March, and essentially will take all of the national herd growth of the last year. Additionally, the program announced plans to subsidize the export of up to 20 million pounds of cheese and 7 million pounds of butter. Export levels will depend on market prices. The program set the price level at $1.40/lb cheese and $1.30/lb of butter. Current market prices handily exceed these levels, indicating no need for exports. The previous year, the CWT program did not need to export target levels because the milk price recovered. This year the CWT program export subsidy program will subsidize butter and cheese exports at a price level well above the government price support for those products. Thus, the program will provide price resistance at the export subsidy level which should assist in moderating price declines.

Watch For Decision on Beef Check-Off

Another development to watch with relevance to the dairy industry is the upcoming ruling on the national Beef Check-Off in the US Supreme Court. Several organizations and producers challenged the Beef Check-Off on free speech grounds. Oral arguments were heard on December 8 with the decision coming in a few months time. It is possible that the national Dairy Check-Off would be affected if the beef check-off were struck down. While this would mean a larger price in the short-run, it would likely hurt long-run consumption trends.

Employee Management

Employees: A Source of Competitive Advantage

Vera Bitsch and Amin W. Mugera
Dept. of Agricultural Economics

Some dairy farmers look at their employees as a cost factor, which needs to be kept minimal. Others see their employees as a resource. With proper management, employees can help keep a farm successful in the long run. How a farmer looks at his or her employees determines how employees will be managed and what role labor will play on a farm. If you are the kind of farmer who sees employees as a resource, applying the resource-based theory to farm labor offers some suggestions on how to manage employees to best contribute their skills, knowledge, and abilities.

The resource-based theory explains how a firm can achieve competitive advantages from its distinct resources. A business is considered a bundle of specialized resources that is used to create a privileged market position. Applied to labor management, the resource-based theory focuses on understanding the relationships among strategy, human resource management practices, and the people (their knowledge, skills, and abilities) to create a competitive advantage. Based on this theory and six case studies with
Michigan dairy farms, we suggest management practices, which help dairy farmers develop a system for selecting, training, and motivating their employees to efficiently contribute to farm goals and accomplish superior performance.

Case Farms
Six Michigan dairy farmers volunteered their time and their employees’ time to participate in labor management case studies during the spring of 2003. On each farm, we interviewed at least one owner or manager, one herdsman or supervisor, and one non-supervisory employee—20 interviews, overall. All case farms were family-owned and operated. In 2002 the case farms averaged, per full-time employee, $193,000 in gross revenues and $36,000 in gross labor expenses. Gross labor expenses ranged from 15 to 30% of gross revenues. On average, farms milked 961 cows, ranging from 225 to 3,200. Four farms used three milking shifts; two farms used two shifts. The number of full-time employees ranged from five to 75, with an average of 21. Full-time employees worked between 50 and 78 hours per week. Almost 50% of the workforce was of Hispanic descent, some with no or very little English language proficiency.

Mission Statements and Operational Goals
To achieve a competitive advantage, a mission statement and operational goals provide a road map for how dairy farmers deploy, develop, and manage their employee resources. Research shows an advantage of enterprises with well-articulated mission statements over those that lack them. The mission statement defines where priorities lie, and the operational goals specify how to achieve these priorities. For employees, the goals and mission statement provide the necessary focus about how to best contribute to the overall success.

Two of the case farms had written mission statements. On three other farms, interviewees did verbally define the future direction of their farms. A mission statement is crucial in formulating goals geared toward the realization of the mission. While writing down the mission statement is useful, it need not be written, as long as it is clearly and persistently communicated to everybody on the farm. A lived mission statement guides strategic planning as well as every day decision making, enabling employees to understand their roles.

Expansion was the long-term goal in four cases; two cases wanted to maintain the current farm size. These long-term goals were translated to measurable and specific operational goals on five farms, which served as yardsticks for employees to gauge their contribution to overall farm performance. Dairy management goals evolved around cow health, milk quality, total milk production, milk yield per cow, conception rates, calf mortality, and parlor cleanliness.

Most employees want to take part in accomplishing goals beyond their daily work routines. Engaging employees in setting short-term goals in their jobs through the use of participatory management makes them feel appreciated and valued, and thereby facilitates their contribution to organizational performance and increases their commitment. On one case farm, where the manager solicited advice and input from all employees, they showed high loyalty despite lower compensation levels.

Selective Hiring
One way to establish a competitive advantage through human resources is by hiring employees with strong work ethics and competencies. Due to comparatively low wage rates in agriculture, the labor market is more likely to provide low quality workers, because high quality workers who are well compensated are often reluctant to change jobs. Managers can handle this situation in two different ways. Because they do not know whether an applicant will turn out to be a below average or above average worker, they pay low entry-level wages, to avoid overpaying a below average worker. If the new employee turns out to be above average, his or her wage will be increased. On the other hand, managers can pay higher entry-level wages, if they obtain favorable information about an applicant before hiring. Employee referral and word of mouth were the most common recruitment methods of the case farms because they enable managers to learn about candidates’ work ethics prior to hiring.

Most participating managers prefer to select and hire non-supervisory employees based on their kinship or friendship ties with current employees. The resource-based theory explains the success of this strategy in the context of team development. When a team of new employees is formed, they spend considerable time on developing relationships, building trust, and figuring out how to work together. Employees who are acquainted with each other and belong to the same social group achieve effective teamwork quicker and more easily. On the case farms, turnover was low when selection was based on kinship and friendship ties. In one case, where walk-ins were hired, turnover and termination were high. Poor working relationships among coworkers were reported as a cause of quitting only in this case.

Training and Development
All case farms provide on-the-job training for newly hired non-supervisory employees regardless of their prior experience, but training approaches varied from farm to farm. New hires typically worked with experienced coworkers. In some cases, they get prior formal training from their supervisors. Competitive advantage through training stems from more than general skills, which can be used on different farms. Training is most advantageous, where it focuses on specific skills, procedures, and protocols, which differ from farm to farm. Farms that have identified unique operating procedures also make it difficult for their employees to use their skills elsewhere, because other farms will employ different procedures. Hence,
retention rates increase because employees’ skills and knowledge are not readily applicable on another farm without retraining.

Non-supervisory employees often crave training beyond what is necessary to function at their current job level. Employees mentioned technical aspects of dairy management, such as animal health care, nutrition, and calf rearing, as ways to improve their performance on the job and better contribute to overall success. Employees with less training are less likely to be loyal and more likely to make costly mistakes. In addition, employees with very specialized tasks and rigid work schedules are likely to experience monotony and dissatisfaction. In these cases, additional training would enable job rotation and thus increase overall job satisfaction.

**Hispanic Employees**

Case farmers reported having increasingly hired Hispanic, often recently immigrated, labor at their farms. Some found it difficult to attract local labor and also felt they encountered more discipline problems with local labor. Once managers had made the transition to hiring immigrant employees, they did not want to revert to the local workforce. One manager reported that, currently, seven Hispanic employees complete the same workload that had previously required 13 employees.

The language barrier between employees with limited or no English language proficiency and their managers may, however, cause friction and hinder full utilization of employees’ potential. Managers with Spanish language abilities or with bilingual employees in supervisory positions or at least on staff may have a competitive advantage over those who are not able to communicate clearly with their employees. When working with immigrant employees, bilingual abilities on all levels of the farm will likely enhance farm performance. Managers approach this communication gap through learning Spanish and (or) sponsoring English language classes for employees. Also, a better understanding of the culture, values, and expectations of Hispanic employees can facilitate day-to-day workplace interactions and help to avoid misunderstanding.

**Compensation**

A competitive compensation package ensures that employees will not be on the lookout for better paying employment opportunities and taking their skills elsewhere. All case farms reported to pay entry-level wages for full-time employees above the legal minimum of $5.15 per hour. Wages reported for entry-level full-time employees ranged from $6.00 to $9.00 per hour. Wages paid to employees in a given position depend on the characteristics of the employees, such as education level, job-related skills, and tenure in current employment, and also on the size of the farm. The wage rate for herdsman on the three larger case farms ranged from $14 to $20 per hour and from $12 to $14 on the three smaller case farms. The three larger farms also provided more benefits.

The benefits package is often seen as a means of retaining employees and increasing their commitment to a specific employer. Three case farms provided health care insurance for all employees, while two farms provided health care only for supervisory personnel. Of the three farms that provided health care to all employees, two also provided retirement benefits to all employees. Of the two farms that provided health care to supervisory personnel, one also provided retirement benefits to supervisory personnel. The job tenure of the interviewed non-supervisory employees on the case farms that provided health care insurance and retirement benefits to them ranged from 6 to 12 years. On the case farms that did not provide both, their tenure ranged from 1 to 4 years.

Long-term competitive advantage will depend on either decreasing operational costs or increasing revenues or both. In achieving these goals, employees play a major role. Training contributes to avoiding costly mistakes and hence, helps to decrease costs. Well-trained and motivated employees also will be creative in developing more active ways to save costs and increase efficiency. Providing incentives to motivate employees and reward their contributions is another way for farmers to increase revenues and decrease costs in the long run. Bonuses are a flexible way to reward desired behaviors and employees’ accomplishments. For example, in one case, each employee received a bonus of $50 at the end of the month if no calf loss occurred. In another case, positive net returns translated into bonuses for employees.

**Trust and Relationships at the Workplace**

Employee retention and performance do not solely depend on compensation packages. For example, a large case farm was paying higher wages, providing more benefits and training opportunities to employees than one of the smaller case farms. Yet, employees on both farms reported to be satisfied with their current employment and not looking for employment elsewhere. Another large case farm provided competitive compensation and training opportunities, but employees were not satisfied and would consider and possibly accept alternative employment offers.

Trusting relationships can create a competitive advantage for farms. One way for trust to develop is through social interaction among coworkers, workers and supervisors, and owners or managers and employees. Nurturing relationships, as well as, kinship and friendship ties contribute to a cohesive work environment, which enables employees to work more productively and reduce turnover. Relationships between managers and non-supervisory employees seem closer on smaller farms, but herdsmen in all six cases reported to have good relationships with their managers. Another way to cultivate trust, without necessarily being socially close, is based on the repeated interactions of managers and employees at the workplace. Fair and respectful treatment and interpersonal management skills will ensure employees that
they will not be taken advantage of and motivate them to behave in a similar way.

Conclusions

Increasing farm sizes make it necessary for dairy farmers to attract and manage a growing workforce. Taking the resource-based perspective of managing people can help farmers to better utilize their employees and empower them to contribute more effectively to overall farm success. The skills needed to manage an increasingly complex farm and a growing workforce can be learned in workshops and seminars, but must be recreated daily on the farm. Managing people works best when integrated in a framework of trust-based relationships and clearly communicated overall farm goals and a vision for the future. Therefore, implementing isolated practices, such as incentive pay, may not lead to the desired results, when not embedded in a unique organizational culture and skillful overall management.

We would like to thank participating dairy farmers and their employees for open discussions of their management practices and job experiences. Partial funding for the case studies was provided by the Northcentral Risk Management Education Center at University of Nebraska. More information on hired labor is available from Dr. Bitsch’s “Personnel Management in Agriculture” website at http://www.msu.edu/user/bitsch/. You also can print the Agricultural Employer Checklist, which provides an overview of current hiring regulations.

Further Readings on Resource-based Theory

Herd Management

Genetic Base Update - February 2005

Kathy Lee
Extension Dairy Educator
Northwest Lower Michigan

Every 5 years the U.S. dairy industry updates the genetic base used in genetic evaluations for production, fitness, fertility, and type traits. The next genetic base update will occur in February, 2005.

Genetic Base

Genetic evaluations are calculated relative to a specified base population. As genetic selection occurs, the average genetic merit of active AI bulls and replacement heifers changes (usually improves) each year. Genetic base updates are adjustments to the predicted transmitting abilities (PTAs) and reflect genetic differences between the previous and current base populations.

Beginning in February, 2005, the base population for genetic evaluations during the next 5 years will be cows born in 2000. From a statistical standpoint, this means that the average PTA for a given trait will be zero for all cows born in 2000.

Genetic and Phenotypic Progress

The genetic base update will provide information about the genetic progress between 1995 and 2000. Table 1 lists the genetic change (progress) for the traits included in the Net Merit (NMS) index. For comparison, the phenotypic change in the Holstein population also is presented. Phenotypic change is the overall change in performance of a given trait. It represents changes in genetic merit and herd management factors.

For most traits positive genetic changes are desirable. However, negative genetic change for somatic cell score (SCS), body size, daughter calving difficulty, and service sire calving difficulty would represent genetic improvement over time.

In reviewing Table 1, you will note:

- Holstein cows born in 2000 produced, on average, 1982 lb more milk than cows born in 1995. The genetic change (1184 lb) in Holstein cows born during that period accounted for 60% of the phenotypic change in milk yield.
- Genetic improvement for productive life was positive for all breeds, ranging from 0.4 to 0.8 months. Based on overall performance, Holstein cows born in 2000 had an increased productive life of almost 1 month.
- Genetic change in somatic cell score was relatively small for all breeds, with only Brown Swiss and Ayrshires showing a desirable trend (negative values).
- Daughter pregnancy rate (DPR) declined for four of the five breeds. However, the change of –0.2 is equivalent to only 0.8 days increase in days open (1.6 days open for –0.4 change in DPR). The PTAs for DPR have only been included in NMS since 2003. Continued use of NMS for sire selection could result in positive DPR trends in the future.
Expected Changes in PTAs

The expected changes in PTAs due to the base change can be estimated by first multiplying the genetic change values in Table 1 by ½ or 0.5. (PTAs are one-half of the total breeding value of animals.) PTAs then will be adjusted in the opposite direction of the genetic change. Therefore, you will need to reverse the sign of the genetic change (positive to negative, or negative to positive) to estimate the expected PTA changes.

Let’s look at a couple of examples. For the genetic change of +38 lb protein for Holsteins, we would expect PTAs for protein in Holsteins to be about 19 lb less (-19) in February 2005 due to the genetic base adjustment. In Jerseys, we would expect NM$ to be decreased by $128 due to the genetic base update ($256 x 0.5 x -1).

Review Sire Selection Goals

Because significant genetic change has occurred in most traits, you will need to review your sire selection goals. You can use estimated PTA changes, as described above, to adjust your goals based on the genetic base update. However, knowing where service sires rank relative to other active AI bulls may be more meaningful in determining if the sires meet your goals.


Summary

Significant genetic change occurred in dairy cattle between 1995 and 2000. The genetic base update in February 2005 will account for these genetic changes. Take time to update your sire selection goals to ensure significant genetic improvement in your herd for the future.

References


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<td>0.50</td>
<td>0.60</td>
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<td>Feet/legs</td>
<td>composite</td>
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<td>0.30</td>
<td>0.50</td>
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<tr>
<td>Body size</td>
<td>composite</td>
<td>0.48</td>
<td>0.90</td>
<td>1.10</td>
</tr>
<tr>
<td>Daughter pregnancy rate</td>
<td>%</td>
<td>-1.0</td>
<td>-0.2</td>
<td>-0.2</td>
</tr>
<tr>
<td>Service sire calving difficulty</td>
<td>%</td>
<td>0.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daughter calving difficulty</td>
<td>%</td>
<td>-0.8</td>
<td></td>
<td></td>
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</tbody>
</table>

Source: Cassell (2004); VanRaden and Tooker (2004).
Farm Security: More Serious Than You Think

Dean Ross
Extension Dairy Educator
Southeast Michigan

In our current world of color-coded alerts and concerns about threats from far-flung parts of the globe, the apparent threat to agriculture would appear to be small. But is it really? One of the most significant security concerns for the federal government is agriterrorism. This includes not only the use of plant or animal pathogens to cause disease, but also hoaxes, threats, vandalism, and adulteration intended to cause public fear. The reason it is considered an issue of concern is the “growing realization that chemical or biological attacks against livestock and the food chain are substantially easier and less risky to carry out than those directed at civilian targets (1)”.

Practice Effective Prevention of Agriterrorism

While these threats may seem like background noise compared with events on the national or international scene, they nonetheless call for vigilance. In late 2001 the federal government began distributing funds for grants and research activities aimed at developing emergency animal disease prevention, preparedness, response and recovery systems at the state and local levels (2). This process continues even in Michigan. But state, local and federal law enforcement and emergency management responses become active on the local level only after the crisis has occurred. Effective prevention of agriterrorism is a function of preparedness on the farm.

Why does our government believe terrorists would find agriculture an attractive target? There are several reasons. The physical risk to the attacker is significantly lessened. Spreading a plant or livestock disease pathogen is much safer than spreading human disease pathogens or lethal chemicals. Secondly, these types of attacks can be developed in such a way that it is difficult to detect, which complicates any investigation. The technical barriers for utilizing plant or livestock pathogens are lower as compared with the pharmacological and industrial requirements for developing something like anthrax into a weapons grade material. Collecting and isolating pathogens from infected animals or plants is a comparatively simpler task. These plant or animal pathogens conceivably could be sent through the mail or through a customs checkpoint without detection and then delivered by simply dropping them into a feed trough or ventilation system or seed storage facility. Finally, agriterrorism is not as likely to create the same backlash or response as an act that kills people. Additional factors that come into play are the mobility and concentrated nature of crops and animals in the U.S. (2), which leads to a situation where the possibility of an attack is more likely transformed into a probability over time.

What makes the overall risk greater are the potential candidates who might be interested in attacking U.S. agriculture. In the mainstream media, international terrorist threats to U.S. interests make the most news. In reality, as good a case can be made for anti-government groups wanting to disrupt society, sociopaths wanting to incite panic, those with an economic motive such as causing trade restrictions and more ominously those with an ideological cause such as radical environmentalism or animal rights (2). These latter groups are the most worrisome points of concern. They are people who look and talk just like you and your neighbors. They will not be obvious, and they will come with a plan for trouble.

As indicated previously, local, state, and federal authorities will only be in position to react to terrorist threats and activities after they occur. So it is in the interest of those within agriculture to become part of the preventative solution before a terrorist incident occurs. How do we accomplish that? The answer is in the hands of the farm owner, as well as their employees. It becomes a matter of simply being aware.

Be Aware of Your Community’s Routines

Be aware of the routines of the community around you. Knowing what is normal in your neighborhood will help you spot what is out of place. Train yourself to see what is not supposed to be there; the door or gate that should be locked but is not, strange vehicles sitting by the road for no reason, unusual people or activity at sensitive places on the farm such as pesticide or fertilizer storage facilities. Keep track of sensitive supplies such as antibiotics, fuels, or fertilizers. Monitor the health and well-being of animals, crops, employees, and family. The sudden death of animals or plants could point to problems beyond normal management parameters. Be prepared to take action if needed.

In an effort to strengthen the preparedness and responsiveness of Michigan’s agricultural community, a tabletop or mock emergency event was conducted by the Michigan Department of Agriculture in East Lansing. Participating in this event were representatives from nearly all aspects of Michigan’s dairy industry, including producers, milk haulers, elevator operators, state police, FBI, Department of Community Health, USDA, and Michigan State University. The tabletop exercise generated a great deal of interest from those who participated. One significant issue that caught everyone’s attention was the difficulty in getting information about the presence of sick animals and (or) people from multiple farms identified as potential terrorist assault victims. The upshot of this pointed to an increased willingness on the part of those on the farm to recognize and report emergencies.

Have local emergency numbers posted where everyone on the farm can easily access them. Invite your county emergency management coordinator or their representative to visit your farm so they will understand your issues and be better prepared.
to help, if the need arises. The county emergency management coordinator can often be located in the telephone book under county government listings or through the sheriff’s office. Take what you see and hear seriously and do not be afraid to report it. State and local authorities need your help to identify terrorist activities or head off emergency situations before they affect other farms or the general public. Emergency management and homeland security is a concern for agriculture on many levels. Expect to hear more about it in the future.

References

Although the possibility of your operation being a target of agri-terrorism is small, the threat today is real. As citizens and business managers, being aware of what to look for and what to do in the case of an event is critical for your business, your community, and our nation. For that reason it is important that you review and share the following information with your family and employees. Making this information available in an appropriate location is important.

Reporting suspicious activities that might indicate your operation has become a target of criminal activity is very important. The following are examples of situations that should be reported when discovered.

- Unusual sickness among staff or unusual numbers of sick or dead animals, birds, or insects.
- Unexpected spraying activities or unusual powders or liquids located where such substances should NOT be found.
- Signs of break-in, tampering, or unexpected damage to sensitive facilities or utilities.
- Appearance of unusual or suspicious packages.
- Unauthorized individuals near or around livestock, livestock housing, livestock feed, or your property.
- Any apparent loss or theft of potentially dangerous chemicals or insecticides/pesticides from anywhere on the farm.

- Any suspicious activity in or around any public or private utility system such as electrical substations, water pump stations, telephone system components, or public transportation systems (roads, bridges, rails, or airfields) in the immediate vicinity of your facilities.

Who To Call
1. Unusual or suspicious events or behavior suggestive of criminal or terrorist activity should be reported to local law enforcement or 911.
   CALL 911 if an event is in progress.
   CALL Local Law Enforcement or 911 in some regions of Michigan if an event is discovered after it occurred.
2. Unusual animal health and food or milk contamination issues should be reported to your veterinarian and (or) the Michigan Department of Agriculture (MDA) at the 24/7 emergency line 517-373-0440. After-hours please leave a message and telephone number with the answering service for the person being paged.

Help Arrives for DHI Records Monitoring

Phil Taylor
Extension Dairy Educator
Eaton, Barry, Calhoun, and Ionia Counties

New years bring new opportunities. Arriving at Dairy Herd Improvement member farms during January 2005 is the DHI Template Kit for herds using Dairy Records Management Service (DRMS) reports. Dairy producers can use the templates to quickly and easily locate information on their DHI reports to monitor herd performance. The templates are heavy laminated pages that lay over the DHI 202 and DHI 521 reports, highlighting 35 key indicators. The DHI 202 report is the Herd Summary data report with reproductive data on one side and production related information on the other. The DHI 521 report is the Somatic Cell Count Summary report. The Key Indicators focus on reproduction, transition cow management, herd replacements, culling, test day production and udder health.

Template Kit Includes Chart on Key Indicators
Perhaps the most important part of the template kit is the Monthly Monitor of Key Indicators. This chart tracks the key indicators showing trends in performance and the goals set by the producer for each performance indicator. Producers can opt to monitor any or all 35 indicators shown in Figure 1 that appear on the monthly monitor sheet.

Three indicators require hand calculations by herd managers. The simple and straightforward calculations provide information about the Percent of Cows Dry Between 40 and 70 days, the Estimated New Infection Rate, and the Chronic Infection Rate. The New and Chronic Infection Rate indicators answer important questions relating to cows with
udder infections.

Another feature of the template kit is the information sheets provided for each template. The information pages show a description of the performance indicator, and in most cases lists a suggested goal and the Michigan state average for each highlighted value. Producers may find the goals and averages included on the information sheets as guides for establishing their own herd goals. The template kit can create an excellent opportunity for a farm to bring together an external management team to set target goals for the farm. Veterinarians, nutritionists, consultants and others will find the monitor report a useful tool in assisting herds with management decisions.

The template kit includes a producer survey to gather information about how members currently use their records, and how they expect to put the template kit to work on their farm. It also will provide a mechanism for contacting producers in the future with information relating to the template kits.

The template kits are being distributed to NorthStar DHI members free of charge by NorthStar DHI technicians during January and February. Be looking for your copy. Additional template kits can be purchased from NorthStar Cooperative for $10 each by calling the customer service line at 1-800-631-3510.

Contact Local Dairy Educators for More Details

More information about the DHI Template Kit is available through local MSU Extension Dairy Educators. The MSU Dairy Extension Team is looking for cooperating DHI farms to assist in using the Template Kit. By working closely with a few herds, Extension Educators can become more effective at teaching others about using the templates. Contact the local Extension Dairy Educator in your area to participate. Contact information is provided on page 1 of the Michigan Dairy Review.

Dairy Forages 2005: Foraging for Milk in the New Millennium

Phil Taylor
Extension Dairy Educator
Eaton, Barry, Calhoun, and Ionia Counties

There is renewed interest in forage production on dairy farms. Popular dairy magazines have devoted many articles in recent months to forage quality and management. Dairy producers continue to hone-in on reducing the costs of milk production, and feed expense remains one of the most significant. There is increased understanding about how dairy animals – specifically high producing dairy cows - digest and utilize forages in their diets. Ration formulation involves considering the nutritional interrelationships of forages with other feedstuffs. For example, how does the ration differ if high moisture corn is fed with corn silage rather than dry corn? What if 10 lb of dry matter are in the ration from alfalfa hay versus alfalfa haylage? More is known about production management practices that improve forage quality. Making proper harvest and storage management decisions can significantly improve forage quality and subsequent milk production. Finally, tools for measuring the quality of forages are available, yet not fully understood.
For these reasons, MSU Extension designed a program to provide an educational opportunity for dairy forage producers and feeders. The Dairy Forages 2005 program was produced and presented by Extension professionals representing four Area of Expertise Teams from MSU Extension. The Field Crop, Forage, Dairy, and FIRM (Farm Information Resources Management) teams collaborated to design the program. The forages program was offered at six locations throughout Michigan in January and early February 2005.

The agenda included the following topics:

• Utilization of Forages by Dairy Cattle
• Climatic and Management Effects on Forage Quality
  – Haycrops
• Climatic and Management Effects on Forage Quality

The 2005 version of the Michigan Grazing Conference holds a lot in store for dairy graziers. From the opening remarks by Dean of the Michigan State University College of Agriculture and Natural Resources, Dr. Jeff Armstrong, to a look to the future of grazing in the United States by Dr. Garry Lacefield, the Grazing Conference offers several presentations and breakout sessions designed for dairy producers.

The Michigan Grazing Conference (MGC) will be held March 11 and 12, 2005 at the Mount Pleasant Comfort Inn and Conference Center. The conference opens on Friday at 11:00 a.m. with registration and a trade show by vendors of products and services related to grazing. The educational program begins at 1:30 p.m. with a welcome by Dean Jeff Armstrong, followed by a keynote address by Dr. Ann Clark from the University of Guelph. Dr. Clark’s topic is “Sustaining Grazing Profitability”.

The remainder of the Friday afternoon program and a portion of the Saturday morning program includes breakout sessions that participants can choose to attend – see details on page 23 (Figure 1). Dinner is planned on Friday evening at 6:00 followed by presentations concerning surface water use and best management practices for graziers.

Thad Cleary from the Michigan Department of Environmental Quality (MDEQ) and Kevin Ogles, grazing specialist with the Natural Resources Conservation Service (NRCS) will be the presenters showing examples of successful uses of surface waters by graziers. On Saturday, the program begins with a keynote address by Dr. Tilak Dhiman from Utah State University. Dr. Dhiman will address the issue of “Conjugated Linoleic Acid (CLA) in Meat and Milk” and the relationship of human health to grazing. After the Saturday morning breakout session, Dr. Rich Leep, MSU Forage Specialist, will present information on “Using Summer Annuals During the Summer Slump”. On Saturday, Dr. Garry Lacefield, forage agronomist from the University of Kentucky, will close out the conference with two presentations – “Maximizing Profitability in Grazing” and “What is the Future of Grazing Systems in the USA?”.

Breakout Session Speakers Include

• Dr. Doo-Hong Min, MSU Extension Forage Specialist – Upper Peninsula Experiment Station
• Roger Betz, MSU Extension District Farm Management Educator, Southwest Michigan
• Gary Zimmer, Midwest BioAg Products
• Dr. Larry Muller, Professor Emeritus, Department of Dairy and Animal Science, Pennsylvania State University
• Dr. Rich Leep, MSU Extension Forage Specialist – Kellogg Biological Station and E. Lansing
• Jerry Lindquist, County Extension Director, Osceola County
• Kevin Ogles, NRCS Grazing Specialist for Michigan

The cost of the 2005 MGC is $60 per person and includes educational materials, Friday dinner, Saturday breakfast, and Saturday lunch. Overnight lodging is not included. Participants must arrange for overnight stay in Mount Pleasant. Registration forms are available from County Extension Offices. Complete program information and a registration form are available at the MSU Extension Forage Team website at www.msue.msu.edu/fis/. Click on the 2005 Michigan Grazing Conference title. Further questions can be directed to Phil Taylor at 517-543-2310 or taylo262@msu.edu.
**Calendar of Events**

**February 23. Dairy Reproduction Meeting** – Sparta Township Hall, 160 E. Division, Sparta. For more information contact Bill Robb at 269-673-0370 or (robbg@msu.edu).

**March 8-March 9 (8 a.m. to 5 p.m.) Pasteurization Workshop** at the MSU Dairy Food Complex. For information, contact John Partridge at 517-355-7713 x179 or partridg@msu.edu.

**March 10. Agriculture’s Conference on the Environment.** Kellogg Center, East Lansing. For more information, call the MAEAP office at 517-241-4063.

**March 11-12. Michigan Grazing Conference** - Comfort Inn & Conference Center, Mt. Pleasant. For more information contact Phil Taylor at 517-543-2310 or taylor262@msu.edu.

**May 2-3. Tri-State Dairy Nutrition Conference.** Allen County War Memorial Coliseum, Ft. Wayne, IN. For more information contact, Herb Bucholtz (517-355-8432) or go the the web site, www.tristatedairy.osu.edu.

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### Figure 1. Breakout sessions for 2005 Grazing Conference.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Friday, March 11 2:30 - 3:30 p.m</th>
<th>Friday, March 11 4:00 - 5:00 p.m</th>
<th>Saturday, March 12 9:45 - 10:45 a.m</th>
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<tr>
<td>Direct Marketing</td>
<td>Beef - Statewide Producer Survey Results Dairy - Value Added Ventures: Direct Retail</td>
<td>Organic Certification: Procedures and Labeling Issues</td>
<td>Beef - Statewide Producer Survey Results Dairy - Value Added Ventures: Direct Retail</td>
</tr>
<tr>
<td>Grazing Basics</td>
<td>Forage Growth and Development - Dr. Doo-Hong Min</td>
<td>Economics of Switching to Grazing and Developing a Plan Roger Betz, MSU Extension</td>
<td>Grazing Scheme Design (2 Hours) Develop your written plan with considerations for rotations, soil fertility, fencing, and water features.</td>
</tr>
<tr>
<td>Advanced Grazing</td>
<td>Selling the Benefits of Grazing to Others - Gary Zimmer</td>
<td>Dairy Nutrition on Pasture Systems; Optimizing Soil Fertility and Nutrient Mgt - Dr. Larry Muller</td>
<td>Variety Selection and Pasture Renovation - Dr. Rich Leep</td>
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</tbody>
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