December 2002

Extended Visions November-December 2002

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In a second study, we replaced soybean meal in the diet with gluten feed, we were able to feed much more of the protein. By adding more escape protein to wet corn byproduct, we were able to successfully replace much dietary grain could be replaced by the byproduct. We were able to successfully replace 100% of the corn and soybean meal in that diet. In a second study, we...
DAIRY - Continued from Page 1

started with the 100% grain replacement diet and were then able to replace up to 45% of the dietary forage. So, in total, we fed our dairy cows diets that contained close to 70% wet corn gluten feed product. It looked a lot like a feedlot diet. Subsequent research has led us to determine that the typical amount of byproduct feed has been about 15 to 20%, you can see that we’ve proven that twice as much can be successfully fed. In fact, cows fed the 40% wet corn gluten feed diet outperformed cows fed a traditional diet based on 50% alfalfa and corn silage plus corn and soybean meal. We have fed 40% wet corn gluten feed to our research herd at Mead for nearly three years now, and production and herd health have never been better.

Selection in Holsteins

by Bruce DeGroot, Jeffrey F. Keown, and Erin Marotz, UNL Animal Science Department

Milk production per cow has increased in U.S. dairy herds because of genetic progress made in yield traits. Selection objectives have changed and improved management practices. In a previous study, average milk production per cow increased by 660 pounds per cow from 1960 to 1990. Top producing U.S. Holstein herds that are eligible for national evaluations averaged 21,650 pounds of milk, 770 pounds of fat, and 682 pounds of protein in 2000. Some of the highest producing cows have produced up to 76,760 pounds of milk.

The heavy emphasis on selection for yield may have a negative effect on non-yield traits that could contribute to the cow’s overall fitness. These traits are associated with body condition, legs, feet, and udders. Many artificial insemination and breed organizations maintain linear classification programs to measure these traits. The information gathered is used to select for profitability and functional cows. Recent studies have identified some linear type traits that are important for cows to produce high levels of milk over multiple locations.

Final score is a linear type trait that represents weighted overall score for all measured conformation traits. Previous studies have found only small relationships between final score and milk yield. Thus selection for final score may not have much effect on milk yield. However, selection on final score may result in changes in individual linear type traits and somatic cell scores (SCS). The objectives of this study were to estimate genetic parameters and measure response of yield and linear type traits and SCS. Estimates of genetic correlations between yield traits and SCS were obtained. Final score had low estimates of 0.01 to 0.18 and 0.06 with milk, fat and protein yields respectively. Final score had a large negative genetic correlation with SCS. Final score had genetic estimates with the udder traits that ranged from 0.66 to 0.88.

For udder attachment, udder depth and udder depth had negative estimates of genetic correlation with milk yield, whereas near udder height and rear udder width had small positive estimates with milk yield. SCS had negative estimates of genetic correlation between the udder traits. Selection for final score would have a positive effect on udder traits as indicated by estimates of genetic correlations and correlated responses. The yield traits would have little effect in response to selection for final score. The genetic correlations between final score would suggest that selection for increased final score could decrease SCS. Divergent selection on PTAT of sires did have an influence on udder traits and SCS with little or no effect on body and yield traits.

Facility Improvements

Construction of a new office/working area for the nutrition barn is under way. This new addition will provide an area for the graduate students that are working on trials to better organize their equipment and perform their data collection. It will provide for sample storage with a refrigerator/freezer and cabinets. A sink and storage shelves will also be a useful addition. The area will serve as an office and observation room for visitors as well. Completion should be done by mid-November.

A new technology will soon be added to the milking parlor. Automatic cow identification and cow activity meters will enable the cows to be automatically identified as they enter the milking parlor. Automatic identification of cows will decrease milking time and eliminate human error in cow identification. All milk weights, milking times, and milk component analyses will be automatically downloaded to the computer for management and research use.

The cow activity meter will measure cow movement, which is critical in determining estrus and cow health. This information will be downloaded into the computer at milking time. The technology is the most advanced available and will be installed in October.

A new 30’x100’ heifer working facility and maternity barn will be constructed in the spring of 2003. This will replace the current forty-year-old barn and will improve worker efficiency and animal comfort.

Graduated student Sarah Vandervest sample from theurem of alfalfa treated Holstein.

About The People

Erin Marotz serves as the dairy research area manager. Erin has been with the University for nearly ten years. His job is to oversee all daily activities at the dairy. This includes all animal and equipment concerns, as well as personnel supervision. He also helps coordinate the research projects for efficient performance and compliance to protocol. Erin lives near the dairy unit with his wife, Nancy and their two children, Tyler and Morgan.

Gene Anderson has been employed at the dairy for six years. Gene is an Ag Research Tech I and his duties include both feeding the milking herd, as well as replacement heifers. He also cares for the nutrition research trials in the nutrition barn. In addition, Gene does the machinery maintenance. Gene lives near Minneapolis with his wife, Rhonda, and children Wyatt, Chance and Zane.

Leo Sweet has been employed at the dairy for nearly ten years as an Ag Research Tech I. His main responsibilities are the feeding and milking system maintenance. Leo lives in Mead with his wife, Linda.

Two new employees have joined the dairy research area. Kelsey Rhynalds is currently the right milker. He milks the herd at 7:00 p.m. and his other duties include parlor sanitation and cleaning the nutrition barn. He and his wife, Becky, and daughter, Ashley, reside in Lincoln.

Ken Cejka is a ten-year veteran of the dairy research area. Ken is an Ag Research Tech II and recently changed positions from a milkier to feeding duties and manure management. Ken lives in Watson with his wife, Chemie and stepdaughter, Emma.

Darren Strizek has been with the dairy for twelve years. Darren is an Ag Research Tech II and cares for the replacement heifers. He, also, performs the feeding and data collecting during research trials in the nutrition barn. Darren lives near Crescent with his wife Janice, and children, Reed and Cole.

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Dustin Jurgensen is a native of Seward, NE with a BS from UNL. His research topic is the effect of facilities on cow behavior and well-being. Dustin is working on his MS in Dairy Nutrition and comes from Ohio State University. Her research at:

Amanda Sparks-Oliver is working on a PhD in Dairy Nutrition and comes from Oklahoma State University. Her research topic is evaluating brown midrib forage and grain sorghum hybrids. Sarah Ivan is working on her MS in Dairy Nutrition and comes from Ohio State University. Her research topic is comparison of corn silage hybrids bred for high fiber digestibility. Bill Majka is working on his MS in Dairy Nutrition and is a native of Seward, NE with a BS from UNL. His research topic is the effect of facilities on cow behavior and well-being. Bill also is instrumental in the Dairy Program at Northeast Community College.

Shaker Al-Sweilkh is working on his PhD in Animal Science from Saudi Arabia. His research topic is protection of the lipid in oilsides to produce designer milk products which are more healthy for consumers. Bruce DeGroot is working on his PhD in Dairy Breeding and Genetics and comes from Northwestern College in Iowa. His research topic is modeling lactation curves for cows with or without bovine somatotropin. Sam Sawatih is a Fulbright Fellow working on his PhD in Dairy Breeding and Genetics and comes from Palestine. His research topic is the economic effects of using bovine somatotropin.

Makram Ghafe is a visiting Fulbright Fellow from Lebanon. He is researching the reasons for disposal of cows that have been administered bovine somatotropin or not.

Graduated student Sarah Vandervest samples from theurem of alfalfa treated Holstein.

Conducting Dairy Research

Graduate students play an important role in conducting research. The following is a list of students currently performing dairy research. Amanda Sparks-Oliver is working on a PhD in Dairy Nutrition and comes from Oklahoma State University. Her research topic is evaluating brown midrib forage and grain sorghum hybrids. Sarah Ivan is working on her MS in Dairy Nutrition and comes from Ohio State University. Her research topic is comparison of corn silage hybrids bred for high fiber digestibility. Bill Majka is working on his MS in Dairy Nutrition and is a native of Seward, NE with a BS from UNL. His research topic is the effect of facilities on cow behavior and well-being. Bill also is instrumental in the Dairy Program at Northeast Community College.

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Looking for CCA Credits? We’ve Got You Covered!

If you are in need of CCA credits or want to expand your knowledge base, several upcoming educational opportunities may be of interest to you. The workshops provide intensive, detailed instruction. They are taught by University and industry specialists. There is a fee for each program, but if you consider the potential gains from the programs, it will be well worth it. (Take a look at the results from our summer programs in this edition to get an idea of the impact our programs have on participants.)

The Annual Research Symposium for agribusiness professionals and others seeking continuing education credit will be held on Tuesday, November 18. The symposium is co-sponsored by the Nebraska Ag-Business Association in cooperation with the University of Nebraska Cooperative Extension and the Department of Agronomy and Horticulture, both are divisions of NU’s Institute of Agriculture and Natural Resources. Additional financial sponsorship is provided by Midwest Laboratories Inc., Bayer, BASF and Monsanto.

A satellite feed will be broadcast across the state. Host sites include NU Panhandle Research and Extension Center (PHREC) in Scottsbluff, the NU West Central Research and Extension Center (WCREC) in North Platte, the Lifelong Learning Center in Norfolk, College Park in Grand Island, and at the ARDC.

A total of 5 hours of CCA CEU Credits will be applied for at each location. The program begins at 8:30 a.m. CST (7:30 a.m. MST). Registration fees are $50 for members and $60 for non-members. Additional materials fee of $10 for members and $15 for non-members.

Register online at http://www.na-ba.com/events.htm. Or contact the Nebraska Ag-Business Association, Inc., 1311 Lincoln Mall, Suite 308, Lincoln, NE 68508-2882 Phone (402) 476-1528; fax (402) 476-1259; e-mail info@na-ba.com.

The INTEGRATED CROP MANAGEMENT WINTER PROGRAMS will kick off on December 5 with a workshop on Irrigation - Soil and Water Management at the Lifelong Learning Center in Norfolk. A 2-day Crop Pest Management workshop will be held on East Campus in Lincoln on December 17 and 18. A Basic Soil workshop will also be held on campus on December 19. Please call or e-mail for pricing, CCA credit info and other workshop information at (402)624-8030 or kglewen1@unl.edu. ☞

### Upcoming Educational Opportunities

#### NEBRASKA SOYBEAN DAY & MACHINERY EXPO

- **Friday, December 13** *8:30 a.m. - 2:30 p.m.*
- Saunders County Fairgrounds in Wahoo

N
ebraska soybean producers who are interested in learning about this year’s outcomes and ideas for next year won’t want to miss this event. Top-notch speakers will provide helpful insights and tips. Reports will be given by the Nebraska Soybean Board. Agribusinesses will be on hand to display their latest wares and you can take a look at equipment - all in the warmth of the heated pavilion. Free lunch will be served at noon. The free event is sponsored by the Saunders County Growers Organization, the Nebraska Soybean Board, private industry representatives, and Cooperative Extension, a division of NU’s Institute of Agriculture and Natural Resources. ☞

#### Upcoming Educational Opportunities

- **December 5**
  - Workshop on Irrigation - Soil and Water Management in Norfolk
- **December 17 and 18**
  - Basic Soil Workshop in Lincoln
- **December 19**
  - Crop Pest Management Workshop in East Campus, Lincoln

#### Youth Learn About Ag

A
approximately 750 students from twelve schools from Omaha, Yutan, and Millard attended the Ag Awareness Festival at the ARDC this fall. The event is coordinated by the Ag Awareness Coalition - a group of agricultural professionals representing business, commodity groups, and the University. The youth learned about beef, grains, dairy, swine and horses. The students participated in interactive presentations, sample various foods made from ag products, and were treated to ice cream courtesy of Blue Bunny and flavored milk from Roberts Dairy. ☞

#### Calendar of Events

**November**

- 6: Administration Team Meeting 9:30-11:30
- 6: Saunders County Health Services 8:00-4:00
- 8: Farm Program Options 10:00-12:00
- 8: NE Agbusiness Meeting 9:00-3:00
- 11: Safety Committee Meeting 1:00-2:00
- 14: Prawn Team Meeting 1:00-3:00
- 18: Saunders Co. Extension Board 7:00-10:00pm
- 19: AIM Thankgiving Supper 6:30-8:00pm
- 19: Research Symposium 8:00-5:00
- 20: Unit Managers Meeting/Safety Talk 12:00-3:00
- 21-22 ARDC Gallup Meeting 8:30-1:00

**December**

- 3: LEAD Dinner and Meeting 6:00-10:00pm
- 3: Bankers Training 9:00-4:00
- 4: Administration Team Meeting 9:30-11:30
- 9: Safety Committee Meeting 1:00-2:00
- 11: Unit Managers Meeting 1:00-3:00
- 13: Soybean Day and Machinery Expo - Saunders Co. Fairgrounds - Wahoo
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- **January**
  - 8: Ag Risk Management Meeting 8:30-4:00
  - 8: Safety Committee Meeting 1:00-2:00
  - 8: Unit Managers Meeting 1:00-3:00
  - 9: Precision Ag Tour 11:00-3:00
  - 9: Market Journal 8:00-9:00pm

#### You’re Invited to a Tour of Roberts Dairy

The dairy call at the Ag Awareness Festival was a hit with attention by youth. ☞

Brown Midrib Forage Sorghum Makes Milk

during the past several years, we have established that brown midrib forage sorghums result in greater feed intake and milk production than normal forage sorghum hybrids. In fact we have observed close to a 20% increase in milk production for cows fed brown midrib sorghum versus the normal hybrids. Brown midrib sorghum contains less lignin than normal sorghum, and so it is more digestible and provides more energy to the cow for milk production. A good way to think about lignin is as a “plant plastic” that protects the forage fiber from digestion by the cow. The less lignin, the more digestible the plant. In several trials, the brown midrib forage sorghum has resulted in milk production similar to commonly used dual-purpose corn silage hybrids. So, from a nutritional standpoint, feeding brown midrib forage sorghums to dairy cattle makes great sense. One agronomic limitation, however, is the greater potential for the brown midrib hybrids to lodge which makes it harder to harvest. Companies are currently working on developing new hybrids and better defining growing conditions to minimize this problem.

Sorghum is agronomically suited to this part of the country with drier conditions because sorghum requires less water, less fertilization, and can withstand drought better than most hybrids of corn.

A current question that we are working on is: are there differences among different hybrids of brown midrib forage sorghum? We have begun a series of studies aimed at determining which hybrids give the best response in milk production, feed intake, and digestibility. Another question we will be looking at over the next several years is what are the differences between brown midrib grain and forage sorghum hybrids? Grain sorghum hybrids would be less prone to lodging, and if we can make them more digestible by the brown midrib trait, then this ought to be ideal silage for a dairy farmer. ☞
Entomology Course Will Offer Dual Credit at Four High Schools

UNL will offer an entomology course via dual credit at four high schools next fall, allowing students to earn high school and college credits at the same time. The pilot project is part of a national and state "seamless education" emphasis that seeks to ease students' transition from high school to college, said Tiffany Heng-Moss, assistant professor of entomology in UNL's College of Agricultural Sciences and Natural Resources. Insect Biology, which will be taught from the UNL campus and offered with various distance education technologies at Mead, Laurel-Concord, Nebraska City and Burwell high schools, will be available for high school credit, college credit or both. The course, which will count toward the Essential Studies-Science and Technology requirement for most of UNL's colleges, will be taught by Heng-Moss and Connie Reimers-Hild, distance education coordinator for the entomology department.

The new dual-credit offering has advantages for the high schools, students and UNL. The course will offer high schools another science course, which helps them meet national and state science-curriculum standards without having to spend new resources. High school students get a head start on their college careers amid familiar surroundings, improving their chances of graduating in four years.

This move also reflects UNL's continued interest in distance education, even as it rethink how it offers such learning amid tightening budgets. "We're still reaching out to communities in different ways despite budget cuts," Reimers-Hild said.

"What this class really represents is a start at making university-curriculum available in every school and community in Nebraska," said Dan Duncan, director of the university's Agricultural Research and Development Center near Mead.

The dual-credit course is a natural progression in the agricultural sciences curriculum at ARDC and other institutions of Agriculture and Natural Resources faculty and staff helped launch. First at Mead High School several years ago, and then at the other three schools this fall, Duncan said. It also addresses concerns raised last year by the National Commission on the High School Senior Year, which said that increased cooperation between secondary and higher education is essential in today's economy.

Heng-Moss, Reimers-Hild, CASNR professor Arlen Etling and others will evaluate the program after the spring semester, with plans to expand Insect Biology to other high schools. "This is only the first course in a series of many we expect to offer" for dual credit at high schools, Reimers-Hild said.

UNL is seeking grant support to offer other dual-credit courses in Nebraska high schools. In addition to ARDC, and the entomology department, other university partners in the project include the College of Agricultural Sciences and Natural Resources, the Department of Agricultural Leadership, Education and Communication; the office of Extended Education and Outreach; and the Admissions Office.

CASNR, ARDC, the entomology department and AgLec are part of the University of Nebraska's Institute of Agriculture and Natural Resources.

Saunders County 4-Hers Receive Top Honors at State Fair and Akarsben

Two Saunders County 4-Hers received top honors with their gifts in recent swine carcass contests. Christine Jacobs won the Nebraska State Fair Swine Carcass Competition. Jacob's pig had a live weight of 206 pounds, carcass weight of 189 pounds and 65.163% lean meat. Andy Chvatal received grand champion honors at the Aksarben Livestock Expo. His pig had a live weight of 238 of, carcass weight of 382 and yielded 66.27% lean meat. Pictured: Christine Jacobs and Bob Maduns, NU Extension Educator and Andy Chvatal with his family.  

Magnet School Updates...

Rodent Invasion

The 8th grade Ag Exploratory class at Mead High School has had much excitement this quarter using an albino rat from the Lincoln Aksarben Livestock Expo. His pig had a live weight of 206 pounds, carcass weight of 189 pounds and 65.163% lean meat. Andy Chvatal received grand champion honors at the Aksarben Livestock Expo. His pig had a live weight of 238 of, carcass weight of 382 and yielded 66.27% lean meat. Pictured: Christine Jacobs and Bob Maduns, NU Extension Educator and Andy Chvatal with his family.  

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Snickers is the first of many animals that will be the ag room hog throughout the year. The class has been able to link many ag science concepts to the hog, especially when talking about animal science. Dan Parsons an 8th grade in the class says, "Having Snickers in the classroom has been a fun learning experience." In addition to the inquiry projects students also take turns conducting daily chores that include using the Zoo's web site to log information and submitting a daily journal. Snickers will be heading back to the zoo in two weeks and in her place will be an anthropod gitter.

Students in Ag Exploratory take a sneak peak from the concoction of a mealworm sandwich with Snickers. From left: Nate Thorton, Dan Parsons, Jacy Thorton (holding Snickers),and Ali Adrchwirg

2002 Biotechnology and the Future Grant Award

The National 4-H Council awarded the Mead Agri cultural Sciences Magnet School project an annual grant of $5,000 funded by Cargill. The grants were awarded to programs that involve youth groups who are taking leadership roles and working with adult volunteer leaders in their communities. Community service will also help youth build fundamental skills and workforce competencies. Youth were actively involved in writing the grant proposals and will be instrumental in project decisions, designs, and implementation.

The mission of National 4-H Council is: "to advance the 4-H youth development movement, building a world in which youth and adults learn, grow, and work together as catalysts for positive change." With local 4-H staff, volunteers, 4-Hers, and other youth programs and organizations, National 4-H Council provides "hands-on" educational programs and activities that involve youth as partners. National 4-H Council facilitates the establishment of youth as resources in their communities and provides leadership training and experience to ensure their success. In 2001, more than 6.8 million youth ages 5-19 were involved in 4-H programs across the United States.