

# **Richland County AG News & Notes**

Agricultural Newsletter of the Richland County Extension Office

Fall 2006

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## **Calendar of Events:**

### **October**

- 13 Future of Farming Forum – UW Platteville, 9 a.m. – 4 p.m.
- 24 Avian Influenza Briefing – Madison 8:30 – noon at the Sheraton

### **November**

- 6 Pest Management Meetings - Sparta
- 8-9 Mid-West Herd Health Conference
- 13 Pest Management Meetings – Platteville
- 14 Pest Management Meetings - Arlington
- 14-15 Management Assessment Center for Dairy Farmers
- 16 Pest Management Meetings - Janesville

### **December**

- 1 SARE Grant proposals Due

#### **Richland County Agriculture Facts:**

*Agricultural Acreage in Richland County (2002)*

**FARMERS IN RICHLAND COUNTY OWN AND  
MANAGE 257,807 ACRES OF LAND IN  
RICHLAND COUNTY.**

**THAT IS ABOUT 69% OF THE LAND IN THE  
COUNTY**

This includes: pastures, cropland, CRP, and tree farms

## **Degree of Starch Access (DSA): Starch Digestibility in Forages and Grains fed to Dairy Cattle**

by Patrick C. Hoffman and Randy Shaver  
Extension Dairy Scientists  
University of Wisconsin - Madison

**Introduction:** Starch, supplied in Midwest diets primarily from high-moisture and dry corn grain and whole-plant corn silage, is an important source of energy for dairy cattle. However, the digestibility of corn starch can be highly variable. Various factors, particle size (fine vs. coarse grind), grain processing (steam flaked vs. dry rolled), storage method (dry vs. high-moisture corn), moisture content of high-moisture corn, type of corn endosperm, and corn silage maturity at harvest, chop length, and kernel processing, influence ruminal and or starch digestibility in lactating dairy cows. Because both physical and chemical properties of starch influence starch digestion, assessment of starch digestibility in the laboratory has been challenging. In an attempt to address variation in starch digestibility, NRC (2001) suggested empirical processing adjustment factors (PAF) to adjust non-fiber carbohydrate digestion coefficients for high-starch feeds. However, since no system to measure variation in processing adjustment factors for feedstuffs is available the PAF's are subjective book values with minimal practical application. For corn silage, Ferreira (2002) developed a kernel processing score (KPS) to assess adequacy of kernel processing of corn silage. But, KPS only considers particle size and does not consider the influence of moisture content and endosperm type on starch digestion. Some commercial laboratories employ in situ or in vitro systems to evaluate starch digestibility, but methods are variable between laboratories and to date relationships to in vivo starch digestion are not well defined.

**What is Degree of Starch Access?** In an effort to overcome challenges associated with evaluating starch digestibility for corn-based feeds, our laboratory developed the degree of starch access (DSA) procedure. The DSA procedure is relatively simple and is repeatable across dry and high-moisture corn grain and whole-plant corn silage samples. The DSA procedure (Blasel et al., 2006) is conducted on feeds in the physical form in which they are fed. A brief description of the DSA procedure is as follows:

- A 5 to 20 g sample of un-ground, un-dried starch containing feed is placed in a large beaker,
- Water and buffer are added and the sample is heated to 95oC,
- After heating the sample is treated with heat-stable amylase and stirred,
- After cooling the sample is re-treated with a second buffer and amyloglucosidase and stirred.
- The amount of starch converted to glucose after 60 minutes is then determined,
- The amount of starch liberated (recovered) from the un-ground, un-dried sample is then divided by the total starch content of the feed and percentage of starch recovered from the feed in its un-dried, un-ground form is determined.

The DSA procedure is extremely sensitive to particle size ( $R^2 = 0.99$ ) and moderately sensitive to moisture content ( $R^2 = 0.76$ ) and endosperm type ( $R^2 = 0.59$ ), which are three primary factors that influence starch digestibility in corn grain.

**What is the Relationship between DSA and Starch Digestibility?** The starch recovery procedure of DSA does not result in a direct estimate of starch digestibility. The DSA procedure only results in differences in starch recoveries. For example, the DSA procedure would recover 95 percent of the starch in finely ground corn but only 5

percent of the starch in whole shelled corn. Thus, the recovery values provide an index of the variation in degree of starch access among feeds. We reviewed eight research reports in the scientific literature with trials using lactating dairy cows, measuring total tract starch digestibility, which provided information on the particle size, moisture content, and endosperm type of the corns tested. From these data, we estimated their starch recovery values and evaluated the relationship between recovery values and their measures of total tract starch digestibility (Refer to Figure 1). This regression equation can be applied to starch recovery values generated from the DSA laboratory procedure yielding an estimate of total tract starch digestibility (termed Starch Digestibility<sub>DSA</sub>). Starch Digestibility<sub>DSA</sub> can then be used in summative energy equations (NRC, 2001) to provide energy values for corn-based feeds on a standardized basis.

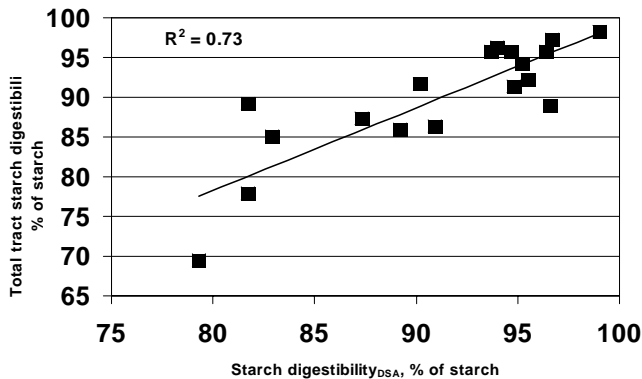


Figure 1. Relationship between Starch Digestibility<sub>DSA</sub> as predicted from DSA starch recovery and total tract starch digestibility in lactating dairy cattle. Relationship is based on starch recovery estimated from particle size, moisture content and corn endosperm data from eight published research trials which evaluated total tract starch digestibility in lactating dairy cows.

### What are the Advantages and Limitations of DSA?

The DSA assay: is relatively simple, is repeatable, can be adapted by commercial feed testing labs, requires minimal laboratory equipment, and does not require rumen fluid. The DSA assay is sensitive to factors in corn grain and whole-plant corn silage, such as particle size, moisture content, and endosperm type, which are known to influence corn starch digestibility. The DSA starch recovery values can be adjusted to the normal range of in vivo starch digestibilities observed in lactating dairy cows. The DSA assay also can determine relative starch digestion potentials of a heterogeneous feed, such as corn silage, or a non-heterogeneous feed, such as steam-flaked corn grain, and evaluate them on a similar scale which to date has been difficult with other laboratory procedures. Despite advantages, the DSA procedure does have limitations. At present, there are no data available to establish a direct relationship between a measured DSA value and in vivo starch digestibility, just a regression equation developed from literature reports. Also, the DSA assay may not distinguish the nuances of starch digestion by ruminants, such as the interactions between ruminal and post-ruminal starch digestion. The DSA assay may also be prone to background interferences of mono- and oligosaccharides, which could result in over-estimation of starch digestibility.

### How are Starch Digestibility<sub>DSA</sub> Values Interpreted?

A summary of Starch Digestibility<sub>DSA</sub> values observed for common corn-based feeds is presented in Table 1. The Starch Digestibility<sub>DSA</sub> values for processed dry grain range from 98 percent for very fine-ground corn to 84 percent for cracked corn. This 14 percentage unit difference in Starch Digestibility<sub>DSA</sub> would translate into a 10 percentage unit difference in the TDN<sub>1x</sub> values for these corns calculated using a summative energy

equation. At a 10 lb. dry matter per cow per day feeding rate of corn, failure to account for this difference in energy values could cost about 3 lb. of milk per cow per day. Typical Starch Digestibility DSA reference values are as follows:

<b>Starch Digestibility<sub>DSA</sub> (% of Starch)</b>	<b>Reference</b>
> 96.0	Very High
96.0-93.0	High
93.0-90.0	Medium
< 90.0	Low

Beware of potential for milk fat test depression and(or) subacute ruminal acidosis when feeding corn-based feeds with “very high” Starch Digestibility<sub>DSA</sub> in diets containing low neutral detergent fiber (NDF) from forage or low effective NDF, especially when in conjunction with sub par bunk management practices.

**Table 1.** Potential range for Starch Digestibility DSA of corn-based feeds commonly fed to dairy cattle.

<b>Feed</b>	<b>Starch % of DM</b>	<b>Starch Digestibility<sub>DSA</sub> (% of Starch)</b>		
		<b>Min</b>	<b>Max</b>	<b>Avg</b>
Corn	95.2	97	98	98
Starch Shelled Corn	68.2	79	98	92
Corn Steam-Flaked	71.7	92	98	95
Corn High-Moisture	67.6	81	98	93
Corn Silage	27.7	80	98	94

## **Extension Livestock Team Assists Wisconsin Cattlemen’s Association Beef Identification Pilot Project**

Jeff Lehmkuhler, Terry Quam, Ardel Quam, Zen Miller, Dave Wachter, Rhonda Gildersleeve, Randy Thompson, Adam Hady<sup>1</sup>

Funds provided to Wisconsin Livestock Identification Consortium were awarded to the Wisconsin Cattlemen’s Association (WCA) for a project to investigate the use of radio frequency identification device (RFID) technology for exhibition steers. The UWEX Livestock team assisted WCA in writing the grant proposal as well as implementing the project. The project involved WCA, Global Animal Management (software service provider), Global Vet Link (on-line certificate of veterinarian inspection provider), Wisconsin State Fair Park, Cooperative Extension, and local county fair boards. The project involved placing RFID ear tags in all steers arriving at all state fair check-in sites in addition to all steers exhibited at the Grant, Iowa, Outagamie, Richland, and Rock county fairs. In total 1,142 steers were identified with RFID tags provided by WLIC for this project.

Exhibitors were required to register their premises through the state’s registration program that become mandatory in the fall of 2005 (January 2006 extension). State Fair Park made it mandatory for all exhibitors to obtain a premise registration in order to exhibit at the 2005 fair. A DVD was developed and displayed as part of an informational tool at the 2004 WI state fair and WCA registered premises of exhibitors at the 2004 state fair as well as check-ins. Additionally, those counties involved in the projects required their exhibitors to register their premise (though this was not strictly enforced). UWEX also assisted exhibitors register their premises. A follow-up survey was conducted by each county extension

agricultural agent that participated in the project.

Post-participation surveys were sent to exhibitors. A total of 112 (17 Outagamie, 34 Iowa, 21 Grant, 10 Richland and 30 Rock) surveys were returned which was approximately a 50% return rate. The survey questions were either yes/no or scalar from 1 to 5 where 1 corresponded to “Strongly Disagree” and 5 represented “Strongly Agree”. A total of ten questions were asked in the brief one page survey.

It was noted that the project tended to increase their knowledge of the electronic animal identification system (3.7-4.2). Responses regarding the premise registration form as being simple to understand and for the question as to the ease of registering their premise were the same for both questions and were between “Undecided” and “Agree” with averages ranging from 3.5-4.1. The process did not appear to slow the check-in process with survey responses ranging from 1.6-3.1. The majority of the participants felt the tags did not negatively impact the appearance of their show animal (1.8-2.4). Based upon the survey responses only, a total of 14 steers had lost the RFID device. The total number lost is unknown as not all steers that were identified at the check-ins were exhibited. This illustrates 1) Retention of RFID tags is not 100% in show cattle and 2) Retention rate is relatively high. Additionally, nine steers were reported by the survey respondents to have developed an infection around the site of administration. It is uncertain as to the cause and warrants further investigation. This project reports responses from neutral to acceptable regarding the device as an acceptable form of animal identification by the respondents (3.2-4.0). The project was reported to be important for the livestock show industry as a National Animal Identification System is developed (3.5-4.6).

The UWEX Livestock Team assisted the beef industry in evaluating a proposed animal identification technology. The use of RFID technology appears to be a plausible method for identifying cattle going to exhibitions but is not faultless. As the industry continues to make advances to the development of a national animal identification system, Extension will provide education to producers regarding the system.

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1 Jeff Lehmkuhler, Extension Beef Cattle Specialist; Terry and Ardel Quam, Wisconsin Cattlemen’s Association; Zen Miller, Outagamie County Extension Agricultural Agent; Dave Wachter, Grant County Extension Agricultural Agent; Rhonda Gildersleeve, Iowa County Extension Agricultural Agent; Randy Thompson, Rock County Extension Agricultural Agent; Adam Hady, Richland County Interim Extension Agricultural Agent

**REPORT** – From the 2005 Steer Project using RFID ear tags (2005 Beef Cattle Research Report – UW-Madison Animal Science Department)

## **Production in the Past**

### *The Dairy industry in 1936*

The Dairy industry in 1936 was a little different than it is today. Dairy was a part of a more diversified agricultural system. If we define a dairy farm as a farm where more than 40% of their product value comes from dairying. Only one tenth of all farms that had dairy cattle in 1936 would qualify as a dairy farm. Nation wide in 1936, only 100,000 farms had more than 20 milk cows.

Milk production has also come a long way since 1930’s. In 1930 the average annual milk production for a cow in the United States was 4,954 pounds. The top 10 States in Milk production (% total US Production) in 1936 were in order: Wisconsin (11.2), Minnesota (7.5), New York (7.0), Iowa (5.9), Illinois (4.7), Pennsylvania (4.4), Michigan (4.3), Ohio (4.3), California (4.0), and Texas (3.9).

Source: Dairy Science: Its Principles and Practice In Production, Management, and Processing. W.E. Petersen, Ph.D., J.B Lippincott Company Chicago, 1936.

## **Midwest Herd Health Conference Scheduled for Nov. 8-9**

Sheboygan The University of Wisconsin-Extension's Dairy Team along with the UW College of Agriculture's Department of Dairy Science and dairy industry allies will host the annual Midwest Herd Health Conference on Nov. 8-9 at the Holiday Inn-Stevens Point.

This conference is designed to meet the educational needs regarding herd health for dairy farms of all sizes. Dairy producers, herdspersons, employees and dairy industry representatives are encouraged to participate in this cutting edge seminar. This conference will be an ideal time to interact with dairy enthusiasts from throughout the Midwest.

Speakers include Dr. Leo Timms from Iowa State University, UW-Extension Dairy Scientists Pat Hoffman and Dave Kammel, Five-Star Dairy Consultant Jim Barmore, Wisconsin Department of Agriculture, Trade and Consumer Protection Animal Health Veterinarian Paul McGraw, and Pfizer Animal Health Technical Services Veterinarian Sam Barringer. Presentation topics include housing and management of special needs and transition cows, caring for teats in winter, feeding strategies to improve feed efficiency in heifers, bedding issues and milk quality, and prevention, diagnosis and treatment of Salmonella. Art Cone, Vice President of Culver's Supply Chain Management and Keith Charmasson of Packerland will address the issues of what food processors and distributors want from livestock producers.

An optional tour is available following the conference. Participants will have an opportunity to tour the UW Marshfield Agriculture Research Station to learn more about dairy replacement research the

University of Wisconsin is currently conducting.

The Midwest Herd Health Conference is open to all dairy producers, herdspersons, dairy employees, agri-business and any other interested individuals. The cost of the conference is \$150 or \$165 for the conference and tour. Fees include registration, conference materials, breaks, lunch, reception and breakfast. Lodging is not included in the fee; however, a block of rooms will be held until October 23 at the Holiday Inn-Stevens Point for \$79 single or double occupancy, plus applicable taxes.

Early registrations are due Nov. 1 to the CALS Conference Services at 620 Babcock Drive, Madison, WI 53706. After Nov. 1, the registration fee increases to \$170 for the conference only and \$185 for conference and tour.

For more information about the Midwest Herd Health Conference, please contact Sheboygan County UW-Extension Dairy and Livestock agent Tina Kohlman at 920-467-5740 or at [tina.kohlman@ces.uwex.edu](mailto:tina.kohlman@ces.uwex.edu). For additional registration information, please contact the CALS Conference Services at 608-263-1672.

## **Enhance Your Management Capabilities at Assessment Center Workshop**

What kind of a dairy manager are you? In today's changing farm environment, producers are required to take on more of a managerial role on their farms. The Management Assessment Center for Dairy Farmers, designed by a team of University of Wisconsin-Extension Agriculture and Natural Resource Extension (ANRE) personnel, helps dairy farms better assess their managerial strengths and weaknesses.

A two-day assessment center workshop will be held at the Byron Retreat Center, in Brownsville, Wisconsin on Nov. 14-15. The assessment center model is based on a thorough job analysis of dairy farm owners and managers and the competencies and attributes necessary for effectiveness and success. It incorporates activities and simulations that enable a participant to demonstrate his or her skills and abilities on eight job-related dimensions. These attributes include communications, planning and organizing, leadership, decision making/judgment, management control, empathy, teamwork and initiative.

Businesses and organizations have used this assessment center methodology for many years to select, evaluate and develop individuals for managerial positions. The assessment center method is unique in that it combines standardized procedures in which competencies for a specific position are identified and assessed using both individual and group simulations and activities. A team of trained assessors will observe participants in several exercises and evaluate participants based on their performance, in contrast to their competencies and attributes. This means that the feedback provided to an individual participant is based upon pooling of information, multiple observations of assessors and consensus decisions.

Activities in the Management Assessment Center include a group discussion with non-assigned roles, a group discussion with assigned roles, a background interview, an in-basket activity, a written case study and a personnel discussion. Feedback will be delivered to participants as soon as possible following the workshops. Suggestions are discussed individually with participants for self-improvement in order to increase their effectiveness in any of the eight attributes.

Registration for the workshop is \$100 and includes two days of management capacity

building experiences, lodging, meals and breaks; individual oral and written feedback; and coaching to assist in action strategies. For more information on the Management Assessment Center, please visit the website at: <http://cdp.wisc.edu/mac.htm>, or contact Jenny Vanderlin, Center for Dairy Profitability, 608-263-7795, [jmvander@wisc.edu](mailto:jmvander@wisc.edu) or Matt Glewen, UW-Extension Calumet County, 920-849-1450, [matthew.glewen@ces.uwex.edu](mailto:matthew.glewen@ces.uwex.edu)

### **Pest Management Update Meetings Scheduled for This Fall**

Madison-Producers and agricultural professionals are invited to attend one of a series of Pest Management Meetings to be hosted by University of Wisconsin-Extension during November. Topics will include weed and insect management and disease control. "We have many topics and issues to discuss as we review this year, especially with the wide ranging weather effects from drought to bumper crops," said Chris Boerboom, weed scientist at UW-Madison/Extension.

Speakers at the meetings include Boerboom; Eileen Cullen, UW-Madison/Extension field crop entomologist; Craig Grau, UW-Madison/Extension field crop plant pathologist; and Mark Renz, UW-Madison/Extension weed scientist. This meeting will provide four hours of pest management continuing education credits for certified crop advisors.

All sessions start at 10 a.m. and conclude at 3 p.m. Registration and coffee begins at 9:30 a.m. for all sessions. The registration fee is \$25. This fee covers the cost of the information packet and the noon meal. The information packet will contain the 2007 Pest Management in Wisconsin Field Crops bulletin, with weed, insect and disease control recommendations for corn, soybean,

small grains and forages, as well as other pest management reference materials. Additional copies of the information packet will be available for purchase at \$15 each.

Organizers request participants to pre-register with the host agent at least one week before the meeting they wish to attend.

The schedule for the Wisconsin Pest Management Update meetings is:

Nov. 6, Sparta, contact Bill Halfman, 608-269-8722

Nov. 7, Bloomer, contact Jerry Clark, 715-726-7950

Nov. 8, Marshfield, contact Matt Lippert, 715-421-8440

Nov. 10, Fond du Lac, contact Mike Rankin, 920-929-3170

Nov. 13, Platteville, contact Ted Bay, 608-723-2125

Nov. 14, Arlington, contact Randy Zogbaum, 608-742-9682

Nov. 15, Green Bay, contact Kevin Jarek, 920-832-5119

Nov. 16, Janesville, contact Jim Stute, 608-757-5696

### **Grant Program Helps Farmers Research and Demonstrate New Ideas**

Madison Farmers always have new ideas for improving their operations. The problem is that those ideas usually require money. Now there is a way to help match funds with ideas to improve the economic, environmental and social sustainability of farming.

The North Central Region Sustainable Agriculture Research and Education (NCR-SARE) Program is currently accepting applications for their 2006 Farmer Rancher Grant program. NCR-SARE awards grants to farmers and ranchers for innovative on-farm research, demonstration and education

projects. The program provides up to \$6,000 for individual grants and up to \$18,000 for grants awarded to groups of three or more farmers.

Larry Jacoby and Judy Moses of Downing, Wis. received a grant to help them market goat meat and lamb to Somali immigrants and other ethnic groups.

“SARE grants have allowed us to collaborate with other producers to address niche markets in our community that would have been too risky to explore without this support,” Moses said.

She added, “The grant writing process also helped us develop and refine our idea by brainstorming with producers, extension agents and marketing professions. We believe this process would have been helpful even if our grant hadn’t been funded.”

Other SARE farmer grants in Wisconsin have funded research on nutritional differences in milk from cows on pasture, supported establishment of a demonstration orchard on the Bad River Indian Reservation, helped farmers fine-tune grazing systems, allowed farmers to evaluate new crop varieties and pest management techniques, and contributed to a wide range of other innovations. Projects funded by SARE are listed on the web at [http://www.sare.org/reporting/report\\_viewer.asp](http://www.sare.org/reporting/report_viewer.asp).

NCR-SARE grants are awarded based on how well projects will improve long-term profitability, help the environment, and advance social goals such as producing healthy foods, enhancing quality of life on the farm, and supporting communities.

Last year NCR-SARE funded 47 grants totaling \$414,489. This year farmers and ranchers throughout the North Central Region will once again have the opportunity



to apply for roughly \$400,000 in grant assistance.

The 12 states that comprise the North Central Region are Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. The NCR-SARE program receives its funding through the United States Department of Agriculture.

Grant proposals are due in the NCR-SARE office by Dec. 1. Interested applicants may contact NCR-SARE at 1-800-529-1342 or [ncrsare@unl.edu](mailto:ncrsare@unl.edu) for more information. The current Farmer Rancher Grant Call for Proposals application is on the NCR-SARE web site at <http://www.sare.org/ncrsare/prod.htm>.

For more information, contact Diane Mayerfeld, the Wisconsin SARE Coordinator, at 608-262-8188 or [dbmayerfeld@wisc.edu](mailto:dbmayerfeld@wisc.edu) or Joan Benjamin, the North Central SARE Farmer Rancher Grants Coordinator, at 402-472-0809 or [jbenjamin2@unl.edu](mailto:jbenjamin2@unl.edu).

### **Wisconsin Suffered 25 Farm-Related Fatalities in 2004**

Wisconsin suffered 25 farm-related fatalities in 2004, a decrease from 37 in 2003, but higher than the 24 that occurred in 2002. These fatalities were all related to farm work or hazards of the farm work site, and do not include recreational or home-related deaths that may have occurred on a farm.

“According to the National Safety Council, agriculture is consistently one of the three most hazardous industries in the country,” said University of Wisconsin-Extension agricultural safety specialist Cheryl Skjolaas.

National Safety Council statistics show agriculture had an estimated 676 work deaths in 2003 and a worker death rate of 30.0 per 100,000 workers.

“Clearly, agriculture has a long way to go to become safer. We see many of the same types of serious and fatal injuries year after year, even though we know how to prevent them,” said Skjolaas.

In 2004, as in previous years, deaths involving tractors and other farm machinery were common in Wisconsin, with seven tractor-related and five machinery-related fatalities.

“Tractor rollovers and runovers, which accounted for the tractor-related fatalities, can be prevented,” said Skjolaas. “We know that operating tractors with rollover protective structures (ROPS), or putting ROPS on tractors without them, will prevent tractor rollover deaths. We know that eliminating extra riders, and keeping young children away from moving machinery, will prevent runovers.”

Skjolaas said, “For the second year there was an increased number of animal-related fatalities. Six fatalities occurred as a result of the victim being attacked by a bull. One victim was pushed by a cow and struck his head on the concrete floor.”

Most farm fatalities occurred in the second half of the year. All but three of the victims were male. More than half (about 64 percent) were over the age of 45. Three victims were under the age of 9.

Additional details about the 2004 or previous farm fatality reports are available at the website of the University of Wisconsin Center for Agricultural Safety and Health’s website, sponsored by UW-Extension and UW-Madison. The address is <http://www.wiscash.uwex.edu/>.

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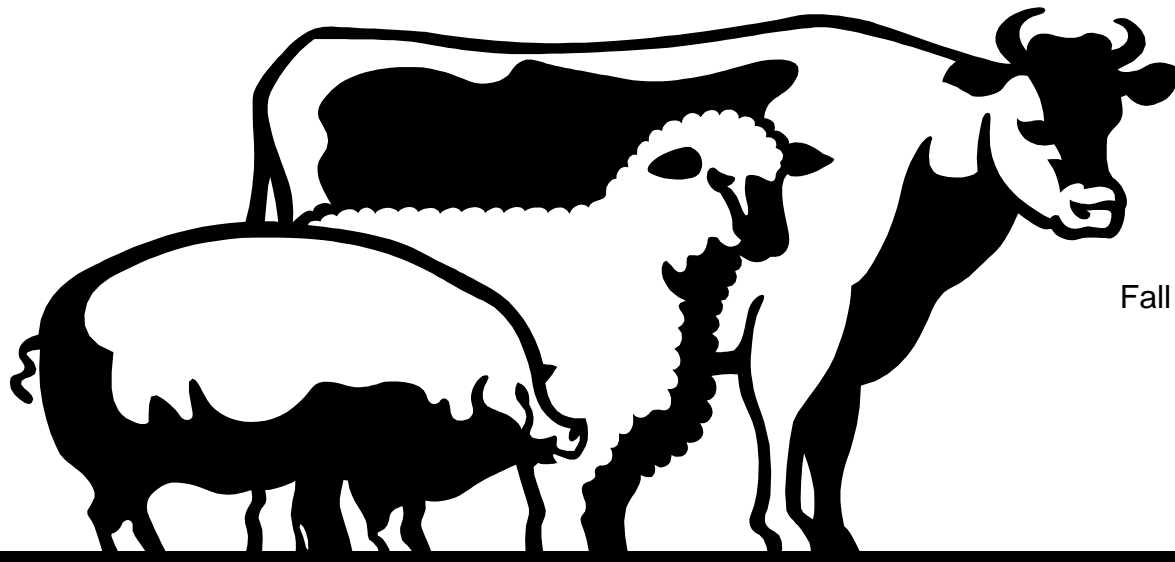
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Fall 2006