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Cooperative Extension Service
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ILLINOIS DAIRY DIGEST

FACTS FOR LAND OF LINCOLN DAIRYMEN

Vol. 21 No. 2 July 1992

IN THIS ISSUE:

Dewayne Dill Accepts New Position

Illinois Dairy Digest editor Dewayne E. Dill has left the University of Illinois to join Cenex/Land O'Lakes Cooperative. Dr. Dill has accepted a position as Manager of Technical Development for Dairy and Poultry in St. Paul, Minnesota, beginning June 15. In his new position he will work with individuals involved in software development at universities throughout the country. He will also search out software products for potential marketing, provide leadership for in-house software development, and work with industry to promote further advancements.

During his three and one half years of service to the Illinois dairy industry, Dewayne developed programs in DHI record use, milk marketing, computer-assisted decision aids, youth, and management. He was the lead editor of the National Dairy Database which will be available this summer on a CD-ROM. Full-text documents (over 800), bibliography of educational materials, expertise database, glossary, software directory, industry statistics, and executable software programs are on the disc. This effort is the first in the United States in any agricultural area. We will miss Dewayne's keen insight, enthusiasm, and commitment to the Illinois dairy industry and the Department of Animal Sciences. Best wishes to Dewayne and his family in his new career in Minnesota.—*Mike Hutjens, Extension Dairy Specialist*

Evaluating Forage Inventories

Dairy producers face a challenging year as forage inventories have been reduced in many areas of Illinois:

- Winter wheat damage reduced wheat silage as a forage crop.
- Warm weather in March followed by a cold snap caused damage to alfalfa stands in northern Illinois.
- A lack of rain in May and June reduced first crop yields 25 to 40 percent in northern and central Illinois.
- Rain-damaged forages in southern Illinois lowered forage quality.
- Low temperatures in late May nipped some corn fields, causing replantingor stunted regrowth of corn needed as corn silage.

Currently, dairy producers should be assessing their forage inventories and needs for the 1992-93 feeding period. Table 1 illustrates the minimum annual amount of forage needed for a 1300-pound cow to produce milk containing 3.5 percent milk fat. Forage amounts include dry cow needs. Increase amounts by 30 percent for replacement heifers.

If forage inventories are limited, several forage crop alternatives are possible:

- Corn silage offers the greatest yield potential if summer and fall growing conditions are favorable.
- Sorghum-sudangrass hybrids can produce forage every 21 to 30 days if moisture and fertility levels are optimal. Harvest at 30 to 35 inches of height for top quality.
- Small grains (oats, wheat, barley, and triticale) make excellent dairy cow forage if cut in the boot stage. Inclusion of peas or soybeans gives a wider harvest window and improves nutrient quality.
- Milo and beans (also called mileage) can provide acceptable tonnage but be lower in quality, depending on stage of maturity at harvest.

These alternative forage crops must be harvested at the proper stage of maturity to insure high forage quality (Table 2). Be sure that an aggressive forage testing and

Table 1. Minimum Yearly Forage Requirements of a 1300-pound Dairy Cow

		Forage amounts			
		pounds as fed per day			
	Corn silage:	45	30	15	0
	Baled hay:	5	12	18	23
Milk yield 18,000 pounds		tons as fed per year			
	Corn silage	9.8	6.1	3.1	0.0
	Baled hay	1.1	2.5	3.6	4.8
Milk yield 15,000 pounds		tons as fed per year			
	Corn silage	10.1	6.2	3.2	0.0
	Baled hay	1.1	2.6	3.8	5.1

ration-balancing program occurs because mineral, protein, and energy supplements must be adjusted.

Co-product or by-product feeds provide another alternative by replacing some forage. Soyhulls, fuzzy cottonseed, wheat middlings, and brewers' grain are good choices.

Table 2. Nutrient Compositions of Alternative Forages on 100 Percent DM Basis

Forage Crop	Crude Protein	ADF	NDF
Oats (Wis)	15	31	53
Oats (Ill)	14	31	52
Oats and Peas (Wis)	18	30	46
Oats and Peas, early (Ill)	20	30	52
Oats and Peas, late (Ill)	13	39	73
Barley (Wis)	13	33	59
Barley and Peas (Wis)	16	32	52
Barley and Peas, early (Ill)	20	27	56
Barley and Peas, late (Ill)	13	36	66
Wheat (Ill)	14	NA	NA
Triticale (Ill)	17	32	55
Wheat and Vetch (Ill)	18	NA	NA
Pearl Millet (Ill)	15	41	NA
Sorghum (Ill)	17	41	NA
Peas (Ill)	13	39	NA
Soybean-sorghum, late (Ill)	11	42	64
Sweet corn residue (Ill)	11	37	59

Wheat midds and brewers' grain are good buys. These co-product feeds cannot replace all traditional forage sources but could be substituted at 3 to 6 pounds per day, or 10 to 15 percent of the total ration dry matter.

Purchased hay could be another approach, but Wisconsin has reported a 30 to 40 percent reduction in first crop yields. Hay prices ranged from $80 to $125 per ton for good hay in Wisconsin in June 1992. Thus, hay prices could be high this year. If you can purchase hay "out of the field," it may contain 20 to 25 percent moisture. A ton of new hay will contain 200 to 250 pounds of extra water compared to stored hay purchased next winter. Be sure to consider this when buying hay.

Alfalfa or forage pellets can replace 5 to 10 pounds of traditional forage if a minimum one percent of the cow's body weight is fed as long forage (hay or silage). Thirteen pounds of hay dry matter (a 1300-pound cow times one percent hay) plus 7 pounds of hay pellets would be an acceptable forage base.

Feeding more grain may be a better buy alternative than using forages. Ear corn, corn gluten feed, and hominy can be blended with shelled corn and protein supplements to reduce starch levels and allow higher levels of grain to be fed. A minimum of 19 percent acid detergent fiber (ADF) and 28 percent neutral detergent fiber (NDF) should be maintained along with adequate functional fiber.—*Mike Hutjens, Extension Dairy Specialist*

Great Lakes Haylist

Want to buy hay or sell hay? The Great Lakes Haylisting service may be of help. This haylisting is sponsored by the Wisconsin and Minnesota Forage Councils. It is similar to the Illinois program, IHELP, which is conducted by Illinois Cooperative Extension Service personnel. The Great Lakes Haylist is designed to cover Illinois, Indiana, Iowa, Wisconsin, and Minnesota. Other states have shown interest also. To be listed, forage must be analyzed at a National Forage Testing Association Certified Laboratory. There is also a $20 charge for the listing, with a 30-day renewal required (at no additional cost) up to 6 months. Brochures and information are available from Great Lakes Haylist, Room 353 Moore Hall, 1575 Linden Dr., Madison, WI 53706, or call 800-462-7408 or 608-262-1533—*Don W. Graffis, Extension Agronomist*

A Challenging Illinois Dairy Outlook

There is good news and bad news for Illinois dairy farmers as they enter the second half of 1992.

The good news is that milk prices are up and rising. The May Minnesota-Wisconsin (M.W.) price series was up 60 cents per hundred to $12.06, with a high of $13.00 to $13.50 projected by Wisconsin milk marketing economists. Cheese prices reached $1.35 per pound in block in June. Fall milk production will determine if higher milk prices hold. Summer heat stress, forage inventory, feed grain prices, and cow numbers will have impact.

The bad news is that since February Illinois dairy farmers have been producing less milk. The following figures were obtained from the Illinois Milk Promotion Board and the USDA National Agricultural Statistics Service (Table 1).

Table 1. Milk Yield (1992 as a Percentage of 1991)

	Illinois	USDA
January	99.4	100
February	100.9	96
March	97.6	92
April	95.5	88

Both statistics illustrate similar trends. February was a leap year with an extra day and should have increased milk yield three percent compared to 1991. March declines are due to reduced cow numbers (four percent) and lower milk yield per cow (four percent). Lower milk yield per cow is critical since it impacts on efficiency. In the top 21 dairy states in March, milk yield per cow was up 2 percent compared to Illinois's 4 percent drop.

Why is this trend occurring, especially when milk prices are increasing? The effects of 1991 low milk prices, low quality forages, or frustration with dairying are possibilities. Illinois FBFM records indicate that the average Illinois dairy farm received $10,847 (operator's share of income) in 1991, sharply down from $28,310 in 1990.—*Mike Hutjens, Extension Dairy Specialist*

Formulating Anionic Dry Cow Rations

The addition of anionic salts (magnesium sulfate, ammonium chloride, ammonium sulfate, calcium chloride, and calcium sulfate) to close-up dry cow rations has demonstrated excellent results when fed three weeks before calving. Benefits include less milk fever, higher blood calcium levels, increased milk yield, and improved reproductive performance. Standard recommendations have worked, but not all of the time. Dr. Dave Byers, a Virginia veterinarian, has developed a four-step approach to formulate anionic rations for close-up dry cows:

- Step One: Balance magnesium at .4 percent of the dry cow dry matter (DM) using magnesium sulfate.
- Step Two: Balance sulfur at .4 percent of DM using calcium sulfate.
- Step Three: Balance chlorine to provide the desired anion-cation balance (-15 milliequivalents per 100 grams of DM) with calcium chloride and/or ammonium chloride.
- Step Four: Provide a daily intake of 50 grams of phosphorus and 150 grams of calcium with calcium carbonate and/or dicalcium phosphate.

A Lotus spreadsheet program is available to quickly and accurately calculate the amount of each mineral needed. Forages should be tested (wet chemistry) for minerals, especially potassium, the critical element that shifts the anion-cation balance.—*Mike Hutjens, Extension Dairy Specialist*

Performance Appraisal and Compensation

Performance appraisal is one of the most important human resource management functions on a dairy farm since it allows rewards (pay increases or promotions) to be linked with employee performance. In addition, performance appraisal affords the farm manager an opportunity to evaluate the effectiveness of employee management procedures currently in place.

Appraisal Criteria. The criteria for an effective performance appraisal system include 1) validity, 2) reliability, 3) freedom from bias, and 4) practicality. The system should be fair to all employees and should be free of errors such as leniency and the halo effect discussed in previous issues. Unintentional errors can result when the farm manager mentally processes the information acquired during the performance appraisal process. Intentional errors occur when the manager intentionally rates employees inaccurately. This may happen when the employee is assigned an overall total score, then given ratings on individual areas in order to make the overall evaluation appear consistent. Finally, the performance appraisal system should be practical: in addition to being cost effective, it should be easy to understand and implement.

Since dairy farm employees work with dairy cows that are highly influenced by employee management decisions, a results-based appraisal method is most effective. This involves assessing the results of the employee's performance based on objective factors such as milk production, somatic cell count, bacteria count, or number of mastitis infections. Ideally, these factors should be under the direct influence of the employee. Numerous incentive plans have been devised for rewarding employees for their performance. A plan should be selected which reflects the farm manager's overall goals and is easy to implement and understand.

Feedback of Results. A key element of performance appraisal is the feedback of results to the employee. Feedback should be an ongoing process, not simply a once-a-year occurrence. The most common (and most useful) method of providing feedback is through an interview. The interview sessions should be conducted individually with adequate time available and no interruptions. First, the manager should point out the employee's strengths, being as specific as possible. Next, areas which the employee needs to work at improving should be discussed. The manager should appraise the employee's response and should listen carefully to ideas which the employee wishes to express. In addition, the employee should be asked for suggestions on how his/her supervision could be improved. The most important aspect of the performance appraisal interview is to be very specific regarding the assessments of the employee's performance. This will reduce the opportunities for misunderstanding between the farm manager and the employee.

Compensation and Benefit Plans. The primary purpose of a compensation system is to induce employees to perform job functions which are important to the success of the farm business. Money is often viewed as a primary motivator for inducing these behaviors. However, this varies from employee to employee. Typically, employees wish to be treated equitably. Equity is the balance between what an employee puts into the job and what he/she receives from the job. Part of the equity theory suggests that individuals will attempt to remove perceived or real inequities by adjusting the amount of input (skills, effort) they put into the job to reflect the amount of output (salaries, benefits). Often, employee perceptions of equity result from the farm manager's policy about compensation/benefit information. If the farm manager is secretive about the compensation and benefits policy, employees may talk among themselves, and hard feelings and misunderstandings might result. Generally, if employees have input into the development of a compensation/benefits plan, they will be more receptive to the plan.

In developing a compensation plan, the farm manager should construct a list of compensable factors which directly relate to the job description and the requirements which the employee is to fulfill on the job. The manager can then assign points to these factors according to the relative importance of the factors to job performance. When setting individual pay levels, seniority and merit should be considered. Pay levels can be tied to the number of years of service the employee has given to the farm. The level of pay should be directly related to the actual job performance of the employee as measured by objective criteria. Objective measures of employee merit should be used in order to increase employees' trust of the system. A compensation/benefits plan that is ambiguous and shrouded in secrecy will lead to worker distrust and low morale.

Individual bonus incentive programs work well on dairy farms. A monthly bonus program as opposed to a bonus given on an annual basis allows the bonus to be more closely linked to the actual time period in which the superior performance occurs. With any incentive system linking performance with pay, it is vitally important that the linkage between pay and performance does actually exist. It is also important for the incentives to be significant enough to induce employees to perform above a base level.

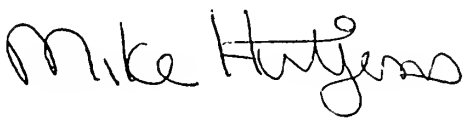
An area of special concern on dairy farms is the amount of fringe benefits provided to employees. In the past, paid holidays, insurance, retirement plans, etc., have unfortunately been overlooked by many farm managers. Since the mandatory government programs (social security, unemployment compensation and workers compensation) do not usually apply to Illinois dairy farms, many farm employees are left with almost no benefits. However, certain federal and state laws may require these programs to be used if a given number of employees are hired for a given number of weeks in the year. It is important to check with state and federal agencies regarding these areas. Benefit programs that dairy farm managers should consider for their full-time employees include 1) paid holidays, 2) paid

vacation, 3) sick leave, 4) personal days, and 5) child-related leaves. Managers should also consider providing a health and/or life insurance program and some form of retirement program. As more nonfarm employers continue to provide benefits such as these, farm managers will be forced to increase the value of benefits they provide in order to attract good employees.

Conclusion. This is the last of a series of articles focusing on human resource management and intended to provide an overview of the employee management process as it may be applied to dairy farms. In light of recent developments in the agricultural industry, the focus of farm management is moving away from production alone toward more overall business and financial management. With increasing farm size and the resulting increase in the number of farm employees, human resource management systems will undoubtedly become a vital part of dairy farm management.—*Matt Musselman, Dairy Management Graduate Research Assistant*

Calendar of Events

Aug 13	State Fair 4-H Dairy Judging Invitational Contest, Springfield, Illinois
Sept 14 and 15	Illinois Sanitarians' Conference, Champaign, Illinois



Mike Hutjens
Extension Dairy Specialist

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ILLINOIS DAIRY DIGEST

FACTS FOR LAND OF LINCOLN DAIRYMEN

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IN THIS ISSUE:

Calendar of Dairy Events

June 15, 1995. Illinois Forage Expo, Carroussel Dairy Farm, Orangeville. See the latest equipment and technology in harvesting and feeding forages to dairy cattle. Contact Jim Morrison, Freeport Crops Educator, at (815)233-3214.

August 2 and 3, 1995. Four-State Professional Dairy Nutrition Conference, La Crosse Convention Center, La Crosse, Wisconsin. The two-day program will feature the latest research and recommendations on amino acid supplementation and balancing, BST applications, hairy heal warts, body condition scoring, and forage storage. Contact Mike Hutjens, Extension Dairy Specialist, at (217)333-2928.

September 11 and 12, 1995. Illinois Dairy Sanitareans Conference, Chancellors Inn, Champaign. This two-day (noon to noon) conference will update participants on changes in the Interstate Milk Shipper (IMC) rules, herd health updates, milk residue avoidance programs, and mastitis prevention. Contact Stan Smith, Freeport Dairy Educator, at (815)233-3214.

High-Oil Corn Update

High-oil corn (HOC) is yellow dent corn that contains more oil than the typical dent corn. The larger embryo or germ in HOC contains higher levels of oil, protein, and essential amino acids (Table 1). Older varieties of HOC had yields lower than comparable hybrids by 5 to 15 percent. A new technology has been developed in which high-yielding hybrids in a male sterile form are fertilized with HOC pollinator plants in the dairy farmer's field, resulting in yields comparable to those of the hybrids and in higher oil content. Two types of seeds are blended in the bag and planted together (8 to 10 percent pollinator and 90 to 92 percent male sterile hybrid seeds). To compensate for the lower yield of the pollinator plants, researchers suggest increasing the plant density by 2,000 seeds per acre. Although the new blended HOC is higher in seed cost by $10 to $15 per acre, it also gives higher nutrient yields. An economic comparison is calculated below using New HOC values from Table 1:

- A yield of 150 bushel corn per acre times 56 pounds per bushel times 3 percent more oil (3.4 percent on a dry matter basis) equals 252 pounds additional oil times $0.26 per pound (tallow price) and results in an extra $65.52 in energy (oil) value per acre.

- The 150 bushels of corn times 56 pounds per bushel times 0.5 percent higher protein (0.6 on a dry matter basis) equals 42 pounds more protein times $0.20 per pound for additional protein based on soybean meal and results in an additional $8.40 in protein value.

- If the cost for HOC is $10 to $15 per acre and added return per acre (from bulleted items above) is $73.90, a benefit to cost ratio of 5:1 is possible. No special management or equipment is needed for raising HOC, but cross pollination by normal hybrid corn should be minimized. (This cross pollination is caused by volunteer corn emerging in the field, mixing HOC with other seeds at planting, and/or planting HOC next to other hybrids.) Border HOC plants should be harvested and treated as regular corn if HOC was planted near other corn.

HOC should be tested for oil, protein, ADF, and NDF, as these components will be different than those of normal corn and corn silage. Rations should be adjusted and

balanced for the higher nutrient content of HOC (higher levels of oil and lower levels of fiber). This new type of HOC must be strategically fed to maximize benefits. Illinois researchers are currently feeding the new HOC to dairy cattle to evaluate dry matter intake, milk yield and component changes, and rumen shifts. Earlier research with former types of hybrid HOC was favorable, but this feed is new. Dairy farmers and nutritionists must realize that the HOC on the market is different in nutrient content and higher than earlier HOC varieties in yield potential.—*Mike Hutjens, Extension Dairy Specialist*

Table 1. Comparisons of Normal Corn and Corn Silage to HOC

Item Evaluated	Normal	Old HOC	New HOC A	New HOC B
Corn grain				
Oil	4.2	6.9	7.6	10.7
Protein	9.2	9.4	9.8	10.7
Lysine	.29	.33	.33	.39
Methionine	.21	.23	.23	.24
Corn Silage				
Oil	3.5	5.0	6.0	6.7
Protein	8.3	9.2	8.3	8.3

NOTE: Values are expressed on a 100 D.M. basis. Old HOC represents earlier hybrids, while new HOC A and B represent field-crossed HOC varieties. (New HOC A can be used for grain and silage, while new HOC B is best used for silage.)

Illinois Dairy Farms Continue Decline

There are 153 fewer Illinois dairy farms in 1995 than in 1994, according to statistics from the Illinois Department of Public Health, Dairy Division. This decrease represents a 6.5 percent decline in dairy farm numbers during the past 12 months. The 1995 reduction follows a 7.9 percent decrease in 1994.

The central portion of the state had the greatest decrease with 11.7 percent fewer farms in the west-central region and 8.0 percent in the east-central region (Table 2).

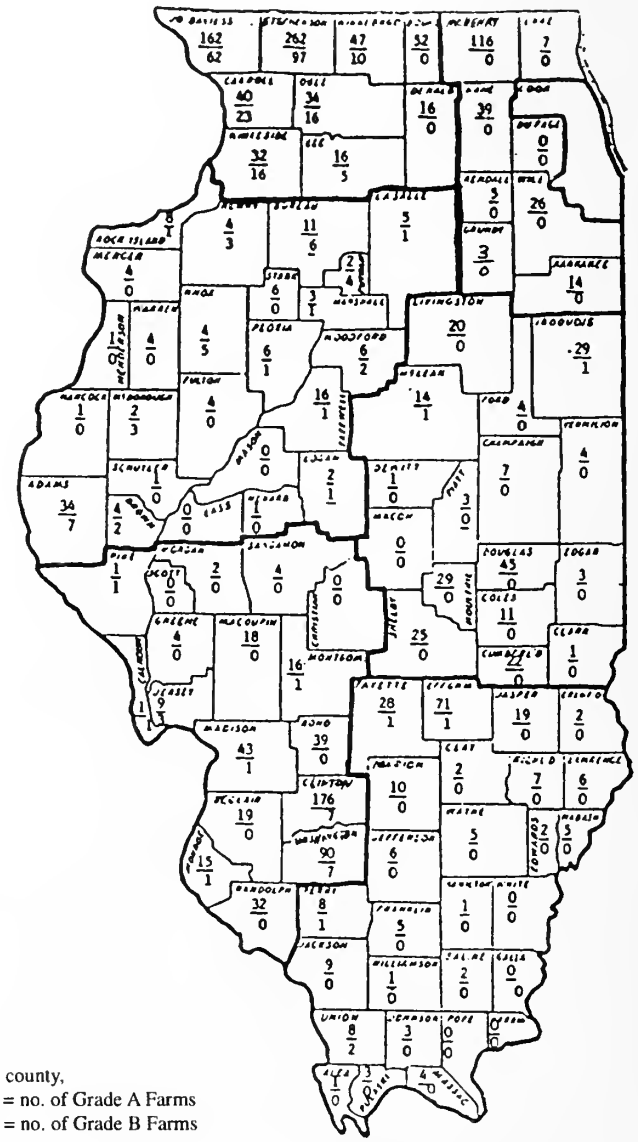
Table 2. Decline of Illinois Dairy Herds by Regions

Region	No. Farms 1995	No. Farms 1994	Percent Change
Northwest	890	959	-7.2
Northeast	210	220	- 4.6
West-central	167	189	- 11.7
East-central	220	239	- 8.0
Southwest	491	521	- 5.8
Southeast	213	217	- 1.9
Total State	2191	2345	- 6.5

Source: Illinois Department of Public Health (as of April 1995)

The northwest and southwest regions continue to be the major dairy pockets in the state. Stephenson and JoDaviess counties rank number one and two, with Clinton and Washington counties ranking third and fifth, respectively, in dairy farm numbers. McHenry County ranks fourth in the top five counties (Figure 1).

Even though there are 153 fewer dairy farms, the Illinois December 1994 Federal Order milk marketings were up 6.9 percent compared to those of December 1993. The Federal Order marketings include approximately 1,900 of the total dairy farms in Illinois. This 1994 milk increase was due to the extremely low production in 1993 as affected by lower quality feeds and decreasing total cow numbers. Based on information supplied by the Federal Milk Market Administrator's Office, the comparative Illinois December (one month) milk marketings for 1991 to 1994 were 178.3, 180.2, 160.0, and 171.0 million pounds, respectively.



In each county,
top no. = no. of Grade A Farms
bottom = no. of Grade B Farms

Figure 1. Location of Illinois dairy herds by county in April 1995.

With the decreasing number of farms, there is also an increase in milk marketed per farm and in the number of milking cows on the average Illinois dairy farm. The average Federal Order milk marketings per farm in the month of December for each year from 1991 to 1994 were 79,643; 83,422; 78,017; and 90,120 pounds of milk. It is difficult to get an accurate number of total milking cows in Illinois; the number of cows per farm, however, increases each year. According to Illinois DHIA, the current average herd size is 70 cows. This is a 6.7 percent increase over last year when the herd size was 65.6 cows.

The lack of sufficient return on investment remains a key issue for many Illinois dairy producers. Increasing optimum production per cow and using cost control measures through improved management will be important factors in supporting a profitable dairy enterprise.—*Dave Fischer, Extension Dairy Educator*

Evaluating Commodity Feeds

With the wet spring, feed prices are shifting weekly, impacting the economics of commodity feeds. Corn prices were climbing due to late planting; cotton acreage was declining; and soybean prices could decline. (The possibility exists because of a large Brazil crop and because lower corn acreage in the Midwest has led to higher soybean acreage.) Table 3 compares the value of commodity feeds using the University of Wisconsin Feed Val 3 program to calculate the nutrient value of by-product feeds. The following base-feed prices were used in calculating break-even prices:

- Shelled corn (energy base), $2.60 per bushel
- Soybean meal—44 percent (by-pass protein base), $180 per ton
- Tallow (fat/oil base), $26 per hundred pounds (cwt)
- Limestone (calcium base), $7 per cwt
- Dicalcium phosphate (phosphorus base), $20 per cwt

Commodity feed prices (May 1995) were obtained from two Midwest suppliers for comparison. If a farmer can purchase and have the commodity feed delivered to the farm below the break-even price, that farmer is getting a good nutrient buy using the base-feed prices. The purchaser must be aware of feed quality and variation, interest on the money invested in semi-load quantities, and feeding and storage losses. Only cows that will utilize the nutrients (by-pass protein and fat) can capture the economic value of the commodity feed. —*Mike Hutjens, Extension Dairy Specialist*

Table 3. Comparison of Commodity Feeds Using Calculated Break-Even Prices and Prices in Illinois

Commodity	Break-Even	Breese	Freeport
	Price ($/ton)		
Beet pulp	75	NQ	NQ
Blood meal	495	NQ	NQ
Brewers grain (dry)	158	NQ	NQ
Brewers grain (22% DM)	36	NQ	25
Brewers grain (35% DM)	57	30	NQ
Corn gluten feed (dry)	108	94	90
Corn gluten feed (45% DM)	48	41	NQ
Cottonseed, fuzzy whole	188	117	139
Distillers grain	188	105	110
Fishmeal	480	NQ	NQ
Hominy	101	96	95
Malt sprouts	119	NQ	65
Meat and bone meal	483	NQ	NQ
Soyhulls	76	NQ	60
Soybeans, heat treated	268	NQ	NQ
Wheat midds	97	60	61

NQ = No quote—commercial company did not have a listed price.

Milk Urea Nitrogen Answers

Beginning March 1995, Illinois Dairy Herd Improvement Association (DHIA) provided members with a new milk analysis using the same milk sample used for fat, protein, and somatic cell count evaluation. The milk urea nitrogen (MUN) test measures that amount of nitrogen not contained in casein (true milk protein) or whey protein fractions. If cows do not utilize protein for protein functions (such as an energy source) or rumen microbes do capture ammonia produced in the rumen, high MUN values can occur. MUN can be a useful tool to evaluate rumen and cow protein status. Several questions have been raised by dairy farmers, feed company personnel, and veterinarians as we learn more about this new test:

- ***What is the normal range of MUN?*** We expect most cows to range from 12 to 18 (expressed as milligrams of nitrogen per milliliter of milk). MUN is usually 2 to 4 units below blood urea nitrogen (BUN) and is not as time dependent as BUN.

- ***Why are some cows low in MUN?*** Although MUN levels will not ordinarily drop below 6, values below 2 have been reported in some herds. Either the milk sample may not have been measured correctly by the machine; the sample may fall outside of the normal calibration of the equipment; or something is abnormal about the sample. Low lactose level, high somatic cell count, stripping or first drawn milk, or shifts in milk protein and/or fat could cause lower readings. Dairy Lab Service is continuing to monitor these low values and determine their causes.

- *How is the MUN equipment checked?* Over 170 samples from Illinois and Iowa herds were collected and chemically measured by a standard chemical test (SIGMA) at the New York DHI lab to set up a calibration curve for the Illinois machine. This calibration set was developed by the company servicing the equipment. Test samples are checked and compared to machines in New York and Minnesota DHI testing labs, the only DHI units in the United States currently using the equipment.

- *If my MUN results are too high or too low, what should I do?* First, have your ration evaluated to determine if the level of protein (for example, 20 percent on a dry matter basis) and/or degradable and soluble protein amounts are too high. (These two protein fractions contribute more to excess ammonia levels in the rumen.) Second, check the level of fermentable carbohydrate—low levels will limit microbial growth, and ammonia can be absorbed in the blood and converted to urea in the liver. Third, review the percent milk protein in cows with high or low MUN values. A low milk protein (for example, below 3.1 for Holsteins or 3.8 for Jerseys) would point to a protein shortage. Fourth, look at manure drops to see if they are firm, indicating low protein, or loose, indicating possible excess protein. No major ration change should be made based on MUN values alone.

- *How should I use MUN?* Monitor changes in MUN values as new forages are harvested or a shift in feed systems occurs. These changes can be used to evaluate protein status in your herd. Look at groups of cows (first-calf heifers, high producers, or fresh cows, for example) to avoid reaching the wrong interpretation by using just one or two unusual cow values. If MUN falls outside the normal range, investigate why and whether a change in your feeding program or delivery system is warranted.—*Mike Hutjens, Extension Dairy Specialist*

Building Your Bunker Silo

In the March 1995 issue of the *Wisconsin Forage Council Newsletter,* Jim Faust, Dunn County agricultural agent, presented a tactical plan for using a bunker silo. Its key success points are outlined below:

- Size your bunker silo. Ideally, six inches of forage should be removed from the face of the bunker daily or every other day if no mold or secondary fermentation occurs. (Sizing is more of a problem in warm weather.) Most bunkers need to be narrower and longer.

- Be ready to cover the bunker. The number of tires needed to seal and reduce wind damage is 15 to 20 tires per 100 square feet. Tires can be cut in half (by length or circumference) to double the effective tire surface area, reduce the weight to handle, and keep water out. Some dairy managers will tie two tires together with rope (two to three feet) to reduce the number of tires needed. Six-mill plastic is recommended if storage will exceed three months; four-mill plastic if storage will be for less than three months. Harvest at optimal moisture and maturity. Forages should be wetter (60 to 70 percent moisture) compared to conventional upright storage. Cut when the forage is in early bud/bloom or vegetative stage to provide fermentable carbohydrate.

- Fill rapidly. Ensile a minimum of 18 tons of dry matter per day and complete filling in four to six days.

- Chop for optimal digestion and compaction. Chopping at 3/8 to 1/2 theoretical length of chop (TLC) should allow for oxygen exclusion while stimulating rumination (cud-chewing) in the cow.

- Add an inoculant. Adding a bacteria that enhances lactic acid production can improve fermentation and increase lactic acid content.

- Filling and packing. Use the progressive wedge, pack 1,000 hour-pounds per ton, and crown the top on the last day. Hour-pounds equals vehicle weight time hours spent packing. For example, a 100 ft by 25 ft by 10 ft bunker contains 440 tons as fed silage. If the packing tractor weighs 13,000 pounds, it would take 34 hours (440,000/13,000) to pack the bunker properly.

- Cover bunkers immediately after packing. This will increase dry matter recovery (97 vs 87 percent in the bottom of the bunk), lower silage pH (4.9 vs 6.8), and increase lactic acid levels (3.2 vs 1.7) in covered compared to uncovered bunker silos, respectively. Channel run-off along the edges. Tires should be touching.—*Mike Hutjens, Extension Dairy Specialist*

Michael F. Hutjens
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ILLINOIS DAIRY DIGEST

FACTS FOR LAND OF LINCOLN DAIRYMEN

Vol. 24 No. 3 September 1995

IN THIS ISSUE:

By-Product Feed Values

As feed prices continue to change weekly based on rain, market trends, and projected yields, livestock producers must compare them to decide on a good feed buy for the fall. To assist in the decision process, several University of Wisconsin Feed Val computer analyses were conducted with different prices for shelled corn and soybean meal (44 percent). Five base feeds were used to calculate breakeven prices for feeds available to Illinois dairy producers:

- Shelled corn was priced at $2.75 or $3.00 per bushel. (The price sets the energy value in the feed.)
- Soybean meal (44 percent) was priced at $200 or $250 per ton. (The price sets the by-pass protein value in the feed.)
- Tallow was priced at $0.26 per pound. (The price sets the fat or oil value in the feed.)
- Dicalcium phosphate was priced at $20 per 100 pounds. (The price sets the phosphorus value in the feed.)
- Limestone was priced at $7 per 100 pounds. (The price sets the calcium value in the feed.)

Table 1 lists the breakeven price for feeds listed. Count it a good buy if dairy or beef producers have the feed delivered to their farms below the breakeven price. The table is based on high-producing cows because value for fat as an energy source is more expensive than shelled corn, and by-pass protein is needed by ruminants with high protein requirements. In some situations, it may be economically correct to sell corn and purchase a by-product feed. Also, some by-product feeds can have associative effects, such as increased milk yield or higher dry matter intake, that make the feed worth more than the breakeven price. For example, soyhulls may increase total ration digestibility, while fuzzy cottonseed can provide functional fiber. By-product feeds to watch for the fall include fuzzy cottonseed, corn gluten feed, soyhulls, malt sprouts, and wet brewers' grain. Sharp feed buyers can save dollars while improving their rations—a win-win situation for 1996!—*Mike Hutjens, Extension Dairy Specialist*

Table 1. Breakeven Prices for Various Feeds Using Two Prices for Shelled Corn and Soybean Meal (44 Percent)

Shelled corn price (dollars per bushel)	2.75	3.00
Soybean meal price (dollars per ton)	200	250
	--dollars per ton--	
Beet pulp	82	88
Blood meal	551	735
Brewers grain (dry)	173	212
Brewers grain (22 percent dry matter)	39	48
Corn gluten feed (dry)	119	135
Corn gluten feed (45 percent dry matter)	53	60
Corn gluten meal (60 percent protein)	379	494
Cottonseed, whole, fuzzy	200	222
Corn distillers grain	205	246
Fish meal	526	664
Hominy	109	118
Malt sprouts	132	156
Meat and bone meal	521	637
Soyhulls	84	90
Soybeans, raw	181	205
Soybeans, heated (45 percent by-pass)	290	348
Wheat middling	105	114

Dairy Extension Update

Four-State Dairy Expansion Program Planned. "Mapping Your Dairy Future" is the theme of two dairy expansion meetings to be held in Rochester, Minnesota, on November 7 and 8, and Stevens Point, Wisconsin, on November 8 and 9. Dennis Armstrong, University of Arizona; Ed Jesse, University of Wisconsin; and Don Rogers, Pioneer Farm Credit, Massachusetts, are the featured speakers. Topics to be discussed include

- Factors Affecting the Midwest Dairy Industry
- Options and Risk Management
- Critical Control Factor Which Improves Success
- Housing As a Management Tool
- Flat Barn Parlors
- Grazing: An Expansion Strategy
- Getting to a YES
- Managing Animal Flow
- Managing a Growing Dairy Operation
- Assembling the Management Team
- Why We Are Excited about Dairy

For registration details, times, and location, contact the dairy Extension office at (217)333-2928.—*Mike Hutjens, Extension Dairy Specialist*

Four-State Dairy Proceedings Available. A highly successful seminar was attended by over 500 people at the La Crosse Convention Center on August 2 and 3. The 189-page proceedings is available for $20 from Randy Shaver in the Wisconsin dairy Extension office (608)263-3491 or from Mike Hutjens in the Illinois dairy Extension office (217)333-2928. The following papers appear in the proceedings:

- Feeding Amino Acids to Lactating Cows (4 papers)
- Rumen Acidosis Diagnosis
- Hairy Footwarts
- Milk Urea Nitrogen Applications
- Synchronization of Ovulation in Lactating Dairy Cows
- Lessons Learned with the 1993 and 1994 Corn Crops
- Designing a BVD Vaccination Program
- Body Condition Scores and Herd Health

Dick Wallace Joins Dairy Team. Richard Wallace, DVM, joined the University of Illinois College of Veterinary Medicine as Extension dairy veterinarian and outreach training veterinarian. Dick received his veterinary medicine degree from The Ohio State University, Columbus; practiced in a large dairy group in northeast Wisconsin; and returned to The Ohio State University for his master's degree in preventive medicine. Dick will be specializing in mastitis, quality milk programs, vaccination programs, and metabolic disorders. You can reach him at (217)333-2907. We welcome Dr. Wallace to the Illinois dairy industry and team!

Stan Smith Retires. After 33 years of dedicated service to the Illinois dairy industry, Stan Smith has decided to retire. Stan has been a fixture in the northern Illinois dairy industry, where he has conducted six different correspondence courses, advised DHI boards, conducted DHI record workshops, represented Illinois at the Four-State Personnel and Expansion Conferences, and conducted numerous meetings across the state each year. He served as the first Freeport regional Extension cluster manager and received the Illinois Cooperative Extension Distinguished Service Award. Stan and his wife plan to remain in Dixon to enjoy his well-earned retirement years with their family, particularly the grandchildren. We will miss his philosophical outlook, guidance, and cigars.

Fall Forage Strategies

With the winter dairy feeding season approaching, dairy farmers must decide what to do about the 1995 forage situation. Corn and soybeans were late because of late rains and delayed planting; the first crop harvest was also delayed by rain; and the baking of some forage crops by hot, humid weather resulted in poor pollination, uneven corn, and disease damage. The following strategies should be considered:

- The late harvest of the first crop in many areas has resulted in large quantities of low quality legume-grass forage. Relative feed values of 100 to 115 are common. The strategy is to dilute low quality forage (energy and dry matter intake will be reduced) with higher quality forage resources (corn silage, small grain forage, or second to fourth crop).

- Poor pollinated corn or uneven corn will make acceptable forage. The energy and tonnage may be reduced, but a forage test will provide valuable information to balance rations and make this corn perform. Mold damage and mycotoxin formation could be another concern and should be monitored. Testing disease-damaged corn silage can establish mycotoxin levels and help in selecting the best strategies to use.

- Some soybeans may not mature to seed. Harvesting the soybeans as a forage crop is a viable alternative. Maximum yield and nutrient content occurs when the plant is in the pod-forming stage. The strategy is not to wait too long. Once leaves begin to drop, feed value drops. Wilting the plant prior to ensiling is encouraged (handle the same way you would a legume silage crop). Be sure no herbicides or insecticides were used—they could cause a residue in meat or milk.

- Immature corn can be an excellent forage alternative. Wait until the dry matter is optimal for your storage unit (30 to 32 percent dry matter with bags or bunkers, 33 to 37 percent with conventional uprights with taller silos at the drier range, and 40 to 50 percent with oxygen-limiting units).

Forage inventories will be tight this year, as New York and Missouri have been extremely dry; Kansas has limited supplies of top quality forage; and Idaho hay is arriving in Illinois at $140 per ton.—*Mike Hutjens, Extension Dairy Specialist*

Costs to Produce Milk

Milk prices rose slightly more than total costs—resulting in total returns equalling total economic costs for Illinois dairy producers in 1994, according to figures summarized by University of Illinois agricultural economists in cooperation with the Illinois Farm Business Farm Management Association. Individual records tabulated were from farmers enrolled in the FBFM record-keeping and business analysis program. The average net price received per 100 pounds of milk was $13.05, which equaled total costs of $13.05. The average price received for milk in 1993 was $12.69. On a per cow basis, total returns from milk were $2,259, compared to the total cost to produce milk of $2,258 per cow. Total returns have exceeded total economic costs 4 of the last 10 years, with 1994 being a breakeven year.

A detailed breakdown by herd size of 1994 milk production costs and returns for dairy farms is shown in Table 2. Farms included had no other livestock, with all costs accounted for either in crops or in the dairy enterprise. Total costs for the dairy enterprise were reduced by income from sales of dairy animals or from an inventory increase in pounds of beef produced during the year. The value of the added pounds was figured at the average price received for all weights of dairy animals sold in the past 5 years. The residual costs—86 percent of the total enterprise costs—were the net cost of producing milk. The feed cost includes on-the-farm grains evaluated at average Illinois market prices for the year, with corn at $2.44 per bushel and oats at $1.43. Commercial feeds were listed at actual cost, hay and silage at farm values, and pasture at 40 cents per animal per pasture day.

Milk production per cow for all herds averaged 17,308 pounds. The average was 316 pounds more per cow than in 1993—its highest level ever. Wet weather conditions, which resulted in low quality forages and higher cost for hay, dropped milk production in 1993. Herds with more than 80 cows produced milk at a slightly lower cost than herds with 40 to 80 animals. Total costs for each 100 pounds of milk produced were 59 cents lower for the larger herds. Feed costs were 5 cents less and nonfeed costs were 54 cents less per 100 pounds produced for the larger herds. The trend in total costs and returns per cow for all herds is given from 1991 to 1994 (Table 3) and from 1985 to 1994 (Figure 1). When cash and noncash costs are figured, the profit margin (return above all cost) increased—from $-32 in 1993 to $1 per cow in 1994. The last 5-year returns above all costs has averaged $39 per cow. During this period, returns above all costs per cow have varied from $-170 in 1985 to $170 in 1992. In Figure 1, labor and interest charges are included in total costs only. Most dairy producers will incur some hired labor and cash interest expense and would include them as cash operating costs.

The rise in milk prices at a slightly faster rate than total costs was the reason for some improvement in dairy producer profitability in 1994. The average net price received for milk was $13.05 per 100 pounds. This is 36 cents per 100 pounds, or 3 percent higher than the average price received in 1993. Based on 17,300 pounds of milk produced per cow, this increase in price increased total returns per cow by $62. The average net price received for milk for the last 5-year period is $12.94 per hundred pounds.

While the price received per 100 pounds of milk increased, feed and nonfeed costs per 100 pounds of milk produced also increased. Feed costs in 1994 averaged $6.61 per 100 pounds of milk produced as compared to $6.56 in 1993. Feed costs were at their highest level since 1984, when they averaged $6.78 per 100 pounds of milk produced. Feed costs were 51 percent of the total cost to produce milk. Nonfeed costs per 100 pounds of milk produced increased from $6.32 in 1993 to $6.44 in 1994. No single expense increased substantially. Interest costs increased 7 cents per 100 pounds of production, or 6 percent.

Along with producing milk, dairy enterprises also produce beef. The average pounds of beef produced per cow in 1994 was 612 pounds. The average price received per 100 pounds sold was $58.01. The last 5-year average price received for beef has been $59.70 per 100 pounds sold. Dairy enterprises have benefited from the relatively good beef prices producers have received during the last few years, although current prices and future projections are for lower prices.

Profit margins for dairy producers in 1995 are expected to decrease compared to 1994 profit levels. This would result in the average dairy producer's operating below a breakeven level. While the average price received for milk in 1994 was higher than the average in 1993, the average milk price for the first 6 months of 1995 has been 7 percent below the average for the same period in 1994. The average milk price for all of 1995 is expected to be 3 to 5 percent below the average for 1994, as milk prices for the second half of 1995 are expected to average near 1994 prices. Cow culling in the Midwest has resulted in a decline in the number of cows, although the rate of decline has slowed. But this decline is offset by higher milk production per cow, resulting in an estimated increase in milk production of 3 percent nationwide. Demand for milk products has not quite kept up with the increased supplies, resulting in lower prices.

While milk prices have decreased, feed costs, which remained stable during the first part of the year, have begun to increase. Late planting and dry weather have resulted in uncertainty about the size of this year's corn and soybean crop. Prices for these commodities have increased accordingly, raising feed costs. Feed costs may remain at these levels through fall and

winter. Feed costs per 100 pounds of milk produced would average about $6.85 using prices of $2.60 per bushel for corn, $0.15 a pound for protein, and $80 a ton for hay. This is based on annual feed consumption per cow, including replacement animals, of 130 bushels of corn, 2,950 pounds of protein, and 7.5 tons of hay or hay equivalents. If nonfeed costs per 100 pounds of milk produced averaged $6.40, total costs to produce 100 pounds of milk would be $13.25. A 5 percent drop in milk prices in 1995 for Illinois producers would result in an annual price of $12.35 per 100 pounds. If total economic costs averaged $13.25 per 100 pounds of milk produced, the average Illinois producer would be 90 cents per 100 pounds of milk produced short of covering his/her total economic cost of production.

Table 2. Costs and Returns for Illinois Dairy Enterprises, by Herd Size, 1994

	40 to 80 Cows per Herd	More Than 80 Cows per Herd	All Units
Number of farms	60	52	112
Average tillable acres per farm	284	474	372
Average number of cows per farm	60.8	111.9	84.5
Average milk per cow, pounds	17,108	17,539	17,308
Average beef produced per cow, pounds	606	618	612
Costs per cow, milk plus beef	$ 2,646	$ 2,596	$ 2,623
Average returns from beef	367	363	365
Net costs for milk per cow	2,279	2,233	2,258
Return from milk per cow	2,229	2,294	2,259
Return above all cost	$ -50	$ 61	$ 1
Cash costs per 100 pounds of milk produced:			
Feed	$ 6.63	$ 6.58	$ 6.61
Operating expenses:			
Maintenance and power	$ 1.21[a]	$ 1.34[a]	$ 1.27[a]
Livestock expense	1.31	1.24	1.28
Insurance, taxes, and overhead	.21	.23	.22
TOTAL operating expenses	$ 2.73	$ 2.81	$ 2.77
Other costs per 100 pounds of milk produced:			
Depreciation	$ .86[b]	$ .80[b]	$ .83[b]
Labor	1.80	1.43	1.63
Interest charge on all capital	1.30	1.11	1.21
TOTAL other costs	$ 3.96	$ 3.34	$ 3.67
Total nonfeed costs per 100 pounds of milk produced	$ 6.69	$ 6.15	$ 6.44
Total all costs per 100 pounds of milk produced	$ 13.32	$ 12.73	$ 13.05
Net price received per 100 pounds of milk produced	$ 13.03	$ 13.08	$ 13.05
Return above all costs per 100 pounds of milk produced	$ -.29	$ .35	$ .00

[a]Includes utilities, machinery, equipment and building repairs, machines hired, and fuel.

[b]Includes machinery, equipment, and building depreciation.

Table 3. Costs and Returns per Cow for Illinois Dairy Enterprises, 1991 to 1994

	1991	1992	1993	1994
Number of farms	139	133	115	112
Number of cows	79	77	77	85
Net cost for milk, per cow	$2,077	$2,102	$2,187	$2,258
Return from milk, per cow	2,003	2,272	2,155	2,259
Return above all costs, per cow	$ -74	$ 170	$ -32	$ 1
Price received per 100 pounds of milk	$11.85	$13.18	$12.69	$13.05
Price received per 100 pounds of beef	$59.87	$58.76	$58.43	$58.01
Milk produced per cow, pounds	16,902	17,244	16,992	17,308

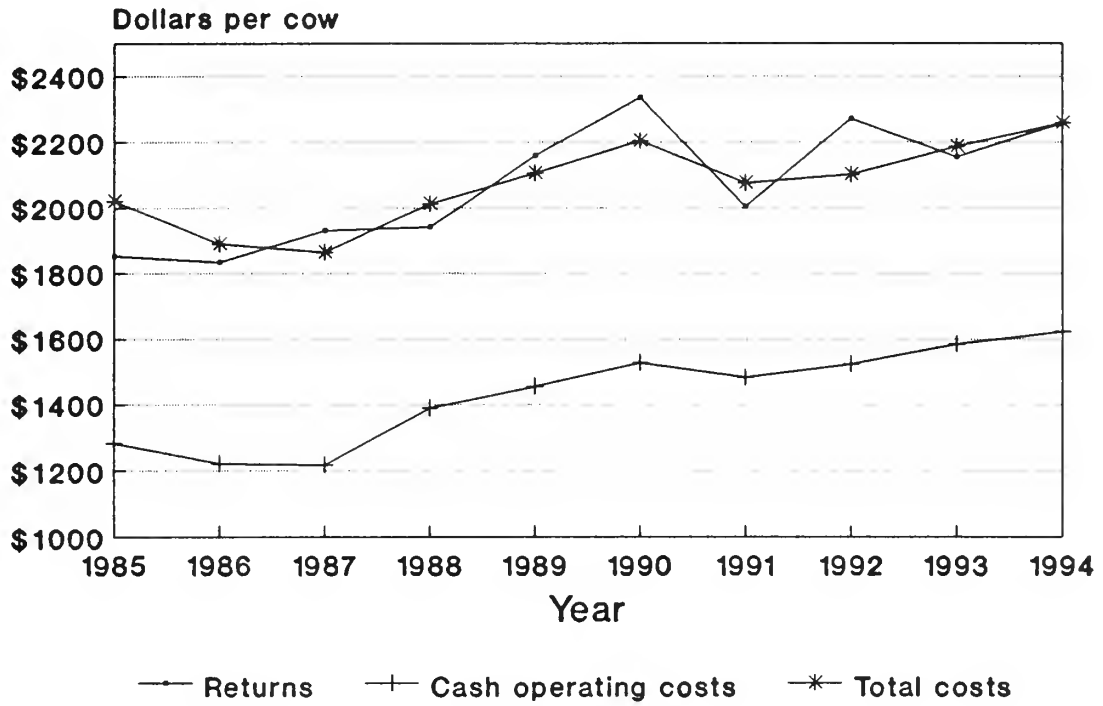

Figure 1. Returns and costs to produce milk, 1985 to 1994. Interest, depreciation, and labor charges included only in total costs.

Prepared by Dale H.Lattz, Extension Specialist, Farm Management, Department of Agricultural Economics

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ILLINOIS DAIRY DIGEST

FACTS FOR LAND OF LINCOLN DAIRYMEN

Vol. 24 No. 4 December 1995

IN THIS ISSUE:

This is the last issue of the 16-year-old *Illinois Dairy Digest.* We have been terminated due to financial considerations and to new materials now available on electronic media (such as the World Wide Web). If you want to be placed on a list for future meeting announcements, Extension publications, and hot topics and tips, send your name and address to us at Dairy Extension Office, 232 Animal Sciences Lab, 1207 West Gregory Drive, Urbana, Illinois 61801. We will send out updates several times a year.

Why Illinois Cows Are Not Milking

A number of dairy farmers have reported that cows are not reaching the level of milk production normally seen (down 7 to 15 pounds of milk per cow compared to the fall of 1994). Several factors could explain why cows are down and may not recover this lactation. More than one factor could be affecting a herd of cows:

Factor 1. Heat stress in August dropped milk yield by 20 to 40 percent. Dry-matter intake also dropped significantly. Once cows have dropped, the lactation curve for cows in mid and late lactation will not "repeak" (reach higher milk yield in the current lactation). These cows will have to start fresh to establish a higher milk curve in the next lactation.

Factor 2. Dry cows were also affected by heat stress resulting in fresh cows that calved in September and early October but did not milk as they did in 1994. The heat stress may have negatively impacted the hormonal levels needed for high milk yield.

Factor 3. First crop hay and haylage harvest was delayed in Illinois due to wet spring growing conditions. RFV (relative feed value) ranges from 95 to 120—which results in lower feed digestibility, lower feed intake potential, and high ADF and NDF levels.

Factor 4. Corn silage dried down quickly in the fall, resulting in lower plant digestibility and hard corn kernels passing out in the manure. Both factors will reduce energy intake.

Factor 5. As shelled corn prices reached $3.25 per bushel, some dairy managers reduced the amount of corn fed to save money. If forage quality is low (factors 3 and 4), the rumen microbes will not have enough fermentable carbohydrate to significantly reduce microbial production of energy and protein.

Factor 6. Since cows that should have been bred in early summer did not conceive, more cows were in later stages of lactation (over 190 average days in milk), and milk yield was reduced. This factor can get worse before it improves.

Factor 7. Many cows lost large amounts of body condition due to heat stress and lower dry-matter intake. Some herds are eating over 50 pounds of dry matter per cow, but the cows are only averaging 55 pounds of milk. Thin cows are partitioning nutrients so that they gain weight rather than produce milk.

Factor 8. Some herd managers question whether hay purchased at $140 per ton can be converted to a profit. Thus, low-quality, forage-based rations are not "spiked" with higher quality purchased hay. Solutions will vary from herd to herd. The following points can be considered and implemented:

1. Test all forages to determine quality, especially fiber and energy content.
2. Balance rations based on current forage quality on intake.
3. Check the level of fermentable carbohydrate (also referred to as NFC) to optimize rumen digestion. Adjust for hard corn kernels seen in manure.
4. If cows are thin, provide additional energy to get cows ready for the next lactation.
5. Splitting the herd into several strings can reduce feed costs (less expensive diets for low producers and late lactation cows) while challenging early lactation and high producing cows.
6. If some cows that will not be culled are below the break-even profit line (20 to 35 pounds of milk), drying up these cows can reduce feed costs and labor inputs.

7. If cows are in a positive energy balance, consider injecting BST to increase milk yield, making marginal cows more profitable.
8. Strategically replace low-quality forage with by-product feeds containing more digestible fiber and energy. However, evaluate break-even prices, select economical feeds, and position the feeds correctly (see "Higher Break-Even Prices for By-Product Feeds" in this newsletter).
9. Supplemental fat can increase energy levels if forage quality cannot be improved.
10. High producing cows can produce milk profitability even when feed and purchased hay prices are high.

—Mike Hutjens, Extension Dairy Specialist

1996 Illinois Dairy Days Schedule

Plan to attend one of the 1996 Illinois Dairy Days near you. "Building on Basis" is the overall theme of the 12 meetings. Program times and topics are listed below:

10:00 Registration
10:15 "Monitoring Rumen Acidosis" by Mike Hutjens
10:45 "Living with Staph Aureus Mastitis" by Dick Wallace
11:15 "Energy Considerations with Heat Stress" by Dave Fischer
Noon Lunch (on your own) and Viewing Commercial Displays
1:00 "Contract Heifer Raising" by Dave Fischer
1:30 "BVD: Facts and Fiction" by Dick Wallace
2:00 "MUN as a Management Tool" by Mike Hutjens
2:30 Questions/Answers and Viewing Commercial Booths

Meeting locations are outlined below. Check with your local Extension unit for details or call the Dairy Extension Office at (217)333-2828.

Dates and locations

Jan 4	El Paso, Elms
Jan 4	Yorkville (night), Extension Office
Jan 5	Kankakee, Redwood Inn
Jan 9	Quincy, Extension Office
Jan 9	Jerseyville (night), Extension Office
Jan 10	St. Libory, American Legion
Jan 11	Breese, American Legion
Jan 12	Teutopolis, Knights of Columbus
Jan 16	Rock Falls, Ramada Inn
Jan 17	Freeport, Highland Community College
Jan 18	Elizabeth, Community Center
Jan 19	Harvard, Stratford Inn

The *1996 Illinois Dairy Report* (119-page booklet containing 26 Extension and research reports) will be available for $5. These meetings are sponsored by the Cooperative Extension Service, Department of Animal Sciences, and Illinois Department of Commerce and Community Affairs (Bureau of Energy and Recycling). Plan to arrive early to visit the commercial booths, and bring a friend.

—Mike Hutjens, Extension Dairy Specialist

Higher Break-Even Prices for By-Product Feeds

As corn prices continue to increase, the value of by-product feeds also increases. However, some by-product feeds are not available (such as brewers' grain) or are not economical. The break-even prices in Tables 1 and 2 were calculated using the University of Wisconsin Feed Val 3 computer program at two prices for shelled corn or soybean meal, with tallow at 26 cents a pound, dicalcium phosphate at 17 cents per pound, and limestone at 7 cents a pound.

Table 1. Break-Even Prices for Energy Feeds at Two Prices for Shelled Corn and Soybean Meal at $225 per Ton

Shelled corn (dollars per bushel)	3.25	3.50
	--dollars per ton--	
Beet pulp	99	109
Brewers' grain, dry	193	193
Brewers' grain, 30 percent dry matter	60	NA
Brewers' grain, 22 percent dry matter	44	61
Corn gluten feed, dry	138	145
Corn gluten feed, 45 percent dry matter	62	66
Cottonseed, whole fuzzy	216	219
Hominy feed	126	134
Oats	89	96
Soy hulls	100	109
Wheat midds	120	127

Table 2. Break-Even Prices for Protein Feeds at Two Prices for Soybean Meal and Shelled Corn at $3 per Bushel

Soybean meal—44 percent (dollars per ton)	200	250
	--dollars per ton--	
Blood meal	538	735
Brewers' grain	173	212
Corn gluten meal	369	494
Corn distillers grain	207	246
Fish meal	509	664
Malt sprouts	137	156
Meat and bone meal	508	637
Soybeans, heat-treated	286	348

Illinois Round Tables

A series of informal dairy programs are scheduled following the area dairy days to answer questions and discuss the current concerns of dairy farmers, veterinarians, and agribusiness personnel. The following dates and locations have been scheduled:

Feb 5	Pontiac (afternoon)
Feb 6	Pekin (afternoon)
Feb 12	Nashville (afternoon)
Feb 12	Redbud (evening)
Feb 13	Breese (evening)
Feb 14	Effingham (morning)
Feb 27	Oregon (morning)
Feb 27	Morrison (night)
Feb 28	Orangeville (day)
Feb 29	Elizabeth (afternoon)
Feb 29	Pecatonica (night)
Mar 1	Belvedere (day)

Contact your local Extension unit for exact location and starting times, or call the Dairy Extension Office at (217)333-2928. Bring your questions and TMR, or forage samples for sizing with the Penn State particle separator.

—Mike Hutjens, Extension Dairy Specialist

New Anionic Salt Available

Anionic salts can reduce milk fever, hypocalcemia, and metabolic disorders, but the number of Illinois dairy farmers using this technology is fewer than 10 percent. The main problem is palatability and reduced dry-matter intake when anionic salts are fed. A new product (commercially named Bio-Chor) is a palatable source of anionic salts fed at the rate of 1.75 to 2.25 pounds per head per day. This level will reduce the DCAB (dietary cation anionic balance) by 15 meq per 100 grams or 150 meq per kilograms of diet dry matter. Canadian researchers reported urinary pH dropped from 8.4 to 6.0 when the new product was fed for 7 days. The product also provided a source of rumen-degradable protein and stimulated bacterial growth based on West Virginia research results. Naming of the product does not imply any endorsement.

—Mike Hutjens, Extension Dairy Specialist

Strategies with $3.25 a Bushel for Corn

Dairy farmers are searching for answers for alternatives to $3.25 a bushel for corn. While some dairy farmers have a supply of corn on hand, others will need to purchase corn grain or would like to sell it. Also, compared to last year, feed costs will be up 20 to 30 percent, which reduces profit margins as milk prices stubbornly increase in October and November. The following strategies can be considered but must be evaluated by dairy farmers and nutritionists on a farm-by-farm basis.

Strategy One: High-quality forages will reduce the fiber level in the diet, and corn amounts can be reduced. Unfortunately, first-crop legume-grass forage was harvested late (RFV < 120), due to rain resulting in the need for more grain energy.

Strategy Two: Increasing corn silage will provide more fermentable carbohydrate (starch) in the ration. Corn can be reduced while maintaining ration energy concentration. Be sure to forage-test all corn silage; some samples may be low in grain, or the plant may be too mature when harvested—resulting in low-energy corn silage. Also, if hard kernels appear in the manure, digestible energy will be reduced.

Strategy Three: High producing cows (over 50 pounds per day) need a minimum level of starch in their rations. Do not shortchange good cows as milk yield and milk components, especially milk protein, will decline. Lower producing cows (less than 50 pounds per day) could be reduced in corn grain if energy needs can be met.

Strategy Four. Corn gluten feed and hominy could replace one-third to one-half of the corn grain in the diet if the ration fiber (28 to 32 percent NDF) and nonfiber carbohydrate or NFC (33 to 36 percent) levels can be met. Again, do not shortchange good cows.

Strategy Five: By-product feeds can be substituted for lower quality forage, increasing ration energy levels while reducing the amount of corn. If a farmer can purchase the by-product feed below the break-even price, it is a good buy.

Strategy Six: More expensive feed can be used for high producing cows since they convert it into more milk. If cows are low in milk production, consider injecting cows with BST (increases milk yield), dry off low producing cows (lowers feed costs as dry cow rations are cheaper), or split the herd into groups (avoids overfeeding expensive corn to low producing cows).

—Mike Hutjens, Extension Dairy Specialist

Rumen Acidosis

Rumen acidosis is the number one metabolic disorder diagnosed by the University of Wisconsin Veterinary College. Two types of acidosis are reported in the field: acute and subacute acidosis. Acute acidosis is less common and severe. Affected animals are depressed and off-feed, have an elevated heart rate and diarrhea, and may die. Cows experiencing subacute rumen acidosis have mild diarrhea, lower dry matter, and hemorrages in the hoof. Rumen pH drops below 6 and remains low for several hours, and volatile fatty acid (VFA) patterns shift (higher levels of propionate with an acetate to propionate ratio < 2.2). Diagnosing subclinical acidosis in the field is a challenge. The signs below can be useful but can vary, and the disease can be caused by other factors.

- Cows experience laminitis and foot problems, especially first lactation and fresh cows.
- Cows are fed more than 6 pounds of concentrate dry matter per meal.
- Concentrate intake after calving is increased faster than 1.5 pounds per day.
- Dry cows are shifted to the high group TMR after calving without a transition ration.

- Individual cows are one full fat test point below the herd average (example: cows below 2.6 when the herd averages 3.6 percent milk fat).
- Individual cows have milk protein tests > 0.4 percentage point higher than milk fat test (example: a cow with a 2.7 percent milk fat test and a 3.2 percent milk protein test).
- Milk fat test returns to normal when a buffer was added to the ration.
- Cows crave or selectively consume coarse long forage (straw or grass hay).
- Cows consume sodium bicarbonate free-choice.
- Manure appears loose or watery.
- Hoof surfaces have ridges or lines.
- Less than half of the cows are chewing their cud.

Wisconsin workers describe two types of subclinical acidosis. Fresh cow acidosis occurs 7 days before calving to 20 days postpartum and is related to the lack of a transition diet or to management factors at calving. These cows are at risk because (1) The rumen papillae need time to elongate for optimum VFA absorption; (2) Rumen microbes must shift to digest high-energy rations; (3) Dry-matter intake slowly increases. Adapted acidosis affects cows 40 to 150 days in milk or longer. Rumen adaption should have occurred, and these cows are receiving diets that are short in functional fiber and high in starch, or the feeding systems allow for feed selection. Both types of acidosis can occur and require different strategies to correct.

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FIRST CLASS