2023 Illinois Dairy Summit

IS CUTTING COSTS ENOUGH? STRATEGIES TO IMPROVE PROFITABILITY

www.illinoismilk.org/DairySummit2023

ILLINOIS MILK PRODUCERS ASSOCIATION

ILLINOIS Extension
COLLEGE OF AGRICULTURAL, CONSUMER & ENVIRONMENTAL SCIENCES

Follow us
@ILMilkProducers
@UIUCDairyExt

13th Annual Illinois Dairy Summit hosted by Illinois Milk Producers Association and University of Illinois Dairy Extension

2023

Illinois Dairy Summit

IS CUTTING COSTS ENOUGH?
STRATEGIES TO IMPROVE PROFITABILITY

FEBRUARY 1 / 10 A.M. - 3 P.M.

AGENDA

10:00am **Registration**

10:30am **Welcome**
IMPA Updates
Tasha Bunting, *Illinois Farm Bureau*

10:45am **Are We Underestimating the Costs of Disease?**
Derek Nolan, *Ph.D., University of Illinois*

11:35am **What are We Breeding for, and How Much Does it Cost?**
A Summary of the Illinois Dairy Genetics and Profitability Survey
Jared Hutchins, *Ph.D., University of Illinois*

12:25pm **Lunch & Booth Visits**

1:25pm **Cover Crops Alternatives in Dairy Cattle Diets**
Phil Cardoso, *DVM, Ph.D., University of Illinois*

1:55pm **Producer Panel: What Works and What Doesn't for Cover Crops**
Moderator: Phil Cardoso, *DVM, Ph.D., University of Illinois*

2:55pm **Wrap up and adjourn**

Illinois Extension
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

www.illinoismilk.org/DairySummit2023

SPEAKERS
Contact Information

Phil Cardoso, DVM, Ph.D.

University of Illinois
cardoso2@illinois.edu

Phil is an associate professor at the University of Illinois at Urbana-Champaign. He received his D.V.M., and M.S. degrees from the Universidade Federal Do Rio Grande do Sul in Brazil, and his Ph.D. from the University of Illinois. Since 2012, Phil has established a unique program that seamlessly blends his teaching, extension, and research efforts. Phil and his students have published over 75 peer-reviewed manuscripts (original research and invited reviews) and 3 invited book chapters to date.

Jared Hutchins, Ph.D.

University of Illinois
jhtchns2@illinois.edu

Jared is an applied microeconomist and an Assistant Professor in the Department of Agricultural and Consumer Economics (ACE) at the University of Illinois at Urbana-Champaign. His research focuses on topics important to the agricultural sector including technology and innovation, dynamic decision making, and the role of cooperatives in the economy. Leveraging some of Jared's personal experience in the agriculture sector, his research has been focused on topics important to both agriculture and development economics, including production economics, dynamic asset replacement, agriculture credit, and technology adoption.

Derek Nolan, Ph.D.

University of Illinois
dtnolan@illinois.edu

Derek grew up on a dairy farm in Northeast Iowa. His passion for agriculture led him to Iowa State University where he earned his degree in Dairy Science. Derek completed both his Master's and Ph.D. at University of Kentucky with a research focus in milk quality and decision economics. Derek is now a Teaching Assistant Professor and Dairy Extension Specialist in the Animal Sciences Department at the University of Illinois.

MEET OUR DAIRY FARMER PANEL

BRYAN HENRICHS
Prairie Farms Dairy
Clinton County
Gotmilk237@yahoo.com

CLINT HARRE
Prairie Farms Dairy
Washington County
Charre3@gmail.com

TONY GRAVES
Prairie Farms Dairy
Richland County
cloverfarmsdairy@gmail.com

BOARD
Contact Information

Don Mackinson
President

(Prairie Farms Dairy)
Livingston County
dmackinson56@gmail.com

Brent Pollard
Vice President

(IAA Board Representative)
Winnebago-Boone County
pollard8@comcast.net

Tony Graves
Treasurer

(Prairie Farms Dairy)
Richland County
cloverfarmsdairy@gmail.com

Mark Brase
Secretary

(Dairy Farmers of America)
Madison County
mrkbrse@yahoo.com

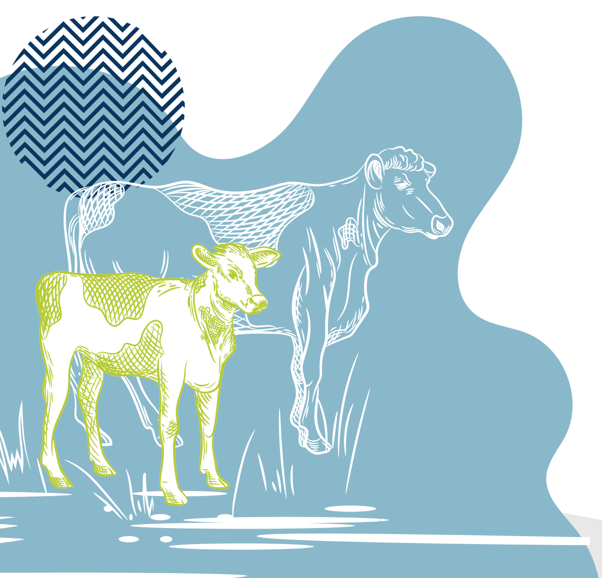
Kappy Koch
(Prairie Farms Dairy)
Tazewell County
koch_5@frontier.com

Bryan Henrichs
(Prairie Farms Dairy)
Clinton County
gotmilk237@yahoo.com

Mark Tuttle
(IAA Board Representative)
DeKalb County
mtuttle@ilfb.org

Kurtis Johnson
(Dairy Farmers of America)
Bond County
villarosainc_553@hotmail.com

Randy Langrehr
(Dairy Farmers of America-Alternate)
Washington County
rlmacho@yahoo.com



Jared Hutchins, Ph.D.
University of Illinois

What are We Breeding for, and How Much Does it Cost? A Summary of the Illinois Dairy Genetics and Profitability Survey

What are we breeding for, and how much does it cost?
A summary of the Illinois Dairy Genetics and Profitability Survey

Jared Hutchins
Illinois Dairy Summit
February 1, 2023

ILLINOIS Agricultural & Consumer Economics · Animal Sciences College of ACES · ILLINOIS College of Veterinary Medicine

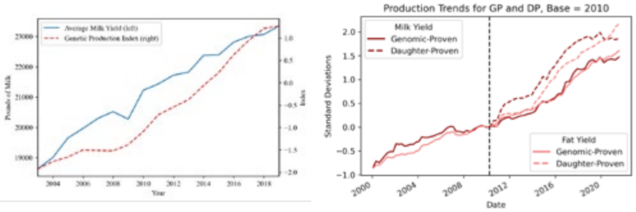
About Me

- Assistant Professor in the **Department of Agricultural and Consumer Economics** (ACE).
- Ph.D. from University of Wisconsin – Madison in agricultural economics.
- **I focus on dairy farming, especially how technology and innovation impacts dairy farming profits.**
- **Specific interest in the role of genetics.**

Some of my past and current research partners

National Association of Animal Breeders (NAAB) · National DHIA · Center for Dairy Profitability · AgSource Laboratories · DRMS Dairy Records Management Systems · CDCB Council on Dairy Cattle Breeding

Improved genetics leads to cows becoming more productive.



… but does it lead to more profit?

To this point, I've mostly focused on how benefits differ across farms.

In my dissertation research**, I found that about 50% of the "return" to increasing PTAs for fat and protein are explained by the farm's environment,** and not just the genetics.

So "bang for buck" depends on other decisions the farm makes. But something is missing here…

So we understand how it might benefit a farm…

… but how much is it costing?

Surprisingly, there is far less data available on the costs of genetics.

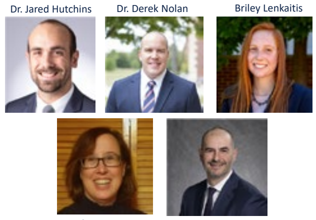
Understanding the cost side is essentially to understanding profitability!

The Illinois Dairy Genetics and Profitability Survey

We sent a survey to Illinois dairy producers in order to start to understand:

- **Genetic technology adoption (sexed semen, genomics, etc.)**
- **Breeding goals**
- **The cost of genetics**
- **Where farmers get information on genetics.**

Our Team



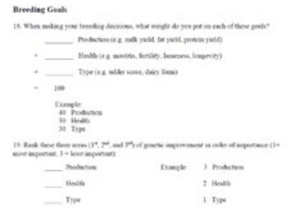
Dr. Jared Hutchins, Dr. Derek Nolan, Briley Lenkaitis, Dr. Courtney Hayes, Dr. Phil Cardoso

The Illinois Dairy Genetics and Profitability Survey

Our survey had a 15.5% response rate (around 60 responses).

Today, I want to present some preliminary results from this survey.

Feedback is encouraged, especially since we aim to survey even more farms in the future.



Breeding Goals

18. When making your breeding decisions, what weight do you put on each of these goals?

________ Production (e.g. milk yield, fat yield, protein yield)

+ ________ Health (e.g. mastitis, fertility, lameness, longevity)

+ ________ Type (e.g. udder score, dairy form)

= 100

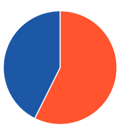
Example:
40 Production
30 Health
30 Type

19. Rank these three areas (1st, 2nd, and 3rd) of genetic improvement in order of importance (1= most important, 3 = least important):

____ Production	Example:	3	Production
____ Health		2	Health
____ Type		1	Type

What sorts of farms answered?

Q10: Percent Purebred



Q8: As of today, what is the total number of adult cows on the farm?

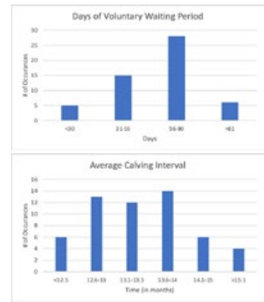
- Average herd size: **186 lactating cows**
- Median herd size: **100 lactating cows**

Q9: Has the approximate number of adult cows changed in the last 12 months?

- 78.69% said herd size **is the same** OR **decreased**
- 21.31% said, herd size **increased**
  - Average increase: **41 cows**

Management decisions

- Average *calving interval*: **13.56 months**
- Average *voluntary waiting period*: **60 days**
- Average *days to first service*: **78 days**



Breeding Goals

Q18. When making your breeding decisions, what weight do you put on each of these goals?

________ Production (e.g. milk yield, fat yield, protein yield)

+ ________ Health (e.g. mastitis, fertility, lameness, longevity)

+ ________ Type (e.g. udder score, dairy form)

= 100

Example:
40 Production
30 Health
30 Type

Breeding Goals

Q18. When making your breeding decisions, what weight do you put on each of these goals?

________ Production (e.g. milk yield, fat yield, protein yield)

+ ________ Health (e.g. mastitis, fertility, lameness, longevity)

+ ________ Type (e.g. udder score, dairy form)

= 100

Example:
40 Production
30 Health
30 Type

Average Weights:

- **Production: 43%**
- **Type: 29%**
- **Health: 27%**

Breeding Goals

Q19. Rank these three areas (1st, 2nd, and 3rd) of genetic improvement in order of importance (1= most important, 3 = least important):

_____ Production	Example:	3	Production
_____ Health		2	Health
_____ Type		1	Type

	Percentage Ranked in Each Area		
	Production	**Health**	**Type**
1st Rank	44.07%	35.59%	20.34%
2nd Rank	33.90%	38.98%	28.81%
3rd Rank	23.73%	23.73%	50.85%

Production and health most likely to be 1st and 2nd,

Type most likely to be 3rd.

Breeding Goals

20. Rank these areas of health in order of importance (1 = most important, 5 = least important):

- _____ Lameness
- _____ Mastitis
- _____ Infertility (low pregnancy rate, high doses per conception)
- _____ Calving Difficulty
- _____ Other disease (list): ______________________________

Rank	Lameness	Mastitis	Infertility	Calving Difficulty	Other
1st	18.64%	33.90%	35.59%	11.86%	0.00%
2nd	19.35%	20.97%	37.10%	22.58%	0.00%
3rd	25.00%	28.57%	19.64%	25.00%	1.79%
4th	37.04%	12.96%	5.56%	44.44%	0.00%

1st: Mastitis, infertility

2nd: Infertility

3rd: Mastitis

4th : Lameness, Calving Difficulty

Breeding Priorities

Q21. Which of these areas are health concerns you wish to address with breeding? Check all that apply:

- 45% ☐ Lameness
- 57% ☐ Mastitis
- 62% ☐ Pregnancy Rate
- 67% ☐ Conception Rate
- 57% ☐ Calving Difficulty
- 3% ☐ Other diseases (list them): ________

22. Which of these trait indices are considering when selecting bulls? Check all that apply:

- 57% ☐ Net Merit (NM$)
- 46% ☐ Total Performance Index (TPI)
- 13% ☐ Grazing Merit/Fluid Merit/Cheese Merit
- 79% ☐ Udder Composite
- 76% ☐ Feet and Legs Composite

Breeding Priorities

23. Of these 5 indices, rank them in order of importance when selecting bulls (1 = most important, 5 = least important):

	Net Merit	TPI	Grazing Merit	Udder Composite	Feet & Legs
1st	34.48%	13.79%	3.45%	24.14%	17.24%
2nd	10.34%	22.41%	6.90%	27.59%	29.31%
3rd	12.50%	26.79%	12.50%	23.21%	25.00%
4th	24.07%	31.48%	11.11%	14.81%	14.81%
5th	16.33%	8.16%	57.14%	6.12%	10.20%

- _____ Net Merit (NM$)
- _____ Total Performance Index (TPI)
- _____ Grazing Merit/Fluid Merit/Cheese Merit
- _____ Udder Composite
- _____ Feet and Legs Composite

1st: Net Merit

2nd: Udder Composite/F&L

3rd: TPI/Udder/F&L

4th: TPI

5th: Grazing/Fluid/Cheese Merit

Breeding Priorities

24. Which of these PTAs are considered when selecting bulls? Check all that apply:

- 85% ☐ Milk yield
- 74% ☐ Fat yield/percentage
- 71% ☐ Protein yield/percentage
- 60% ☐ Somatic Cell Score
- 50% ☐ Daughter Pregnancy Rate
- 65% ☐ Conception Rate
- 71% ☐ Calving Ease
- 61% ☐ Type
- 18% ☐ Feed Efficiency/Feed Saved
- 61% ☐ Productive Life
- 23% ☐ Cow Livability

Most popular: Milk, Fat, Protein, Calving Ease

Moderately popular: SCC, Conception Rate, Type, PL, DPR

Least popular: Feed efficiency, cow livability

Main takeaways:

Breeding goals:

- Most respondents are **production and fertility oriented**.
- Net Merit is popular, but **so is udder and F&L** (maybe even more popular!).

Breeding Costs

- Non-sexed semen: **$25 per straw**
- Beef semen: **$12 per straw**
- Sexed semen: **$40 per straw**
- Others need more data points

Breeding Information

- **Main source: genetics companies**
- Other sources: other farmers, breed associations, etc.
- Mostly DIY for mating decisions and actual breeding.

Breeding Priorities

25. Of the above PTAs, list the five most important to you for choosing bulls (in order of importance, 1 = most important 5 = least important).

1. _______________
2. _______________
3. _______________
4. _______________
5. _______________

	Calving Ease	Conception Rate	Livability	DPR	Fat YP	Milk Yeild	PL	Protein	Type	SCC	Feed Efficiency
1st Rank	5.45%	5.45%	3.64%	3.64%	21.82%	27.27%	7.27%	10.91%	14.55%	0.00%	0.00%
2nd Rank	9.23%	10.77%	1.54%	6.15%	20.00%	15.38%	7.69%	12.31%	12.31%	3.08%	1.54%
3rd Rank	10.94%	3.13%	0.00%	7.81%	17.19%	7.81%	7.81%	20.31%	10.94%	10.94%	3.13%
4th Rank	10.71%	16.07%	3.57%	5.36%	5.36%	12.50%	12.50%	16.07%	7.14%	10.71%	0.00%
5th Rank	9.62%	7.69%	0.00%	9.62%	5.77%	9.62%	25.00%	1.92%	11.54%	17.31%	1.92%

1st and 2nd : Milk, Fat

3rd: Protein, Fat

4th : Protein, Conception

5th : Productive Life

Breeding Technology

32. What percentage of your cows are typically bred using these methods:

____ % AI, non-sexed semen.
+ ____ % AI, sexed-semen.
+ ____ % Embryo transfer
+ ____ % Natural service
= 100

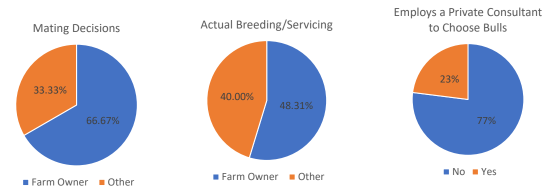
Average answer:
72 % AI, non-sexed semen.
+ 18 % AI, sexed-semen.
+ 2% Embryo transfer
+ 9% Natural service

Breeding Technology

	Non-Sexed Semen	Sexed Semen	Beef Semen	Genomic Testing	Embryo Transfer
Percent of farms using		69%	66%	26%	16%
Average Cost	$24	$39	$12	$59*	$282*

* High variance

Who makes decisions?



Sources of information: advice

39. Who advises you on selecting genetics? Check all that apply:

Your answers:
- ☐ Cooperative extension
- ☐ DHIA
- ☐ Other dairy farmers
- ☐ Breed association (e.g. Holstein Association USA)
- ☐ Genetics Company (e.g. Select Sires, Genex)
- ☐ Veterinarian
- ☐ Other: _______________

69% Genetics Company
29% Other, DHIA, & Cooperative Extension
11% Other dairy farmers
11% Breed association
5% Veterinarian

Sources of information: new bulls

38. Which of these information sources do you use to find out about new bulls and genetics? Check all that apply:
- ☐ Cooperative extension
- ☐ DHIA
- ☐ Other dairy farmers
- ☐ Breed association (e.g. Holstein Association USA)
- ☐ Genetics Company (e.g. Select Sires, Genex)
- ☐ Milk Processor
- ☐ Industry Publications (e.g. Hoard's Dairyman)
- ☐ Other: _________________

81% Genetics companies
32% Industry publications
29% Other dairy farmers
24% Breed associations
13% Other, DHIA, Milk Processor, Extension

Question and Comments?

Jared Hutchins, Ph.D.
Mumford Hall 312
1301 W Gregory Dr,
Urbana, IL 61801
Email me at: ***jhtchns2@illinois.edu***

Derek Nolan, Ph.D.
University of Illinois

Are We Underestimating the Costs of Disease?

Underestimating the cost of disease

Derek Nolan
Illinois Dairy Summit
February 1st, 2023

ILLINOIS

Objectives

- Discuss up-front vs hidden costs
- Research of costs of diseases
- Calculating the cost of disease
- SCC Research
- Take home messages

ILLINOIS

Why measure disease costs?

- Another benchmarking tool
- Disease has large impact on profitability
  - Up-front costs
  - Hidden costs

ILLINOIS

Differences in costs

- Up-front costs – Costs easily identifiable
  - Help determine costs of current infections
- Hidden costs – Costs not easily seen
  - Often not considered but can contribute the most
  - Hard to estimate and calculate
  - Highly dependent on the disease situation

ILLINOIS

How do we look at costs of disease?

- Measure the rate of infections
- Keep accurate treatment records
- Success of treatment
- Record milk withdrawal times
- These will help determine up-front costs

ILLINOIS

Costs of Disease per Case

Disease	Veterinary cost	Treatment cost	Labor cost
Mastitis	19.16 ± 15.27	57.46 ± 27.72	11.58 ± 6.00
Metritis	21.81 ± 17.01	67.08 ± 31.65	9.74 ± 4.51
Ketosis	20.99 ± 13.29	32.34 ± 19.30	11.96 ± 5.99
Left-displaced abomasum	87.30 ± 29.99	114.30 ± 62.35	15.63 ± 8.48
Retained placenta	17.61 ± 9.53	69.47 ± 41.52	11.86 ± 6.30
Lameness	36.57 ± 17.54	70.52 ± 44.31	13.10 ± 6.12
Hypocalcemia	30.13 ± 15.33	58.24 ± 37.97	12.60 ± 5.98

Liang et al (2017)

ILLINOIS

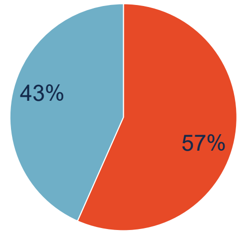
Costs of Disease per Case (Hidden)

Disease	Discarded milk	Decreased milk production	Culling	Extended days open	Death	Total costs
Mastitis	53.55	162.17	10.26	−1.54	12.05	325.76
Lameness	2.01	23.83	24.98	5.86	11.10	185.10
Metritis	33.58	3.29	7.25	11.41	16.26	171.69
Retained placenta	NA	48.37	NA	5.41	NA	150.41
Left-displaced abomasum	NA	169.80	25.73	2.54	21.69	432.48
Ketosis	NA	1.00	4.72	1.67	5.42	77.00
Hypocalcemia	NA	6.01	8.46	85.28	46.79	246.23

Liang et al (2017)

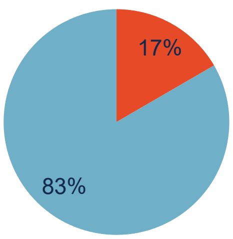
ILLINOIS

Mastitis Costs



ILLINOIS

Ketosis Costs



ILLINOIS

Culling and Death Costs

- Why are these calculated in disease costs?
  - Chance that the cow will be culled early or die from the disease
  - Culling costs can be very complicated
  - Death cost – slaughter value * probability that the cow dies

ILLINOIS

Cost of mastitis

$250/case

$2 billion/year

$35 billion/year

ILLINOIS

2 billion is an underestimation

- Cost of a case of mastitis * US incidence rate
- Most of our costs are spent preventing the disease
  - Post dip
  - Pre dip
  - Vaccinations

ILLINOIS

Total disease cost

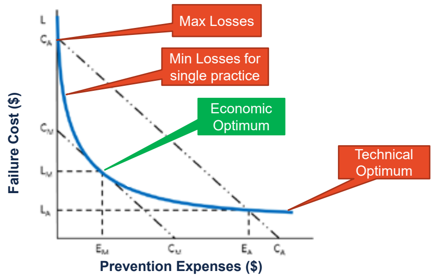
$$C = L + E$$

- C = Total cost
- L = Losses – benefits taken away (milk production, premiums)
- E = Expenses – resources used to manage a disease (management, labor)

McInerney et al. (1992)

ILLINOIS

Loss-Expenditure Frontier



McInerney et al. (1992)

ILLINOIS

McInerney et al. (1992)

- Three different scenarios for subclinical mastitis
  - Teat disinfect – all year long
  - Dry cow treat – every cow at dry off
  - Milk equipment tests – annually

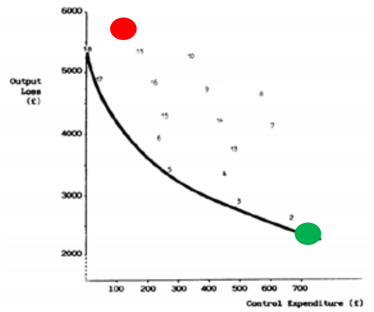
ILLINOIS

Results

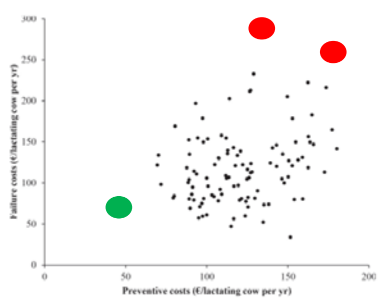
Management practice		Estimated change (%)
Teat dip	All yr	-11.7%
	Part of yr	3.5%
	Not at all	0.0%
Dry-cow therapy	Blanket	-9.3%
	Selective	-4.4%
	Not at all	0.0%
Milking Machine Maintenance	Annaully	-3.8%
	Not at all	0.0%

ILLINOIS

McInerney et al. (1992)



van Soest et al. (2016)



Research Results

- Preventative costs need to be considered when calculating the cost of diseases
- Some management practice do not pay off
- Can invest too much
- Management practices need to be adopted correctly

ILLINOIS

Can farms lower their SCC and still make money?

- Led to research by SQMI
- Low SCC farms only want to get better
- Modeled the average Holstein herd enrolled in DRMS

ILLINOIS

Model of SCC Impact of US Dairy Farm

Variable	Input
Herd Size	205
Rolling herd average (lbs)	22,740
Somatic cell count (# cells/mL)	251,000

ILLINOIS

Herd SCC

SCC Threshold (SCC*1,000 cells/mL)		Lactation		
Upper SCC	Lower SCC	1	2	3+
100	200	165	348	381
200	300	196	372	423
300	400	253	444	503

ILLINOIS

Three different variables

- Milk Price
  - Premium offered
- Cost of Management Practice
- Management Practice Impact on SCC
- Simulate – 1,000 scenarios

ILLINOIS

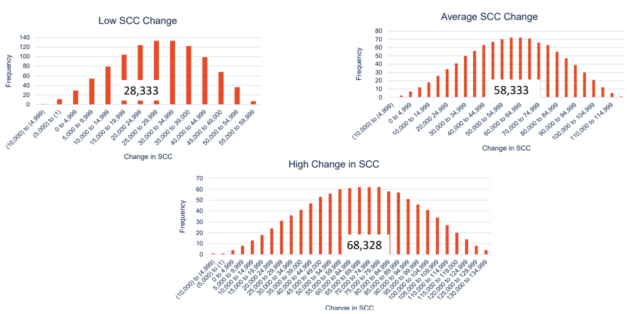
Milk price

ILLINOIS

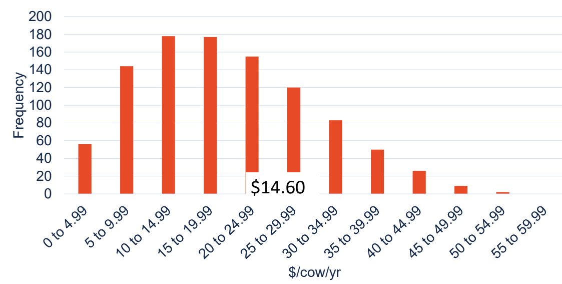
Milk price

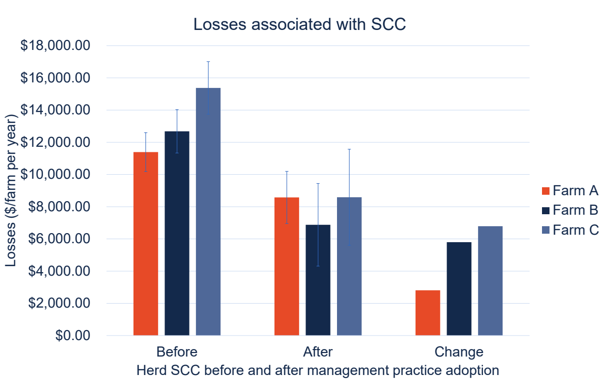
Milk price

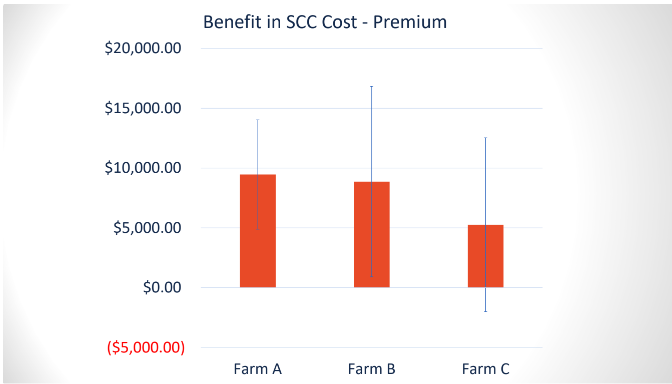
Change in SCC

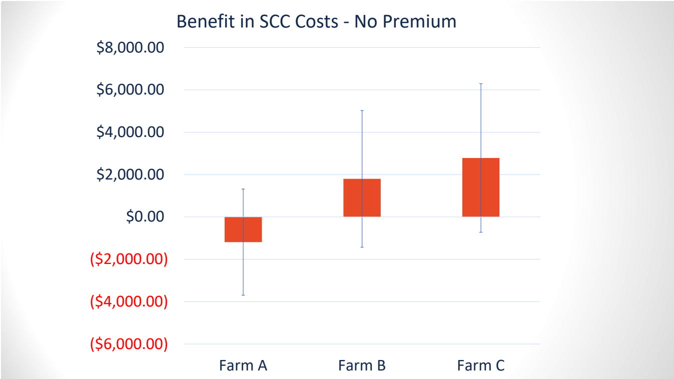


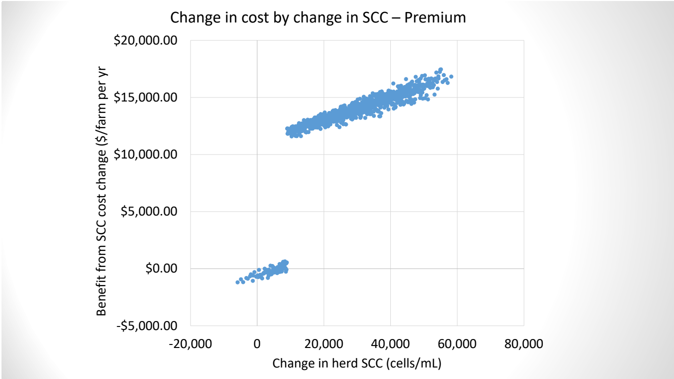
Management expense

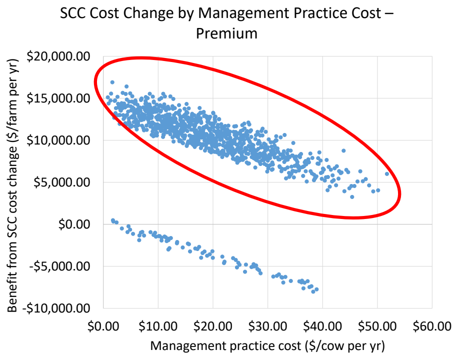




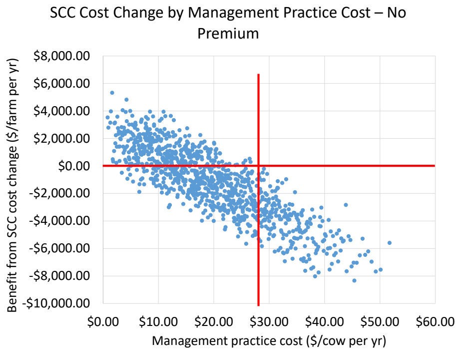








ILLINOIS



ILLINOIS

Research Results

- In most cases lowering SCC is economically beneficial
- Low SCC herds careful consideration
- Premiums should be strived for
- Consider impact on SCC before making a management decision

ILLINOIS

Take Home Messages

- Cannot control what we do not measure
- Many costs of diseases are underestimated
- Do not consider prevention costs
- Up-front costs are great to benchmark

ILLINOIS

Take Home Messages

- Total costs give better idea of impact of a disease
  - Consider change in total cost with adoption of management practices
  - Premiums should be thought of as an investment cost
- If management practices are not adopted correctly end up costing more money

ILLINOIS

Thank you

Derek T. Nolan, PhD.

Teaching Assistant Professor

Dairy Extension Specialist

University of Illinois

217-244-7637

dtnolan@Illinois.edu

ILLINOIS

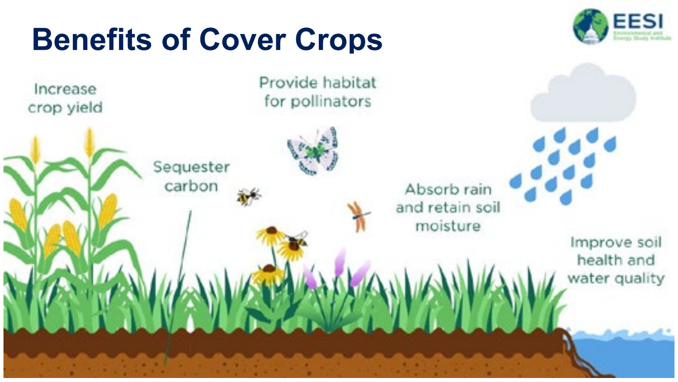
Phil Cardoso, DVM, Ph.D.
University of Illinois

Cover Crops Alternatives in Dairy Cattle Diets

Cover crops are plants seeded into agricultural fields, either within or outside of the regular growing season, with the primary purpose of improving or maintaining ecosystem quality.

University of Illinois at Urbana-Champaign

Benefits of Cover Crops



What do cover crops do for the environment?

- Enhance biodiversity
- Increase soil infiltration, leading to less flooding, leaching, and runoff
- Create wildlife habitat
- Attract honey bees and beneficial insects

University of Illinois at Urbana-Champaign

What do cover crops do for farmers?

- Reduce erosion
- Improve soil quality, through increases in porosity (reduced compaction)
- Soil organic matter
- Water holding capacity
- Beneficial microbes
- Micro- and macro-invertebrates
- Retain nutrients that would otherwise be lost
- Add nitrogen through fixation (leguminous cover crops)
- Combat weeds
- Break disease cycles

University of Illinois at Urbana-Champaign

Cover crops – how to choose

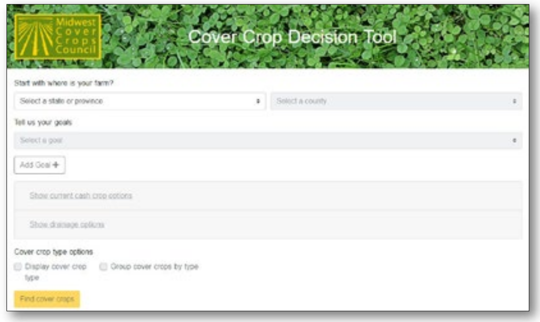
- If an incentive program is involved, check the requirements. Can you plant a cover that winterkills, or will you have to kill it next spring? Must you let the cover crops grow until a specific date?
- Start small. Learn how your cover crop performs in your natural and physical environments. Use this knowledge next year.
- Choose a cover that will achieve your goal and fit your planting window. As you narrow your choices, consider the recommended planting date for each one.

University of Illinois at Urbana-Champaign

Research:

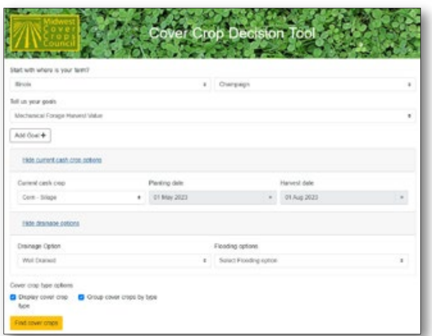
- Truterra (a division of Land O' Lakes) and the Soil Water Conservation Society (SWCS) have reported the early findings from a three year on-farm research study. The focus was to evaluate cover crops and the practice's effect on soil heath, soil erosion, carbon sequestration, and return on investment.
- The field-scale study spanned 2,400 acres in three states: Iowa, Kansas and Nebraska. The research compared cover crops to conventional practices.
- Two of the key findings are:
  - Cover crops sequestered nearly three times as much greenhouse gas as the check fields. And acres with cover crops were carbon negative
  - Sheet and rill erosion was cut in half. Wind erosion was reduced by 72%

University of Illinois at Urbana-Champaign



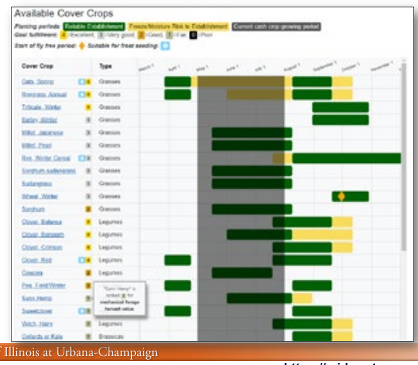
University of Illinois at Urbana-Champaign

https://midwestcovercrops.org/covercroptool



University of Illinois at Urbana-Champaign

https://midwestcovercrops.org/covercroptool



University of Illinois at Urbana-Champaign

https://midwestcovercrops.org/covercroptool

New DMI equations

For far-off dry cows (>3 wk prepartum)

- DMI will be between 1.8 and 2% of BW
- Negatively correlated with dietary NDF

For close-up dry cows (<3 wk prepartum)

- DMI starts decreasing ~2.5 wk prepartum
- Rate of decline negatively correlated with dietary NDF
- At about wk 1 prepartum DMI about the same for all NDF (1.65% of BW)

University of Illinois at Urbana-Champaign

Close-up starch, fiber, and energy

- Almost impossible to separate these effects (e.g., as NDF goes up starch and NEL usually go down)
- Increasing prefresh energy (more starch, less NDF):
  - ➢Increases prepartum DMI
  - ➢Generally little effect on postpartum DMI
  - ➢Most studies show no effect on milk yield

Summary – diet energy concentrations (Mcal/lb DM)

Cow class	NRC, 2001	NASEM, 2021
Far-off dry cows	0.63	0.71
Close-up dry cows	0.65	0.73
Fresh cows	0.76	0.84

Don't mix systems!

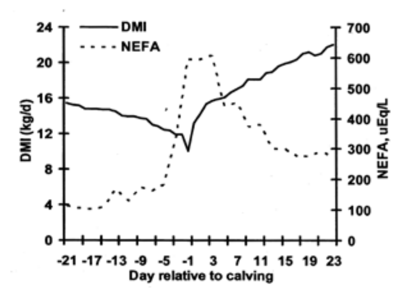
Overall changes in energy balance are small.

Use of pre-fresh diet to adapt rumen

- To "help rumen deal with higher starch postpartum diet"

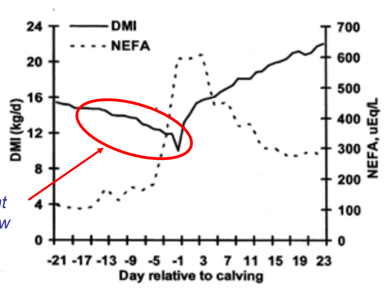
"Based on available data, benefits of feeding a diet of moderate starch and fiber to transition ruminal cells and rumen tissue morphology from a high-forage diet to a higher-starch lactation diet are not evident."

Dry matter intake and plasma NEFA are inversely related



K. L. Smith, 2004

Dry matter intake and plasma NEFA are inversely related



K. L. Smith, 2004

Dietary Recommendations for Dry Cows

- **NEL:** Control energy intake at 18 to 20 Mcal daily [diet ~ 1.39 Mcal/kg (0.63 Mcal/lb) DM] for mature cows
- **Crude protein:** 12 – 14% of DM
- **Metabolizable protein (MP):** > 1,200 g/d
- **Starch content:** 12 to 15% of DM (NFC < 26%)
- **NDF from forage:** 40 to 50% of total DM or 4.5 to 6 kg per head daily (~0.7 – 0.8% of BW). Target the high end of the range if more higher-energy fiber sources (like grass hay or low-quality alfalfa) are used, and the low end of the range if straw is used (2-5 kg)
- **Total ration DM content:** <50% (add water if necessary)
- **Minerals and vitamins:** follow guidelines (For close-ups, target values are 0.40% magnesium (minimum), 0.35 – 0.40% sulfur, potassium as low as possible (Mg:K = 1:4), a DCAD of near zero or negative, calcium without anionic supplementation: 0.9 to 1.2% (~125g) calcium with full anion supplementation: 1.5 to 2.0% (~200g), 0.35 – 0.42% phosphorus, at least 1,500 IU of vitamin E, and 25,000 – 30,000 IU of Vitamin D (cholecalciferol)

How to build the dry cow diet?

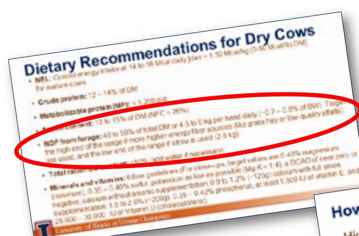
- High forage digestibility is important
- Diets with more than 50% forage seem to work better
- No more than 4kg (~10 lb) of total DM coming from ingredients with more than 40% of NDF that are not from forage (by-product feeds)

University of Illinois at Urbana-Champaign

How to build the dry cow diet? continuing...

- Cows usually eat 12–14 kg of dry matter (DM)
- 3 – 4 kg DM from chopped hay/straw
  - Particle size < 1.5 in (3 cm)
- No more than 4 kg DM from corn silage (only USA?)
  - Corn grain in the diet will come from corn silage
- Add forage with low energy and high NDF (hay/straw) if necessary

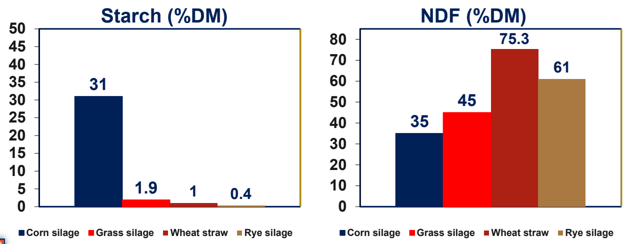
University of Illinois at Urbana-Champaign



Forages with less energy

University of Illinois at Urbana-Champaign

What forage to use?



University of Illinois at Urbana-Champaign

University of Illinois at Urbana-Champaign

Fehlberg et al., 2020

Dry cow diet with Corn Silage

AMTS

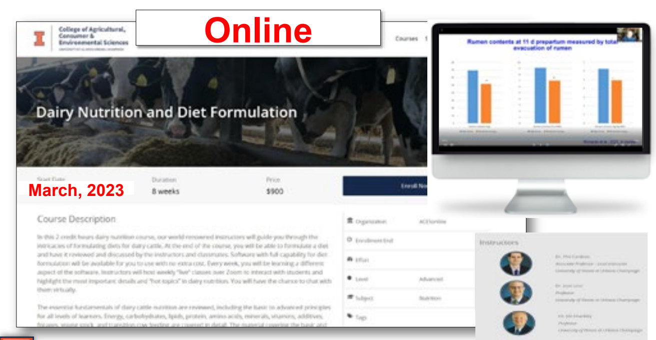
Feed	kg/day (DM)	kg/day (AF)
Corn Silage Conventional 20in U of I 2018 (02.24.19)	[illegible]	13.2
Wheat Straw 5 CP 79 NDF 16 LNDF_2242019	4.4	5.2
Grass Silage 16 CP 45 NDF 15 uNDF	0.0	0.0
Whole Crop Wheat Silage 42 DM 42 NDF	0.0	0.0
Water	0.0041	8.1633
Corn Gluten Feed dry	1.085	1.247
DRY COW MIX	2.9974	3.2768
Click to add...		
Total	12.8132	31.0716
Predicted DMI	12.8855	
Inputted/Predicted DMI (%)	99.439	
Drinking Water Intake (AF)	27.5	
Total Water Intake (AF)	45.8	

Nutrient (TMR)	
DM (%)	41.2
Crude Protein (% DM)	14.2
Starch (% DM)	14.9
NDF (% DM)	45.7
NDF from forage (% DM)	39.5
Ca (% DM)	2.04
P (% DM)	0.37
K (% DM)	1.25
Na (% DM)	0.09
Cl (% DM)	0.84
S (% DM)	0.34
NEL (Mcal/kg)	1.38
DCAD1 (meq/kg) (Ender et al., 1971)	-93
DCAD2 (meq/kg) (NRC 2001)	20

University of Illinois at Urbana-Champaign

Fehlberg et al., 2020

Online



University of Illinois at Urbana-Champaign

Diet Quick Report 6 - Review

Feed Constraints:

Your ration should be developed using these minimum and maximum feed amounts and prices:

	Minimum (kg)	Maximum (kg)	Price ($/Metric Ton)
Corn Silage BMR	1.0	20.0	50
Alfalfa Silage	0.0	10.0	120
Water	0.0	10	2
Wheat Straw	0.1	10	80
Corn Gluten Feed Dry	0.1	2.1	225
Soybean Hulls Ground	0.0	2.1	185
Corn Grain Ground fine	0.0	5.0	230
Canola Meal Expelled	0.1	4.0	370
Wheat Midds	0.1	4	220
Soybean Meal 47.5 Solvent	0.1	4.0	420
Soy Plus*	0.0	2.0	455
Urea	0.0	0.1	700
Megalac*	0.0	0.1	1750
Methionine analog	0.028	0.028	3,000
Rumen protected methionine	0.000	0.100	10,000
Rumen protected lysine	0.000	0.100	5,000
Limestone (calcium carbonate)	0.010	0.200	150
Sodium bicarbonate	0.0	0.250	700
Magnesium oxide	0.000	0.100	415
Magnesium sulfate	0.0	0.03	515
Vitamin E 20K units	0.01	0.100	5,200
Zinpro Availa Dairy*	0.0	0.009	6,700
Anionate*	0.1	1.0	2,400
Mineral and Vitamin Mix	0.33	0.3	2,000

*No endorsement of commercial products is implied.

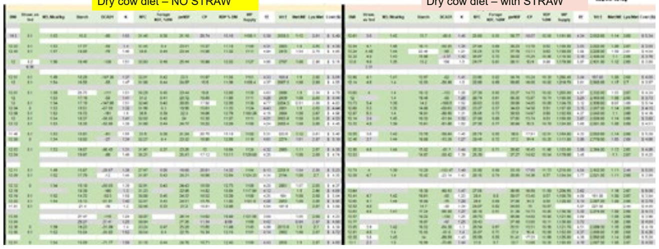
Nutrient Constraints:

The nutrient levels of your ration should fall within the constraints listed here:

	Unit	Minimum	Maximum
Dry Matter Intake	kg	12.0	14.0
Dry Matter	%	40.0	55.0
NEl	Mcal/kg	1.0	2.0
Forage NDF	% BW	0.2	1.0
peNDF	% DM	19.5	45.0
Starch	% DM	10.0	20.0
NFC	% DM	20.00	42.00
EE	% DM	3.00	5.50
MP supply	g	1,100.0	1,400.0
CP	% DM	13.0	17.0
RDP	% DM	9.5	14.0
Rumen NH3	% Req	100.0	180.0
Met:ME	g/Mcal	1.08	1.19
Lys:Met		2.65:1	2.70:1
DCAD 1	(meq/kg)	-200	-50
Ca	% DM	0.70	2.00
P	% DM	0.30	0.40
K	% DM	0.0	2.00
Vitamin E	IU	2,000	3,000
Mg	% DM	0.35	0.50

ILLINOIS

Diet Quick Report 6 - Review



ILLINOIS

Diet Quick Report 6 - Review

TMR without Straw	AVG	MIN	MAX
Cost per head, $	4.69	3.89	5.49
Dry Matter Intake, kg/d	12.13	11.46	13.55
Nel, Mcal/kg	1.54	1.49	1.59
Starch, % DM	18.57	14.72	28.27
NFC, % DM	32.56	27.97	39.84
Forage NDF, % BW	0.40	0.06	0.49
peNDF, % DM	23.47	10.68	28.05
CP, % DM	16.50	11.34	20.76
MP Supply, g	1119	1100	1166
EE, % DM	4.53	3.69	6.13
Vitamin E, IU	1831	164	2707
Met:ME	1.11	0.91	1.61
Lys:Met	2.67	2.07	2.97
DCAD1, meq/kg (Ender et al., 1971)	-72	-160	-27

TMR with Straw	AVG	MIN	MAX
Cost per head, $	4.31	3.55	5.5
Dry Matter Intake, kg/d	12.90	12	13.80
Nel, Mcal/kg	1.42	1.35	1.5
Starch, % DM	16.41	12.53	22.46
NFC, % DM	26.73	22.88	31.90
Forage NDF, % BW	0.68	0.51	0.83
peNDF, % DM	36.23	30.77	39.57
CP, % DM	15.14	13.11	18.07
MP Supply, g	1138	1100	1236
EE, % DM	3.84	3.08	4.37
Vitamin E, IU	1987	152	2770
Met:ME	1.13	0.87	1.65
Lys:Met	2.63	2.01	3.06
DCAD1, meq/kg (Ender et al., 1971)	-62	-169	150

ILLINOIS

Diet Quick Report 6 - Review

Difference (w/o Straw – w Straw)	
Cost per head, $	0.38
Dry Matter Intake, kg/d	-0.77
Nel, Mcal/kg	0.12
Starch, % DM	2.16
NFC, % DM	5.83
Forage NDF, % BW	-0.28
peNDF, % DM	-12.76
CP, % DM	1.36
MP Supply, g	-19
EE, % DM	0.69
Vitamin E, IU	-156
Met:ME	-0.02
Lys:Met	0.04
DCAD1, meq/kg (Ender et al., 1971)	-10

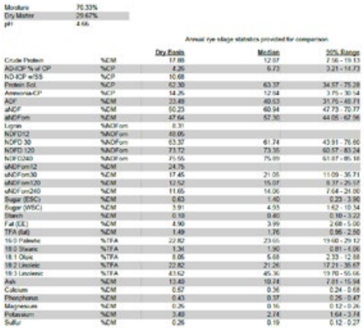
ILLINOIS

Rye silage

Farmer: I have done 140 acres of Rye. The moisture on this sample is wetter than what it is our koester tests have been in the 33-34% range. It was cut in mid may no heads. It's feeding really well

Phil: How have you been using it? Replacing what for Rye?

Farmer: Both alfalfa silage and corn silage

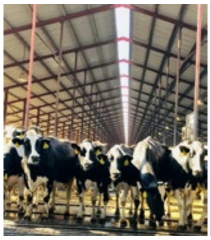


ILLINOIS

ILLINOIS
Animal Sciences
COLLEGE OF AGRICULTURAL, CONSUMER & ENVIRONMENTAL SCIENCES

Dairy Extension

ILLINOIS ACES



THANKS!

cardoso2@Illinois.edu

www.dairyfocus.Illinois.edu

Volume 7, Number 1

Lessons learned from the 2021 Illinois Dairy Summit

On February 3, 2021, the University of Illinois and the Illinois Milk Producers' Association held the Illinois Dairy Summit. This year's event, which was conducted virtually, was attended by more than 150 people, and we had good discussions. The proceedings and recorded presentations are available at no charge through the IMPA website (http://www.illinoismilk.org/dairy-summit/). The meeting's goal was to bring information to dairy farmers in IL regarding protecting their milk check during COVID-19 and beyond. I have selected a few take-home messages from the meeting to share with you. I have also indicated in parentheses where you can learn more about the specific topic in the recorded video (https://vimeo.com/508693470). I hope you find this information helpful. Stay safe, and feel free to reach out if you have any questions.

1. Negative producer price differentials (PPD) in 2020 were not necessarily a deduction from your milk check, but were due to Federal Milk Marketing Order (FMMO) accounting rules. Dr. Newton stressed that the money was never really in the marketplace. The milk's component value was greater than the milk's value in the pool, and the FMMO had to make the deduction for the pool to equalize (09:40 in the video). The FMMO was established in the 1930s, and we may see a reformulation of milk pricing due to the change in the pool of Class 3 milk (the milk used to produce cheese).
2. Corn and soybean prices are on an upward trend. Dr. Hutjens challenges you to keep your total mixed ration (TMR) cost below $0.117 per lb of dry matter. Canola meal, blood meal, soy hulls, and fuzzy cottonseed prices were above the breakeven values of $283/ton, $883/ton, $180/ton, and $288/ton, respectively in January 2021. In addition, it seems that there is not much to lose in trying cover crops in Illinois. One of the strategies to implement cover crops is to plant them in September, after corn silage or soybean harvest (1:05:05 in the video).

Dairy Extension

ILLINOIS ACES

3. Making sure that your cows are efficient is still an important goal to achieve profitability on your farm. During the transition period, three feeding strategies can add to your milk check by improving milk components (mainly protein). We recommend that the dairy milk component efficiency (lb of milk fat + lb of milk protein/dry matter intake) of your herd be at least 10, ideally greater than 11. The Dairy Efficiency Calculator from our lab can help you in calculating efficiencies (https://dairyfocus.illinois.edu/tools/dairy-efficiency-calculator/). Feeding cows with the right amount of energy (not more, not less) before calving can lead to a cheaper diet and healthier cows after calving. Feeding a negative dietary cation-anion difference (DCAD) diet before calving can enhance a cow's health and reproductive success, especially when forages are a challenge due to high potassium levels. Rumen protected amino acids (methionine and lysine) are an effective strategy (especially with high blood meal prices) to improve milk protein, heath, and fertility of your cows (1:53:25 in the video).
4. Understanding the controllables of your milk check is of the utmost importance. You can control production, milk components, and the milk quality bonus. Dr. Nolan highlights benchmarks for milk income, feed cost, and operating cost for farms in IL (2:09:30 in the video). Purchased feed in IL ($8.00/cwt) was more expensive than in the US as a whole ($7.20), leading to total feed costs of $12.89 for IL and $10.59 for the US. Home feed costs are associated with farm size. Smaller herds have higher feed costs than larger herds. Also, make sure to achieve the quality bonus in your milk check. One way to do that is using the Somatic Cell Count (SCC) Calculator from our lab (https://dairyfocus.illinois.edu/tools/somatic-cell-count-calculator/). A few high-SCC cows can cause you to miss the bonus for the whole tank. Always estimate the benefits (minus costs) of management practices before adoption.

—Dr. Phil Cardoso, Associate Professor, Dept. of Animal Sciences, University of Illinois

2

Volume 7, Number 2

Can nutrition help to alleviate heat stress in dairy cows?

Heat stress occurs in dairy cattle when there is a negative balance between the amount of heat energy an animal produces and the amount transferred from the animal to its surrounding environment. An estimated $2.4 billion is lost annually in livestock production due to the effects of heat stress, including roughly $900 million in the dairy industry. These economic losses in the dairy industry are mainly attributed to decreased milk production, adverse effects on milk composition, decreased reproductive performance and increased culling rate. Many heat abatement practices have been implemented on dairy farms. Some of these practices include increasing shaded areas, increasing air velocity by use of fans, and water-soaker lines to increase evaporative heat loss. Even when these management practices are implemented, heat stress still causes significant economic issues for dairy producers on a national and global scale.

Historically, a decrease in feed intake has been assumed to be the primary driver of reduced milk yield in cattle experiencing heat stress. However, recent research has demonstrated that declining feed intake only accounts for approximately 35 to 50% of the decrease in milk yield. Other more chronic physiological and metabolic alterations also play a role. Not only does heat stress decrease overall milk yield, but milk composition is also altered, specifically milk protein concentration. Previous research has also found decreases in milk protein and milk casein concentration when cows are subjected to elevated ambient temperatures. These alterations in milk composition seem to be due to factors beyond a decrease in feed intake and are likely caused by reduced delivery of protein precursors to the mammary glands and increased utilization of amino acids for other biochemical processes, such as acute phase protein and heat shock protein synthesis.

Dairy Extension

ILLINOIS ACES

Feeding diets balanced for proper amino acid content increases lactation performance and milk protein and fat concentration while also improving responses to stressful conditions, under which feed intake often decreases. Specifically, improved lactation performance and reduced inflammatory responses have been reported when the most limiting amino acids for dairy cattle (methionine and lysine) are fed in their rumen-protected form. Figure 1 shows the milk protein concentration at the bulk tank for our Dairy Research Unit from January 2014 through April 2021.

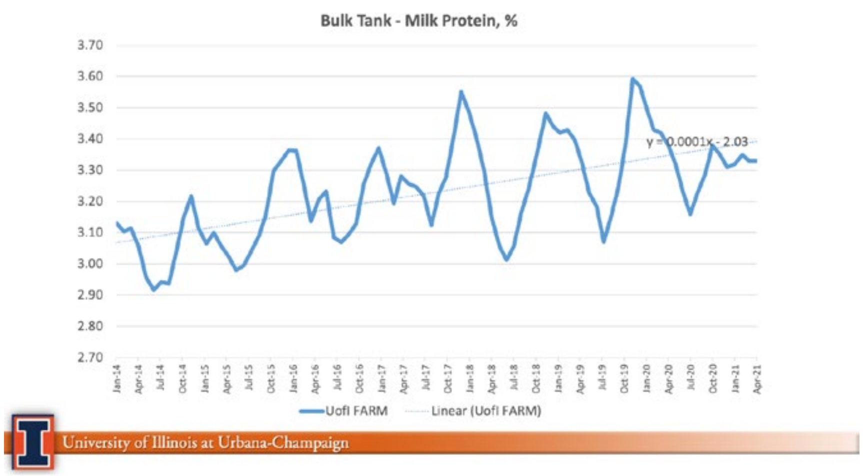


Figure 1. Milk protein concentration at Dairy Research Unit bulk tank, January 2014 through April 2021

You can see that since we started formulating diets for amino acids, our milk protein concentration has increased linearly. Interestingly enough, we can obtain milk protein concentration higher than the average of farms around us (route; our neighboring 35 dairy farms) or all the farms that send milk to the Milk Plant. This is true even during the summer months, when milk protein concentration decreases.

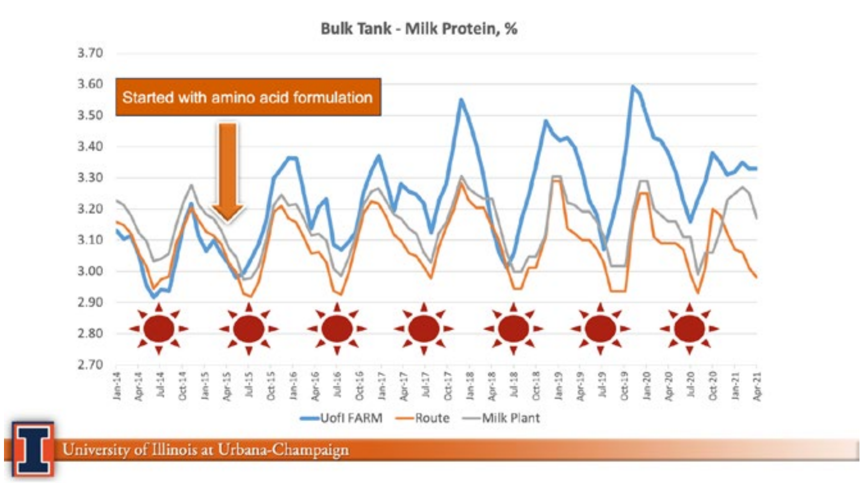


Figure 2. Milk protein % at U of I, surrounding farms, and Milk Plant, January 2014 through April 2021

We have been learning a lot about how to formulate diets for amino acids. Here are some key points:

- Formulating diets based on crude protein is like driving a car while looking into the passenger's side mirror.
- Pre-fresh cows need no less than 1,200 g/day of metabolizable protein (MP).
- Diets should have a LYS:MET ratio between 2.7:1 and 2.8:1. (CNCPS model)
- MET should be supplied at ~1.0–1.17 g/Mcal ME.
- LYS should be supplied at ~2.90–3.16 g/Mcal ME.

Talk with your nutritionist, veterinarian, and dairy consultant about how to formulate your cows' diet for amino acids to improve performance during the summer and after. We're glad to join the conversation!

—Dr. Phil Cardoso, Associate Professor, Dept. of Animal Sciences, University of Illinois

Volume 8, Number 1

Wheat straw in dry cow diets: A Dairy Tech Tour experience

Straw or other roughage in the dry cow diet must be consumed in the desired amounts. If cows sort out the straw, they will consume too much energy from the other ingredients, which may be poor. In July, during the Dairy Tech Tour hosted by Beer's Robo Holsteins Dairy Farm near Mascoutah in St. Clair County, we saw a controlled-energy diet for dry cows in action. Mark and Marvin mentioned that since the adoption of this diet, the number of ketosis cases had reduced tremendously. Keeping up with a good mixed diet is not easy. Marvin mentioned that, because of the tour, he did not have enough time to process the straw in the mixer on that day. He mixed it for 5 minutes instead of 20 minutes. We could fix that by using the Penn State Particle Separator on the dry cow TMR. There were four sieves: upper (19-mm pore size), middle (8-mm pore size), lower (4-mm pore size) sieves, and the pan. The upper sieve caught around 54% of the material on that day. The upper sieve caught more material than the middle sieve. This is characteristic of wheat straw that has not been well processed by the mixer. Usually, you should shoot for the prepartum TMR with 6.1 ± 3.0% of material on the upper sieve, 47.8 ± 5.3% on the middle, 20.0 ± 3.0% on the lower sieves, and 26.1 ± 6.7% in the pan.

Much research suggests that short-chopping forages will result in not only greater dry matter intake (DMI) but may also help reduce the amount of feed sorting in lactating cow and dry cow diets. Researchers from Canada reported that cows fed a high-straw dry cow diet with a smaller straw particle size (chopped with a 1-inch screen) had improved intake during the dry period, sorted feed less, and maintained more consistent intake in the week leading up to calving compared to the longer straw (chopped with a 4-inch screen).

Dairy Extension

ILLINOIS ACES

MS student Emily O'Meara in the transition cow station

Another area of concern is the physical difference between a high-straw, lesser moisture dry cow ration and a more dense, greater moisture lactating ration. Controlled-energy dry cow diets typically contain a high proportion of dry forages and thus have lower moisture content than most lactating diets. Researchers in Canada have found that addition of water to lactating cow rations that are low in moisture has been demonstrated to have some beneficial effects, including reduced sorting and resultant greater milk fat content (Leonardi et al., 2005). They also reported that increasing the moisture content of a high-straw dry cow diet (from 53% to 45% dry matter) through water addition, improved DMI during the dry period, resulted in less sorting of that diet, and maintained more consistent DMI in the week leading up to calving. Talk with your nutritionist, veterinarian, and dairy consultant about how to formulate your dry cows' diet for controlled energy to improve performance. We're glad to join the conversation.

—Dr. Phil Cardoso, Associate Professor, Dept. of Animal Sciences, University of Illinois

Mike Hutjens, Ph.D.
UIUC Dairy Specialist, emeritus

Economic Feeding Opportunities and Solutions in 2023: 2023 IMPA Seminar

Economic Feeding Opportunities and Solutions In 2023

2023 IMPA Seminar

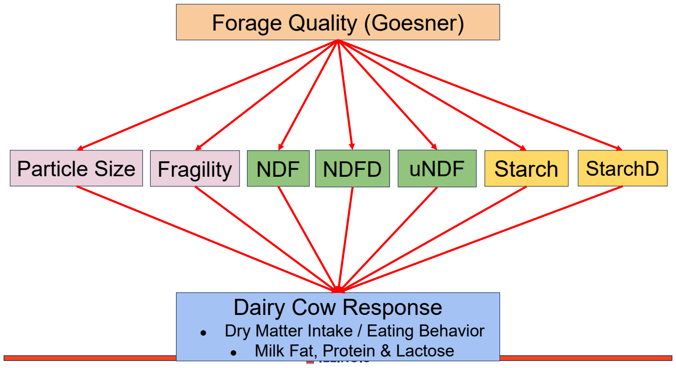
Today's Economic Choices

1. Higher milk production with higher feed costs
2. Lower milk production with lower feed costs
3. Higher milk production with lower feed costs

ILLINOIS

Forage Quality As A Tool

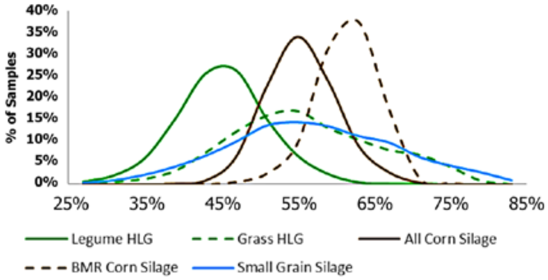
ILLINOIS



ILLINOIS

NDFD30

140,964 Samples



ILLINOIS

2022 Corn Silage (36,782)

	Crop Year(s)		
	2022	2020-22	Diff
Moisture	65.1	64.6	0.5
Crude Protein	8.1	7.9	0.2
aNDFom	36.9	37.3	-0.4
NDFD30	59.7	60.7	-1.0
uNDFom240	9.9	9.4	0.5
Starch	34.3	34.0	0.3
Total Fatty Acid	2.2	2.2	0.0
Ash	3.9	4.3	-0.4

*median values

DAIRYLAND

ILLINOIS

2022 Corn Silage Results

	Corn Silage		BMR Corn Silage	
	2022	2020-22	2022	2020-22
Moisture	65.1	64.6	67.1	66.2
Crude Protein	8.1	7.9	7.9	7.9
aNDFom	36.9	37.3	37.6	38.0
NDFD30	59.7	60.7	68.1	67.3
uNDFom240	9.9	9.4	7.9	7.7
Starch	34.3	34.0	32.8	32.4
Total Fatty Acid	2.2	2.2	2.2	2.2
Ash	3.9	4.3	3.7	4.3

*median values

ILLINOIS DAIRYLAND

Alfalfa Haylage (18,043 samples)

	2022	2020-22	Difference
Moisture	56.6	56.8	-0.2%
CP	21.4	21.2	0.2%
aNDFom	36.3	36.4	-0.1%
NDFD30	49.1	48.5	0.6%
uNDFom240	16.5	16.7	-0.2%
Ash	11.1	11.1	0.0%
RFV	152	151	1.0
RFQ	162	160	2.0

*median values

ILLINOIS DAIRYLAND

World Dairy Expo, 2022, Forage Winners

Nutrient	Alfalfa haylage	Corn Silage	BMR Corn Silage
Dry matter (%)	38.9	33.9	33.9
Crude protein (%)	25.6	7.1	7.7
NDF (%)	25.9	34.9	32.3
NDFD (% NDF)	54.9	64.5	75.6
Ash (%)	11.5	3.2	NA
Starch (%)	NA	42.4	32.3
RFQ (units)	277	NA	NA
Milk 2006 (lb / ton)	3715	4029	4045

ILLINOIS

Forage NDFD—30 hours (> 50% leg/grass; > 60% CS)

Represents the digestibility of the cell wall of your forage (NDF or neutral detergent fiber)

Forage uNDFD--240 (< 2.4 kg for 635 kg cow)

Represents the amount of forage a cow can consume before meeting her physical capacity (fill factor)

ILLINOIS

Evaluating Feed Ingredient Costs

ILLINOIS

Changing Feed Costs

$6.51/bushel

Was over $6.00/bushel

$3.10/bushel

$446/ton

$300/ton

Soybean Meal

Remain High

$260+/ton

By-product feeds follow corn and soybean meal prices

ILLINOIS

Factors For 2023

- Yields in Brazil and Argentina
- Export to China and other countries
- War in Ukraine with Russia
- Spring planting and weather in U.S.
- Ethanol production

ILLINOIS

Midwest U.S. Breakeven Prices

Sesame, January, 2023

Feed	Current	Breakeven
Distillers grain	$260/ton	331/ ton
Corn gluten feed	236/ton	$263/ton
Soy hulls	$223/ton	$209/ton
Fuzzy cottonseed	$375/ton	$353/ton
Wheat midds	$221/ton	$208/ton

ILLINOIS

Midwest U.S. Breakeven Prices

Sesame, January, 2023

Feed	Current	Breakeven
Shelled corn	$257/ton	$240/ton
SBM—48%	$455/ton	$469/ton
Corn silage	$55/ton	$94/ton
Average quality alfalfa hay	$210/ton	$233/ton
Soybean meal heated	$495/ton	$592/ton
Canola meal	$445/ton	$315/ton
Hominy	$216/ton	$223/ton

ILLINOIS

Feed Efficiency As A Tool

ILLINOIS

Milk Yield Targets for Feed Efficiency

Source: The Ohio State University

Milk Yield		Feed Efficiency
lb.	kg	
55	25	1.25
60	27	1.32
65	30	1.38
70	32	1.44
75	34	1.49
80	36	1.54
85	38	1.58
90	40	1.63

ILLINOIS

Economics of Feed Efficiency

(70 pounds milk and $0.15 / pound DM)

Feed Efficiency (lb milk / lb DM)	DMI (lb/day)	Difference (savings/day)
1.3	53.8	
		$0.58
1.4	49.9	
		$0.49
1.5	46.6	

ILLINOIS

Measuring Milk Profitability As A Tool

ILLINOIS

Feed Benchmarks 2023 (Illinois)

	Milk Production	
Feed costs per cow per day	$8.16	
1. Feed cost per pound of DM	0.15	
	80 lb	70 lb
2. Feed cost per cwt milk	$10.02	$11.65
3. Income over feed costs/cwt	$11.98	$10.35
4. Feed efficiency (kg milk/kg DM)	1.63	1.43

ILLINOIS

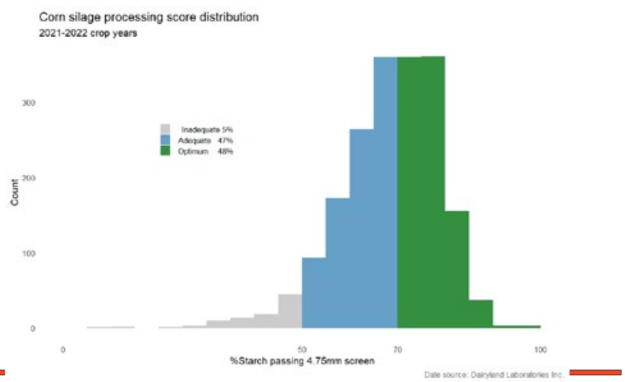
Kernel Processing Scores As A Tool

ILLINOIS

Kernel Processing Score

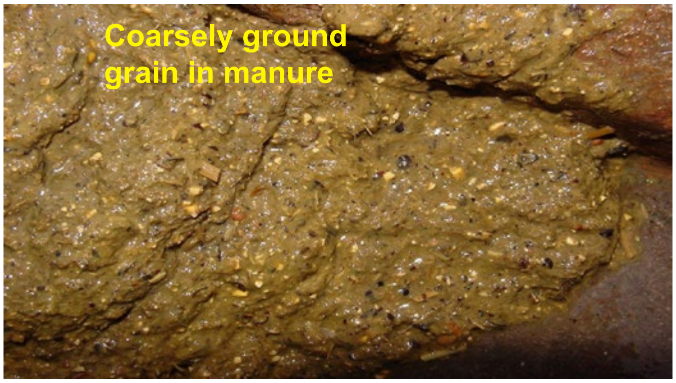
RD Shaver UW-Madison

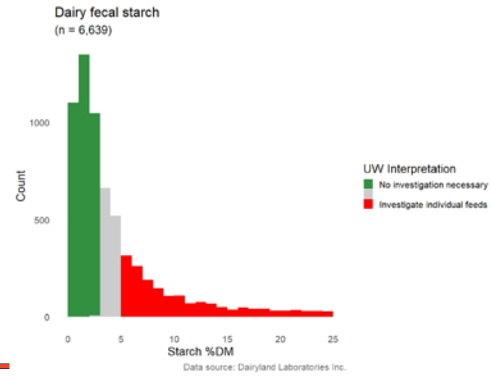
ILLINOIS



Fecal Starch Levels As a Tool

ILLINOIS





Milk Urea Nitrogen (MUN) As a Tool

MUN Values

- Older guidelines 10-14 mg/dl
- New guidelines 8 -12 mg/dl
- Reproductive concerns > 16 mg /dl
- Protein losses (10 to 15 mg/dl) 2+ pounds SBM
- Environmental concerns > 12 mg / dl
- If less than 8 mg/dl, limits microbial growth

ILLINOIS

Take Home Profit Messages

- Use all available tools to measure optimal performance (fecal starch, KP scores, grain processing size, MUN, feed efficiency, etc.)
- Control the controllable costs
- Optimize milk yield and components
- You may not be able to save your way to profits

ILLINOIS

Sponsors

Thank You to the following Agri-Businesses for their sponsorship to our Illinois Dairy Summit

PLATINUM PARTNERS

Illinois Farm Bureau — Farm. Family. Food.™

Illinois Soybean Association

PREMIER

ADM

Ameren Illinois Energy Efficiency Program

Arentsen Farm Sales & Service, Inc.

Country Financial

Farm Credit Illinois

IL Corn Marketing Board

Kaeb Sales Inc

Maurer-Stutz

Midwest Dairy

Parnell Living Science

Prairie Farms

Select Sires

St. Louis District Dairy Council

TechMix — Redefining Hydration

SILVER

DCC Waterbeds — Dual Chamber Cow Waterbeds

UFS Inc. — unverfehrtinc.com — 618-493-7357

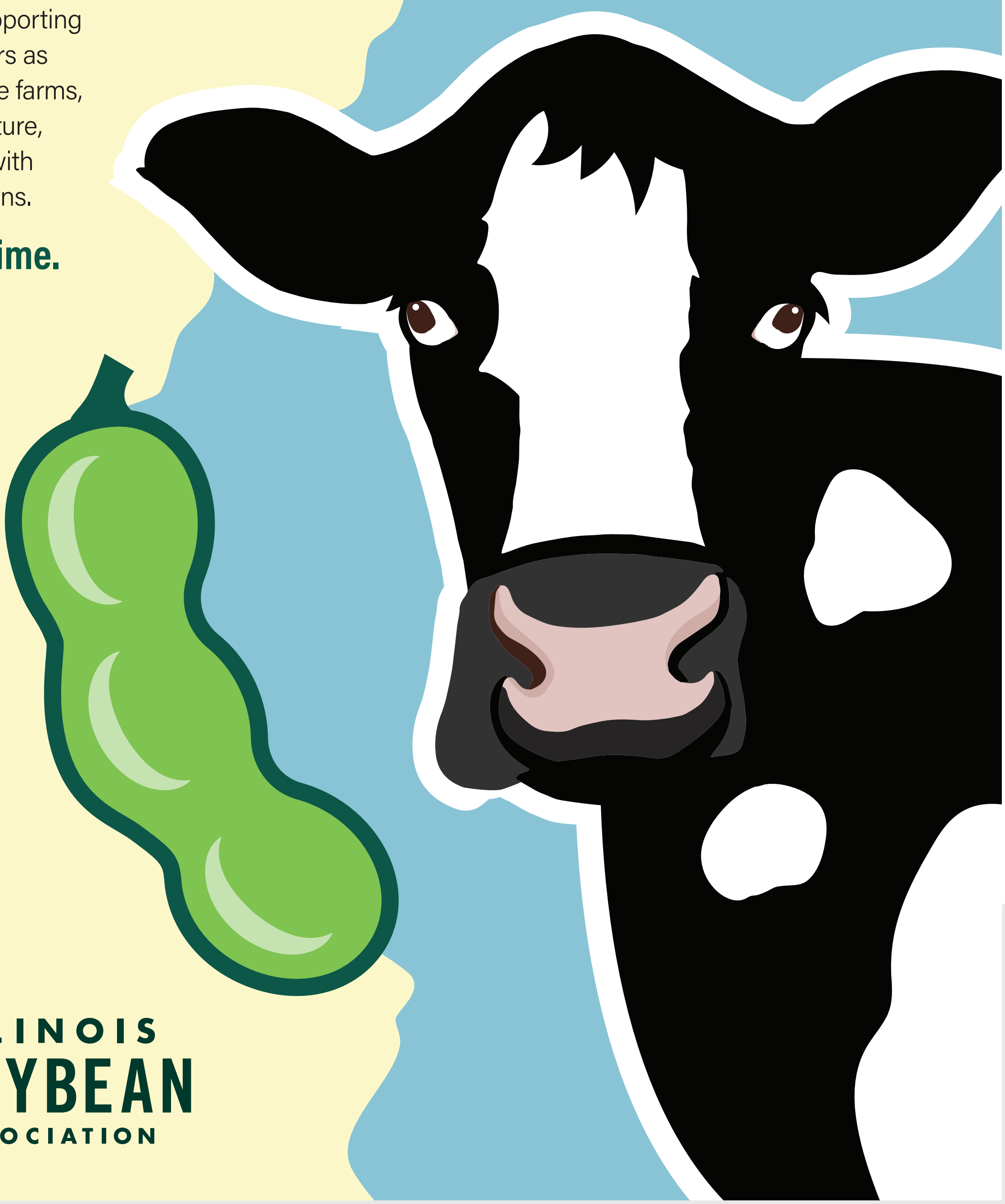
Download the benefit app today or contact your county Farm Bureau for membership benefit assistance.

You're here for the Moo.

We're here for *you*.

Soy nutrition is a vital component for all Illinois livestock. That's why Illinois Soybean Association is proud to partner with other organizations in support of livestock expansion efforts across the state, supporting dairy cattle producers as they work to improve farms, grow animal agriculture, and meet demand with home-grown solutions.

One farm at a time.



ILLINOIS SOYBEAN ASSOCIATION

Funded by the Illinois Soybean Association Checkoff Program


ADM
Building world class nutrition with you
Trusted partnerships to create tomorrow's opportunities.
Connect with us at
go.adm.com/dairy

Ameren ILLINOIS

Energy Efficiency
PROGRAM

Save on Energy With the Ameren Illinois Energy Efficiency Program

Increase the efficiency of your farm and lower your utility costs with financial incentives from the Ameren Illinois Energy Efficiency Program. In addition to incentives for LED lighting upgrades, HVAC equipment, new construction and custom projects, our Program also offers:

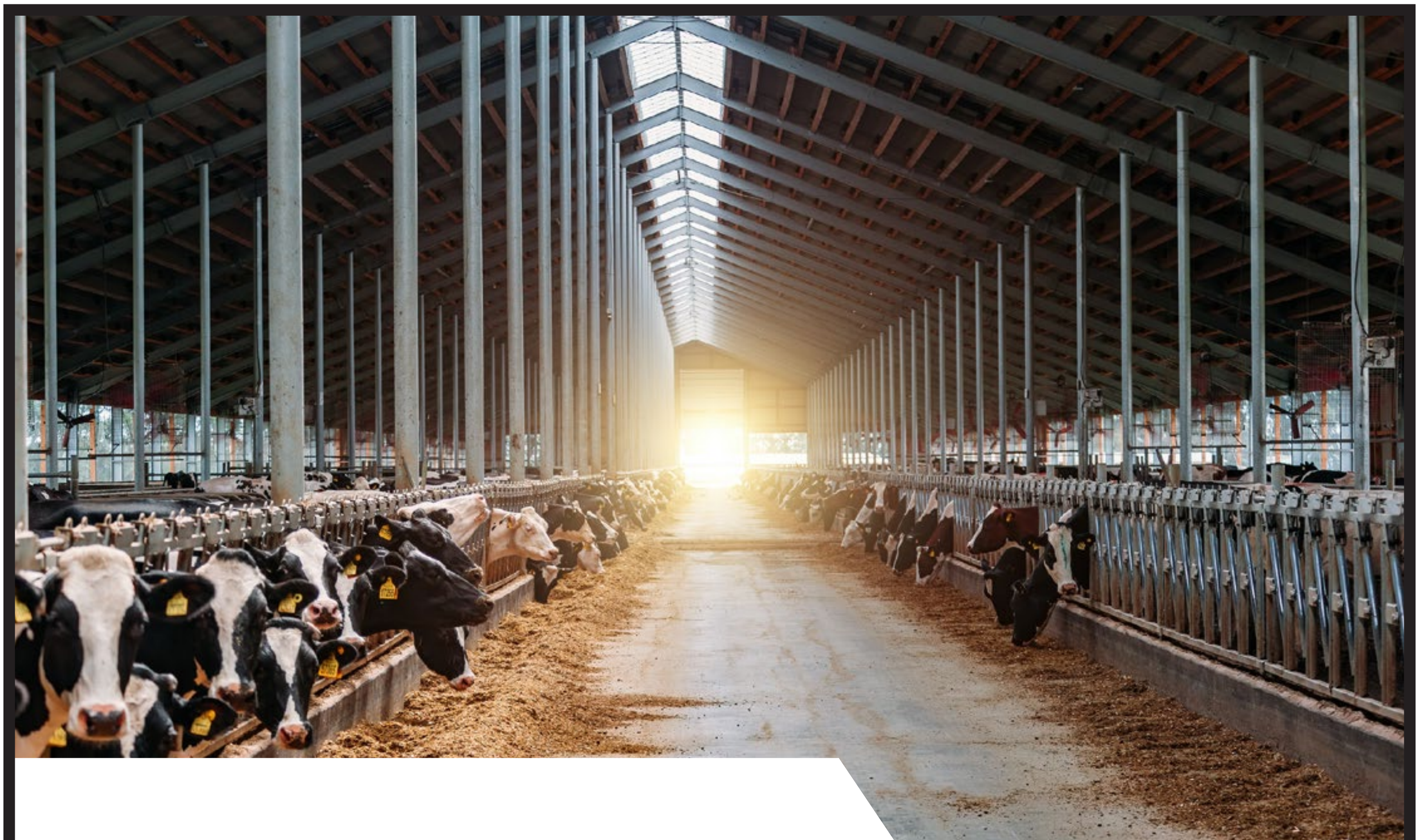
- High-Efficiency High-Speed Exhaust/Ventilation Fans
- High-Volume Low-Speed (HVLS) Fans for Agriculture
- Scroll Compressor for Dairy Refrigeration
- Milk Pre-Cooler
- High-Efficiency Circulation Fans
- Livestock Ventilation Fan Controller
- Livestock Waterer
- Dairy Water Heater

These incentives make these energy-efficient upgrades more affordable, and with the upgrades you'll have energy savings continuing to add up year after year.

SCAN HERE

To learn more about the ways our Program can benefit your farm, scan the QR code or visit us at ***AmerenIllinois****Savings.com/Ag*.

BONUS
You can receive 15% MORE INCENTIVES for your qualifiying natural gas or electric project completed by March 30, 2023. Visit our booth for more details.




MAURER-STUTZ
ENGINEERS SURVEYORS
Experienced Project Managers
NRCS Technical Service Provider
Nutrient Management Expertise
Assistance with Regulations
Structural Design Services
Site Planning and Design
CONTACT US
www.mstutz.com
309-693-7615

Opportunities FOR YOU

MIDWEST Dairy®

Leadership Development

- Dairy Ambassadors
- Dairy Experience and Agricultural Leadership Program
- Summer Internships

Share your Story

- Farmer Trainings
- Undeniably Dairy Grants
- Free items in the Promo Center

Get involved at
MidwestDairy.com

Our Vision: "To be a Growth-oriented, Trusted, and Reliable Resource Delivering Innovative Solutions for Our Customers' Success"

Parnell launched the first FDA-approved products for the synchronization of estrous cycles in lactating dairy cows and beef cows; **GONAbreed®** (gonadorelin acetate), in combination with **estroPLAN®** (cloprostenol sodium), can be used safely and effectively in various timed breeding programs.

INNOVATIVE TECHNOLOGY

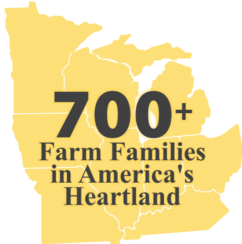
Parnell is developing mySYNCH™, a digital tool to help veterinarians and producers optimize reproduction and maximize economic gains. mySYNCH combines highly effective in-field training with simple repro reports that use predictive metrics to benchmark your performance against comparable operations.

FARMER OWNED Prairie Farms®

DRINK Local

We are a farmer-owned cooperative. This means we are owned and operated by over 700 farm families who are critical members of society. They have selflessly taken on the tremendous task of producing nutritious, high-quality milk for a growing population, which requires being on the job 24/7, 365 days a year.

We have represented American agriculture since our founding in 1938. Many of our dairy farms are operated by several generations of family members with roots dating back to the 1800s. On average, each farm milks around 120 cows and everyone pitches in to keep them happy and healthy - which means around-the-clock care!



Manufacturing & Distribution Overview

Manufacturing Facilities

Headquarters - Edwardsville, IL

Fluid Milk Plants	32
Cheese Plants	7
Ice Cream Plants	3
Cultured Plants	3
Novelty Plants	3
Creamer Plant	1
Water Plant	1
Total	50
Distribution Centers	100+

Distribution Capabilities

Coast to Coast

ONE Transportation Company	**7,000+** Dedicated Team Members
5,200 Trucks	**2,000** Routes
49 States	**53,000** B2B Partners

Our Family of Brands

Prairie Farms · Hiland Dairy Foods · North Star · Shullsburg Creamery · Caves of Faribault

Manufacturing Capabilities

Fluid Milk

Cottage Cheese

Yogurt

Cream / Half & Half

Sour Cream

Sour Cream Dip

Specialty Cheese

Cream Cheese

Orange Juice

Tea/Fruit Drink

Ice Cream/Mix

Frozen Treats

Quality Standards

Our manufacturing facilities adhere to robust quality practices and protocols. All processing and packaging equipment is operated under Grade A Food Safety Standards and SQF Level 3 certified to maintain GFSI compliance.

Our Farm to Table Values

From our farm families to the team members who operate our manufacturing facilities and deliver our products, we all have one thing in common...

A Passion for Doing our Part to Help Feed American Families.

Farmer Owned • Locally Produced • Since 1938 | Prairiefarms.com

MAKE LONGEVITY HER LEGACY.

Equip her with profitable genetics.

The average cost to raise a replacement heifer ranges from $1,700 to $2,200! Make sure she is equipped to return that investment and more through genetics to improve health, fertility, and mastitis resistance from Select Sires. Let Select Sires help you **make longevity her legacy.**

SELECT SIRES INC.

YOUR SUCCESS Our Passion.

Select Sires MidAmerica
Phone: (847) 464-5281
www.facebook/SelectSiresMidAmerica

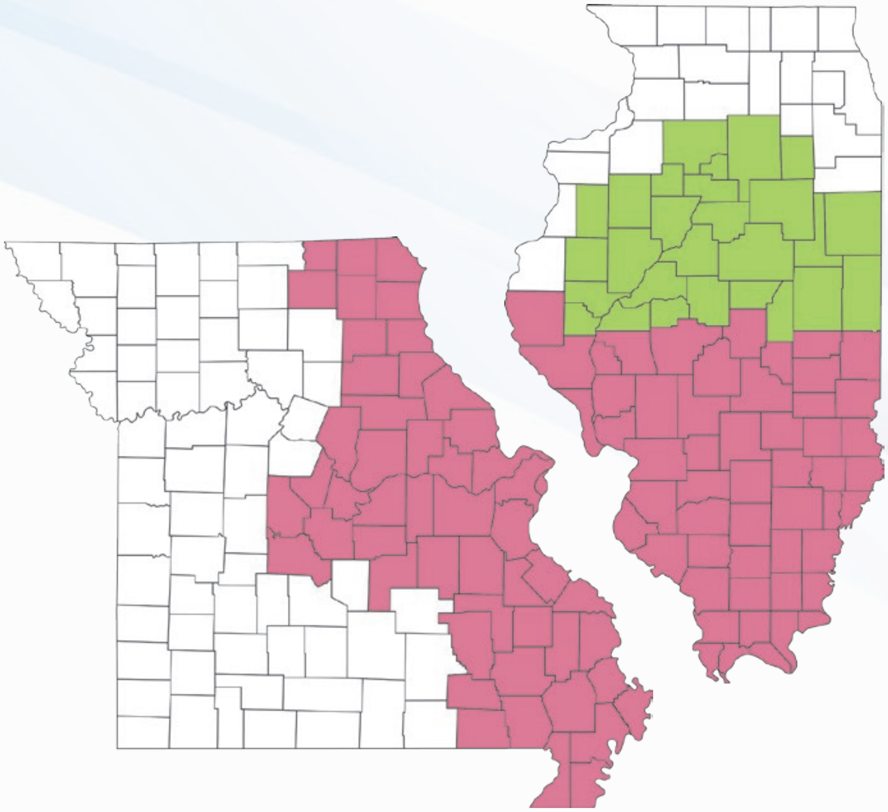
*Replacement heifer costs used from Tranel L. What's It Cost to Raise Heifers?

about us

Who We Are

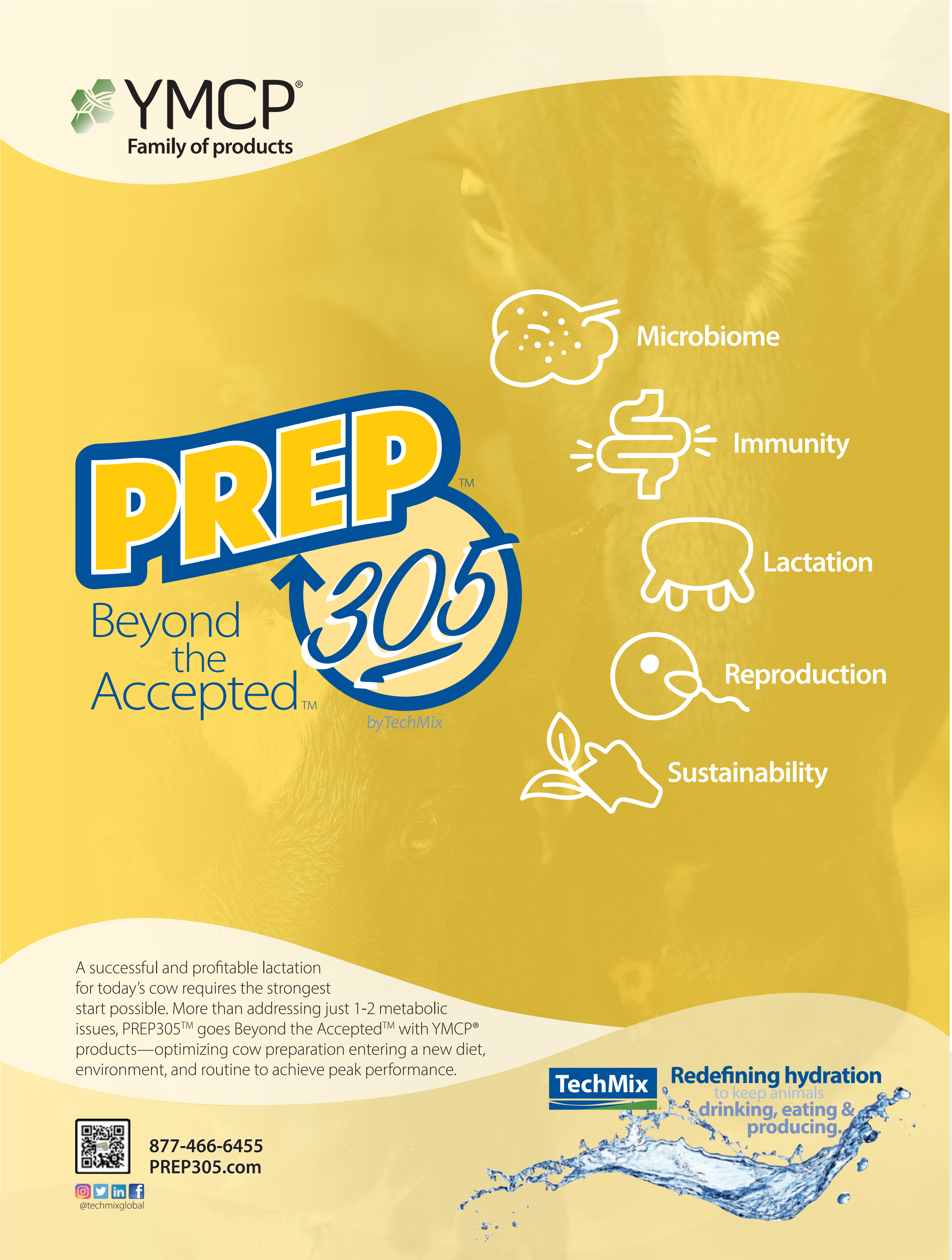
St. Louis District Dairy Council (SLDDC) is a nonprofit nutrition education organization funded by local dairy farmers. Since 1932, SLDDC has served central/southern Illinois and eastern Missouri as the go-to educational resource and advocate for the role of dairy foods as part of a healthful diet. Today, we're as passionate about dairy as ever, and as The Nutrition Education People, we're proud to spread knowledge to local communities, bridging the gap between local dairy farmers and consumers.

Headquartered in St. Louis, Missouri, SLDDC has a satellite office located in Bloomington, Illinois and serves a 131-county area. The staff is comprised of professionals with experience in nutrition, food service management, education and communication, and we take pride in delivering engaging programs throughout the communities we serve.



St. Louis Office
info@stldairycouncil.org
314-835-9668

Bloomington Office
mnyman@stldairycouncil.org
309-681-4629


YMCP®
Family of products
Microbiome
Immunity
Lactation
Reproduction
Sustainability
PREP™
305
Beyond the Accepted™
by TechMix
A successful and profitable lactation for today's cow requires the strongest start possible. More than addressing just 1-2 metabolic issues, PREP305™ goes Beyond the Accepted™ with YMCP® products—optimizing cow preparation entering a new diet, environment, and routine to achieve peak performance.
877-466-6455
PREP305.com
@techmixglobal
TechMix
Redefining hydration
to keep animals
drinking, eating & producing.

TELL US WHAT YOU THINK!
Your feedback will help
us navigate next year's Summit.

ILLINOIS MILK PRODUCERS ASSOCIATION

ILLINOIS
Extension
COLLEGE OF AGRICULTURAL, CONSUMER
& ENVIRONMENTAL SCIENCES