

The Latest Across the Plains

Timely Reminders

- ◆ Inoculate and cover silage/earlage piles
- ◆ Consider planting cover crop for spring grazing and manure application
- ◆ Scrape pens and pile manure
- ◆ Clean water sources on a weekly basis
- ◆ Keep an eye on commodity contract prices the next two months
- ◆ Have us sample hay and silage (silage greater than 3 weeks after harvest)
- ◆ Start thinking about pre-weaning calf diets
- ◆ Consider the use of energy supplements and diets on cool season pasture grazing this fall to help boost gains since the value of gain is very high
- ◆ Contact your nutritionist about running projections on growing or finishing cattle, beef or Holstein, to help plan feedstuffs needs

Beef Facts

- ◆ 91% of U.S. farms and ranches are family owned and operated.
- ◆ Beef cattle produce only 1.8% of the total greenhouse emissions in the United States.
- ◆ Corn only makes up 7% of beef cattle's feed intake over their lifetime.

Unused Feed

Agriculture is the greatest and fundamentally the most important of our industries. The cities are but the branches of the tree of national life, the roots of which go deeply into the land. We all flourish or decline with the farmer. - Bernard Baruch

Save Money \$\$\$ Test Your Feeds

Tests are relatively inexpensive, usually costing less than \$18, for the information derived. Contact our office to set up an appointment to have us pull feed samples if we have not done so yet.

We want to hear from you...

Do you have a question you would like one of the nutritionists to address in depth in our newsletter? Just submit your question through our website www.GPLC-Inc.com and we will get to work on it.

Calendar of Events

- **Sept 18 - 19** Minnesota Nutrition Conference, Mankato, MN
- **Sept 20 - 21** Stockmanship & Stewardship Event, Manhattan, KS
- **Sept 27 - Oct 20** Texas State Fair, Dallas, TX
- **Oct 4 - 6** Ozark Fall Farm Fest, Springfield, MO
- **Oct 4 - 5** Stockmanship & Stewardship Event, West Monroe, LA
- **Oct 11 - 20** Arkansas State Fair, Little Rock, AR
- **Oct 12 - 19** Northern International Livestock Exposition, Billings, MT
- **Oct. 13 - 15** Texas Cattle Feeders Association Annual Convention, Fort Worth, TX
- **Oct 17 - 18** Animal Care and Handling Conference, Kansas City, MO
- **Oct 23 - 24** South Texas Farm & Ranch Show, Victoria, TX
- **Oct. 25 - 26** Annual Kansas Cattlemen's Association Convention and Tradeshow, Newton, KS
- **Nov. 12 - 14** Nebraska Fall Conference & NCEA Annual Conference, Kearney, NE
- **Nov. 18 - 20** Range Beef Cow Symposium, Mitchell, NE

Balancing Protein in Rations

When balancing rations for ruminants, you are not only formulating to meet the needs of the animal but the bacteria living within the rumen as well. Since rumen bacteria are living organisms themselves, they need a constant supply of both protein and energy to survive. Protein provided to microbes is called rumen degradable protein (RDP). RDP is the portion of feed protein utilized by ruminal bacteria so they can proliferate and play an active role in feed digestion.

In addition to balancing rations to meet microbial needs, you must consider the protein needs of the animal. Cattle obtain protein in two different forms. One is rumen undegradable protein (RUP), which is the fraction of feed protein that bypasses rumen degradation and is metabolized and absorbed in the small intestine. Microbial crude protein is the second protein source of the animal, which is the protein derived from the microbes within the rumen. The combination of both microbial protein and RUP make up what is called metabolizable protein, which is the protein utilized by the animal.

All feeds are not created equally, some contain more RDP, while others contain more RUP (Table 1). Over the years, distillers grains have become a staple in rations. With its high protein and energy content, it can be used to meet both the protein needs of the animal, as well as a partial replacement for corn. Distillers grains contain approximately 68% RUP (% of crude protein), meaning that a

Table 1. NRC Crude Protein, RDP & RUP values.

	CP, % DM	RDP, % of CP	RUP, % of CP
Corn	8.79	34.60	65.31
DDG	30.79	32.00	67.93
Urea	288	100	-
Soybean Meal	46.53	55.88	44.08

Table 2. Performance measurements for finishing diets containing DDG with or without supplemental urea.

	10% DDG	10% DDG+ Urea	20% DDG	20% DDG+ Urea
DMI, lb/d	24.5	24.9	23.9	24.6
ADG, lb/d	3.51	3.68	3.55	3.60
Feed:Gain	7.02	6.79	6.82	6.95

Source: Degradable Intake Protein in Finishing Diets Containing Dried Distillers Grains; Vander Pol, et al. 2005

large portion of its protein bypasses rumen degradation and is strictly utilized by the animal. With these numbers, one would think we would have a shortage of RDP if distillers grains were the sole source of protein, and on paper, it may look like we do. However, data from multiple studies conducted by researchers at the University of Nebraska have found that is not the case. A study conducted in 2005 found that there was no negative impact on cattle performance when no urea was supplemented to cattle receiving finishing rations containing either 10 or 20% DDG (Table 2).

Researchers at the University of Nebraska continued their evaluation and conducted two additional studies evaluating the effects of adding urea to dry rolled corn-based rations containing wet distillers grains (WDGS). The first

Table 3. Main effects of distillers inclusion and urea inclusion on finishing performance.

	Distillers, % diet DM			P-Value		Urea, % diet DM			P-Value	
	10%	15%	20%	Lin	Quad	0%	0.5%	1.0%	Lin	Quad
DMI, lb/d	24.1	24.0	23.4	<0.01	0.16	23.9	23.9	23.7	0.49	0.61
ADG, lb/d	4.39	4.45	4.50	0.01	0.96	4.39	4.49	4.46	0.16	0.08
Feed:Gain	5.49	5.40	5.18	<0.01	0.25	5.43	5.32	5.32	0.05	0.26

study looked at the effects of feeding rations containing 10, 15 or 20% WDGS (DM basis) with or without 0, 0.5 or 1.0% urea (DM basis). Researchers found no interaction between level of distillers grains fed and level of urea added (Table 3). There was an improvement in gain and feed conversion as level of distillers grains increased from 10 to 20% (DMB).

Table 4. Main effect of distillers inclusion on finishing performance.

	Distillers Inclusion		P-Value
	12%	20%	
DMI, lb/d	25.7	25.2	0.04
ADG, lb/d	4.16	4.26	0.20
Feed:Gain	6.21	5.92	0.01

Table 5. Performance measurements for finishing diets containing DDG with or without supplemental urea.

	Urea Inclusion				P-Value
	0%	0.4%	0.8%	1.2%	
DMI, lb/d	25.4	25.9	25.1	25.5	0.26
ADG, lb/d	4.21 ^{ab}	4.37 ^a	4.07 ^b	4.17 ^{ab}	0.07
Feed:Gain	6.02	5.92	6.13	6.10	0.36

The second study evaluated the effects of feeding rations containing 12 or 20% WDG (DM basis) with or without 0, 0.4, 0.8 or 1.3% urea (DM basis) on finishing cattle performance. Similar to the previous two studies, researchers did not observe any improvement in performance when urea was added to rations containing WDGS. They did observe improved performance as the level of distillers increased in the ration (Table 4).

These data suggest that there is little benefit to adding urea to dry rolled corn-based rations containing at least 10% distillers grains. Cattle have the unique ability to take excess RUP, convert it to RDP and put it back into the rumen, *vita saliva*, to help meet an RDP deficiency. Implications from this work could be beneficial for many cattle feeders, especially when evaluating protein sources for your rations. When including distillers in rations as a partial corn replacement, additional protein is not needed to meet the animal's needs. To find out if this research can be applied to your cattle operation, contact one of our consultants to evaluate your feeding program. 

Syngenta Enogen® Corn as Silage

Corn silage is a single harvest, high energy forage crop that reduces labor and machinery costs typically associated with harvest. It's energy content, coupled with its roughage value, makes it an ideal feed resource for growing and finishing cattle rations. There are a variety of corn hybrids to consider when prepping for next year's planting season, with a more recent hybrid being Enogen corn.

Enogen is a corn hybrid, developed by Syngenta, that contains the alpha amylase enzyme within the corn kernel. Alpha amylase is the enzyme that aides in the digestion of complex starches within the digestive tract. Enogen corn was developed to help improve production efficiency of ethanol plants. Having the alpha amylase gene in the hybrid allows ethanol plants to reduce added enzyme during ethanol production. This hybrid was made available for cattle producers in 2016, with the idea that the more starch that gets converted to sugar, via alpha amylase, the higher the digestibility of the starch and utilization in the small intestine. Studies evaluating the effects of feeding Enogen corn have shown variable results. Researchers at the University of Nebraska-Lincoln have observed feed conversion increases from 3% to 15% in dry-rolled corn rations. In high-moisture corn rations there was no benefit to feeding Enogen grain. These results have begged the question of how the Enogen corn would perform if fed as corn silage.

Researchers at Kansas State evaluated Enogen fed as corn silage compared to silage without the gene in growing rations. The rations consisted of 40% corn silage (DM basis). Researchers observed a 6% improvement in average daily gain and a 4.4% improvement in feed efficiency when cattle were fed Enogen corn silage compared to cattle fed the control corn silage (Table 1).

Table 1. Effects of feeding Enogen Corn Silage on Growing Cattle Performance.

	40% Enogen Corn Silage	40% Control Corn Silage	P-Value
Ending Bodyweight, lb	954	941	0.10
ADG, lb/d	3.28	3.10	0.01
Dry Matter Intake, lb/d	20.25	19.95	0.07
F:G	6.19	6.46	0.02

A second study conducted by Kansas State researchers evaluated the impact of Enogen corn in finishing cattle rations when fed as corn silage and steam flaked corn with or with or without the Enogen trait (Table 2). The data suggest that steers fed rations containing Enogen corn silage had a 5.3% improvement in feed conversion compared steers fed the control silage. However, there was no significant improvement in hot carcass weight when cattle were fed Enogen corn silage compared to the control silage.

Table 2. Effects of feeding Enogen Corn Silage in Steam Flaked Corn based Finishing Rations.

	8% Enogen Corn Silage	8% Control Corn Silage	P-Value
Final weight, lb	1445	1453.5	ns
ADG, lb	3.91	3.96	ns
Dry matter intake, lb/d	22.89	22.03	< 0.05
F:G	5.85	5.55	< 0.05
Hot carcass weight, lb	887.5	888.5	ns

These initial studies suggest there may be an advantage to feeding Enogen corn as silage and more research is warranted. We would suggest you discuss the agronomic and marketing variables associated with growing Enogen corn with your crop advisors. As always, please feel free to contact one of our consultants with any of your nutrition needs. 



GREAT PLAINS Livestock Consulting, Inc.

500 S. 4th St.
P.O. Box 377
Eagle, NE 68347

PRSR STD
U.S. POSTAGE PAID
EAGLE, NE
ZIP CODE 68347
PERMIT NO. 27

RETURN SERVICE REQUESTED

The Great Plains News Feed

Staff

Ruminant Consultants

Ki Fanning, Ph.D., PAS

Cell: (402) 890-5505
Ki.Fanning@GPLC-Inc.com

Jeremy Martin, Ph.D.

Cell: (402) 890-5507
Jeremy.Martin@GPLC-Inc.com

Dan Larson, Ph.D.

Cell: (402) 560-4052
Dan.Larson@GPLC-Inc.com

Luke Miller, M.S.

Cell: (660) 299-0798
Luke.Miller@GPLC-Inc.com

Jason Warner, Ph.D.

Cell: (402) 890-8533
Jason.Warner@GPLC-inc.com

Chris Muegge, M.S.

Cell: (317) 526-8204
Chris.Muegge@GPLC-Inc.com

Adam Schroeder, M.S., MBA, PAS

Cell: (815) 592-5491
Adam.Schroeder@GPLC-Inc.com

Karl Harborth, Ph.D.

Cell: (830) 310-0848
Karl.Harborth@GPLC-Inc.com

Matt Luebbe, Ph.D., PAS

Cell: (563) 213-9603
Matt.Luebbe@GPLC-Inc.com

Robert Jones, M.S.

Cell: (417) 737-9146
Robert.Jones@GPLC-Inc.com

Field Representatives

Brent Nelms

Cell: (308) 340-4235
Brent.Nelms@GPLC-Inc.com

Braden Forker

Cell: (402) 862-7001
Braden.Forker@GPLC-Inc.com



**GREAT
PLAINS**

LIVESTOCK
CONSULTING
INC.

Phone: (402) 781-9378

Fax: (402) 781-9379

www.GPLC-Inc.com

Fall
2019