Ag Insights

From the Desks of Your Northwest Area Ag Specialists

Oklahoma Cooperative Extension Service - Division of Agricultural Sciences and Natural Resources - Oklahoma State University

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To Roll or Not to Roll? - A Common Beef Producer Question

Dana Zook, Area Livestock Specialist, Enid, OK

Every year, inquiries are made by beef producers addressing the need to process corn. This is an important question to ask because most producers do not have the luxury of on-farm processing. In many feeding situations, corn must be purchased and processing adds cost and increases shrink. Research has been done to identify the value of processing corn but results have been a mixed bag. This article addresses the effects of diets with whole corn on cattle performance.

One of the biggest factors that limits the use of whole corn in beef cattle diets is the visual presence of whole corn kernels in the manure pats. There is a general feeling in the industry that if it can be seen, it was not used and therefore wasted. Producers may be surprised to discover that most research indicates there is little difference in the performance of cattle fed whole or rolled corn.

One such study from Ohio State University conducted a series of experiments to quantify passage of whole corn kernels in the manure. Based on historical data, the researchers predicted that whole kernel digestion could be affected by the age of animal and amount of forage in the diet.

This trial utilized high forage diets containing 18.2% corn silage or low forage diets containing 5.2% corn silage. Forage was then formulated in diets with either 80% whole or rolled corn. Four different weight classes were utilized to determine the effect of corn processing, forage level, and cattle age on performance.

Visually, forage level did not affect the digestibility of corn kernels present in the manure. In the trial, cattle ate about 39,000 whole kernels of corn per day but only excreted about 500 kernels per day equating to only about 2% of kernels escaping digestion. Cattle performance of this trial revealed that heavier calves gained slightly more on rolled corn but efficiency (feed/gain) was no different among weight classes. On the other hand, feed efficiency was superior for lighter, longer fed cattle consuming whole corn. High inclusion of forage in the rolled corn diets improved daily gain, likely offsetting some digestive upsets that can occur when processed corn is fed.

This research highlights the benefits of forgoing processing costs by feeding whole corn. The study indicated slight improvements in performance of yearlings fed rolled corn but producers should weigh these options to determine if this will justify processing costs. Starter rations, limit feeding, cow supplements, or diets low in forage are situations where whole corn would be an excellent energy source.

In general, performance of cattle fed whole or rolled corn is a wash. Feeding rolled corn increases digestibility by 5 to 10% and equates to faster growth in cattle due to the higher energy concen-

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tration of the diet. However, higher digestibility of starch can lead to digestive upsets such as acidosis which can reduce performance slightly. Starch fermentation is slower in whole corn diets and less digestive upsets are observed. Producers who do not have access to rolled corn or find processing costs too high should rest easy knowing that cattle performance will differ very little when feeding whole or rolled corn. For questions about grain processing and its effects on cattle performance, contact your local county Oklahoma Cooperative Extension Office.

JOIN US

March 8, 2019
9:00 a.m. to 2:00 p.m.
1.2 miles west of the intersection of Highways 51 and 74, Logan County just south of the town of Marshall.
Lunch provided at no cost.

Please register by March 1, 2019

LEARN ABOUT

- Overview of wheat pasture stocker enterprise
- Research impacts of the Marshall Wheat Pasture Research Unit
- Economic impact of dual-purpose wheat enterprise
- Afternoon breakout sessions

MORE INFO

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Oklahoma Agricultural Experiment Station

Beans in Nineteen

Trent T. Milacek, NW Area Ag Econ Specialist

The lowest planted wheat acres in 100 years opens doors for different crops. Several thousand of those acres will be planted to soybeans and studious farmers will harken the results of enterprise budgeting. Unlike in years past, current soybean prices are not as competitive with other crops.

The cost to produce soybeans will include the burndown herbicide, seed, rent, phosphorus fertilizer, planting and harvest costs. Excluding planting and harvesting, those costs could total $150. Herbicide programs and fertility requirements will change this number significantly on a producer basis. To cover $150, producers will need to raise 18 bu./acre. Of course, this is dependent on an $8.50/bu. selling price at harvest.

Some producers may consider custom planting and harvesting if they do not own the required equipment to produce soybeans. Those costs could climb above $50 per acre depending on the custom applicator. All costs included, a yield above 24 bu./acre will be required to breakeven.

Without price protection, a producer is open to market risk. New crop beans are currently bid at $9.52/bushel. Basis bids vary based on location, but assuming $1.00 for basis gives a cash price of $8.52/bu. A November put option with a strike price of $9.60 costs $0.55 and would guarantee a producer a futures price of $9.05/bu. Using current basis values this results in a cash price of $8.05/bushel. With this price risk strategy, breakeven yield is increased by 1 bushel to 25 bu./acre if prices fall below the protected price. If prices increase, a producer is able to capture that price movement.

The 4-year average yield from 2013-2016 in the north-central district of Oklahoma is 27 bu./acre. Given adequate rains, it should be possible to breakeven. However, in a dry year it would be difficult. A cool and wet winter has made productive fallow acres a candidate for soybean production. Consider soybean yield history and yield potential to minimize risk. Also, consider planting other crops as a way to hedge against production risks unique to soybeans.

If you would like more information on budgeting or growing soybeans, please contact your local county extension educator. Enterprise budgeting software is available to producers so that individual costs and production goals can be used. This will assist producers in adopting new enterprises on their operations.

2019 OSU Dicamba Trainings (as of 3-5-19)

Mar 6: Blackwell at Noon (Lunch at 11:30) – North Central Crops Conf. (contact Kay Co. 580-362-3194)
Mar 7: Miami at 8:30am – Northeast OK Crops Conf. (contact Ottawa Co. 918-542-1688)
Mar 12: Walters at 9:30am – Crop Production & Dicamba Training (contact Cotton Co. 580-875-3136)
Mar 12: Pond Creek at 6pm – Dicamba Only (contact Grant Co. 580-395-2134)
Mar 19: Shattuck at 6pm – Dicamba Only (contact Woodward Co. at 580-254-3391)
Mar 15: Hugo – SE OK Crops Conf & Dicamba (contact Choctaw Co. 580-326-3359)
Mar 21: Cherokee at Noon – Dicamba Only (contact Alfalfa Co. 580-596-3131)
Mar 21: Alva at 3pm – Dicamba Only (contact Woods Co. 580-327-2786)
Mar 26: Burns Flat at 9:30am, 5 County Cotton Production and Dicamba Training (contact Beckham Co. 580-928-2139, or Roger Mills, Custer, Washita, or Kiowa Co. offices)
Mar 27: Taloga at 1:30pm – Dicamba Only (contact Dewey Co 580-328-5351)

Spring Management in Wheat

Josh Bushong, Area Extension Agronomy Specialist

Overall the wheat coming out of winter looks to have a good potential for grain production. The region has had decent amounts of rainfall over the past 180 days, ranging from 10 to 18 inches. Planting date has proven to have played a critical role in wheat pasture this year. Early sown wheat has produced very well, while late sown wheat has remained small.

While some of the wheat has remained small, it has produced a viable root system and has continued to develop new tillers this spring. When assessing wheat fields for grain yield potential, it is best to start by evaluating the stand. Past research at OSU has shown that at least 60 heads per square foot is ideal to produce max grain yield. Using a little math, that would equate to 38 tillers per foot of row when on 7.5 inch row spacing.

Since many producers have adequate soil moisture and viable stands, there will be a good potential for wheat to respond favorably to additional inputs. For an example, if a pound a nitrogen costs about $0.50 and it increased yield by only one bushel the return on investment is there. Even at low grain prices, $3.93 is over 7 times more than the $0.50 spent on fertilizer.

In addition to topdressing nitrogen, disease management has shown to have good yield savings over the years. If applied timely, most commercially available fungicides have had good yield protection in OSU field trials. If only one application is budgeted, it is best to apply late and protect the flag leaf. Long-term data typically average about 10 to 20 percent yield increase compared to no fungicide.

The OSU variety trial near Lahoma has evaluated more than 50 wheat varieties with and without a fungicide applied around the boot to flagleaf growth stage. Some varieties had good rust resistance and had little to no benefit to a fungicide application, while others had yield reductions of 20 to 40%. Including all varieties, there has been a 16.5% average increase in grain yield over the past five years.

The disease has to be present to save yield with a fungicide application. Knowing whether or not your wheat variety has good tolerance or resistance to leaf diseases is another factor to be considered. At the current wheat prices, if the wheat has a yield potential of at least 30 bushels per acre, then more than likely it will be economical to apply a fungicide.

Timely field scouting is the only way to determine if a pest is present and if an application of an herbicide, insecticide, or fungicide is warranted. The only way for one of these pesticides to protect yield and have a positive return on investment would be knowing what pests are present and knowing how much yield potential can be saved if applied correctly.

Effect of Pre-Calving Nutrition on Birth Weight and Calving Difficulty

Britt Hicks, Ph.D., Area Extension Livestock Specialist

Over the last month or two, beef producers have asked me if reducing the supplemental feeding of energy and/or protein will decrease calf birth weight and improve calving ease. Some producers think that increasing supplementation may increase birth weights and lead to a higher incidence of dystocia. Research does not support this concept. In one research trial, 2-year old Hereford and Angus 2-year-old cows were fed three levels of energy (10.8, 13.7, or 17.0 pounds total digestible nutrients (TDN) per head per day for 90 days before calving. The results showed that increasing the level of dietary energy resulted in increased birth weights but not increased dystocia. In fact, the incidence of calving difficulty was lower in the medium- and high-energy groups than in the low-energy group (Table 1).

Table 1. Effect of pre-calving ration on birth weight and dystocia in 2-year-old cows.

Energy Level of Ration (lb TDN/day)	Birth Weight, lb	Dystocia, %
Low (10.8 lb)	58.0	26
Medium (13.7 lb)	61.5	17
High (17 lb)	63.9	18

Source: University of Missouri Extension, Calving Difficulty in Beef Cattle: BIF Fact Sheet

A summary of seven research trials conducted in Montana indicates that plane of nutrition during gestation plays a role in dystocia (calving difficulty) and calf survival (Table 2). In this summary, even though cows fed on a high plane of nutrition had calves with higher birth weights; dystocia, scours incidence, and mortality were lower. In addition, calf survival at weaning was higher in cows fed on a higher plain of nutrition and these cows had higher pregnancy rates the following breeding season.

Table 2. Effect of low or high gestation feeding level on calving and subsequent reproduction.*

Item	Low	High
Calf Traits		
Calf birth weight, lb	63	69
Dystocia, %	35	28
Calf survival at birth, %	93	91
Calf survival at weaning, %	58	85
Scours Incidence, %	52	33
Mortality due to scours, %	19	0
Dam Traits		
Estrus at the beginning of the breeding season, %	48	69
Pregnancy, %	65	75

*Summary of seven research trials by Bob Bellows, USDA-ARS, Miles City, MT. Range Beef Cow Symposium XIII, 1993, pp. 175-189. Cows on low plane of nutrition lost weight. Cows on high plane of nutrition gained weight.

Kansas State University research evaluated the influence of pre-partum dietary protein content on calf birth weight, dystocia and subsequent reproductive performance in first calf heifers and mature beef cows. In this study, spring calv-

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ing Simmental heifers (83 head) and cows (49 head) were allotted to three pre-partum nutritional treatments 112 days prior to their average expected calving date: 1) low protein, 75%; 2) control protein, 100%, and 3) high protein, 150% of the daily crude protein requirement for heifers or cows in the last trimester of pregnancy. After calving, all females were fed 100% of requirements.

In this study, protein level had no effect on calf birth weight, calving ease score, or the incidence of dystocia. (Table 3). Low protein had no effect on the post-partum interval (PPI) from calving to first estrus, the percentage in estrus in the first 21 days of the breeding season, first service or overall conception rates. High protein shortened (P<.05) the PPI and increased (P<.05) the percentage in estrus in the first 21 days of the breeding season compared to the control diet, but had no effect on first service or overall conception rates.

Table 3. Effect of pre-partum protein level on calf birth weight, dystocia, and reproductive data.

Item	Low (75% of rqt)	Control (100% of rqt)	High (150% of rqt)
Birth Weight	89.5	87.7	89.5
Calving ease Score*	2.2	1.9	1.7
Dystocia, %	48.3	32.1	36.7
Postpartum interval, days	72.8^{ab}	78.5^{a}	62.3^{b}
% Cycling in 1st 21 days of breeding Season	73.1^{a}	70.8^{a}	90.0^{b}
Conception rate:			
First service, %	29.4	45.5	58.8
Overall, %	76.9	76.8	77.0

*Calving ease scoring system: 1 = unassisted, 2 = slight assistance, 3 = mechanical calf jack, 4 = Caesarean section, 5 = mal-presentation, 6 = calf death resulting from difficulty.
^{a,b}Values with different superscripts differ significantly ($P < 0.05$).
Source: Bolze and Corah, 1988, Prof. Anim. Sci. 4:25-31.

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Research conducted in Australia investigated the effects of the pre-calving nutrition level on calf and dam behavior immediately following calving (Table 4). Calves born to dams on a low plane of nutrition took significantly longer to nurse than calves born to dams on a maintenance or high plane of nutrition. The longer the calf takes to nurse, the higher the likelihood that colostrum absorption will not be adequate to protect the calf from disease.

Table 4. Effect of pre-calving nutrition on calf and dam behavior.

Item	High Plain	Maintenance Plane	Low Plane
No. dams observed	19	20	20
No. calves observed	16	18	20
Duration of parturition, min.	109.0	89.4	142.7
Time taken by dam to rise after calving, min.	11.6	14.4	30.7
Time taken by calves to stand after birth, min.	23.5[a]	160.0[b]	221.3[b]
Time elapsing from birth to 1st suckling, min	86.5[a]	134.8[a]	305.7[a]

[a,b]Values with different superscripts differ significantly ($P < 0.05$).
Source: Krokev and Cummins, 1979, Australian Vet. Jour. 55:467.

In summary, these data illustrate that a low plane of nutrition during gestation will have no effect or only slightly decrease birth weight. Conversely, calving difficulty typically increases with reduced nutrient intake because the cow tends to be weaker. In addition, this practice results in weak calves that are less active immediately after birth. Furthermore, low plains of nutrition may reduce the percentage of cows cycling at the beginning of the following breeding season and reduce pregnancy rates.