

Beef Bits are e-mails sent out that briefly summarize recent research or relevant topics. More information on each subject is available on request.

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Beef Bits, Dec 18, 2009

The value of oil in corn DDGS

From: Nebraska Beef Report 2010 p 74-76; Can. J. Anim. Sci. 2009 89:409-413; J. Anim. Sci. 2009. 87:639-652, 2002, 80:1105-1111.

Increasing dietary energy density typically improves performance, carcass quality, and cost of gain. After grain levels are maximized, energy density can be increased further by adding fats or oils. As a result, their value in finishing diets is about 4 times higher than barley, even though they are only about 2.5 times higher in energy.

Many assume that the high oil (> 10%) content in corn DDG explains its superior feeding value (> 20% higher than dry rolled corn). University of Nebraska researchers estimate that only 42% of the enhanced performance is due to the oil. In other words, if regular corn DDG is worth a 20% premium to barley, then low oil corn DDG is still worth more than barley. There has been very little low oil corn DDGS show up in the Lethbridge area.

Oils derived from plants are typically unsaturated and can have a negative effect on fibre digestion in the rumen. Although this can negatively affect energy availability, this is offset by the reduction in methane (a greenhouse gas) production. Feeding oils is one of the few established protocols whereby a feedlot can sell carbon credits. Although oil from corn DDG is less reactive in the rumen, feeding 35% corn DDG (3% added oil) reduced methane production by about 20% (~11 kg/year). However, this is offset by increased protein (nitrogen) intake and excretion, potentially resulting in > 1.3 kg nitrous oxide, a greenhouse gas that is about 15 times more potent than methane.

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Beef Bits December 3, 2009

Field peas in feedlot diets improve meat quality attributes and

From Nebraska Beef Report 2010 p 107-108; 2007 Proc. Mid West. Sec. Amer. Soc. Anim. Sci. abstracts 278 & 283.

Field peas are occasionally cost effective in feedlot diets. North Dakota Researchers have documented that intakes are slightly increased when peas are included in corn-based diets. With little effect on feed efficiency, these researchers concluded that energy content is similar to the corn and soybean meal it displaced (ie slightly higher than barley). Although peas have had minor effects on carcass yield and quality grade, tenderness, and meat flavour were increased with the addition of peas in the diet with the most desirable ratings occurring with the highest levels (30%).

There appears to be little benefit to processing field peas prior to feeding.

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Beef Bits November 16, 2009

Mycotoxins in feedlot diets

From; Can. J. Plant Sci. 2008. 88: 143-146; North Carolina Extension documents; Natural Toxicants in Feeds, Forages and Poisonous Plants, 2nd Ed by Peter Cheeke. p 113 – 127.

Wet conditions through flowering and cool wet falls contribute to mold growth and mycotoxin development in grains. Fusarium is one of the molds that form several different mycotoxins. “Head blight” and “scab” are crop diseases that result from Fusarium. Mycotoxins are typically not a concern in the dry conditions of Western Canada. However, the cool wet growing and harvesting season combined with feeding DDG increase concerns. Although Fusarium does not remain viable when it passes through the digestive tract of cattle (little chance of spreading to the land via manure), the toxins that are present may survive. As a result, Mycotoxins are not completely removed from the grain through the fermentation process that produces ethanol. Therefore DDG can have concentrated levels of mycotoxin.

Two of the common mycotoxins produced by the Fusarium mold are Vomitoxin (DON) and Zearelenone. DON can result in nausea, vomiting, diarrhea and reduced intake and gains. Zearelenone is similar to the active compound in Ralgro implants and has estrogenic activity that can result in abortions, poor fertility, enhanced sexual traits (ie udder development), increased prolapse or buller activity. Other less common but more potent Fusarium mycotoxins exist (ie T-2, HT-2, and DAS).

The US FDA suggests a maximum of 5 ppm DON in the complete diet of feedlot cattle. The [CFIA](#) have suggested only 2.5 ppm. Acceptable levels in DDG will depend on the inclusion level in the diet. Max Zearelenone levels are poorly defined and may be less concern for steers. Through 15 years of working with feedlots, I have only seen 1 case where mycotoxins were suspect in health and death loss.

By binding to the mycotoxin, products such as [Mycofix](#) reduce negative effects. Including Mycofix in your supplement will cost about \$0.25/hd/d. Testimonials suggest that zeolite may also help sequester mycotoxins. Feeding zeolite will cost about \$0.03/hd/d.

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Beef Bits October 15, 2009

Value of pharmaceuticals in beef production

From; J. Anim. Sci 87:3418-3426; <http://www.econ.iastate.edu/faculty/lawrence/>.

Natural beef production prohibits the use of implants and antibiotics. Organic beef production also requires that cattle are fed only certified organic feeds. To estimate the

increased cost of natural and organic beef production, 91 experiments were critically evaluated that compared performance response to steroid implants, monensin, tylosin, endectocides (ie Ivomec), and metaphylaxis (mass medication) with any antibiotic. Although monensin and endectocides (but not tylosin) appeared to have a positive effect on performance, these technologies were not considered in the statistical summary (meta-analysis) of the trials due to an insufficient number of experiments (≤ 8 for each technology) that met the requirements. Despite the lack of apparent performance response to feeding tylosin, it did reduce liver abscesses from 30 to 8%. The 20 trials (n=20) that compared metaphylaxis reported increased ADG of 0.26 lb/d. Implanting heifers (n=9) increased ADG by 0.18 lb/d (P=0.09) but the ½ lb reduction in feed/gain was not consistent (P = 0.44). Implanting steers (n=44) increased ADG $> \frac{1}{2}$ lb/d (P<0.01) and reduced feed/gain by > 0.85 (P<0.01). Documented response to implanting may be conservative as only trials that used just one implant were considered. Implanting reduced cost of production for a steer by \$77/animal. Others have estimated that removal of pharmaceutical technologies costs a total of \$155/animal, with \$71 due to implants. Assuming organic feed costs 50% more than conventional feed, organic beef costs at least \$350 more to produce than conventional beef.

There are markets for natural and organic beef, but that market must pay a sizeable premium for production to be viable.

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Beef Bits, date; September 29, 2009

Subject: Prolonging the withdrawal period reduces response to Zilmax.

From; J. Anim. Sci. 2009. 87:2133-2141; 87: 1759 – 1763; Proc. Plains Nutr. Conf. 2009
abst p 100

Zilmax is a powerful growth promotant, but will require selective use and special management to capitalize on its value.

Feeding Zilmax for 20 days followed by 3 day withdrawal typically results in an additional 30 lb carcass weight. At \$1.55/lb of carcass, this is worth \$46.70. Zilmax will cost $> \$20$ for a net benefit of about \$24. More accurately, the value of Zilmax is the savings in production costs to achieve 30 lb of carcass gain. Based on performance and carcass growth late in the feeding period, Zilmax saves about \$12 in production costs to achieve 30 lbs of carcass gain. The value of altered carcass composition is not considered in these calculations.

These improved performance estimates are likely optimistic for Canadian fed Cattle due to the required 4 rather than 3 day withdrawal period. In trials evaluating performance costs of extended withdrawal periods, the carcass weight advantage resulting from Zilmax declined from 28 to 17 lbs as withdrawal period extended from 3 to 10 days. In another trial, 3 vs 6 day withdrawal resulted in a 6.5% reduction in carcass adjusted ADG and 8.5% reduction in carcass adjusted feed efficiency. At current pricing, profitability in this trial declined over \$5 with an extra 3 days withdrawal.

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Beef Bits, date; August 21 2009

Subject: Consider sulfur levels as you increase DDG feeding

From; Proc. Plains Nutr. Conf. 2009 abstr p 105, 106; J. Anim. Sci. 1997. 75:1723-1728.

Several trials have demonstrated that efficiency of DDG use declines at elevated dietary levels. This may be partly due to the increasing levels of sulfur in the diet. As with all non-starch nutrients, sulfur is concentrated about 3 fold in DDG compared to the original grain. Sulfur containing compounds may also be added in the process of ethanol production.

Dietary sulfur results in production of hydrogen sulfide in the rumen which contributes to polio. In a summary of Nebraska trials evaluating corn byproducts, incidence of polio was low (0.13%) for diets containing <0.46% sulfur but was > 6% for diets containing > 0.56%. Production of hydrogen sulfide is amplified with declining rumen pH (more acids) so reducing forage levels increase risks of polio.

Finishing diets without DDG are typically < 0.2% sulfur. Sulfur levels from locally obtained DDG samples have ranged from 0.4 – 1.24% with an average of 0.72%. Maximum tolerable levels are thought to be near 0.4%, but much lower levels (0.25%) have negatively affected performance. With minimal contribution from other sources, it takes about 40% DDG in diet dry matter to bring a typical finishing diet up to 0.4% sulfur. Other sources of sulfur include high sulfate water, canola and molasses.

Sulfur levels and risks should be considered when there is economic incentive to maximize DDG in the diet. Give me a call if you want further information.

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Beef Bits, July 21 2009

MGA improves performance of implanted heifers

From: Vet. Therapeutics. 9: 223- 240.

Several trials (> 10) have demonstrated small increases in performance (ADG, gain/feed) and carcass fat when MGA is fed to TBA+Estrogen implanted heifers. These small responses barely justified the use of MGA. However, these trials conducted in research facilities may not have revealed the full benefit of MGA due to the reduced riding activity observed in small pens (typically < 12 head/pen). Feedlot observations (ie Benchmark data) indicates responses maybe greater than indicated by small pen research.

Feedlot Health Management Services completed a large trial evaluating response of feeding MGA. Heifers had an average initial weight of 745 lbs. 3006 heifers (10 pens) received an average of 0.4 mg MGA/hd/d starting on day 28 until 24 hours prior to slaughter. 3005 heifers (10 pens) received no MGA. All other management variables were the same between treatment groups through the 204 day trial. Heifers received Synovex Choice implants on days 1 and 70.

The following responses were observed with feeding MGA:

Increased dry matter intake (23.3 vs 22.8 lb; $P = 0.005$)

Increased daily gain (3.05 vs 2.90; $P < 0.001$)
Decreased Feed/Gain (7.65/7.84; $P < 0.001$)
Increased live (1370 vs 1340 lb; $P < 0.001$) and carcass weight (840 vs 821 lb; $P = 0.001$)
Reduced % yield grade 1 (35.4 vs 45.3), Increased % yield grade 3 (24.7 vs 17.2; $P < 0.002$)
Increased % AAA carcass (57.8 vs 51.9; $P = 0.007$)
Reduced incidence of undifferentiated fever (7.0 vs 8.6%; $P = 0.007$)
Reduced BRD mortalities (1.2 vs 0.6%; $P = 0.02$)

An economic advantage of \$11.31 per animal due to feeding MGA

This trial was done at a large feedlot near Vegreville AB. No AIPs were reported.

Give me a call if you want further details or want to discuss MGA use in your feedlot.

Darryl

Notice - Feeding MGA to implanted heifers is off-label use and requires a vets prescription.

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Beef Bits, July 6, 2009

Factors that influence meat tenderness

From: J. Anim. Sci. 2009. 87: 269-274; 2008. 86: 205-210; 2008. 86: 211-219.

We hear a lot about meat tenderness, especially since the introduction of Zilmax. A primary reason for Cargill not buying cattle fed Zilmax is due to requests from large customers based on reduced tenderness.

Generally, meat tenderness is inversely related to growth rate and loin muscle area. For example, Exotic cattle are less tender than British, implanted cattle are less tender than non-implanted, and cattle fed beta agonists (Optaflexx, Zilmax) are also less tender than cattle not fed these compounds. Tenderness is typically measured using Warner Bratzler sheer force measurements, which is more sensitive than the human palate. Luckily, consumers cannot detect many of these reductions in tenderness. Now, NIR (near infrared reflectance spectroscopy; the same equipment that analyzes a lot of your feed) can be used to measure meat tenderness. The simplicity of NIR may one day enable tenderness to be considered in grid pricing.

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Beef Bits May 29, 2009

DFM reduce E. coli shedding with possible improvements in health and performance

From J. Anim. Sci. 2009. 86:756-762. 2009 Proc. Plains Nutrition Council,

A couple of recent summaries on direct fed microbials (DFM) in feedlot diets have been reported. DFM include viable cultures of yeasts and/or bacteria or just the extracts from

their fermentation. Improvements in feed efficiency with bacterial products has averaged 1.5 – 2%. These products are widely used in US feedlots due to positive responses that have been documented in performance, health, and food safety (reduced shedding of E. Coli). At current costs, this represents returns of > \$4/head for cattle gaining 600 pounds.

Yeasts frequently increase intakes and improve gains. This was the response we observed in a commercial feedlot trial that resulted in > \$4 profit/head from the use of Lallemond's yeast. Yeasts cost near \$0.05/hd/d. Bacterial products cost near \$0.015 /hd/d. Yeasts are most frequently used in the dairy industry. Bacterial products are more frequently used in the beef industry. Both are popular products in natural beef programs.

If you want more information on economics, responses, and how DFM might fit in your feeding program, give me a call.

Darryl

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Beef Bits, April 29,

Strategies to reduce forage use

From 2009 Nebraska Beef Report; Abstract from 2009 Canadian Society of Animal Science meetings.

A couple of recently completed trials stimulate our imagination of how we can stretch dwindling silage supplies and enhance efficiency of production by using less forage.

A trial at the Lethbridge Research Centre assessed the impact of replacing 9% silage + 6% rolled barley with 15% whole oats. As a result, finishing diets contained either 0 or 9% silage (DM basis). Fibre (%NDF) levels were similar between the two diets. Consistent with trials evaluating whole corn, whole oats were not used efficiently in high silage (back grounding) diets. Finishing diets containing 15% whole oats and 0% silage improved (P = 0.002) daily gain and feed efficiency by > 9%. Similar intakes and liver abscesses between diets indicate 15% whole oats provided similar roughage value as 9% silage. However, increased eating rates in whole oat diets may have implications on digestive health.

In a trial conducted at the University of Nebraska, wet corn gluten feed (WCGF) or silage was used through a 26 day step-up period to adapt cattle to a finishing diet that included 35% WCGF. At the end of the trial, steers adapted using WCGF had 4.5% better (P < 0.01) daily gains and feed conversions. Distillers grains are similar to gluten feed and may also provide an avenue to reduce silage use through the transition period while improving efficiency of production.

If you want additional details or would like to discuss ways to stretch your silage supplies, give me a call.

Darryl

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Beef Bits, Apr 14, 2009

Zilpaterol (Zilmax) cleared for use in Canada as choice - select spread narrows

From: CME group – Daily Livestock Report. Volume 7, # 72 April 8 2009; J. Anim. Sci. 2006 84: 3259-3265.

The price spread between choice and select carcasses has been decreasing the past couple of years and even went negative the week ending April 4th. This is due to changes in both supply and demand. The supply of Choice carcasses has increased over the past two years and the proportion of carcasses grading Choice has set records this year. One reason for the increase is because Graders are better trained and better managed in order to get consistent grades both within and across plants. USDA is simply doing a better job of quality control and it has shown up as more Choice carcasses. Another reason, especially applicable this year, is that cattle have been older and bigger when placed on feed. The declining price of corn has also contributed to increased days on feed at slaughter.

Sixteen straight months of low restaurant performance according to the National Restaurant Association is manifesting itself in lower demand for Choice beef. A shift of consumer purchasing to supermarkets suggests higher demand for Select beef that comprises much of many chains' offerings. Choice may not command as large of a premium to Select as we have seen in the past — at least in the short to intermediate term.

With less incentive to pursue carcass quality, management and technologies that enhance performance at the expense of marbling become more valuable. One such product is Zilpaterol (Zilmax) which has recently been cleared for use in Canada. Intervet hopes to have product available this summer. Zilmax is similar to Optaflexx, but is more potent including increased positive effects on performance as well as increased negative effects on carcass quality.

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Beef Bits: Mar 19, 2007

Barley vs corn fed beef; consumers prefer what they are used to

From: Meat Science. 2008. 80: 857-863; J. Anim. Sci. 2005. 83: 2863-2868

Steaks from corn-fed and barley-fed beef were characterized by a trained (Canadian) panel, which rated corn-fed beef higher ($P < 0.05$) for tenderness attributes and overall flavor intensity. Canadian consumers preferred ($P < 0.01$) cooked and raw steaks from barley-fed beef, while Mexican consumers showed no preference ($P > 0.05$) for either type of finished beef. Japanese consumers showed a preference ($P < 0.05$) for the appearance of raw barley-fed steaks but a preference for cooked corn-fed steaks ($P < 0.05$). No differences ($P > 0.05$) were observed for Warner-Bratzler shear, marbling scores, or cooking losses. There was a trend ($P < 0.08$) for higher concentrations of the saturated fatty acids in the barley treatment, but no differences ($p > 0.10$) in mono or polyunsaturated fatty acids.

In US consumer acceptance tests conducted in Denver and Chicago, consumers ($n=273$) rated Canadian steaks numerically lower for juiciness ($P = 0.09$) and lower ($P < 0.005$) for flavor, tenderness, and overall acceptability than US samples.

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Optaflexx improves gain, efficiency, and carcass weight in heifers fed MGA

Beef Bits, Mar

From: Prof. Anim. Sci. 2009. 25:33-40.

Early trials indicated that Optaflexx may not be as beneficial with heifers as with steers (Shroeder et al., 2003a, b, Laudert et al., 2004). However, heifers in these trials did not receive MGA or implants containing TBA. An Optaflexx trial funded by Pfizer (makers of MGA) in Nebraska (trial 1) and Texas (trial 2) were recently reported with heifers that were fed MGA and received TBA implants. In Trial 1, 1807 heifers (10 pens per treatment, 133 DOF) were fed 200 mg ractopamine/hd/d the last 29 days on feed. In Trial 2, 1964 heifers (10 pens per treatment; 138 DOF) received 200 mg ractopamine the last 36 days on feed. In Trial 1, Optaflexx increased live gain by 10.4 lbs ($P = 0.09$) and carcass gain by 7.3 lbs ($P = 0.01$) but fat thickness, yield grade, marbling score, % choice, and ribeye area were not ($P > 0.47$) affected. In Trial 2, Optaflexx increased live gain by 17 pounds ($P < 0.01$) and carcass gain by 12.1 lbs and decreased marbling scores ($P = 0.01$) but increased ($P = 0.01$) ribeye area. Through the whole feeding period, Optaflexx increased carcass adjusted gain/feed ($P < 0.01$) by 1.7 and 3.7% and ADG by 3.1 and 3.4% in Exp. 1 and 2, respectively. In today's market, the average of these improvements result in a savings of \$9.80 in feed and \$2.00 in yardage and interest. **Assuming a daily cost of \$0.25/animal, Optaflexx increased returns per head by \$3.80.**

A review on statistics

In properly conducted research, P values are always reported. These values provide an indication of how consistent responses are and how confident we can be that differences are due to treatment and not just chance. For example, saying carcass gain increased by 7.3 lbs ($P = 0.01$) means that there is a 99% probability this 7.3 lb difference was due to feeding Optaflexx. On the other hand, Optaflexx had minimal effects ($P > 0.47$) on carcass traits in Trial 1. This means there was at least 47% probability differences were due to chance.

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Relationship of intakes to performance of feedlot cattle

Beef Bits February 25, 2009

From J. Anim. Sci. 2009. 87:1138-1146

A recent publication documented the relationship between intake and performance from 3363 pens of cattle from 3 feedlots over a 4 year period. As with other reports, energy intake accounts for much (70%) of the variation in ADG, but little (1%) of the variation in feed efficiency. Consistent with previous research, efficiency of energy use declined with increasing energy intake. Reduced efficiencies resulting from high intakes are likely a result of: reduced digestibility, increased maintenance requirements, or increased fat deposition (increased energy content).

This research is consistent with the improved feed efficiencies documented with limit fed cattle. Although limit feeding is typically only used for back grounding cattle, these principles help remove concerns of reduced performance that some think result from the occasional slick bunk in the finishing yard.

Darryl

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The cost of severe winter weather.

Beef Bits, February 10, 2009

From: 2008 Colorado State University (CSU) Beef Research Report

Many have wondered what December's weather cost in animal performance. CSU documented such numbers through a 2007 winter storm in which temperature averaged -8°C, and snow depth averaged 12.7 inches with a peak of 36.0 inches through the 58 day period. Prior to the storm, cattle performed well (ADG > 3 lb, feed/gain < 5.5). Weight of cattle during the 58 days changed from 1235 to 1218 pounds (-0.29 lb/d). Based on their feed consumption of 21.3 lb of DM each day, this equates to a 2.5 times increase in maintenance energy requirement. Their lack of bedding and wind breaks contributed to 15 of the 214 animals dying (7% death loss). Even with moderately priced corn, the Colorado storm cost over \$200 per animal purchased. This report reminds us that: 1) straw is cheap insurance to keep cattle dry and maintenance energy requirements low, 2) we are fortunate we don't have the hot summers, so we can afford to put up wind breaks to reduce wind effects.

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Value of DDGS

Beef bits, Feb 5, 2008

For most of the past year, corn DDGS has been priced lower than its value. After a year of better than normal cattle performance, many producers are reluctant to quit using it despite a widening price spread between corn DDGS and barley. The value in feeding corn DDGS is due to its energy content and the increase in intake that results from its use. The following calculations assume DDGS is fed at 20% of the dry matter and rolled barley is priced at \$170/tonne.

Increased intake – consistently, DDGS increase intake. At today's commodity prices, a 3% increase in intake increases ADG, so COG is reduced by > \$0.015/lb. If a product fed at 20% of DM can increase intake by 3%, it is worth 14% more than the barley it displaces.

Increased energy content - Based on several trials, corn DDGS has at least 10% more energy than dry rolled corn (which is about the same as rolled barley). The increased energy content reduces COG by \$0.023/lb and makes corn DDGS worth 21% more than rolled barley.

The higher energy intake due to feeding corn DDGS puts its value at \$225/tonne, or 32% higher than barley. Value is even higher where the protein is required (ie back grounding diets using corn silage). A 25% premium for corn DDGS is easily justified.

Although wheat DDGS also stimulates intake, energy content is about the same as rolled barley so only about ½ as much premium is warranted.

Costs of handling another ingredient and the shrink losses (wind, moisture) must also be considered when establishing value.

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Ensiling improves digestibility

Beef bits, January 30, 2008.

From J. Anim. Sci. 2008. 85, E-Supp. 2, p 30

Samples of corn silage were obtained from the same harvested load of silage and stored in vacuum-sealed polyethylene bags. Each month for the next 12 months, 4 replicate samples were analyzed using NIR for ruminal and total tract digestibility. This process was repeated at 2 different dairies. Up to the 6 month period, starch digestibility increased by 1.63 units each month. Fibre (NDF) digestibility increased 1.16 units each month. After a six month period, ensiling resulted in considerable improvements in digestibility.

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Details in a new era

Beef Bits, January 15, 2009.

Attention to details often improves productivity through increased awareness of potential opportunities and deficiencies. Increasingly, producers are required to document these details to be compliant with beef production systems, or even eligibility for Government programs. Registering cattle arriving at your feedlot with [CCIA](#) is the most recent requirement.

The [Verified Beef](#) and [Canada Gold Beef](#) programs are currently voluntary. However, under the Feeds Act and Health of Animals act, [CFIA](#) has many similar (mandatory) requirements. Documenting the feeding details these programs require adds time and complexity to daily feeding. For example, target and actual quantities of each ingredient in each load, as well as what pens each load was fed to is required. Feeding systems are available ([VAS](#), [Feed supervisor](#), [Digi-Star](#)) that automatically record these details, but integration with current feedlot software is limited and there is little opportunity to summarize and quickly view recorded data.

[Fusion](#) is a complete “Feedlot accounting” package designed and produced [locally](#) to capture daily details for quality control and compliance with previously mentioned programs. This software provides feed management, animal health, and commodity contract management and communicates with the CCIA database for age verification and automatic submission of new animals to your feedlot.

If you want more information on computerized systems or on farm food safety programs, give me a call.

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Beef Bits Dec 29, 2008. Nutrition, tilmicodin, and immunity

From: J. Anim. Sci. 2008. 86:1963-1976, J. Anim. Sci. 2006. 85: 823-840.

It has been documented that high energy starter diets increase intake and gains but also increase morbidity in newly weaned calves. A recent publication documents how feeding reduced energy can positively affect the immune response.

Steers were fed 3 different levels of energy, treated with subcutaneous injection of 0 or 1 g tilmicosin/30 kg body weight, and subsequently challenged with an E. Coli endotoxin to stimulate an immune response. Following the challenge, cattle that were consuming low energy diets had reduced rectal temperature with increased levels of compounds (pro-inflammatory cytokines) that signal an immune response. Tilmicosin enhanced the immune response on the low energy (30% concentrate) but not the high energy (70% concentrate) diet. This research reminds us to use properly balanced, moderate energy starter diets to optimize health and enhance response to antimicrobials.

Give me a call if you want to discuss your starter program.

Darryl

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Beef Bits. December 17, 2008.

Feeding value of low oil corn distillers grains.

From J. Anim. Sci. 80:1105-1111, Kansas State Beef Cattle Research Report. 2007. 69-72

With more research and experience, producers recognize the value of dried distillers grains with solubles (DDGS). In summary, DDGS from wheat is comparable value as rolled barley when fed at moderate levels (ie 20% of DM). DDGS from corn is worth at least 10-15% more than rolled barley (summary of Nebraska research indicates > 20% more value than dry-rolled corn). The value of DDGS is greater where the extra protein is required. Increased intakes resulting from feeding DDGS also has value and should be considered.

Many assume the superior value of corn DDGS is due to the higher oil content (~ 4 vs 10%). A few ethanol plants are now extracting the oil from corn DDGS resulting in a product with similar oil and protein content as wheat DDGS. Increased oil content explains much, but likely not all of the increased value in corn DDGS. Based on performance responses and the energy content of oil, Nebraska researchers estimate that only 42% of the superior value of DDGS is due to the oil content. When compared in steam-flaked corn diets, Kansas researchers found that de-germed (oil removed) DDGS fed at 13% of DM resulted in similar feed efficiency as regular DDGS, although there was a small reduction in intake and gain. In other words, low oil corn distillers is likely worth at least as much as wheat distillers. If they were priced the same, I would buy the low oil corn DDGS.

BTW, there has been very little low oil corn DDGS show up in this area. A good broker will always let you know what you are buying.

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Beef Bits, December 2, 2008

Pulse dose chlortetracycline (CTC) feeding programs for reduced BRD.

From Feedlot Health Management Services research report 533.

A previous trial (1993) by Feedlot Health Management Services documented that providing AS700 for 56 days to newly weaned calves reduced ($P < 0.05$) mortalities due to Histophilosis. A subsequent trial demonstrated that 1 g CTC / day for 56 days provided similar health benefits as AS700 but with improved animal performance.

Phase I of a trial recently conducted at Western Feedlots (High River) by Feedlot Health Management Services compared feeding of CTC to newly weaned calves (3855, 5 pens per treatment) at the following rates:

- 1) 1 gram for 56 days
- 2) 2 pulse doses of CTC (2 weeks)
- 3) 4 pulse doses of CTC (4 weeks)

Each pulse dose included 5 days of feeding 1 g CTC / 100 lb calf weight followed by 2 days of no CTC. The 4 pulse treatment reduced ($P < 0.05$) incidence of undifferentiated fever and mortalities due to BRD and histophilosis. Although treatments did not affect intake, gains or feed conversions, the 4 dose treatment resulted in a \$5.50 / head net advantage due to reduced treatments and mortalities. The 2 pulse treatment provided an intermediate response.

Give me a call if you want further information on feed medications available for treating BRD

Darryl

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Beef Bits, November 13, 2008

Economic impact of performance and carcass changes through the finishing period
From: 2007. Proc. Mid West. Sec. Amer. Soc. Anim. Sci. **257 Performance changes through the finishing period.** J. C.

MacDonald*, T. J. Klopfenstein, G. E. Erickson, and K. J. Vander Pol,
University of Nebraska, Lincoln.

Live animal and carcass growth was documented through the feeding period in three different steer finishing trials. Live weight (LW) ADG decreased through the feeding period. However, carcass weight (CW) ADG remained constant resulting in a linear ($P = 0.01$) increase in live gain that is transferred to the carcass. Transfer of LW gain to the carcass may approach 100% near the end of the feeding period. Dry matter intake increased through the feeding period, but both LW and CW feed efficiency linearly declined ($P = 0.01$) with increasing body weight. However, the decline in CW feed efficiency was only 26.5% the decline in LW feed efficiency.

Based on this work and several other trials and industry observations (Benchmark data; thank you Elanco), A computer model was generated to calculate profitability with increasing days on feed and animal weight. Based on this model, increasing steer slaughter weight from 1350 to 1400 lbs results in an additional 44 lb carcass. With the premiums and discounts used, improvements in carcass quality were offset by over weight and yield grade discounts. At \$175/tonne barley, the value of the heavier carcass

offset reduced performance resulting in increased profitability of \$6.64 per animal. At \$225 barley, the extra gain cost \$4.26 more than the value of the carcass. Increasing feed prices will have a larger economic effect on heifers due to a more rapid decline in performance late in the feeding period.

Changes in cost of gain and carcass value must be considered when determining optimum marketing date. Give me a call if you want to review this information.

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Beef Bits, October 10 2008. Value of a tempering agent in barley based diets.

From: Proceedings of 2008 Canadian Animal Science meetings (Y.Wang et al.); J. Anim. Sci. 81: 2145-2154 (Y. Wang et al).

Previous research at the Lethbridge Research Centre evaluating saponin based tempering agents (GrainPrep) has clearly documented that GrainPrep reduces time required for tempering. Performance responses have been less clear. When aggressively rolled barley was fed, the greatest response to GrainPrep was surprisingly observed in back grounding diets. In a second trial, tempering with GrainPrep improved feed efficiency in a finishing diet by 4.4% ($P < 0.05$) over dry rolling and 3% ($P > 0.05$) over tempering alone. GrainPrep added with barley to rumen fluid reduced methane production but increased overall gas production. Both measurements indicate improved energy availability. This helps explain why GrainPrep has increased performance in back grounding (high forage / low grain) diets. Responses to GrainPrep (saponin) are likely due to more than just improved processing.

If you want more information on processing, give me a call.

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Beef Bits July 17, 2008. Silage yields and quality as influenced by maturity

From: Florida Ruminant Nutrition Symposium. 2008; Can. J. Anim. Sci. 77:259-267,

Corn Silage

Following an exhaustive review of research, Fred Owens (Pioneer Hi-Bred) summarized the following points: 1) Maximum yield of DM is achieved at about 37% DM. 2) With today's corn hi-breds and improved late season growth, milk line is a poor indicator of dry matter (DM) 3) For corn silage harvested without a kernel processor, energy concentration appears to be optimized at 30 – 33% DM, For processed corn silage, 37 – 40% DM maximizes energy yield. The drier the silage, the more critical management (chop length, packing, covering) becomes. Even with a kernel processor, there is no reason to harvest corn silage > 40% DM.

Small grain silage

Cereal DM yields typically increase up to the soft dough stage of maturity. Maximum yield of barley DM occurs at 42% DM, but optimum energy yield was not documented. Increasing maturity results in declining forage quality resulting from increasing cell wall and lignin levels. However, this is offset by increasing head development (starch levels)

resulting in only small changes in quality with advancing maturity. At a given maturity, barley has a higher leaf/stem ratio than oats and triticale. Based on fibre (NDF) levels, silage quality was ranked in the order of barley, triticale, then oats. Due to rapid decline in fibre quality with maturity, triticale should be harvested earlier (~33% DM) than barley (38-40% DM).

Give me a call if you want to discuss or would like further information.

Darryl

12

Beef Bits June 17, 2008. The value of bedding.

From: 2007. Proc. Mid West. Sec. Amer. Soc. Anim. Sci.

If you have ever toured US feedlots in the winter, you realize that not all feedlots provide bedding for their cattle. Do we get returns on bedding?

Researchers provided none, modest (175 kg/hd) or generous (300 kg/hd) bedding to finishing steers during two typical winters in North Dakota. Bedding did not change dry matter intake, but daily gains were greater ($P < 0.01$) for modest (1.67 kg) and generous bedding (1.60 kg) compared to no bedding (1.28 kg). Marbling score and percent choice were also greater for cattle that received bedding. Carcass value was calculated at \$61.76 and \$81.61 greater for modest and generous bedding, respectively, compared to no bedding when the choice-select spread was \$10.00 per cwt. Nitrogen content of composted manure was increased with bedding. During one of the mildest winters on record, bedding had negative effects on dry matter intake but still improved daily gain. Bedding improved gains in both trials and appears to be more effective in cold and dry winters. Bedding may improve carcass quality and value. Providing bedding of any type had a positive influence on the amount of nitrogen in composted manure.

11

Beef Bits June 9, 2008. Statistics and perspectives on ethanol production.

Colleen Christensen from the University of Saskatchewan (which some of you met last week) forwarded this article to me. Thought it was very interesting, especially after seeing some of the costs and inefficiencies of ethanol production at the Husky plant. The article discusses production, costs, government incentives, economic and environmental impacts of ethanol production. The editor also does a good job of justifying her pro-ethanol bias in the "Backgrounder" near the end of the article.

<http://www.agriweek.com/agrxa/jqj104.pdf>

To return a favour, I am also attaching a brochure on the feedlot school John McKinnon puts on at the University of Saskatchewan.

10

Beef Bits, May 20 2008, Effect of liver abscesses on carcass traits of feedlot cattle

From: 2007. Proc. Mid West. Sec. Amer. Soc. Anim. Sci. 264.

Moderately abscessed livers have little effect on animal performance. However, severely abscessed livers (A+) frequently adhere to the carcass resulting in carcass trim, reduced carcass weight, and reduced carcass gain and efficiency. Carcass measurements and liver abscess scores were documented for 20455 steers and 9103 heifers that were used in 14 different Kansas research trials (Bos Technica Research). All cattle received 90 mg/hd/d Tylan. Over 87% of steers had no abscesses, 3.8% had A+ livers. Only A+ livers affected carcass traits. Of the A+ livers, 68% were adhered to the carcass resulting in carcass trim and lighter (29.1 lb) carcass weights. These animals also had smaller (2.19 cm²) ribeyer area. Even without carcass trim, A+ livers resulted in 3.2 kg lighter carcasses. Similar rates and effects of liver abscesses were observed with heifers.

Give me a call if you want to discuss control of liver abscesses in your feeding program.

Darryl

9

Beef Bits, May 15, 2008 By-products from bio-diesel production.

From: Proceedings of 2008 Plains Nutrition Council. San Antonio Texas; Industry observations.

The next by-products of the bio-fuel industry we will see on the market will probably come from bio-diesel production. Two potentially useful products are generated: the meal (i.e. canola cake) and glycerin.

Because solvents cannot be used to extract the oil for bio-diesel production, there is much more residual oil (~15%) in the resulting canola meal, or canola "cake". Although feed analysis on this product don't look too exciting (less energy than millrun), feed labs often underestimate energy content of high oil feeds. When oil content is considered, the value of this product is close to barley. Protein levels are also high (> 30%).

Most fats and oils are stored in plants and animals as 3 fatty acids attached to glycerol (triglyceride). In bio-diesel production, the fatty acids are harvested but not the glycerol (glycerin). Glycerin is a sweet, thick liquid historically used in the beverage, food, and cosmetic industries. With increased availability, we may see it in the feed industry if it gets registered with CFIA. Kansas State researchers found that glycerin has higher feeding value than corn when included at less than 10% in finishing diets, but intakes and performance declined at higher levels.

Darryl

Previous Beef Bits reported LRC research that found corn DDG, wheat DDG, and millrun had 113%, 106%, and 98% the feeding value of barley in back grounding diets. Before you offer your broker these prices give me a call to discuss additional details.

8

Beef Bits, March 9, 2008. Valuing by-products

From: LRC Beef Research; Dalke et al., 1997. J. Anim. Sci. 75:2561-2566

With increasing feed prices, it is critically important to know the nutritional value of available by-products. Corn distillers has been researched thoroughly and more work is being done with wheat DDG. Although by-product from the flour milling industry (millrun) has been available for decades, there is surprisingly little research documenting its feeding value.

At the Lethbridge Research Centre (LRC), the feeding value of millrun, wheat DDG, and corn DDG were recently compared by replacing barley (40% of the dry matter) in back grounding diets. Intake was higher ($P = 0.01$) for wheat DDG than barley grain (19.5 vs 17.17 lb/d). Both wheat and corn DDG resulted in higher ($P < 0.01$) ADG than the barley diet (3.0 and 3.0 vs 2.4 lb/d respectively). Cattle fed corn DDG were more ($P < 0.01$) efficient than cattle fed barley (6.2 vs 7.1). Millrun was intermediate between barley and DDG in all measurements. Based on these results, economic values were 113%, 106%, and 98% of barley price for corn DDG, wheat DDG, and millrun respectively.

As mentioned previously, there is little millrun research to compare to. As well, there is variability between flour mills in what is included in millrun. In a Kansas finishing trial (Dalke et al., 1997), millrun (wheat midds) could only replace 5% corn before performance was negatively affected. These researchers concluded that millrun only has 40% the net energy value of dry-rolled corn when it replaces corn in finishing diets. When it replaced the forage, performance was maintained.

Give me a call if you have questions or comments.

Darryl

7

Beef Bits, May 1, 2008, Feeding Holsteins

From Veterinary Clinics Food Animal Practice. 2007. 23: 281- 297.

Holsteins comprise much of the feedlot industry in some areas (90% in Arizona). Their curious/playful disposition that results in increased pen maintenance, dust, and feed sorting has been referred to as “suicidal tendencies” by some feeders. Holsteins are more heat tolerant, but less cold tolerant and have poorer feed conversion due to increased losses (~20%) in metabolic energy. Calf-fed Holsteins (< 350 lb) usually spend more than 1 year in the feedlot. Due to increased days on feed, Holsteins have increased digestive and metabolic disorders (bloat, sudden death, acidosis) with greater risk for liver abscess but not founder. As a result, higher fibre levels and supplemental fat are more beneficial in Holstein diets. As well, additional attention should be paid to protein quality and quantity for calf-fed Holsteins There is typically more riding with Holsteins but they are perceived to have less respiratory problems than beef calves. Their larger frame size can increase pen space requirement and urine and ammonia excretion due to increased feed and water intake. Due to reduced ribeye areas and dressing percent, implants and beta agonists (Ractopamine) are especially valuable for Holsteins.

6

Beef Bits, April 22 2008. Costs of handling cattle.

From Journal of Dairy Science, 2008, 91:1011 – 1016; Lethbridge Research Centre, unpublished research.

Disrupting social hierarchy in a pen of cattle can affect behaviour, intake, and performance, but long term effects are unknown. When dairy cows were added to an established group of animals, the “new” animals were displaced at the feed bunk more often but dominance at the feed bunk returned to normal within 3 days. Milk production declined 9% the day following mixing but recovered thereafter. Previous work has shown that aggressive interactions increase dramatically following sorting but returns to normal within 3 – 15 days. Frequent handling of cattle can also affect performance. Compared to cattle that were weighed every month, cattle weighed every other week had lower intakes (1.3%; $P = 0.008$), daily gains (4.5%; $P = 0.01$), and conversions (3.7%; $P = 0.05$).

Darryl

A note on statistics

Proper research always has multiple observations for each treatment. This allows us to see how consistent results are and determine the likelihood that treatment differences are due to chance (P values). For example, in the above mentioned “frequent vs infrequent weighing of cattle”, there was a 99% likelihood that the 4.5% difference in daily gain was due to the frequent weighing and not just chance. In animal science, most researchers consider P values of < 0.05 to be real, or statistically significant.

5

Beef Bits, March 26, Stretching silage supplies

From: 2007 Nebraska Beef Cattle Report. Effects of roughage source and level with the inclusion of wet distillers grains on finishing cattle performance and economics.

At this time of year, many producers notice a shrinking silage pile and start looking for ways to stretch inventories. Those feeding distillers grains have wondered if, and how much they can reduce silage levels in finishing diets. Research at the University of Nebraska addressed these questions. In diets containing 30% wet distillers grains (DM basis), removing all of the forage reduced intakes, gains and profitability. The best performance and profitability was achieved with the highest level of alfalfa hay (8%) or the same amount of fibre from corn silage (12.25%). However, only 3% corn stalks were needed to achieve maximum performance and profitability. Corn stalks likely provided more effective fibre, so less was required. Dry course forages (i.e. corn stalks, straw) can replace a lot of silage. In finishing diets, 1 tonne of straw can replace about 4½ tonnes of silage. With rolled barley at \$225/tonne and silage at \$57/tonne, the value of hay and straw is about \$110 and \$80 respectively.

Give me a call if you are looking for ways to stretch silage supplies.

Darryl

4

Beef Bits, March 10, Seasonal feeding challenges

Increasing day length (changing eating patterns), increased wind, muddy pens etc. are thought to contribute to the increased rates of bloat and foot rot observed in the spring.

Increased levels of zinc and/or organic iodine (EDDI) in the supplement may help prevent foot rots. 1.5 kg EDDI (7.4%) in the supplement costs about \$7.50/tonne of supplement (~ 0.3 cents/hd/d). An additional 5 kg of zinc sulfate in the supplement costs \$8.50/tonne of supplement (~ 0.4 cents/hd/d). Feeding antibiotics in specific problem pens is more effective and costs about 5½ cents/hd/d (2 g/hd/d of oxytetracycline)

Besides spring conditions, high grain prices give us incentive to process grains more aggressively; both of which can contribute to bloat. Ensuring monensin levels are at 33 ppm will help reduce bloats. Increasing monensin levels from 25 to 33 ppm will add about \$12.30 / tonne of supplement (about \$ 0.6 cents/hd/d).

Give me a call if you want to discuss.

Darryl

3

Beef Bits, March 5. Feeding practices in the US.

Feeding trends reported in a nutritionist survey: Journal of Animal Science 2007 85: 2772-2781.

29 consulting feedlot nutritionists working in the US were surveyed to summarize feeding recommendations and practices. Total number of animals serviced per year was 18,000,000, or an average of 621,000 for each nutritionist. Steam-flaked corn is the most common grain fed by their clients. Levels of roughage averaged 9% in winter and 8.3% in summer (most of my clients average 9%+ year round). Over 80% of nutritionists clients feed a by-product, primarily distillers grain (mostly wet). Recommended protein levels were higher (13.3% average, with 1% urea) than I recommend (12.5%); this is due to differences in digestion between corn and barley. Most recommended a maximum terminal implant window of 110 – 120 days. An average of 3.1 diets are used, each fed for 7 days (21 days) to get cattle onto finishing diets. Majority of clients feed cattle 2 or 3 times a day. 71% of clients feed added fat which is mostly tallow or yellow grease. Average energy concentration in finishing diets is 1.5 MCal/kg (higher than straight barley!). 41% of clients feed corn silage, 31% use alfalfa hay. Most nutritionists recommend feeding no vitamin D but more Vitamin A and E than NRC recommends. Recommended levels of minerals were similar to levels fed here with the exception of higher magnesium levels.

If you want the article, let me know.

Darryl

2

Beef Bits, Feb 14, Dietary yeast

From: Canadian Journal of Animal Science. 2006. 86:590 (abst.)

Lallemand's live yeast product (Levucell) recently received CFIA approval to be fed in beef diets with a claim of "increased daily gain when fed as directed". Such a claim by CFIA requires multiple trials with consistent results.

Levucell was evaluated locally in a commercial feedlot trial using 6 pens per treatment (1195 head total). Monensin levels were reduced when Levucell was included in finishing diets (22 vs 33 ppm). There was a trend ($P = 0.10$) for cattle fed Levucell to have better (+5%) daily gain and feed efficiency. Final weight was similar between treatments, but feeding the yeast resulted in fewer days ($P = 0.03$) to reach final weight.

Levucell cost about 4.5 cents per head per day. At this price, a 5% improvement in daily gain reduces cost of gain by $\frac{1}{2}$ cent/ pound gained.

1

Beef Bits, Feb 4, Vitamin E

From: Professional Animal Scientist, 13:47-54

Since Cargill has removed their requirement to finish cattle with elevated levels of vitamin E, some producers have chosen to save a bit of money and drop vitamin E to original levels. Others kept it in due to an Oklahoma summary of 21 comparisons that documents small but consistent improvements in daily gain and feed efficiency with elevated levels. This performance improvement was worth about 8 times more than the vitamin E cost. However, world prices of vitamin E have doubled in the past two months so potential returns have been cut in half.

If you want to discuss, or make a change in your vitamin E levels, give me a call.

Darryl
