Virtual Beef

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Ministry of Agriculture, Food and Rural Affairs

Ontario

Decisions, Decisions

Brian Pogue, Beef Program Lead – Genetics

Fall is an extremely busy time of year for the spring calving cow herd with lots of decisions to be made. This article gives an outline of what factors you should consider when addressing the most critical decisions.

Figure 1. Fall is a good time to assess the calf crop and plan for the coming year.

Calves

The first decision is about marketing calves. When is the best time to market calves? There are a large number of factors that can affect calf price. With the current market, you can be confident that you will be well paid, but how do you maximize your profit? The market continues to reward those producers who have larger uniform groups of calves. There is also an advantage to those who market in conjunction with other producers that have similar calves so that a dealer or backgrounder or feedlot can buy all their calves at one time. Have you considered selling direct into a branded beef program that has complete traceability? Can you get some data back on ADG and carcass traits of your cattle relative to others?

With the price of calves, buyers will want to minimize health risks. Check with your veterinarian on the best vaccination program for your calves. Buyers generally prefer live vaccines. Consider selling weaned calves to eliminate that stress for the buyer. Fenceline weaning or using nose tags and keeping the calves outside with some creep feed will keep the bloom and hair coats on your calves.

Replacements

With calves being worth such a high price, should you keep heifers as replacements to calve for the first time in 2 years, or are you farther ahead to purchase bred cows and/or heifers? That will depend on your breeding program and the availability of suitable females to go into your herd. There are always some producers who, for various reasons, are prepared to sell their cows and heifers. You just need to find them and realize there are several others who are looking as well. Do some calculations to determine what you can afford to pay for a good bred replacement based on your cost of production and compare that to your costs of keeping one of your heifer calves.

Culling Cows

Cull cows are also selling very well. Open cows cost you money, so pregnancy checking your cows is always a good management practice. Some veterinarians are now using ultrasound to preg check cows. Calves are worth a lot but a cull cow which will not be able to wean a good calf is not worth keeping. What about any cows whose calves you need to assist because of big teats or a low udder? What about those really late calving cows, will their light weight calves earn enough to justify the cow and has this cow been getting later each year?

Bulls

Are you happy with the bulls you have now? Do they calve easily, produce growthy calves and do the daughters make good replacement females? Is your herd small enough that you only have one bull? If so, have you considered buying bulls with others and rotating them around such that bulls are not mated to daughters?

Doing some homework in the fall and having a list of candidates will save some time in bull buying season next fall. Find someone that you trust to either purchase a bull for you or at least assist you in the process. This should be someone who understands your goals and will match up a bull to suit your herd.

Nutrition

Have you tested your hay and other feeds for nutrients? Visit with a feed salesperson/nutritionist about the results to develop a feeding strategy and consider possible supplements such as mineral to optimize the performance of your cowherd.

There are lots of resources available on the web at the OMAFRA website (http://www.omafra.gov.on.ca/english/ag.html) as well as others to help you with your decisions.

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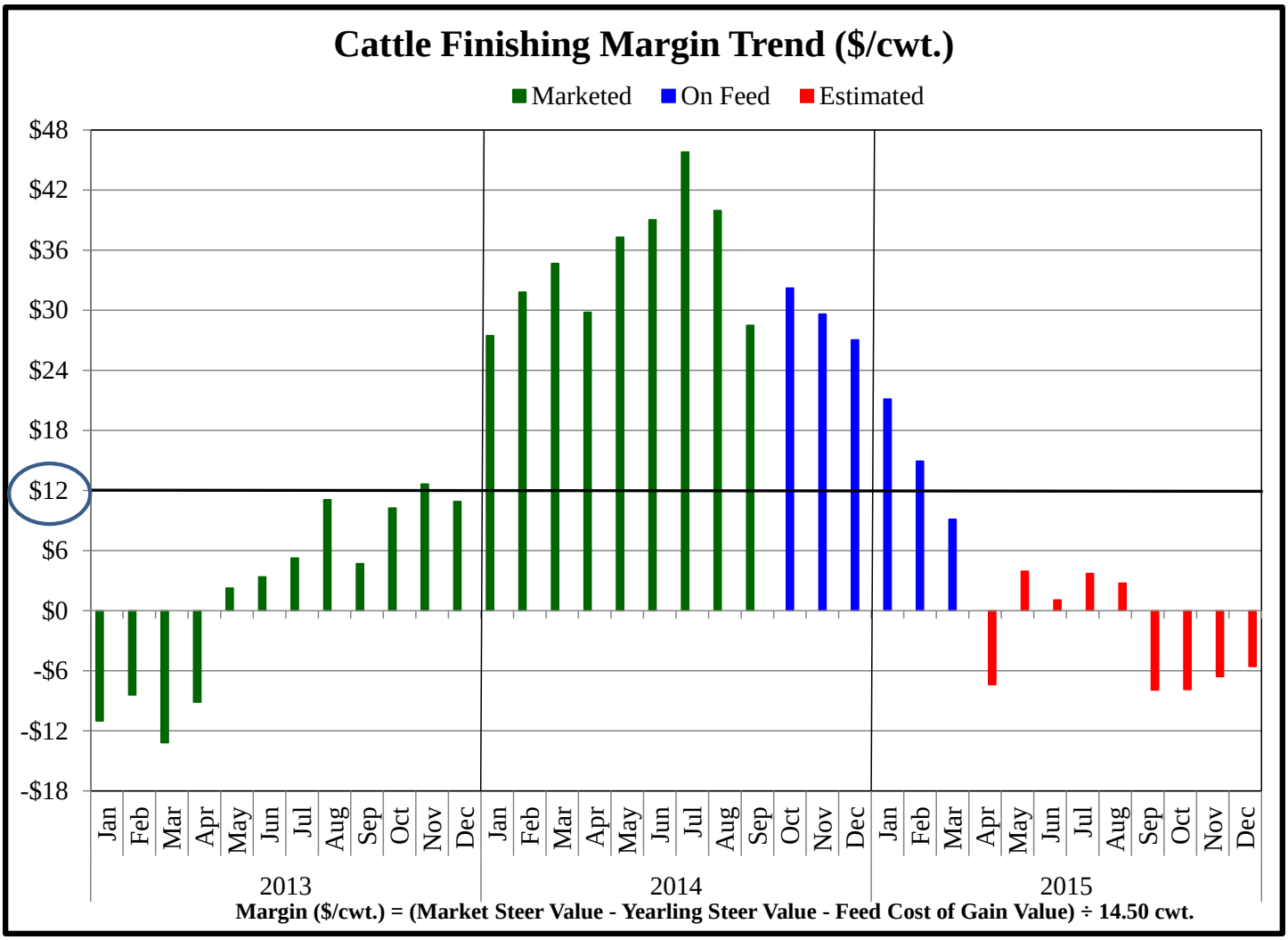
Tracking Cattle Feeding Margins

John Bancroft, Market Strategies Program Lead

Tracking a cattle feeding margin is another handy tool in a marketing dashboard to assist in making marketing and management decisions. A cattle feeding margin is an indicator of the margin after accounting for the variables with the greatest price risk (fed cattle, feeder cattle, corn and corn silage). The margin is the return to cover all other costs and provide a profit. It is simply the fed cattle value less the feeder cattle value and feed costs. It provides an on-going picture of past, current and potential future margins. Depending on the current market assessment and risk implications, an appropriate decision and action can be taken.

To illustrate cattle feeding margins the following Graph #1 and Table #1 was generated. It utilizes some of the assumptions used in the weekly Beef Farmers of Ontario “Ontario Weekly Breakeven Yearling Steers” report. It assumes an 850 pound feeder steer being fed for about 26 weeks and gaining 600 pounds, to be marketed at 1,450 pounds. The same price sources are used for cattle pricing and the same feed budget. The feed pricing sources are different but with similar results. The assumptions and details are outlined after the graph and the table.

Graph#1 – Tracking a Cattle Feeding Margin



Time Periods on Graph:

- Marketed - The green bars show the actual margins achieved as the cattle are marketed.
- Cattle on Feed - The blue bars are the estimated margins of cattle on feed. The yearling steer value is established but the feed and market steer values will change with the market on a weekly basis.
- Looking Forward – The red bars are the estimated margins with all of the values being projected.
- **$12/cwt. Margin** – Example of a benchmark margin value to cover all other variable and fixed costs.

The basic assumptions used to generate the data in Table #1 and Graph #1are as follows:

- **Market Steer Value** is based on 1,250+ pound fed steer prices reported by Beef Farmers of Ontario
- **Yearling Steer Value** is based on 800-900 pound yearly steer prices reported by Beef Farmers of Ontario
- Feed Costs are based on using 1.79 tonnes of corn (Avg. of Huron FOB Farm & Western Ontario Feed Corn), 1.21 tonnes of corn silage (8.5 x the $/bushel corn price), and 0.13 tonnes of commercial supplement. A 26 week rolling average of the feed cost is used.
- **Projected values** used for fed market steers, yearling steers, and corn are calculated using basis adjusted futures values at the market close on Thursday, October 2, 2014.

Margin ($/cwt.)
= (1450 lb. Market Steer Value – 850 lb. Yearling Steer Value – 600 lbs. Feed Cost of Gain) ÷ 14.50 cwt.

Special Notes for Table 1:

- The values shown in **Green** are actual data, values in **Blue** are estimated when cattle are on feed, and values in **Red** are looking forward at feeder cattle to be purchased in the future.
- The **Green Bar** in the Production Stage Column indicates the month that Fed Cattle are currently being marketed from and the **Blue Bar** indicates the sale month for Feeder Cattle currently being placed on feed.
- The Feed Inputs indicate the values used for grain corn and corn silage to calculate the feed costs.

This graph and table are intended as a guide and demonstration of fed cattle margins based on the indicated assumptions. Individuals need to generate their own margins that apply their market conditions, cattle feeding situation and costs to calculate an applicable historical and future margin.

Table 1. Data Used to Determine the Monthly Fed Cattle Margins

Fed Cattle Margin Calculator						Production Stage	Feed Inputs	
$/cwt.		Market	Yearling	Feed	Margin		Corn ($/bu)	Silage ($/tonne)
2013	Jan	$117	$139	$113	-$11	Marketed	$6.75	$57
	Feb	$118	$130	$120	-$8		$6.79	$58
	Mar	$117	$140	$115	-$13		$6.90	$59
	Apr	$114	$134	$108	-$9		$6.13	$52
	May	$121	$128	$105	$2		$6.34	$54
	Jun	$125	$134	$103	$3		$6.54	$56
	Jul	$124	$134	$97	$5		$6.33	$54
	Aug	$124	$126	$95	$11		$5.93	$50
	Sep	$119	$130	$93	$5		$5.53	$47
	Oct	$120	$124	$90	$10		$4.49	$38
	Nov	$123	$127	$86	$13		$4.13	$35
	Dec	$121	$132	$80	$11		$4.26	$36
2014	Jan	$139	$137	$75	$27	Marketed	$4.33	$37
	Feb	$146	$144	$71	$32		$4.56	$39
	Mar	$150	$147	$69	$35		$4.90	$42
	Apr	$149	$154	$69	$30		$5.02	$43
	May	$154	$149	$71	$37		$4.99	$42
	Jun	$161	$156	$73	$39		$4.76	$40
	Jul	$167	$155	$74	$46		$4.46	$38
	Aug	$167	$164	$74	$40		$4.63	$39
	Sep	$158	$169	$74	$28		$4.64	$39
	Oct	$166	$177	$73	$32		$3.99	$34
	Nov	$168	$186	$70	$30	On-Feed	$3.82	$33
	Dec	$169	$195	$68	$27		$3.98	$34
2015	Jan	$172	$210	$66	$21		$3.96	$34
	Feb	$169	$217	$65	$15		$3.92	$33
	Mar	$169	$228	$63	$9		$4.01	$34
	Apr	$161	$244	$62	-$7		$4.07	$35
	May	$166	$232	$63	$4	Looking Forward	$4.22	$36
	Jun	$165	$234	$64	$1		$4.33	$37
	Jul	$163	$226	$65	$4		$4.67	$40
	Aug	$163	$226	$67	$3		$4.80	$41
	Sep	$154	$228	$69	-$8		$4.87	$41
	Oct	$155	$228	$70	-$8		$4.53	$39
	Nov	$155	$226	$71	-$7		$4.34	$37
	Dec	$156	$226	$71	-$6		$4.47	$38

What is needed to develop a cattle feeding margin?

- Working knowledge of an excel spreadsheet
- Historical basis data for corn, feeder cattle and fed cattle
- Feed budget for the cattle operation
- Determination of what a good margin is for the operation. This means looking at all the other costs associated with feeding cattle that are not included in the margin calculation. i.e. health, interest, overhead, trucking, death loss, marketing
- Some historical margins to use as benchmark data when looking at forwarding looking margins.
- Understand the function of the risk management tools available and determine the comfort level of using them to manage the margin risk.
- Marketing resources and information to assist in making decisions.
- A comfortable knowledge and experience level with margin calculations and the assumptions used.

The concept of tracking margin is basically the idea of calculating a "crush margin" for cattle. The original idea of "crush margin" comes from the soybean processing industry. The term "crush" refers to the crushing of soybeans to produce meal and oil. Market traders use the soybean, soybean meal and soybean oil futures to generate margin numbers to manage for profit opportunities. An example of a cattle crush margin is the, "Iowa State University Yearling to Finish Crush Margin." The assumptions, historical and future margins for the Iowa model are posted at http://www.econ.iastate.edu/margins/ .

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Beef Cow Winter Feed Utilization

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In Ontario, most beef cows are fed a significant amount of conserved forage during winter. While extending the grazing season with stockpiled grass and annual forage crops has reduced the length of the feeding season on many farms, there is still a lot of baling and chopping done in preparation for winter! Harvesting, storing and delivering the herd's winter rations are major expenses, up to 50 % of the cost of keeping a cow. Even small improvements in the system can result in significant savings. After all of the effort and expense of creating the feed inventory, ensuring that it is being efficiently utilized by the animals is the critical last step.

Efficient feed utilization includes:

- Matching the quality of the forages to the right animal group
- Monitoring feed disappearance
- Minimizing feed wastage
- Comparing the amount of feed offered to what the cows should be consuming

The better we understand how feed is being utilized, the more effectively we can manage the winter feeding program.

Feeds and Feed Terminology

Nutritionists use a variety of terms when talking about feeds and feeding. It's important to have a working knowledge of them in order to be able to use the information presented in lab analysis reports and animal requirement tables, as well general feeding management. A list of some of these terms and their meanings are presented in Table 1.

Table 1. Feeding Terms and Definitions

- As Fed Basis: the weight of a sample of feed as it is offered to an animal, **including** the moisture that is contained within the feed.
- Dry Matter Basis: the weight of a sample of feed **after** the moisture has been evaporated out of it in a drying oven
- Dry Matter Intake: the amount of dry material that the animal consumes. The cow's capacity to eat forage is primarily determined by the physical volume of the rumen and how quickly food is processed along the digestive tract. Within the range of moisture levels of typical stored forages, dry matter intake remains constant. With wetter feeds, cows just drink less water.
- Bunk space: the amount of room available for each cow to eat at a feeding location (feed bunk, bale feeder or uncontained bale or stack) when all are eating at the same time.
- Free choice: the animals have feed available to them for most of the day
- Limit fed: the animals are provided with a specific amount of feed during each feeding period, which is less than what they would eat on a free choice basis
- Feed Offered: the total amount of feed which is taken out of storage and placed in feeders or feeding locations
- Feed Consumed: the amount of feed which is actually eaten by the animals, not including wastage, or refusals
- Feed Wastage: feed which is offered but cannot be consumed because it is tramped into mud and bedding, and/or soiled by manure or urine
- Feed Refusal: feed which is offered but not consumed prior to offering new feed
- Feed Disappearance: the total amount of feed which is taken out of storage and offered to the animals which is not recovered and available to be fed at a later time

Dry Matter

Good feeding management starts with an accurate prediction of how much of a particular feed the cows are expected to be consuming in a particular situation. In order to do this, the first thing we need to deal with is whether we are referring to feed intake and nutrient content on an As Fed basis (AF) or a Dry Matter basis (DM).

All feeds contain at least some moisture. But since nutrients such as energy, protein and minerals are only contained within the dry matter, the amount of nutrients the cow gets is solely determined by the amount of dry matter she consumes. The cow adjusts to the amount of moisture in the feed by regulating how much water she drinks - the higher the proportion of water in the feed, the less the cow drinks. In general, the maximum amount of forage a cow can consume is based on her capacity to intake dry matter, and is independent of moisture content.

Example Dry Matter Calculations

"Dry" bales of hay typically contain about 15% moisture and 85% dry matter, while wrapped baleage may contain around 45% moisture and 55% dry matter. Let's assume we weigh a 4 ft X 5 ft bale of dry hay and get a reading of 850 lbs … this is the As Fed weight of the bale. So what does this information mean? Assuming the bale contains 85% DM …

The amount of dry material in this bale is:

850 lbs AF X 85% DM = 723 lbs of DM

The amount of moisture in the bale is:

850 lbs AF X 15% moisture = 127 lbs of moisture

If this same forage had been baled "green" and wrapped up as a 4 ft X 5 ft bale of silage, its scale weight would be much greater, say 1300 lbs (it's As Fed weight). However, the actual amount of dry material would still be the same (723 lbs), and all of the extra weight would be from additional moisture. In this case:

The total amount of moisture in the silage bale would be:
1300 lbs AF – 723 lbs of DM = 577 lbs of moisture.

The % of dry matter in the silage bale would be:
723 lbs / 1300 lbs X 100% = 56% DM.

The % of moisture in the bale would be:
577 lbs / 1300 lbs X 100% = 44% moisture

Assuming the above hay and silage bales contain identical plant material (species, degree of maturity etc.), a cow's intake of **dry matter** would be quite similar regardless of whether she is fed the dry bale or the silage bale, although there may be a slight decrease in dry matter intake (DMI) over time for the ensiled feed. Of course, the total scale weight of feed consumed by the cows would be much greater when fed the baleage.

So if we want to measure the nutritional value of a feed, relate it to animal requirements, and be able to compare it to other feeds, it is essential that we deal with nutrient content on a DM basis. Likewise, if we want to evaluate the feed intake of animals in terms of nutrients supplied, we have to convert scale weights (as fed basis) to dry matter intake (DMI).

Feed Intake Estimates

Knowing the expected feed intake for a group of animals is an essential step in evaluating diets and feeding systems. Feed intake of beef cows is affected by a number of factors, including body size, body condition, physiological state (dry, lactating, pregnancy etc.) the palatability and digestibility of the feed, and the environmental temperature. Table 2 contains some useful guidelines for the forage dry matter intake capacity of beef cows as a % of their body weight.

Table 2. Forage Intake Capacity of Beef Cows[1,2]

Forage Type and Maturity	Stage of Production	Dry Matter Intake Capacity (% of body weight)
Low quality (<52% TDN)	Non-lactating	1.8%
	Lactating	2.2%
Average quality (52 – 59% TDN)	Non-lactating	2.2%
	Lactating	2.5%
High Quality (>59% TDN)	Non-lactating	2.5%
	Lactating	2.7%

[1] Hibbard, C. A. and T. A. Thrift. 1992. J. Anim. Sci. 70:(Suppl. 2). (Abstr.).
[2] assumes that protein requirements are met in total diet

Forage intake increases as quality increases. This is due to a combination of both increased palatability and improved digestibility of the better forage, which speeds up rate of passage through the digestive tract.

Let's look at the expected intake of a 1400 lb dry cow in good body condition being fed average quality hay on a free choice basis …

DMI = 1400 lbs X 2.2%
= 30.8 lbs of dry matter

Since this is on a dry matter basis, we have to convert to it to an as fed basis in order to relate it to the actual weight of hay being consumed. If this is the same hay we looked at earlier, it would contain 85% DM. So…

As Fed weight = 30.8 lbs DM / 85%DM
= 36.2 lbs of hay as fed

What would happen if we were feeding the same quality forage but it had been wrapped instead of dried down? The cow would still consume about the same amount of dry matter (30.8 lbs), but the actual weight of feed consume would be much higher.

As Fed weight = 30.8 lbs DM / 56% DM
= 55 lbs of silage as fed

Other Factors Affecting Dry Matter Intake

For any specific feeding situation, environmental factors such as air temperature and yard condition can impact dry matter intake, in addition to animal class and forage quality. Some environmental adjustment factors are given in Table 3.

Table 3. Dry Matter Intake Adjustments for Environmental Factors[1]

Environmental Factor	Dry Matter Intake Adjustment Factor Multiplier
Average Daily Air Temperature	
25 to 35 C	0.90
15 to 24 C	1.00
5 to 14 C	1.03
-5 to 4 C	1.05
-15 to -6 C	1.07
< -15 C	1.16
Mud Depth	
None or minimal	1.00
Moderate (4.0 – 8.0 inches)	0.85
Severe (12 – 24 inches)	0.70

[1] NRC 1987. Adapted from Predicting Feed Intake of Food Producing Animals

Feed Intake vs. Feed Disappearance

When farmers talk about the amount they are feeding their cows, they are usually referring to the amount of forage offered and which **disappears** from the inventory. This will always be larger than what the cows are **actually** consuming. The difference is due to several factors, including:

- the wastage of forage as it is being moved from storage
- feed tramped into the ground or bedding,
- feed soiled by manure or urine,
- feed which is left uneaten until the next lot of feed is delivered.
- inedible crusts on bales which may be removed prior to feeding.

It's important to have a good idea of how feed disappearance matches up with the expected intake of the cows. If the gap is too wide, after adjusting for typical wastage, there may be some issues with the feeding system that can be corrected in order to save feed and therefore money. If actual feed intake is significantly lower than anticipated, after accounting for wastage, there may be an issue with the quality of the forage. Table 4 has some guidelines for evaluating various levels of feed disappearance.

Table 4. Interpretation of the Difference between Observed Forage Disappearance and Predicted Intake [1]	
% Difference[2]	**Interpretation**
< 6%	Excellent utilization of forage
6% to 10%	Very Good utilization; some slight improvements may be possible
11% to 15%	Good utilization; some improvements possible
16% to 20%	Medium utilization; significant improvements possible
21% to 25%	Poor utilization; very significant improvements possible
>25%	Very Poor utilization; critically evaluate feeding system

[1] forages fed to beef cows under typical on farm conditions
[2] (Observed disappearance – Predicted intake) / Predicted intake X 100

Here's an example of a feeding scenario:

- 50 cow management group
- Cows average 1500 lbs, in good body condition, dry, mid third of pregnancy
- Average daily temperature is -5 C, feeding area is sheltered from the prevailing wind
- Ground conditions are dry
- Being offered 4 ft X 4 ft dry hay bales which weigh 600 lbs
- Hay was tested and is 84% DM with 54% TDN (DM basis)

What is the expected dry matter feed intake of these cows?

Basic cow dry matter intake:
DMI = Cow wt. X % DMI (per lb of cow wt.)
DMI = 1500 lbs X 2.2%
DMI = 33 lbs

Adjustment for daily air temperature = 1.05
Adjustment for mud = 1.00

Cow DMI adjusted for environment:
DMI = 33 lbs X 1.05 X 1.00
DMI = 34.7 lbs

What is the expected actual (as fed) amount of hay which would be consumed by these cows? We need to convert our estimated DM intake to an AF basis for the hay been offered.

As Fed Intake = DMI lbs / % DM in the hay
AF Intake = 34.7 lbs / 84% DM
AF Intake = 41.3 lbs

So we would expect each cow to consume about 41.3 lbs of hay per day. For the feeding group of 50 cows this would be:
41.3 lbs X 50 hd = 2065 lbs of hay
Converting this to bale of hay,
2065 lbs / 600 lbs = 3.44 bales of hay per day

The group is being fed an average of 4.0 bales per day, with a very minimal amount left in the feeders. How does this feed disappearance match up with what is expected? Let's look at it on a per hd basis ….
Feed disappearance/hd = 4.0 bales X 600 lbs / 50 hd
= 48 lbs/hd/day

We had estimated the hay disappearance for this group as 41.3 lbs/hd/d. The difference between disappearances estimated intake:

Difference = disappearance – estimated intake
= 48 lbs – 41.3 lbs
= 6.7 lbs
On a percentage basis this would be:
Difference / estimated intake X 100%
6.7 lbs / 41.3 lbs X 100% = 16%

This indicates that about 16% of the feed which is being offered is not actually being eaten by the cows. This falls under the Medium utilization category (Table 4), so there is likely significant room for improvement. It would be a good idea to closely observe the cows' feeding behavior and see how much hay is being pulled out of the feeder and lost on the ground, as well as how much forage is being left uneaten in the feeders. In trials, hay wastage when feeding round bales has been measured from 5% to 40%, with the higher range occurring when the bales are rolled out on the ground. You can compare the design of your feeders with those evaluated in a feed wastage trial[1]

The Bottom Line
Examining the winter feed utilization of your cow herd is an excellent management tool. Comparing the amount of feed you are going through to what is expected for your situation gives you the information needed to evaluate the feeding system and take corrective action if needed. Since feed accounts for such a large portion of overall costs, it's important to ensure that "disappearance" matches up well with cow requirements.

References:
[1] The Disappearing Act Efficiently Feeding Beef Cows Round Bales
http://www.omafra.gov.on.ca/english/livestock/beef/facts/roundbales.htm

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Nutrient Management eLearning Courses Article

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