

## Drought Options Supplementing Straw and Chaff to Beef Cows

### Chaff and Straw Residues

Chaff and straw residues are a low cost way of feeding cattle for Alberta cow/calf producers. However, to effectively utilize these feeds producers must pay careful attention to beef cow nutrition so these feeding programs work effectively, actually lowering unit beef production costs as opposed to increasing them through poorer animal performance and increased metabolic dysfunction.

**Table 1. Summary of Chaff and Straw Residues  
Northeast Alberta (1996-1998)**

Sample	CP (%)	Energy Mcal/lb	Cal (%)	Phos (%)
Wheat Chaff	4.3	0.79	0.23	0.08
Wheat Chaff & Straw	3.7	0.75	0.21	0.07
Barley Chaff	5.9	0.95	0.51	0.12
Barley Chaff & Straw	4.6	0.84	0.41	0.11
Oat Chaff	6.3	0.92	0.70	0.13
Oat Chaff & Straw	4.9	0.79	0.29	0.10
Pea Chaff	11.0	0.84	2.21	0.15
Pea Chaff & Straw	6.8	0.67	1.36	0.11

The most important part of straw based rations is ensuring that cattle are in good body condition prior to beginning the program. Straw and chaff residues are meant for mature cows that are in good shape and have finished growing. Using straw rations for growing and/or thin animals will result in animals that are nutritionally deprived, likely affecting calving and rebreeding success.

From 1996 to 1998 a survey of over 200 samples of chaff and chaff/straw combinations was collected in Northeast Alberta. Survey results showed huge variances on the feed values, emphasizing why it is so important to test feeds and make sure that rations are balanced to maintain optimal animal performance.

Chaff and chaff/straw rations are generally suited to mature beef cows in the second to early third trimester. Maintaining a 1,400 pound mature beef cow with a good to better body condition of at least 6 (scale 1-9) will require a minimum of 6.5% Crude Protein (CP) and 54% Total Dietary Nitrogen in her ration. The results from the survey on chaff and chaff/straw residues (Table 1) make it quite clear that many of these feeds will come short to maintaining the above-mentioned cow.

As a result, some form of supplementation will have to occur in order to achieve proper animal performance; the most effective type being protein supplements.

### Nutrition and The Cow

Protein supplementation of chaff and chaff/straw combinations (CP < 6%) has been proven as an effective way of improving dry matter intake and digestion, resulting in better maintenance of cow body weight and condition over the winter months. Protein supplements increase the amount of ruminal NH<sub>3</sub> available for bacteria digestion. In so doing, time for bacteria multiplication is reduced and bacteria digestion of the low-quality roughage is enhanced. Enhanced throughput of roughage then results in an increase in dry matter intake and subsequent animal performance.

Chaff and straw rations are maintenance rations and do not work well to increase cow body condition. If animals are in poor condition it is recommended that they be segregated and fed a ration containing some sort of energy supplement so proper body condition can be achieved.

Cow body condition is the number one factor controlling reproduction and rebreeding success. Significant research has been done studying body condition pre-calving, pre-breeding and the effects on conception rates.

### Protein Supplements

The choices and claims of protein supplements are endless. Supplements vary from meal-based like canola and soybean meal, to lick tanks and blocks, to grain by-products and alfalfa. Each has merit, some more than others. Self fed supplements, like lick tanks and protein blocks, may have a purpose in grazing situations when there is a desire to

minimize the effects on grazing behavior by having the cattle gather up every second day as in the situation with hand fed supplements. However, regulation of intake on self-fed supplements is next to impossible. Many of these supplements contain high quantities of non-protein nitrogens which are poor cousins to natural proteins in the case of supplementing low quality roughages. Finally, these supplements on a cost per pound of CP-basis, are typically high priced.

**Table 2. Cost Comparison of Protein Supplements (October 2001)**

	% NPN	% CP	\$/Ton	\$/lb of CP
Canola Meal	0.0	40.0	210	0.26
Wheat Shorts	0.0	16.0	150	0.47
32 % Beef Suppl.	47.0	32.0	234	0.37
Pea / Lentil Pellets	0.0	20.0	150	0.38
32% Lick Tank	69.0	20.0	250	0.63
20% Protein Block	0.0	20.0	509	1.27
20% Protein Lick	0.0	20.0	768	1.92
Alfalfa Cubes	0.0	16.5	180	0.55
2 <sup>nd</sup> cut Alf-Long Stem	0.0	18.0	150	0.42
Peas	0.0	20.0	175	0.42

Concentrate and meal-based supplements are another very effective form for supplementing straw rations. These supplements have levels of CP > 35% and are very digestible. However, due to the high CP values and their physical form, these types of supplements have to be mixed and/or processed with other feeds in order to achieve proper animal intakes. This can result in increased costs due to handling and processing. Processed supplements can be quite beneficial because they can be blended as a carrier for minerals, vitamins, and/or ionophores such as rumensin.

Concentrate supplements need to be hand fed, so labour can become a limiting factor. When using skip-a-day feeding programs, the cost can be reduced and, in fact, feeding rates improved due to less variation in intake with higher levels of feeding. Ideally supplements blended to achieve an overall CP value of 18-20% and fed at 5-6 pounds daily (or 10-12 lbs. every second day) will work the best. In this case, feed peas would also work quite effectively.

Another source of supplemental protein overlooked, and often underestimated for its potential, are high quality forages such as alfalfa hay or haylage. The advantages of forage supplements are several. With forage type supplements, overall rumen function is enhanced. Alfalfa hay and/or haylage is also a rich mineral and vitamin source and so works well as a mineral supplement. The disadvantage, however, is that alfalfa can be bulky to feed and so can be more machinery and labour intensive. Still, when evaluated on the basis of \$/lb. of CP (Table 2), forage supplements can show significant advantages.

### Summary

Straw and Chaff residues are good feed alternatives for reducing ration costs for cows in second to early third trimester. However, they are meant for mature cows that are in good shape and have finished growing. Using straw rations for growing and/or thin animals will result in animals that are nutritionally deprived which will likely effect calving and rebreeding success.

Take the time to ensure that your ration is balanced. Cattle need free choice access to straw. Careful attention needs to be paid to digestible intake protein, calcium and phosphorus levels. Remember that once the cows have calved the proportion of the straw in the ration will have to be significantly reduced in order to meet the cows' increased energy and protein requirements. Working with a nutritionist or your local feed company will give you a better idea of the proportion that can be included.

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If you have questions or require further assistance on this topic, please call the AgInfo-Center at 1-866-882-7677