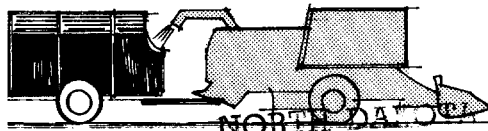


STRAW and CHAFF for Wintering Beef Cattle

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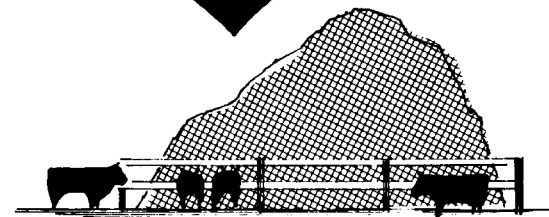
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STRAW AND CHAFF FOR WINTERING BEEF CATTLE

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STRAW AND CHAFF from small grain crops can best be used as a part of the wintering ration for mature beef cattle. The economic use of straw and chaff depends on each cattleman's situation.

For the operator who (1) is short of pasture and/or hayland for his present beef operation, or (2) is presently using his pasture and/or hayland to full capacity and wants to increase his herd size, straw and chaff offers an opportunity. Such an operation can increase his total roughage supply, and/or release hayland acres for pasture to provide added grazing during the pay-off period--when the cow is milking and the calf is growing.

The operator with adequate pasture and hayland, who does not intend to increase the size of his cow herd, or utilize the available roughage with another enterprise, should not consider the added machinery investment necessary to collect additional forage that he will not require.

WHAT IS "STRAW" AND "CHAFF"?

Nutrition books list chaff in their nutrient analysis section as the glumes of the grain. Straw is considered as the plant stem and leaves. These definitions do not fit with the types of machines being used to collect straw and chaff. In this discussion, chaff refers to that material coming over the combine shoe which includes the glumes, many of the leaves, broken bits of stem, and the cracked and thin crop and weed seeds. Straw refers to the material that comes over the combine straw walker and would include primarily the stems of grain and weeds in the field.

ADVANTAGES OF COLLECTING STRAW AND CHAFF:

1. Straw and chaff, as by-products of grain production, can be an inexpensive source



of roughage if the operator can utilize it through added beef cattle production.

2. A straw and chaff catcher will collect weed seeds and grain that could volunteer in future years and affect subsequent crop yields.
3. In many areas, straw and chaff for livestock bedding costs as much as hay.

PROBLEMS IN HANDLING AND FEEDING:

1. Proper handling and storage of straw and chaff is necessary to maintain quality. Rain on straw in the windrow will reduce quality and palatability.
2. Small piles in the field are vulnerable to heavy rains and trampling by cattle, reducing the amount and quality of the feed. In adverse weather it may be difficult to remove straw piles from the field. This may cause a tillage problem the following year.
3. Proper supplementing of straw and chaff is necessary to attain a balanced ration.

VARIATIONS IN NUTRIENT VALUE:

A big variation will exist from field to field and farm to farm in the makeup, and consequently the nutrient value of straw and chaff. Value depends on the weediness of the field, how well the combine operator adjusts his machine to get most of the grain into the tank with a minimum of cracked grain, and grain maturity at cutting time.

STRAW AS A FEED:

Straw is high in fiber and lignin. Both are associated with low digestibility. Straw is low in protein, calcium, phosphorus and vitamin A. The chief value of straw is in the energy it contains. Energy or "heat increment" is produced as the cow digests the straw. This heat keeps the animal's body warm but does not provide energy for gain. The TDN and protein values of straw and hay are as follows:

CATTLE			
	TDN	PROTEIN	DIGESTABLE PROTEIN
	Per cent	Per cent	Per cent
Oat Straw	47	4.0	1.3
Barley Straw	36	3.6	0.5
Wheat Straw	43	3.2	0.4
Alfalfa Hay	52	15.2	10.8
Mid-Bloom Prairie Hay	46	7.4	3.7
Late-Bloom Prairie Hay	45	6.0	2.0

Mature wintering cattle can effectively use poor quality roughage as part of the ration. As the only roughage, the rate of digestion is too slow to permit normal intakes. For example, a 1000-pound cow would eat about 20 pounds of the alfalfa hay and digestion time would be 50 to 60 hours. The same cow would only eat 12 to 14 pounds of wheat straw and digestion time would be 75 to 90 hours. However, the same cow would eat 10 pounds of alfalfa and 10 pounds of the straw with digestion time of 60 to 70 hours. The protein of straw is low and very poorly digested.

CHAFF AS A FEED:

The value of chaff is difficult to determine. It depends on the amount of grain, weed seeds and other material such as pigeon grass leaves that goes through the combine. Chaff is lower in fiber and higher in protein than straw. Chaff is usually more acceptable and contains about twice as much protein as straw.

SUPPLEMENTING STRAW AND CHAFF:

Protein - A ration for wintering cows on straw and chaff can be supplemented for protein by feeding alfalfa hay, grain or a commercial protein supplement.

Minerals - Straw is deficient in both phosphorus and calcium; this deficiency can be met by feeding a high phosphorus livestock mineral or a mixture of 50 per cent steamed bonemeal or dicalcium phosphate and 50 per cent trace mineral salt.

Bearded grains (wheat and barley) may cause sore mouth if heads are rough awned.

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RATIONS* WINTERING BEEF COWS WITH STRAW AND CHAFF:

1. 10 lbs. straw, good quality
9 lbs. alfalfa hay, good quality
2. 10 lbs. straw, good quality
20 lbs. corn silage
1½ lbs. high protein supplement
3. 10 lbs. straw, good quality
10 lbs. prairie hay
4 lbs. oats or barley
4. 12 lbs. straw, good quality
5 lbs. oats and barley
¾ lb. protein supplement, plus Vitamin A

Molasses is most beneficial when added to straw and poor quality roughage. Molasses in small amounts stimulates growth of rumen bacteria that break down the roughages to more available nutrients. Feed from one-half to two pounds of molasses per head per day. Mix one-third molasses with two-thirds hot water and pour or sprinkle on the roughage.

STRAW PRODUCTION PER ACRE:

Yields of straw and/or chaff per acre will vary due to grain yield per acre, weed growth and proper adjustment of harvesting machine.

Farmers using straw and chaff savers indicate that they can collect 500 to 700 pounds of materials per acre as chaff (as defined earlier). A rule of thumb would indicate a 1500 to 2000 pound straw and chaff yield on 20 bushel average wheat crop. The same yield could be expected on a 25- to 30-bushel barley or 35 to 40-bushel oat crop.

Depending on the length of your winter feeding period and yields obtained, two acres of straw and chaff would supply winter forage for one cow.

EQUIPMENT NEEDS:

There are many methods of putting up crop residues. Dropping the straw into windrows and then loose stacking or baling will save the stems but lose the majority of the chaff, grain and weed seeds.

Straw and chaff collectors rear-attached on the combine are available. Prices of these machines vary considerably depending on size and other

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features. Some of the are designed to collect straw or chaff alone, or both. Some farmers have built these machines. The cost and adaptability of home-made units depend on available farm scrap materials, and the skill and ingenuity of the farmer-builder.

COST OF STRAW AND CHAFF:

Little is available on operating costs of straw savers. Costs include the added fuel necessary to pull them and the additional time involved in dumping, and repair time. Annual use cost to cover depreciation, interest on investment, repairs and insurance on the machine can be calculated by taking original new cost times 15 per cent. Per-ton use costs can be determined by dividing annual use cost by the tonnage put up.

Field loading and haulage costs would be similar to comparable operations in the hay field.

WILL A STRAW AND CHAFF SAVER PAY FOR YOU?

The individual operator will have to determine for his own unique circumstances, whether the added investment, and added costs of the new machine will pay its way.

1. Is more roughage needed on the unit over and above present production to either (a) maintain present herd size, or (b) increase size of beef cow enterprise?
2. Would the use of straw and chaff in the ration be an emergency measure for years when hay and pasture production is short? If so, the machine may be used only one year out of several, and the cost in the years it is not used must be charged against the forage collected in the year used.
3. If for emergency use only, could equipment presently owned do the job satisfactorily in short roughage years?
4. Is this the most economical alternative of acquiring added roughage vs (a) renting or purchasing added roughage-producing acres, (b) switching crop acres to forage production, (c) purchasing added forage needs.
5. Would this equipment have added value for putting up straw and chaff for livestock bedding?