



Feeding in Dry Conditions

This publication addresses issues related to feeding livestock, particularly after a growing season drought followed by late season moisture.

Adapting to alternative feeds

If drought during the early growing season is followed by rains that cause second growth, many producers may be obliged to look at alternative feed and revised feeding practices to help them maintain their herds. When considering their options, producers need to be aware of a number of issues.

There are numerous options available for alternative feedstuffs. Some of these are available in the local area, while others are made available through various brokers. While local feed sources in your immediate area should be used first, do not overlook how feeds from other areas may fit and complement your feeding program.

The tables on the next pages give the nutrient content of various feeds, and can be used as a guide. Specific diet limitations vary, as does nutrient content. Please contact a livestock nutritionist prior to planning your feeding program accordingly.

See tables pages 2 and 3

Caution when feeding greenfeed flax

Frozen flax can be used as greenfeed, but caution must be taken. At flowering, flax greenfeed has a crude protein that runs in the range of 12 to 14 per cent and a Total Digestible Nutrient (TDN), or energy level, of 60 to 65 per cent. This would be comparable to canola greenfeed. After

flowering, the nutritional value rapidly deteriorates to straw-like quality.

Producers should be wary when feeding greenfeed flax due to the potential hazard of prussic acid or hydrocyanic acid poisoning in livestock.

Conditions that cause plant growth to be stunted, such as drought, wilting or frost, can result in the buildup of cyanogenetic glycosides, which are converted to cyanide during the process of digestion. The highest concentrations are found in the leaves and seeds of rapidly growing plants. Depending on the concentration, the amount consumed and the type of animal being fed, cyanide frequently results in rapid

death. Levels of cyanide in excess of 200 ppm (parts per million) are significant.

Prevention is the key to avoiding prussic acid poisoning. Never turn hungry cattle out onto pasture that is recovering from drought or frost or onto succulent pasture. Properly cured hay and silage usually lose a majority of their cyanogenic potential.

If you are concerned about the prussic acid levels in your flax, have a prussic acid test done. If you have any questions, call your local livestock agrologist.

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Minimum forage for cattle - feeding suggestions

Some cattle producers may plan to restrict the amount of forage in their winter feeding program. Various feeding trials have shown that cows could receive as little as half a per cent of their body weight in dry matter forage when using whole corn grain as the concentrate to balance energy and protein requirements. This type of feeding program requires good knowledge of feeding management. There is little room for errors or mistakes, especially in very cold conditions.

Another option is to feed about one per cent of the cow's body weight as dry matter forage. The energy and protein are then balanced by feeding grain or fortified pellets. A few feeding guidelines

should be followed to avoid digestive problems. The hay or greenfeed should be fed whole or, if processed, should not be shredded shorter than three-inch lengths. The forage should be fed in the morning prior to feeding the grain or pellet concentrate. Do not feed more than six or seven pounds of concentrate at one feeding. Ideally, provide some straw or poor quality roughage, such as slough hay, prior to the afternoon feeding of concentrate. It is important to supply a balanced ration that meets all mineral and vitamin requirements.

Cows on this type of a feeding program will be hungry as their dry matter intake is not being met. Ensure that each animal is receiving its share of forage

and concentrate. Cows should be in good body condition prior to the onset of cold weather. Adjustments to the feeding program should reflect changes in outside air temperature. Provide adequate bedding and shelter from the wind to reduce effects of cold stress.

Sample Ration:

1,300 lb. Cow 7 Months Pregnant
Air Temperature -20° C
Body Score 3.0
Expected Calf Birth Weight 90 lb.

Alfalfa-Grass Hay 14 lb.
 Barley Grain 12 lb.
 18:18 Mineral 1.0 oz.
 TM Fortified Salt Free Choice
 Vitamin ADE 0.15 oz.
 (10 million IU Vit A/Kg)

Recommended dry matter intake is 33.4 lb. per day. This ration supplies approximately 23 lb. of dry matter intake per day. The expected body weight gain is about 0.8 lb. per day.

Feeding unconventional roughages

Continued from page 1 - "Adapting to alternative feeds." The following table gives the nutrient feed content of various feeds and can be used as a guide.

Feed	CP	TDN	Ca	P	ADF	NDF	RFV	
Alfalfa hay (mid bloom)	17.5	57.5	1.54	0.22	37.1	45.5	122.7	
Brome hay	11.1	55.6	0.57	0.16	39.2	62	87.6	
Alfalfa brome hay	14.5	56.5	1.21	0.17	38.3	54.5	100.8	
Wheat	Hay	10.6	54.7	0.22	0.2	41.3	61	86.5
	Silage	12.5	56.8	0.28	0.26	40.8	60	88.6
	Straw	4.16	42.5	0.23	0.09	52	71.5	63
Oats	Hay	11.5	57	0.37	0.22	36.5	58.5	96.2
	Silage	11.5	58	0.37	0.24	36	58	97.6
	Straw	4.5	44.5	0.26	0.14	43.5	65	78.7
Barley	Hay	11.2	58.4	0.39	0.25	37.3	59	94.4
	Silage	12.7	61.5	0.47	0.32	34.2	57.2	101.2
	Straw	4.2	43	0.23	0.18	48	67	71.5
Peas	Hay	14	56	1.3	0.21	39.1	50	108.7
	Silage	15.4	58	1.32	0.22	36.7	48	116.9
	Straw	6.4	46	0.6	0.19	41		
Lentils	Hay	14.1	56	1.22	0.22	38.9		
	Silage	14.5	56	1.22	0.22	38.2		
	Straw	6.4	46	0.65	0.2	41.5		
Canola	Hay	11.5	54	0.47	0.3	42.4		
	Silage	12.5	55	1.03	0.3	40		
	Straw	3.9	41.5	0.29	0.18	51		
Canary seed straw	4.63	41.5	0.24	0.11	52			

Legend

CP Crude Protein
 TDN Total Digestible Nutrients, an estimate of energy.
 Ca Calcium
 P Phosphorus
 ADF Acid Detergent Fibre (used to determine digestibility and energy)
 NDF Neutral Detergent Fibre (used as an indicator of feed intake)
 RFV Relative feed value is an index that reflects the fibre fractions, which dictate potential digestible dry matter feed intake. The higher the RFV, the higher quality feed value is obtained from the forage. RFV ranks forages relative to the digestible dry matter intake of full bloom alfalfa (RFV of 100, ADF of 41, and NDF of 53). Relative Feed Values decline as plants mature.

Improving the feed quality of straw

Many producers use straw as part or all of their feeding requirements. Cattle forced to subsist on straw rations without supplementation of energy, protein, minerals and vitamins will have problems meeting their nutrient requirements during the winter months.

Ammoniation may be a cost-effective way to increase the nutrient and feeding value of straw. Ammoniation improves roughage nutritive value by increasing crude protein content, roughage digestibility and intake by increasing palatability. You can expect the crude protein content of a wheat straw bale to increase from four to over seven per cent, and the digestibility to improve from around 38 per cent to approximately 48 per cent.

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Table continued from Page 1- "Adapting to alternative feeds."

Average nutrient content of base feeds and byproducts

Feed	Crude Protein	ADF	TDN Energy	Ca	P
#1 feed screenings (wheat)	15.1		86.66		
Barley	12.4	7.8	82.5	0.06	0.38
Barley screenings (thins)	13		80.55		
Canary seed screenings	17.65		78.8		
Canola & flax fines	21.66		96.4		
Canola meal	37.75		75.55	0.72	1.22
Chickpeas (Desi)	23.5		84.4		
Chickpeas (Kabuli)	22.6		88		
Coarse canola screenings	16.94		76.9		
Corn	9.2	3.1	89	0.06	0.31
Corn gluten feed or pellets	20		84	0.33	0.83
Distillers dried grains	35.2		73		
Frozen canola seed	21.1		109.5		
Grain dust	8.8		52.5		
Grain screening pellets	13.75		74		
Hulless Barley	13.55	5.63	86.6	0.06	0.41
Legume seed screenings	31.1		68.5		
Lentil screenings	20.5		76.6		
Lentils	24.5		81	0.11	0.43
Malt sprout pellets	28.5		70		
Mill run (wheat)	18.1		75.55	0.17	1.12
Mixed feed oats (wild oats)	13.5		72.2		
Mustard screenings	23		82.1		
Oat hulls	4.45		51		
Oats	11.7	15.2	75.5	0.08	0.39
Pea screenings	20		75.5		
Peas	23.9		87	0.11	0.44
Rye	13.2		84.5	0.06	0.34
Sunflower hulls	7.5		46		
Sunflower screenings	13.61		71		
Triticale	13.88		86.6	0.06	0.34
Wheat	14.5	5.8	88.8	0.07	0.38

Canola and mustard for hay and silage

Canola and mustard (brown, yellow and Oriental) can be fed to cattle, but precautions should be noted. These crops make palatable feed; however, it may take one or two days for cattle to become accustomed to the taste.

On a dry matter basis, crude protein averages 12 to 14 per cent and can be as high as 16 per cent. Total digestible nutrients (TDN) average 55 to 58 per cent. Some samples have shown higher levels of protein, some up to 17 per cent, as well as higher TDN values. A feed analysis is recommended to determine actual nutrient values. A feed analysis will also determine if nitrates are a concern.

To maximize total dry matter yield and maintain good protein and energy levels, the crops should be cut from the early podding stage just after the flowers have dropped to the stage where the lower leaves are starting to wilt. Producers have commented that these crops can be difficult to bale at proper moisture levels, and suggest crimping the hay to ensure more uniform drying. Canola tends to turn very dark as it cures; however, this does not seem to affect palatability.

Canola and mustard can be used for silage. These crops are high in moisture (75 to 80 per cent), and it may be difficult to wilt them down to 65 per cent moisture. Crimping will hasten the drying process. There may be seepage and ensiling problems if they are ensiled at a moisture content greater than 70 per cent. Some producers have had good results by filling the silo with alternating layers of canola and cereals cut for silage. This helps to reduce seepage problems and offers the opportunity to mix the layers when feeding the silage. Bacterial silage inoculants may be beneficial when ensiling these crops that are low in soluble sugars and carbohydrates.

Some producers have noticed that cattle tend to scour when fed this hay as the only source of roughage. It is recommended to feed no more than 50 to 60 per cent of the total feed intake as canola or mustard hay or silage.

Feeding brassica forages to cattle for long periods may inhibit trace mineral utilization, particularly copper and selenium. Ensure that recommended levels of copper and selenium are fed on a daily basis. Fortified trace mineralized salt and various mineral supplements contain varying levels of copper and selenium. These should be added to rations containing brassica forages or silage.

It is important to make note of what pesticides were applied to the crops prior to using them for feed. A number of grazing and feeding restrictions may apply to crops treated or sprayed with pesticides and herbicides. Read and follow label directions.

Improving the feed quality of straw

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The ammoniation process can be particularly useful where bales contain weed and grain seeds. The viability of weed and grain seeds in chaff and straw will be destroyed with ammoniation.

Ammoniation also stops mould growth in bales that are heating. Researchers from the Saskatchewan Research Council found that ammoniation of 35 per cent moisture hay with two per cent ammonia by weight with the polyethylene cover in place for 21 days completely inhibited mould development. When using anhydrous ammonia on feeds containing any green material, producers should watch for a feeding disorder called “Bovine Bonkers,” otherwise known as “Crazy Calf Syndrome.” Livestock may acquire this condition if they eat too much of this type of feed.

The increase in feed value from the ammoniation process is essentially determined by four factors: ammonia concentration, temperature, moisture and exposure time. The rate of reaction of ammonia with straw is faster at higher temperatures.



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For drought assistance or information on available programs and services, contact the Agriculture Knowledge Centre 1-866-457-2377.

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The nutritive value and response of straw to ammoniation is improved with higher moisture levels in the bales.

The straw ammoniation process involves sealing the straw in a gas-tight enclosure, adding approximately two to three per cent anhydrous ammonia based on the dry weight of the straw, and leaving it sealed for a period of time. The cost will be from \$8 to \$12 per bale, depending on the amount of ammonia used and the weight of the bales.

Anhydrous ammonia can be very dangerous if used improperly or by untrained personnel. The Agriculture Knowledge Centre will have a list of companies willing to perform that service for you.

Producers may also consider adding a liquid feed supplement to straw bales. The liquid feed supplement is primarily molasses and high levels of natural protein. It also has phosphorus, vitamins A, D and E, selenium and trace minerals. The supplement is specifically designed to improve palatability, add energy and improve rumen activity. The cost is approximately \$10 per bale when top dressing this product on forage bales.

A considerable variability in the quality of straw exists between seasons and fields, and even between bales taken from the same field. We recommend you analyze your winter feed supplies at a feed testing lab, particularly if feed supplies include feeds that you are not accustomed to feeding your livestock.

Saskatchewan Agriculture and Food staff at the Agriculture Knowledge Centre and/or Livestock Development Specialists can provide you with guidance on ration balancing.

Atypical Interstitial Pneumonia

Cattle producers need to be aware that Atypical Interstitial Pneumonia (AIP) is a very real threat to the health of their cattle. If you are moving cattle from dry, over-grazed pasture onto fresh, lush growth, your cattle may be at risk.

What is AIP?

AIP is a result of cattle consuming toxic levels of L-tryptophan, which is converted in the animal's rumen to a chemical which affects the lining of the lungs.

Causes:

AIP is triggered when hungry cattle from a dry or over-grazed pasture are turned out onto lush pasture. The pasture species does not seem to make a difference aside from the similarity that all the plants are actively growing. AIP commonly occurs in late summer to early fall.

Symptoms and treatment:

Onset is sudden with little or no forewarning, as cattle can be found dead within four to 10 days of the change in feed. Cattle exhibit laboured and open-mouth breathing, frothing at the mouth and anxiety. Affected animals tend not to graze and often stand apart from the herd. *Do not move cattle if these symptoms appear. Call your veterinarian immediately.*

The best treatment for AIP is often no treatment at all. If animals are moved or stressed, they may fall and die within minutes. If symptoms are not severe, your veterinarian may be able to treat with a diuretic or anti-inflammatory.

Prevention:

Grazing management is key to avoiding the risk of AIP. Before turning cattle out onto lush pasture, they should be fed with dry feed.

Access to the lush pasture should be restricted to one or two hours at first, and then supplemented with dry feed. Over the period of a week, gradually increase the time the cattle are allowed to graze until, at the end of the week, they are on pasture full time.

AIP is sometimes confused with nitrate poisoning. Your veterinarian will be able to distinguish this for you. If you have any questions, please call your local livestock agrologist.