Emergency Feeding of Livestock

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By

John H. Jones, Animal Husbandman, Texas Agricultural Experiment Station
A. L. Smith, Animal Husbandman, Texas Agricultural Extension Service
J. A. Gray, Animal Husbandman, Texas Agricultural Extension Service

It is an old rule of the range that it does not pay to move breeding stock to another part of the country and then return it to the former home. Such moves usually result in death losses, lower calf and lamb crops, and additional labor, feed and transportation costs. It is also difficult to get pasturage in emergencies. Rather, there is merit in the policy of selling out when conditions force a move so that the stock moves as the property of another operator. While many stockmen accept this as a result of experience, they are reluctant to follow it in hopes of rain and better prices. There is also a reluctance to dispose of carefully selected breeding stock.

Aside from movement or sale, another procedure is to reduce numbers, hold and feed the remainder. This has presently been done in many cases, and Drouth Relief enacted July 1 supports the latter plan. Concentrates, such as cottonseed meal or cottonseed cake, wheat, corn and oats have been made available at the respective prices per ton of $35, $36.66, $35.72 and $31.25. Hay may be made available at a price lower than present prices.

Two main considerations should get major attention if best use is to be made of the available feeds: (1) to use such feeds in such amounts as to keep the stock alive through a period of time, and (2) to use the feeds with some thought of maintaining production although curtailed by the supply and cost of the feed. In either case certain experiences gained from previous drouths and experimental work apply.

If there is no grass or forage available on the range or pasture, it is best to confine animals in a trap or dry lot where they will not waste energy walking in search of feed. Emergency feeds will go further if livestock are so confined. This will also prevent destruction of grass from trampling after it is too short for grazing.

1. Only the strongest and most valuable stock should be kept. The calves and lambs should be weaned as early as possible; also, all late calves should be sold to avoid cows nursing small calves in winter. It is easier to winter dry stock than wet stock and steers can be fed even more sparingly than cows. Calv-y heifers also need more care than dry females and are sometimes sold along with older animals.

2. Water and salt are always necessary, and the stock should have easy access to good water. A boggy, steep-banked water-hole is a good place to lose weak stock. Shelter to prevent chilling and conserve body heat helps with thin animals on short rations. A calcium or disodium phosphate (bone meal, mono calcium phosphate, di-calcium phosphate) or a soluble phosphate in the stock water is beneficial in practically all areas and may be particularly valuable under drouth conditions.

3. Conditions govern the lower limits of feed in maintaining animals. Seventeen pounds of good hay for a cow and four pounds of good hay for a ewe or nanny is considered a maintenance feed for these animals in practically any state of flesh. The question of how much less can be fed depends on several things:

(a) Animals in fair condition need to be fed only enough to maintain body weight.

(b) Fleshy animals may lose considerable weight without affecting production.

(c) Very thin animals need enough feed to offset the loss in weight due to giving birth.

(d) Animals that are in good condition in the fall will winter much more easily than thin animals. Flesh that can be kept on them in early winter will save feed before spring or after giving birth.

(e) The best feed should be saved for calving, lambing and kidding time. Use the lower quality feeds first and save the best feeds
for the weaker stock and young bred animals. Young bred animals giving birth in the spring should be fed separate from the older animals or many may be lost.

(f) Animals that lose weight but stay strong drop offspring of normal weight, but the young will not grow normally unless there is good feed, nor will the dam be likely to rebreed. It is the amount of feed during the suckling period that affects the weaning weight of the young animal. Temporary thinness of the female, particularly if a good offspring has just been weaned, does not justify culling.

(g) Open females may suffer privation and become low in body stores of Vitamin A potency without becoming sterile. Breeding will be delayed longer than for well wintered females, and there may be some "stunting", but they can with good conditions be developed for breeding.

4. More care, labor and attention to stock is necessary in emergency feeding than under ordinary conditions. Two general methods of feeding and wintering on grass have been used. Probably the most common method is to feed 1 or 2 pounds of cottonseed cake per cow or one-half pound per sheep or goat each day. The other method is to feed twice as much every second day. Those practicing the former believe better results are obtained from daily feeding and that in feeding larger amounts every other day the animals do not rustle as much for grass. Either method requires practically individual attention to provide fair shares of feed.

In the last 20 years many operators have resorted to self feeding cottonseed meal and salt mixtures. This has saved labor and provided uniform distribution of feed. Good results have been ascribed to the practice particularly when water was close by with available forage. Theoretically at least, the practice conflicts with the principle of conserving energy in that high intakes of salt demand high intakes of water, and the heat required to raise the water to body temperature practically equals the maintenance requirement. Commonly, salt and cottonseed meal mixtures range from 10 to 40 percent of salt. Other salt mixtures may contain ground grain. One such mixture consisting of 2 parts ground sorghum grain, 2 parts cottonseed meal and 1 part salt is described by the Australians as a salt fodder.

Ranchmen who have had experience in feeding salt and meal mixtures make the following suggestions for their use:

Feeding salt in combination with meal to limit consumption of the meal, to save labor and equipment with possibly less handling of livestock is deemed an emergency drouth measure. An adequate supply of clean water and plenty of roughage (dry feed or grass) should be available for meal-salt feeding to be practical over any extended period.

The greater the ratio of meal to salt (3 to 1 or better), the less chance there is for permanent injury or death loss to the livestock. If high energy feed such as corn, wheat, or oats can be included to provide the major portion of the ration with meal and salt, results will be much better.

Some operators feed the salt and meal mixture for 3 or 4 weeks then feed carbonaceous feeds for a like period. Such ration changes are much more advisable than straight salt and meal feeding over a period of 3 to 6 months or more. Location of the self-feeder will have an effect on the amount of salt needed in the mixture. By locating a feeder about a mile from water, livestock ate no more of a 10 to 1 mixture located near the water. The animals eating the 10 to 1 mixture made better utilization of the roughage available.

With native forage very scarce in most areas, salt-meal feeding without supplying some type of roughage feed is not advisable. Ranchmen have been able to get by with such a practice in the past reasonably well but they did have more forage on the range than now.

Another method of feeding breeding herds is to creep feed young animals from birth to weaning age.

Creep feeding young animals serves a dual purpose of developing young stock and insuring better condition of the dams at weaning time. Although primarily suited to the stock farmer or small ranchman, it can be used by the large ranchmen, particularly during drouth emergencies.

The creep is an enclosure having an opening large enough for young animals to enter but
too small for the dams. For best results from creep feeding calves, sheep and goats should be removed from the pasture.

Preferable locations for creeps are at watering places, bed grounds or near the shade. It is important that young livestock have access to the creep at their leisure.

The advantages of this method of feeding are as follows:

(a) Dams are not so badly suckled down, they go into winter in much fleshier condition, and they breed more readily.

(b) Young animals develop more size and weight, grow out more uniformly, and shrink very little at weaning time.

Shelled corn, oats, and cottonseed pellets are good feeds to use in creep feeding. If wheat is used, it should be ground for calves but corn and oats may be fed whole. Lambs and kids can be fed any of the grain feeds without grinding.

5. Trouble may be experienced when unloading and moving weak, drouthy animals to feed or pasture. There is also the problem of building them up gradually with immediate rest, water, salt and a light feed. Perhaps the best initial feed is a mixture of equal parts of alfalfa hay and a good quality grass hay. A mixture of 90 percent cottonseed hulls and 10 percent cottonseed meal can be used, or better, a mixture of 45 percent cottonseed hulls, 45 percent ground alfalfa hay and 10 percent cottonseed meal. Some feeders give any new livestock access to bone-meal not only to detect mineral starvation, but to accustom the animals to the new location. Drouthy, small calves require special attention, and in these cases, one to 2 pounds of wheat bran or rolled oats may be used for the first 30 to 60 days. However, the greater part of the livestock can be handled with good hay or mixtures of cottonseed hulls, hays and cottonseed meal. It is better not to turn the stock onto fresh grazing immediately or to place them on a full feed of legume hays.

6. Maintaining livestock in feedlots or traps near water removes opportunity for grazing and everything must be fed. In this case, hays from legumes generally contain enough protein and calcium and can be used as the sole feed. When a legume hay is not used, it is almost mandatory that protein rich feed be used as a supplement to non-legume hays or roughage.

Practically any kind of hay, fodder or roughage can be fed as long as it is supplemented with 1 to 4 pounds of cottonseed meal and 2 to 4 pounds of alfalfa hay in the case of cattle or 1/4 to 1/3 lb. cottonseed meal in the case of sheep. However, there are a few materials such as ground peanut hulls and gin trash which should be used only in limited amounts at the start and with hay of good quality. Later the amount of low grade fibrous material may be increased, but full feeding is dangerous at the start because of possible impaction.

The question of how much to feed of any roughage depends on several factors, and the judgment of the experienced stockman is invaluable. Roughages vary in quality, the livestock vary in condition, and the weather is a factor. Definitely more feed is needed in bad weather than in good, and less pounds of high quality forage are needed than of low quality forage. Silage, as well as dry forage, varies in ash and moisture content, and all these must be considered. As long as the cow gets as much as two pounds of cottonseed cake or four pounds of alfalfa daily and a reasonable fill of 8 to 14 pounds of other roughage material, their weights should be maintained. Similarly as long as a ewe gets 1/3 lb. cottonseed meal or 1 1/4 lbs. alfalfa with a reasonable fill of other roughages, their weights should be maintained. The judgment of the feeder will determine whether more or less feed is needed.

7. Basically, the stockman is interested in low-cost, digestible protein, feed energy, bulk and what is called feed utility. By utility is meant a feed that can be stored, fed and handled easily with little waste, is palatable and which does not cause scour or impaction.

Protein nearly always costs more than energy. After the protein needs are met, protein loses value in the ration and become expensive as a source of energy. Certain medium protein concentrates as sorghum gluten feed (23 to 25 percent protein) and cottonseed (about 20 percent protein) which are also comparatively high in energy, may cost less than the grains. If they do, they may be used to replace not only part of the grain, but part or all of the protein in the ration normally supplied by high protein feeds such as cottonseed meal. In any case, the procedure is to examine the cost of essential nutri-
ents in the available feeds keeping in mind utility values.

8. Presently, drouth relief prices as given are:

- Wheat $1.10 per bushel of 60# or $1.83 per cwt;
- Corn $1.00 per bushel of 56# or $1.79 per cwt;
- Oats 50¢ per bushel of 32# or $1.56 per cwt;
- Cottonseed meal $35.00 per ton or $1.75 per cwt.

Feeding molasses should be added to this list since it has been the lowest costing energy feed available during the last 12 months. It presently costs about $28.00 per ton delivered to ranch storage.

The comparative digestible protein and productive value of the above feeding stuff are shown in Table I, also prices per cwt. of feeds ready for feeding and the comparative costs of the feed nutrients.

9. Drouth disaster implies extreme shortage or complete lack of forage. Forage is the backbone of maintenance for cattle and sheep and they can be kept on hays without concentrates. It is not feasible to try to maintain stock on concentrates. Concentrates are merely supplements to forage, making the forage or roughage feeds last longer. They also make possible the use of low quality forage which provides a balance and makes possible the use of less forage which may reduce the cost of feeding.

10. Hays, forages or roughages vary widely in quality. This is illustrated in Table II.

Legumes and carbonaceous hays differ principally in content of protein and carotene. Legume hay is higher in calcium, carotene and protein than carbonaceous hay. However, top quality carbonaceous hay may be better than a low quality legume hay. The principal marks of quality in hays are green color, leafiness, lack of weeds, low moisture content, and freedom from dirt.

11. In addition to the commonly known hays, there are several roughage materials which have been used in emergency feeding or as a means of reducing the cost of bulk in rations. Many of them are coarse and fibrous and require care or special preparations for feeding. In this connection, it is known that cattle and particularly sheep by one means or another get their feeds rather finely divided before final passage through the digestive tract. Grinding to some extent saves the stock labor in digestion, but it must be remembered that grinding does not change a roughage to a concentrate. Some of the characteristics of several roughage feeds are described.

(a) Cottonseed hulls are a standard well-known roughage, very high in crude fiber, 40 to 45 percent, and low in protein and productive value. They have high value from the standpoint of utility, mix readily with ground grains, cottonseed meal, and alfalfa hay, and are palatable in such mixtures. The hulls should be free of dirt, low in moisture and carry enough lint to permit ready mixing with cottonseed meal.

(b) Ground cotton burs and ground cotton stalks have not been used successfully in rations for cattle although they do show

Table I

<table>
<thead>
<tr>
<th>Feed &amp; price per cwt.</th>
<th>Digestible protein (%)</th>
<th>Therms prod. value (per cwt.)</th>
<th>Price of dig. protein (lbs)</th>
<th>Price of prod. value (therms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat $2.18*</td>
<td>11.3</td>
<td>78.8</td>
<td>19¢</td>
<td>2.8¢</td>
</tr>
<tr>
<td>Corn 2.14*</td>
<td>6.4</td>
<td>84.8</td>
<td>34¢</td>
<td>2.5¢</td>
</tr>
<tr>
<td>Oats 1.91*</td>
<td>8.7</td>
<td>71.3</td>
<td>22¢</td>
<td>2.7¢</td>
</tr>
<tr>
<td>CSMeal 2.10</td>
<td>34.6</td>
<td>63.9</td>
<td>5¢</td>
<td>2.7¢</td>
</tr>
<tr>
<td>Molasses 1.40</td>
<td>.5</td>
<td>61.6</td>
<td>---</td>
<td>2.3¢</td>
</tr>
</tbody>
</table>

* 35¢ added per cwt. for preparation for feeding.
higher values for protein and low content of crude fiber than cottonseed hulls. These materials are not palatable.

(c) Ground cotton gin trash, including leaf trash, a small percent of immature seed and some lint and burs have been used to replace cottonseed hulls, and as half of the roughage in mixtures containing ground alfalfa hay, ground sorghum grain and cottonseed meal. The value of cotton gin trash depends to a large extent on the percentage of immature seed and leaf trash. It may contain from 6 to 10 percent crude protein and about 30 percent crude fiber.

(d) Peanut hulls are extremely high in crude fiber, ranging from 55 to 65 percent. They are higher in crude protein but lower in nitrogen free extract than cottonseed hulls. Peanut hulls, if finely ground, may be used to replace cottonseed hulls in rations for cattle but, as with cottonseed hulls, they are best used if fed with a ground legume hay as only part of the allowance of roughage. If supplied as the only roughage at the start of feeding, they may cause impaction. They are less palatable in mixtures than cottonseed hulls.

(e) Rice hulls, sometimes finely ground and used in mixed rations, contain less crude fiber than cottonseed hulls, but are extremely high in crude ash, principally silica. While they may be used as a source of bulk in otherwise complete rations, they have no productive value.

(f) Rice straw is lower in crude fiber than cottonseed hulls, but, like rice hulls, is high in crude ash. It can be used in wintering rations, and cattle will eat fair to good amounts of it depending on its quality. In common with previously named low grade fibrous roughages, it should be supplemented with cottonseed meal or cake.

(g) Sotol, yucca and prickly pear, on an air dry basis, contain less crude fiber than cottonseed hulls and are considerably higher in protein and nitrogen free extract. Of these, prickly pear is lowest in crude fiber but much higher in ash, and because of its high content of mineral salts and water may be quite laxative. However, the water content of prickly pear is markedly affected by drouth, and samples probably now show no more than 50 percent water. For best results the moisture-bearing dryland plants should be supplemented with protein feeds and dry hay. However, if livestock is practically full fed on them, ground grain may be used as the supplement. Routine cautions apply to the use of these feeds as singeing the spines, removal of dead leaves, chopping finely enough to avoid choking and limitation of feed at the outset.

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{Grades of Alfalfa and Prairie Hay} & \text{Excellent} & \text{Good} & \text{Fair} & \text{Poor} \\
\hline
\text{Protein} & 18 & 15 & 14 & 12 \\
\text{Fiber} & 24 & 28 & 30 & 35 \\
\text{N F E} & 42 & 38 & 36 & 34 \\
\text{Carotene (ppm)} & 50 & 20 & 10 & 4 \\
\hline
\end{array}
\]
Sugar cane tops, leaves and bagasse or cane chew are sometimes used in winter feeding. All are fibrous and low in protein, and need protein supplements. Use care in feeding to avoid impaction.

Mistletoe and Spanish moss can be fed to livestock. Mistletoe is comparatively high in protein and contains about 60 percent water. Spanish moss is much lower in protein and water. Mistletoe is low in crude fiber and Spanish moss is high in crude fiber.

Sacahuista and salt marsh grass are both highly fibrous and in common with other similar feeds should be supplemented with protein.

Mesquite beans with pod contain about 12 percent crude protein and 48 percent nitrogen free extract but are high in crude fiber. The content of crude fiber limits digestibility and occasionally there are cases of impaction.

Corncobs contain little protein but are high in nitrogen free extract. They are much lower in crude fiber than cottonseed hulls but seemingly less palatable. They should be finely ground if included in mixed rations, in which case they may be used as a source of bulk.

The common hays and forage crops whether cured dry or stored as silage are classed as carbonaceous roughages and have much the same utility. In most cases the quality of the particular forage is of greater importance than the kind or variety. There are certain utility preferences; for example, North Texas prairie hay is more desirable than South Texas prairie hay and hegari bundles are preferred to the harder stemmed, less palatable kafir and milo bundles. All require additional protein for balance, yet have sufficient quality for the maintenance of cattle and sheep.

Fineness of grinding is a consideration in drouth feeding. Generally it is recommended that the grains be coarsely ground. However, fine grinding is recommended in feeding small amounts of grain as in maintenance feeding and in mixing with ground roughages or cottonseed hulls.

Feeding molasses has been low in cost and can be self-fed or mixed with ground grains and roughages. Beet, corn and cane or blackstrap molasses are available. Cane molasses contains from 20 to 25 percent water and about 65 percent nitrogen free extract. Molasses is a strictly carbonaceous feed containing very little protein but is high in ash. It is rated as having 70 to 80 percent of the feeding value of corn. It also improves the ease of handling feed mixtures and adds palatability to ground low grade roughages.

Molasses and alfalfa hay make a good combination, particularly for feeding sheep. It is not too difficult to govern the consumption of molasses if other feeds are available.

Wheat is perhaps the best single grain for drouth or winter feeding. It contains about 3 percent more protein than corn. It should be crushed or rolled for cattle and is used to better advantage when mixed with ground corn or oats and sorghum grains. It must be hand fed in limited amounts at the outset because of danger from founder.

Corn is perhaps the best single fattening grain because of its high productive value. It is comparatively easy to feed. It should be ground for cattle but need not be ground in maintenance feeding of sheep and goats.

Oats are perhaps the best balanced grain feed and are particularly good for growing young stock. They need not be ground for calves or sheep, but should be ground for cattle.

Fineness of grinding is a consideration in drouth feeding. Generally it is recommended that the grains be coarsely ground. However, fine grinding is recommended in feeding small amounts of grain as in maintenance feeding and in mixing with ground roughages or cottonseed hulls.

The oil seed protein meals such as cottonseed meal, soybean meal and peanut
Percentage chemical composition of certain emergency roughage feeds are shown below:

**Table III** Percentage chemical composition of feeding stuffs.*

<table>
<thead>
<tr>
<th>Feed</th>
<th>Crude Protein</th>
<th>Fats**</th>
<th>Crude Fiber</th>
<th>Nitrogen Free Extract</th>
<th>Water</th>
<th>Ash</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfalfa hay, average</td>
<td>14.8</td>
<td>2.0</td>
<td>29.1</td>
<td>37.4</td>
<td>8.3</td>
<td>8.4</td>
</tr>
<tr>
<td>Alfalfa leaf meal</td>
<td>20.3</td>
<td>2.6</td>
<td>18.4</td>
<td>38.2</td>
<td>7.5</td>
<td>13.0</td>
</tr>
<tr>
<td>Bear Grass, yucca glauca</td>
<td>4.0</td>
<td>1.1</td>
<td>18.7</td>
<td>21.3</td>
<td>48.3</td>
<td>4.6</td>
</tr>
<tr>
<td>Bone Meal, steamed</td>
<td>25.3</td>
<td>3.6</td>
<td>1.2</td>
<td>1.5</td>
<td>6.6</td>
<td>62.4</td>
</tr>
<tr>
<td>Careless weed, green</td>
<td>3.4</td>
<td>0.3</td>
<td>2.2</td>
<td>6.0</td>
<td>83.4</td>
<td>4.7</td>
</tr>
<tr>
<td>Corn chops, grain</td>
<td>10.1</td>
<td>4.9</td>
<td>2.6</td>
<td>69.7</td>
<td>10.9</td>
<td>1.8</td>
</tr>
<tr>
<td>Corn cobs</td>
<td>3.1</td>
<td>0.5</td>
<td>33.0</td>
<td>54.0</td>
<td>7.3</td>
<td>2.1</td>
</tr>
<tr>
<td>Cotton shucks</td>
<td>3.2</td>
<td>0.7</td>
<td>30.3</td>
<td>54.5</td>
<td>7.8</td>
<td>3.5</td>
</tr>
<tr>
<td>Cotton burs</td>
<td>8.0</td>
<td>2.6</td>
<td>34.3</td>
<td>38.7</td>
<td>8.7</td>
<td>7.7</td>
</tr>
<tr>
<td>Cotton seed</td>
<td>20.9</td>
<td>17.9</td>
<td>23.8</td>
<td>26.9</td>
<td>7.0</td>
<td>3.5</td>
</tr>
<tr>
<td>Cotton stalk hay</td>
<td>10.4</td>
<td>3.0</td>
<td>28.1</td>
<td>40.8</td>
<td>9.3</td>
<td>8.4</td>
</tr>
<tr>
<td>Cottonseed hulls</td>
<td>4.1</td>
<td>0.9</td>
<td>47.6</td>
<td>35.3</td>
<td>9.4</td>
<td>2.7</td>
</tr>
<tr>
<td>Cottonseed meal 41% protein</td>
<td>41.0</td>
<td>5.0</td>
<td>12.0</td>
<td>25.0</td>
<td>6.8</td>
<td>4.8</td>
</tr>
<tr>
<td>Digester tankage</td>
<td>60.5</td>
<td>8.8</td>
<td>2.1</td>
<td>2.1</td>
<td>7.5</td>
<td>17.2</td>
</tr>
<tr>
<td>Hegari fodder</td>
<td>7.3</td>
<td>1.9</td>
<td>16.0</td>
<td>53.8</td>
<td>10.0</td>
<td>11.0</td>
</tr>
<tr>
<td>Johnson grass hay</td>
<td>7.4</td>
<td>1.4</td>
<td>35.3</td>
<td>41.9</td>
<td>6.3</td>
<td>7.7</td>
</tr>
<tr>
<td>Lechuguilla, moist</td>
<td>3.1</td>
<td>0.8</td>
<td>11.6</td>
<td>22.1</td>
<td>58.7</td>
<td>3.7</td>
</tr>
<tr>
<td>Live-oak acorns</td>
<td>4.3</td>
<td>4.0</td>
<td>2.2</td>
<td>47.8</td>
<td>40.0</td>
<td>1.7</td>
</tr>
<tr>
<td>Live-oak leaves</td>
<td>9.2</td>
<td>2.6</td>
<td>27.9</td>
<td>47.1</td>
<td>6.4</td>
<td>6.8</td>
</tr>
<tr>
<td>Maguey leaf, century plant</td>
<td>6.3</td>
<td>1.1</td>
<td>13.6</td>
<td>53.5</td>
<td>15.1</td>
<td>10.4</td>
</tr>
<tr>
<td>Meat and bone scrap</td>
<td>51.0</td>
<td>10.5</td>
<td>2.1</td>
<td>1.5</td>
<td>6.3</td>
<td>28.6</td>
</tr>
<tr>
<td>Mesquite beans with pod</td>
<td>12.8</td>
<td>2.2</td>
<td>27.0</td>
<td>48.2</td>
<td>5.5</td>
<td>4.3</td>
</tr>
<tr>
<td>Milo grain</td>
<td>11.1</td>
<td>2.9</td>
<td>2.5</td>
<td>70.9</td>
<td>10.7</td>
<td>1.9</td>
</tr>
<tr>
<td>Mistletoe</td>
<td>9.0</td>
<td>2.3</td>
<td>8.1</td>
<td>19.2</td>
<td>59.0</td>
<td>2.4</td>
</tr>
<tr>
<td>Molasses, blackstrap</td>
<td>2.4</td>
<td>0.0</td>
<td>0.0</td>
<td>65.0</td>
<td>27.3</td>
<td>6.3</td>
</tr>
<tr>
<td>Oats</td>
<td>12.0</td>
<td>5.0</td>
<td>10.9</td>
<td>58.8</td>
<td>9.3</td>
<td>4.0</td>
</tr>
<tr>
<td>Peanut hulls</td>
<td>8.0</td>
<td>2.5</td>
<td>52.6</td>
<td>22.1</td>
<td>8.7</td>
<td>6.1</td>
</tr>
<tr>
<td>Post-oak acorns</td>
<td>3.0</td>
<td>3.4</td>
<td>6.5</td>
<td>35.8</td>
<td>50.0</td>
<td>1.3</td>
</tr>
<tr>
<td>Prairie hay, South Texas</td>
<td>4.2</td>
<td>1.8</td>
<td>30.5</td>
<td>48.3</td>
<td>7.7</td>
<td>7.5</td>
</tr>
<tr>
<td>Prairie hay, North Texas</td>
<td>5.1</td>
<td>3.1</td>
<td>29.3</td>
<td>47.9</td>
<td>8.2</td>
<td>6.4</td>
</tr>
<tr>
<td>Prickly pear, dried - Cactus</td>
<td>3.5</td>
<td>1.1</td>
<td>9.8</td>
<td>51.3</td>
<td>16.7</td>
<td>17.6</td>
</tr>
<tr>
<td>Cactus, fresh</td>
<td>1.3</td>
<td>4.4</td>
<td>4.7</td>
<td>17.6</td>
<td>68.3</td>
<td>7.7</td>
</tr>
<tr>
<td>Rice hulls</td>
<td>3.1</td>
<td>0.9</td>
<td>40.1</td>
<td>28.9</td>
<td>8.1</td>
<td>18.9</td>
</tr>
<tr>
<td>Rice bran</td>
<td>12.8</td>
<td>13.1</td>
<td>12.7</td>
<td>41.7</td>
<td>9.0</td>
<td>10.7</td>
</tr>
<tr>
<td>Rice straw</td>
<td>3.7</td>
<td>1.5</td>
<td>31.6</td>
<td>40.1</td>
<td>7.1</td>
<td>16.0</td>
</tr>
<tr>
<td>Spanish moss</td>
<td>4.1</td>
<td>1.6</td>
<td>24.5</td>
<td>53.8</td>
<td>8.2</td>
<td>7.8</td>
</tr>
<tr>
<td>Wheat grain</td>
<td>16.7</td>
<td>1.9</td>
<td>2.7</td>
<td>66.0</td>
<td>10.4</td>
<td>2.5</td>
</tr>
</tbody>
</table>

* Reference Texas Station Bulletin 461
** Synonymous with Ether Extract
The weights of breeding cows from yearlings to 7 years old are shown in Figure 1. The seasonal variation in weights apply to parts of the State where frost may occur from November to March. Calves are dropped in the spring and weaned in the fall.

Low weights usually coincide with calving in the spring, but rapid gains follow the rise of spring feed. Peak weights may occur in early summer or in the late fall and following weaning. Under other conditions cows are lightest in weight when the calves are weaned.

meal, if equal in percent of crude protein, are rated as about equal in rations for cattle and sheep. Recent advancements in the extraction of oil from cottonseed and resulting low fat content of cottonseed meal have reduced the calculated productive value of cottonseed meal. Likewise the lowering of cottonseed meal from 43 percent protein content to 41 percent protein has reduced the productive value. For example, 43 percent protein cottonseed meal with 7.5 percent fat is rated at 74.9 therms of productive value per 100 pounds while 41 percent protein cottonseed meal with 5 percent fat is rated at 63.9 therms.

Urea or, as presently available, DuPont's 262 Feed compound does not fit into the drought feeding picture with cottonseed meal and corn both available at about $1.75 per cwt. This feed compound, containing non-protein nitrogen equivalent of 262 percent crude protein, contains no energy. By rule of thumb, 1 pound of urea plus 6 pounds of grain would be equivalent to 7 pounds of an oil seed protein meal. If grain were cheaper than cottonseed meal, then it would be possible to consider the use of urea as a source of equivalent protein.

Sorghum gluten meal (41 percent protein) and sorghum gluten feed (23 to 25 percent protein) may be considered as sources of protein for cattle if price is favorable. They are satisfactory for sheep if alfalfa is used as the roughage.
Sorghum gluten feed is a medium protein feed comparatively high in energy, and may be used as a source of both protein and energy. For example, in feeding steers, 5 pounds of sorghum gluten feed has been fed to replace 3 pounds of cottonseed meal and 2 pounds of grain. It follows that if 5 pounds of gluten feed costs less than 3 pounds of cottonseed meal and 2 pounds of grain it can be used.

(i) Cottonseed is another medium protein feed. It contains approximately 20 percent crude protein and about 77 therms of energy per 100 pounds. It is higher in productive value than 41 percent protein cottonseed meal and approaches the productive value of the better feed grains. Subject to some lack of palatability, if fed in large amounts in fattening rations, it can be used to supply both protein and energy just as was previously indicated for sorghum gluten feed. Similarly, it can be fed for maintenance subject to comparative costs of feed utilities as supplied by cottonseed meal and the grains.

(j) The average 20 percent protein commercially mixed cubes, meals or pellets classified as medium protein feeds contain about 50 percent nitrogen free extract. Most of these mixtures are fortified with vitamin A and contain trace minerals. As with straight grain feeds or protein supplements, costs of the principal feed utilities should be considered.

(k) Rice bran, which contains more protein than corn and only slightly less than wheat, classes as a feed high in energy because of high fat content. It may become rancid in storage, is not very palatable and may cause scouring; however, price often favors its use in winter feeding. "Converted rice bran" and polishings with added calcium carbonate contain approximately 11 percent crude protein, 17 percent fat and 22 to 23 percent calcium carbonate. It does not become rancid but lacks palatability because of the high content of calcium carbonate. It may be used in combination with cottonseed meal in maintenance rations.

(l) Meat and bone scraps, 50 percent protein, and 60 percent protein digester tankage may be used to supply protein in rations for cattle and sheep. These products are high in calcium and phosphorus and supply good amounts of energy. They lack palatability and perhaps should form only 3 or 4 percent of full-fed fattening rations. Also, they are probably not as efficient sources of protein for cattle and sheep as the oilseed meals. As with other feeds, price is to be considered.

13. A 20 percent protein mixture can be prepared by mixing about 33 pounds of 41 percent protein cottonseed meal and 67 pounds of ground corn. Less cottonseed meal would be required if wheat were used instead of corn. In fact, about 23 pounds of cottonseed meal and 77 pounds of wheat would afford a 20 percent protein mixture.

14. Vitamin A deficiency can be a problem particularly after the females drop their young. The young animal is born with little storage of Vitamin A and must get it from the milk. If no green feed is forthcoming, the young will die from weakness in a few weeks. An axiom mentioned earlier is to save the best feed for the time of giving birth. Hay with green color, particularly alfalfa, supplies carotene and is certainly one of the best drouth feeds. It also provides some bulk protein and conditioning effect.

15. Stay with known feeds and good methods of feeding. Don't let the old animals get down. Even if they can be saved, it takes a lot of extra work. The use of livestock conservation practices will pay off.