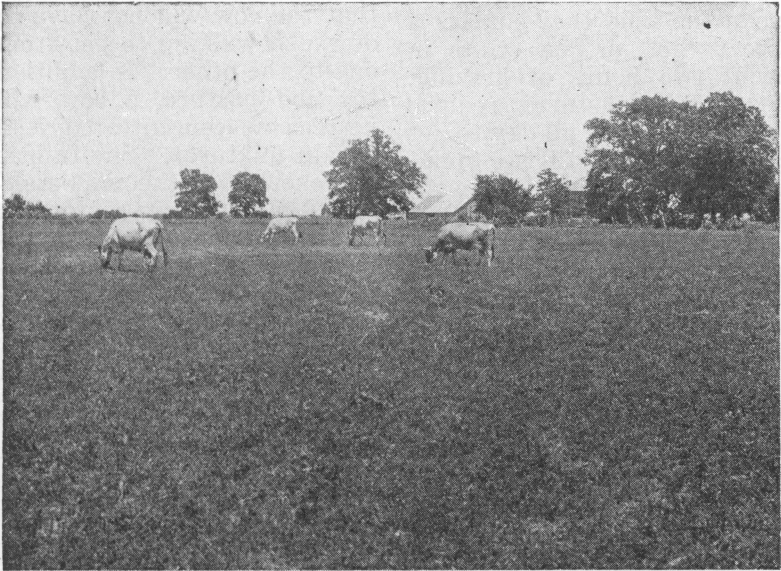


Feeding and Care of the Dairy Herd



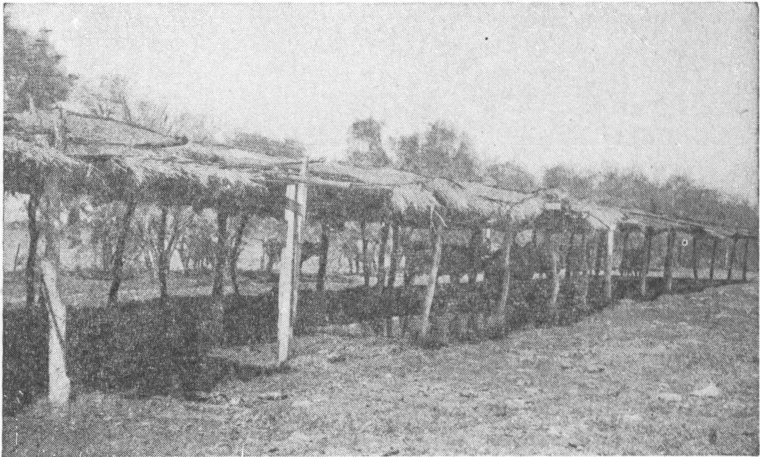
Issued by
The Extension Service
Agricultural and Mechanical College of Texas and
The United States Department of Agriculture
H. H. Williamson, Director, College Station, Texas

Feeding and Care of the Dairy Herd

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PROFITABLE dairying depends upon an ample supply of good, cheap feed. The farmers of Texas must learn that a cow cannot produce milk on scenery and sunshine. The cheapest feed for a dairy cow is good permanent pasture. By good pasture, we mean the kind that enables a cow to get all she wants in about two hours of grazing. Too many pastures require the cow to graze all day to get enough grass to fill her stomach. Where this condition exists, all the feed nutrients the cow gets from the grass are used to furnish the energy to walk around to get the grass and nothing is left with which to produce milk.

In addition to pasture a milk cow needs shade in warm weather and protection from the cold in bad weather. Also the cow needs an abundant supply of good clean, cool water in summer and good, clean, warm water in the winter. The pasture, shade, and water should be so located that the cow will not have to do much walking to get from one to the other. In addition to good pasture, a cow will need some concentrated feed (grain mixture). She cannot get enough of the milk-making elements from a stomach full of the best grass to produce very much milk; therefore, she needs some concentrated feed to supply the extra needed.



Have Permanent and Temporary Pastures

To have good permanent pastures, it is necessary not to overgraze. Give the grass a chance to grow and make seed and thereby help choke out the weeds. Where possible, the pasture should be mowed to kill the weeds. Where it is not possible to mow, a few sheep should be kept on the pasture to keep down the weeds.

In parts of Texas, the permanent pasture can be improved by planting improved grasses and clovers. Write the Extension Service for B-82, Pastures, for recommendations on improving permanent pastures. Less acres of permanent pastures will be required if the pasture is divided into two or more pastures and the grazing alternated. The amount of permanent pasture needed varies from one-half acre up to five acres where dairy cows are kept. On some ranges where beef cattle are kept, the amount of pasture needed runs up to 25 acres per cow. This would not be suitable for dairy cattle.

With the best of care and management it is not possible to have good permanent pasture all the year, because of dry weather and cold weather. Good cows cannot maintain production on dry pastures. Temporary pastures are need-

ed to supplement the permanent pasture. Sudan grass is the best temporary pasture for summer and early fall. Small grain such as oats, barley, and wheat are the best for late fall, winter and early spring.

For best results the sudan grass should be planted in rows. The width of the rows should vary for best results. In some sections the rows should be three feet apart, in some 30 inches apart, and others 18 inches apart. For best results the sudan grass pasture should be divided into two pastures. This will permit alternate grazing and thereby give more grazing per acre. Never let sudan grass head out, as this lowers the feed value of the grass and stops further growth. If there are not sufficient cows on the pasture to prevent the sudan grass from heading, it should be mowed. Sudan grass makes good hay. It can be put in a trench silo. It is therefore not lost by mowing.

The small grain should be sown broadcast in September to permit good growth before cold weather. It will stand more cold and give more grazing by sowing early.

Silage Is the Best Substitute for Pasture

With all the planning of permanent and temporary pastures, it is not possible to



have good green succulent pasture the entire year. Hence we need some good succulent feed to take the place of pasture when the green pasture is not available because of drouth or cold. The best substitute for pasture is silage. Silage can be had by every dairyman in Texas even though he has only two cows. The trench silo makes this possible. The smaller the number of cows, the smaller the trench silo should be made. We have trenches only two feet wide, two feet deep and 20 feet long. Write the Extension Service for Bulletin B-84, Trench Silos. The better the quality of feed put in the trench silo, the better

will be the silage. Corn and the grain sorghums are the best. However, the sweet sorghums (such as red top and seeded ribbon cane) are good. It is better to let these feeds get ripe before putting in the trench. Cows can eat more silage made from ripe feeds without scouring. A succulent feed makes it easier to maintain production. Milk is 85 to 87 per cent water. The cow cannot produce milk without water any more than she can without feed. The more water the cow gets with the feed the less she has to drink. High producing cows will not always drink enough water to produce large quantities of milk due to the water being



too hot, too cold or being unclean.

If a cow is fed some dry roughage (hay or grain sorghum bundles) along with the silage, the average cow will eat about 5 pounds of hay and 35 pounds of silage per day. If no hay is fed, an average cow will eat about 50 pounds of silage per day. On this basis about three tons of silage will be needed per cow per year. Over the most of Texas a reserve of three tons of silage will be needed to take care of dry years. Hence, when a good crop is made, six tons of silage should be put down for each cow.

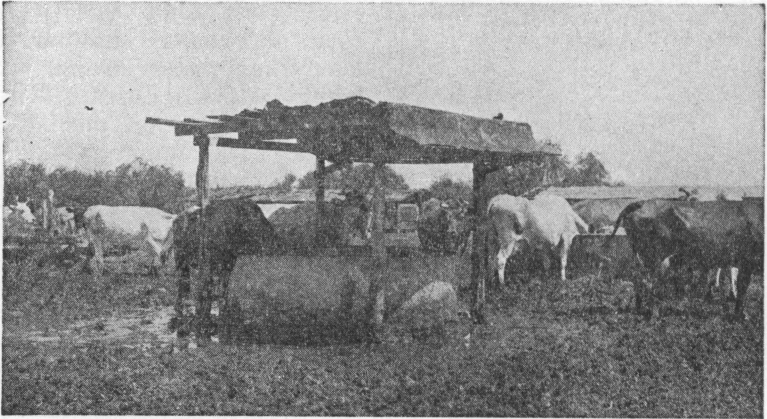
Keep Water Clean and Cool

To get high producing cows to drink enough water to

maintain production it is necessary to keep the water clean and cool in summer. To keep the water clean, the trough should be drained and cleaned at least once each week. Too much water is wasted in draining and cleaning a large trough. Therefore, it is best not to make the trough too large. To keep the water cool, a shade should be built over it. The higher the shade the cooler. Hence the shade should be at least six feet high. It should be larger than the trough, otherwise the water will only be shaded about an hour in the middle of the day when the sun is overhead. The water may be warmed in cold weather by putting a tub or other receptacle on the water and building a fire in it.

A Good Dairy Cow Needs Some Hay

In addition to pasture and silage, a good dairy cow will need some dry roughage such as hay or what is commonly called dry bundle feed, (dry bundles of grain sorghum, sweet sorghum, or sudan grass). The dry roughage is especially important in the early spring when the grass is very "sappy" or "watery" which means it contains a high per cent of water, usually 90 to 95 per cent water. Sappy grass will cause cows to scour if they do not get some dry roughage. Dry



roughage should be kept before the cows when they are eating silage. If the silage is made from ripe feed, the cows will probably not eat much dry roughage, but it should be offered them. For best results the hay should be a legume hay such as alfalfa, cowpeas, soybeans, or peanuts. These kinds of hay will furnish more lime and protein than hay made from non-legumes such as cane, sudan grass, and Johnson grass.

Roughages are the bulky feeding stuffs that are higher in fiber and supply a lower percentage of digestible matter. Such feeds as hay, fodder, straws, silage and cottonseed hulls belong to this class. Some people grind grain sorghum bundles, head and stalk and call it a concentrate. This is a mistake. Ground roughage is still a roughage. Concentrates are feeding stuffs

of a condensed nature which are low in fiber and furnish a high percentage of digestible matter. Such feeds as corn, grain, sorghum heads or threshed grain, oats, barley, wheat, wheatbran and cottonseed meal are concentrates. Ground peanut hulls with molasses on it is not a concentrate. Neither is ground alfalfa hay with molasses on it. Most of the sweet feeds on the market are roughages.

Feed Concentrates According to Production

Any cow worth keeping is entitled to all the roughage, including pasture, silage and hay that she can eat. The concentrated feed (grain mixture) should be fed according to production. The amount of the concentrate to feed per gallon of milk depends upon the kind of roughage the cow

is getting. If she is getting good green pasture or legume hay, she should get about three pounds of grain mixture per day for each gallon of milk produced daily. When the cow is getting dry pasture or non-legume hay or silage, she should receive about four pounds of grain mixture per day to each gallon of milk produced per day. A good cow should receive some concentrated feed every day in the year, regardless of whether she is fresh or dry. When the cow is dry, she needs building up so that she will have a reserve from which to draw during the next lactation period.

Grain Mixture Depends on Feed Grown and Roughage Fed

The kind of grain mixture to use depends upon the kind of feed that can be grown and upon the kind of roughage the cow is getting. A low protein roughage requires a high protein grain mixture. A high protein roughage requires a low protein grain mixture. In some sections of Texas, corn can be grown advantageously; in others, the grain sorghums can be grown to better advantage. Ear corn or grain sorghum heads should constitute a part of the grain mixture. Where oats and barley can be grown successfully, some of the corn or grain sorghum can be substituted with oats or barley

or both. This will add variety and improve the grain mixture. When the cows are getting dry roughages such as dry pasture, hay or bundle feed, wheatbran should be added to the grain mixture for a laxative effect. Where minerals are needed add two per cent ground limestone or pulverized oyster shell to the grain mixture.

Since the grain mixture is to furnish the elements not furnished by the roughage, it is necessary to know the analysis of the roughage in order to determine the kind of grain mixture to make. We give the analysis of some of the roughages and concentrates in the back of this bulletin. The analysis of the others can be obtained from the Texas Agricultural Experiment Station bulletin No. 461, entitled "The Composition and Utilization of Texas Feeding Stuffs."

Determine the Grain Mixture This Way

To determine the grain mixture look in the back of this bulletin or in bulletin No. 461, and find the percentage of crude protein content of the roughage, dry basis. Subtract this from 27. The difference will be the desired crude protein content of the grain mixture.

Example: Suppose a cow is getting hegari silage. We look

in the bulletin and see that the protein of hegari silage (dry basis) is 7 per cent. Subtract 7 from 27, and the result is 20. Twenty should be the protein content of the grain mixture. Now suppose we have ground ear corn and ground oats available on the farm. We look in the bulletin and see that the protein content of ear corn is 8 and that of ground oats, 11 per cent. We see that we will not get sufficient protein by feeding these feeds alone. Hence we will have to add some feed or feeds higher in protein to get the mixture up to 20, the desired per cent. Suppose wheatbran and cottonseed meal are added. Refer to the bulletin and find that wheatbran contains 14.5 per cent protein and cottonseed meal contains 43.0 per cent protein.

If we had 100 pounds each of ground ear corn, ground oats, wheatbran and 125 pounds of cottonseed meal, we would have a total of 87.2 pounds of protein or 20.5 pounds of protein to each 100 pounds of mixture. This is close enough. Therefore a grain mixture composed of equal parts of ear corn, ground oats, wheatbran and 125 pounds cottonseed meal would be all right to use with hegari silage.

If the cow is getting alfalfa hay for roughage the grain mixture should be lower in protein than it would be if

she were getting hegari silage, since we find in the bulletin that protein of alfalfa hay (average) is 13 per cent; whereas, the protein of hegari silage (dry basis) is 7 per cent. By subtracting 13 from 27, we get 14. Hence the grain mixture should contain 14 per cent protein. Therefore, if alfalfa hay is the roughage and we use 100 pounds ground ear corn, 100 pounds ground oats, 100 pounds wheat bran and 30 pounds cottonseed meal for the grain mixture, we should mix it as follows:

	Per cent protein
100 pounds ground ear corn	8.0
100 pounds ground oats	11.0
100 pounds wheatbran	14.5
30 pounds cottonseed meal	12.9
Total protein	46.4

These 46.4 pounds of protein make up 14 percent of the total mixture. To apply this rule when cows are on pasture use the analysis of the kind of grass the cows are grazing. If the cows are getting more than one kind of roughage take the average of the two or more being used.

Cows Need Minerals

If the cow is getting legume hay, legume silage or legume pasture and is receiving a grain mixture containing cottonseed meal, she should get all the minerals needed. All legumes are higher in lime than non-legumes. Wheatbran and cottonseed meal are high in phosphoric acid. If the cow is not getting any legume hay, legume pasture or legume silage, mineral should be added to the grain mixture. Add two percent ground limestone, pulverized oyster shell to the grain mixture. The dry cows and heifers will also need mineral. To supply these with mineral, mix three pounds of steam bone meal with one pound of salt and keep this mixture where the cows can have access to it at will. It is best to put this mixture in a box under a shed for protection from the weather. Sometimes cattle will not lick bone meal when it is first put in. To get them started, sprinkle some cottonseed meal on the bone meal and salt mixture.

Add Salt to Ration

In addition to the lime and phosphoric acid, cows need salt. Add one percent salt to the grain mixture. Salt in the above mineral mixture will supply any additional salt needed by the milking herd

and also supply the dry cattle with salt.

Here's Help on Feeding Dry

Cows and Heifers

To get the largest annual production, a cow should be dry from six to eight weeks. Some cows are persistent milkers and are hard to make go dry. Place these cows in a dry lot and give them nothing but dry carbonaceous hay such as cane hay, sudan grass hay, and prairie hay, and allow them only about three gallons of water per day for about two days. After two days increase the water to all the cows want but do not give them anything to eat except hay until they are dry. To increase the water give the cow three gallons at a time, two hours apart until she has all she wants. After this she should have free access to water. Milk the cow once a day for the first two days, and then quit. Under this procedure the cow should be dry in a week. After the cow is dry, she should be fed all the good roughage (the same kind the milking herd is getting) she will eat, and in addition two to five pounds of the grain mixture the milking herd is getting. The amount will depend upon the size and condition of the cow.

The cow's body should be built back to normal before calving so that she will have

her full reserve to draw on during the next lactation. If necessary the heifers should be fed for two or three months before calving the same as the dry cows.

The last ten days before calving change the grain mixture for the dry cows and heifers to equal parts of ground oats and wheatbran. If oats are not available give wheatbran alone. Feed this mixture for the first three or four days after calving. At the end of this time if the cow or heifer is doing all right the mixture can be changed to that given the milking herd. Feed two or three pounds at first and then gradually increase the amount until the cow is getting a full feed which depends upon production. Take at least 14 days to get a good cow on full feed.

The Dairy Calf Requires Care

The young calf should always get the first milk (colostrum) which is designed by nature for cleansing the bowels and starting the digestive functions. The young calf should receive its own mother's milk until her milk becomes normal after which the calf may be given milk from the entire herd the same as other calves. The young calf should not be allowed to gorge the milk as this will result in indigestion and scours.

Eight to 10 pounds of milk per day is enough for a Jersey calf at the start and 10 to 12 pounds is enough for a Holstein calf. It is best to divide this into three feeds up to two weeks. After this two feedings per day will be all right.

Teach the Young Calf

To Drink

After a day or two, the calf should be taught to drink from a pail. Some dairymen never allow the calf to draw milk from the mother, claiming if the calf and mother are separated at once, the calf learns to drink more readily from a pail. This is a matter of individual preference. The milk should be fed as fresh as possible and at blood heat in a clean bucket. The calf should be fed from a stanchion and be fed individually. Leave the calves in the stanchion or tied separately until the milk taste or odor has left them so they will not develop the habit of sucking one another's ears or other parts of the body.

No better way is known for teaching a calf to drink than the simple method of putting one's fingers in its mouth and with one motion bringing the calf's head into a pail containing a small amount of whole milk so that its mouth comes in contact with the milk and then carefully withdrawing the fingers while holding the



calf's head down. Some calves will learn to drink after the first attempt. Others will require several trials.

Here's a Ration for the Calf

The calf should be given whole milk the first two or three weeks. After this time skim milk may gradually replace the whole milk. Substitute one-half pound of whole milk with skim milk for the first feeding and then an ad-

ditional one-half pound for each succeeding feeding until the calf is getting all skim milk. If the calf is getting 10 pounds of milk per day, 10 days will be required to make the change. The skim milk may be gradually increased as follows: For Jersey calves at four weeks of age, give five pounds each feeding; at six weeks give six pounds; at eight weeks give seven pounds; at 10 weeks give eight pounds; at 12 weeks give nine pounds. The amount

of milk should not exceed nine pounds.

The calves should be given some grain and hay to eat as soon as they will eat which is usually from two to three weeks of age. A good grain mixture for calves is equal parts of corn, oats, and wheatbran. So long as the calf is getting the above amount of skim milk it is not advisable to add cottonseed meal to the above grain mixture. When the skim milk is discontinued, add cottonseed meal to the grain mixture, using a mixture of equal parts corn or grain sorghum, oats, wheatbran, and cottonseed meal. If the calf is given only one-half the above amount of skim milk, add one-half part of cottonseed meal to the grain mixture.

The hay should be of good quality either Johnson grass, sudan grass, prairie or bermuda grass. Where pasture is near the calf shed, the calves may be turned on pasture in good weather. Be sure the calf has free access to shade and clean water. The calf will not eat very much grain and hay up to three months of age. Therefore, it should be given all it wants. After this time, the grain may be regulated according to the calf's condition. The calf should have all the hay it wants at all times.

Calves should have access to salt. After the skim milk is discontinued and where no legume hay is available, keep salt and bone meal mixture (three parts steam bone meal and one part salt) before the calves instead of salt alone.

Milk Powder Can Substitute for Milk

In sections where the whole milk is sold to manufacturing plants or as market milk there is no skim milk left to feed the calves. In this case skim milk powder may be used. Either spray or roller process powder may be used but the roller process is much easier to mix with water and is usually cheaper. Mix one pound of skim milk powder with nine pounds of water heated to 90 or 95 degrees. Feed the same way as with skim milk. After the calves are eating well (about three months of age) the skim milk powder can be mixed with the grain. Make the mixture as follows: one part wheatbran, one part ground oats, and two parts powdered skim milk. When the calf is six months of age, the skim milk powder may be discontinued and cottonseed meal added to the grain mixture. Make this mixture equal parts of ground corn, ground oats, wheatbran and cottonseed meal. Calves should be kept on dry clean quarters.

Handle Bulls Similar

to Heifers

Bull calves to be raised for breeding purposes should be fed and handled much the same as heifers. If skim milk is fed, it is desirable to give the bull calves after they are three months of age, a little more grain than the heifers and delay weaning to at least eight months. As a rule bulls grow faster than heifers and therefore need a little more grain to attain their best size and development.

Bulls should be of sufficient size and maturity for light service at 10 to 12 months of age. From this time on the grain mixture may be much the same as that given the cows in milk. Bulls should be fed enough to keep them in a vigorous physical condition but not too fat. High finish has a tendency to make them sluggish.

The amount of grain to feed daily varies from four to 10 pounds, depending upon the size and condition of the bull and the kind of roughage. Figure the ration the same way as for the cows.

Keep the Bull in a Pen

The bull should be kept in a pen of at least one-half acre in size to allow room for exercise and if possible, green feed. The bull should have some green feed each day to furnish vitamin "A" which is essential to health. If no green grass is available in the bull's pen, he should be given three or four pounds of peagreen alfalfa hay. A shed opening into the pen is a practical shelter for a bull. This should be arranged so that the bull can be fed and watered without the attendant having to enter the pen. Newspapers frequently tell of persons being injured or killed by bulls as a result of improper equipment or wrong handling.

Under no condition should a bull be placed in a pen or pasture that does not have a good fence. The bull should never be allowed to run in the pasture with the cows. The bull pen should be equipped with a breeding chute so that the cows does not have to enter the bull pen for service. See Extension Service C-146, "Build a Safety Bull Pen," for description and drawing of a breeding chute.

COMPOSITION OF SOME OF THE COMMONLY USED FEEDS (DRY BASIS)

Use Figures In First Column In Figuring Balanced Rations

Feed	% Crude Protein	% Fat	% Crude Fiber	% Starch or Sugar	% Digestible Protein
CONCENTRATES					
Barley	11.0	1.5	6.0	65.0	8.8
Corn chops.....	9.0	3.5	3.0	70.0	5.8
Corn feed meal	9.0	3.5	3.0	70.0	5.8
Corn bran	8.0	5.0	12.0	60.0	4.3
Corn ear with shuck.....	7.8	2.8	10.0	62.0	4.7
Cotton seed	21.0	17.0	20.0	25.0	14.7
Cotton seed whole pressed	28.0	6.0	23.0	29.0	22.4
Cotton seed meal	43.0	6.0	12.0	23.0	35.7
Hegari threshed	10.0	2.5	3.0	70.0	6.9
Hegari heads	8.5	2.5	8.0	65.0	5.9
Hominy feed	10.0	6.0	7.0	60.0	6.8
Kafir threshed	10.0	2.5	3.0	70.0	7.0
Kafir heads	8.5	2.5	8.0	65.0	5.9
Milo threshed	10.0	2.5	3.0	70.0	7.3
Milo heads	8.0	2.5	8.0	65.0	6.1
Oats	11.0	4.0	12.0	58.0	8.8
Wheat	12.0	2.0	3.0	70.0	9.8
Wheat bran	14.5	3.0	10.0	50.0	11.4
Wheat shorts	17.0	4.0	6.0	55.0	14.4

DRY ROUGHAGES

Alfalfa hay	14.0	1.5	33.0	35.0	8.9
Bermuda grass hay	5.9	1.5	26.7	50.3	3.0
Cowpea hay	13.1	2.9	30.6	33.9	9.0
Cottonseed hulls	3.0	0.5	50.0	30.0	0.3
Dallis grass hay	8.7	1.8	32.1	40.3	5.1
Hegari bundles, heads & stalk	7.0	2.0	20.0	55.0	2.7
Hegari bundles without heads	5.5	1.9	28.5	43.7	2.2
Johnson grass hay	6.1	1.7	29.1	45.6	2.7
Kafir bundles, heads & stalk	7.0	2.0	20.0	55.0	3.7
Kafir bundles without heads	5.5	1.9	28.5	43.7	2.2
Milo bundles, heads & stalk	6.5	1.9	20.0	55.0	2.5
Milo bundles without heads	3.3	1.6	33.5	45.0	1.3
Mesquite grass hay	6.9	1.9	26.2	43.3	3.5
Oat hay	8.3	2.7	35.7	45.0	4.5
Oat straw	4.0	2.3	36.1	41.2	0.9
Peanut hay with nuts	13.2	10.5	22.1	33.7	10.0
Peanut hay without nuts	10.0	3.5	24.0	44.0	6.4

Feed	% Crude Protein	% Fat	% Crude Fiber	% Starch or Sugar	% Digestible Protein
Prairie grass hay	5.3	1.8	30.1	47.0	2.7
Rhodes grass hay	5.6	1.3	33.0	43.1	2.5
Rice straw	3.7	1.5	31.6	40.1	0.8
Sudan grass hay	6.6	1.8	29.7	43.4	4.5
Sorghum cane hay	5.3	2.8	28.5	48.0	1.7
Soybean hay	15.0	5.8	31.1	29.0	9.0
Wheat straw	3.8	1.5	35.7	40.9	0.8

SILAGES

Corn silage	7.3	2.3	24.9	51.9	4.0
Hegari silage	7.1	2.7	18.3	54.4	2.0
Japanese seeded ribbon cane silage	3.1	1.5	29.1	57.0	1.0
Johnson grass silage	7.0	2.7	32.3	43.0	4.0
Kafir silage	7.1	2.7	18.3	54.4	2.0
Milo silage	6.8	2.4	18.1	51.4	1.8
Sorghum cane silage	5.3	2.8	28.5	48.0	1.7
Sudan grass silage	6.6	2.7	26.4	45.4	3.6

GREEN GRASSES

Bermuda grass, young-tender	12.0	2.5	21.7	50.0	7.2
Bermuda grass, tall.....	8.0	3.0	24.7	54.0	5.9
Buffalo grass, young-tender	14.0	3.0	20.0	50.0	8.1
Barley before booting	15.0	3.2	11.7	30.3	12.0
Carpet grass	11.0	2.4	28.0	41.6	6.9
Dallis grass	12.7	2.8	26.9	39.8	7.4
Johnson grass, young-green...	15.0	2.7	18.6	42.0	7.7
Mesquite grass, young-green..	14.0	3.0	20.0	50.0	8.1
Oat before booting	15.0	3.2	11.7	30.3	12.0
Sudan grass, young	18.0	4.4	21.9	35.3	15.7
Sudan grass, medium height	15.0	2.3	30.3	38.3	8.5
Sudan grass, headed	8.6	1.8	29.7	43.4	4.5

Cooperative Extension Work in Agriculture and Home Economics, Agricultural and Mechanical College of Texas and United States Department of Agriculture Cooperating.
Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.

15M-12-41