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RECOMMENDATIONS

to

FARMERS

in

DROUTH AREAS,

(Winter, 1953 - 54)

Circular 512

Cooperative Extension Work in Agriculture and Home Economics
College of Agriculture and Home Economics, University of Kentucky
and the U.S. Department of Agriculture, cooperating

FRANK J. WELCH, Director

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Recommendations to Kentucky Farmers in Drouth Areas (Winter, 1953-54)

This circular is a revision of the booklet issued in August, 1952, entitled "Recommendations to Kentucky Farmers in Drouth Areas." It is revised and reissued at this time because the present drouth, extending far into the fall and giving at present writing (October 21) no indication of let-up, has changed the picture considerably. Many courses of action practical in August or early September are not practical in November. The circular is re-written so as to point up what can be done at the later date.

Even more than was true of the booklet issued in 1952, this circular is concerned with the problem of what the feed situation will be next spring and summer when, we hope, weather will again be favorable for farm production. Even if rainfall this winter and next spring should be "normal" in amount and distribution, the severity of the present drouth will mean that farmers will still be faced with a serious situation in damaged pastures and meadows. Farmers are now concerned first of all with the problem of getting their herds and flocks through the winter as economically and safely as possible, but forward-looking farmers are also taking stock now of what they will need to do, and when they can do it, to get their damaged or destroyed pastures and meadows back to normal production.

A time of disaster is also a time of planning ahead, planning the means of avoiding the effects of such disasters in the future. This circular therefore also points briefly to certain steps to be taken after the present drouth is over, such as providing a backlog of feed for drouth emergencies, and doing whatever is possible to improve the water supply for the farm for such emergencies.

How To Decide What To Do In Balancing Feed Requirements With Livestock

If you have not already done so, decide upon the number and kind of livestock which your farm is best suited to produce from year to year under normal weather conditions. Plan to keep this winter, if possible, the necessary breeding stock to produce the livestock and livestock products which you have decided upon. Calculate how much forage these livestock will need this winter, and then estimate the amount of hay and concentrates you will need to buy before April or May of next year. Then consider the requirements for other livestock on the farm in a similar manner. (Ask your county agent

for Leaflet 121, "How Much Feed Does Your Livestock Need?").

Make Emergency Seedings

Practically all farmers are faced with difficult decisions as they consider problems of seeding arising from the prolonged drouth. Most seedings made last spring and in late summer have perished. Reseedings and new seedings that would have been made during the fall if rains had come have been postponed in expectation of more favorable weather. Thus there is much land in the state from which no grazing can be obtained this fall and little during the winter even though fall and winter rains and temperatures are favorable. Such lands might, however, furnish considerable early spring grazing if seeded to winter grain, especially to rye or wheat, yet this fall or winter. These grains if sown in November will germinate when soil moisture is favorable, but they may be winterkilled if winter should be severe. Grains sown during the winter will germinate if there is a period of mild weather, and their survival and growth will depend upon the nature of the weather thereafter. However, seeding these winter grains and early seeding of spring oats, offer about the only chance of early spring grazing. Each farmer must therefore decide whether to sow these winter grains for emergency spring pasture. In view of the serious need for feed it seems wise to take the chance. The seeding rate should be heavy -- 3 bushels of either wheat or rye -- preferably Balbo. Winter or hairy vetch may be seeded with the grain, mixed in such proportions as to sow 15 to 25 pounds of vetch per acre. This seed should be inoculated. The vetch will add to the value of the spring pasture. However, it should not be used where grasses and clovers are to be sown in the spring.

Wheat seeding is, of course, now subject to quota restrictions, but there is no restriction whatever on planting for grazing though the proper declaration of such intent must be made at county PMA office before seeding.

Much land is in good condition for seeding or can easily be prepared. Some of this was in corn or other crops that left the land more or less loose. Other land in condition to seed was actually prepared for seeding but left unseeded in anticipation of rains. Other land was seeded in late summer to grasses and legumes. For one reason or another these seedings have not produced established stands. These various kinds of bare and more or less loose land ought to be used first for emergency seeding of winter grains. They are most easily seeded, of course, and they need all possible protection against erosion. The seeds should be sown with a drill, if possible. This is especially desirable where previously sown grasses and legume seeds remain ungerminated in the soil.

Other land that may be used with some success for emergency seeding is in lespedeza, and largely dead meadows and pastures. This land can perhaps be loosened enough to prepare a fair seedbed but in order to avoid the danger of winter erosion it will be preferable, where possible to obtain a suitable implement, to drill the seed into the stubble or sod.

In general 300 to 500 pounds of a high analysis fertilizer should be applied per acre with these emergency seedings. Where hand seeding is done the fertilizer should be applied above the seed --not in contact with it.

Fertilize Permanent Pastures That Are Still Alive

Pastures that appear dead should be examined carefully to determine the condition. If half of the sod appears to be alive these fields can be made to produce some winter and early spring grazing if rain comes and the winter is mild. They should be fertilized with 300 to 500 pounds per acre of a high analysis complete fertilizer, applied in fall or winter.

Sow Permanent Pasture Mixtures Next Spring

It is too late to sow permanent pastures this fall with much probability of success. Fortunately spring seedings of rapid-growing grasses and legumes are usually successful in Kentucky. These should be sown next spring in the usual manner to replace the pastures destroyed by the drouth and, in many areas by insect attacks. (See Kentucky Extension Circular, #402.)

Sow Emergency Crops Next Summer

Even if the drouth should be broken by next spring, hay and pasture crops next year are likely to be short. Plans for next years' planting should, therefore include soybeans and, especially, sudan grass, or a mixture of sudan grass and soybeans. (See Extension Circular 510.)

Use Temporary Silos

Temporary silos may be used for storing corn, beans, sudan grass, and other crops for feed. Grass silage may be made of chopped or unchopped material. Listed and briefly described below are several types of temporary silos that have been used by Kentucky farmers. For more information on how to build these silos, ask your county agent for Mimeograph No. A-130, "Temporary Silos."

Trench silos

The trench silo is made by digging a trench into a hillside, so that the silo will have drainage toward the open lower end of the trench. The width, depth, and length of the trench may vary, depending upon the number of tons of silage to be stored and the types of equipment used in building the silo. The trench is made wider at the top than at the bottom to prevent the side-walls caving in. It is filled with silage slightly above the top of the trench, then covered with straw or chaff, and then with 8 or 10 inches of earth. The crowned top will provide drainage away from the silo and reduce spoilage. Spoilage of 5 to 25 percent can be expected, depending upon the condition of the silage when put in the silo and how tightly it is packed. Packing may be done with a team or tractor. As much air space as possible must be eliminated to reduce spoilage to a minimum.

Silos made of snow fencing, corn cribbing, picket fencing

Local lumber or hardware dealers may have fencing in stock that can be used in making a circular upright silo. These silos are built in sections of such height as the materials available. A reinforced waterproof paper is used inside the fencing next to the silage to keep air from entering. These silos may be 16 ft. in diameter and 16 ft. high. Such a silo would hold 38 to 44 tons of silage.

Box silo

The box silo is a long, narrow above-ground box built of lumber or stone with earth bottom and open top. The end of the box may be about 7 feet square and the length varies with the amount of silage to be stored. Posts can be set in the ground to support the sidewalls. A waterproof paper is used on the inside walls of the box to keep out air, and the silage is covered with a layer of straw or chaff and dirt. For feeding, the silage is taken from one end of the box.

Brick silo

A small silo about 10' in diameter and 30' high may be built of brick. The cost of materials for such a silo is about \$350. and it holds 40 to 60 tons of silage. Plans for the silo are available from your county agent.

Straw silo

Silos made of baled straw have been used in Kentucky. They

are made by stacking bales of straw or hay on edge to form a circular wall, then putting two strands of No. 9 wire around each row of bales to hold the pressure of the silage. The rows of bales are laid as the silo is filled.

With this silo a large amount of spoilage might be expected; it would be the least dependable type of silo to use.

Feeding the Dairy Herd

Every farmer who has a dairy herd should immediately make an inventory of feed supplies on hand. This practice may help avoid buying several hundred dollars worth of roughage this winter.

Some general recommendations are as follows:

1. Feed the best-quality hay to calves one year of age and under.
2. The milk-feed price relationship will usually favor the feeding of some high-quality hay and moderate amounts of concentrates to high-producing milk cows.
3. When no silage is fed do not go below 10 pounds of hay per cow daily.
4. When corn silage or grass silage is available in large quantities and very little hay is on hand, all the roughage could be supplied in the form of silage.
5. It is doubtful if Vitamin A deficiencies will become apparent this winter even under roughage feeding programs that include the use of feeds fairly low in carotene. Most animals have a storage of the vitamin in their livers at the beginning of the winter feeding program. Corn silage cut with the leaves green and fed at the rate of 17 to 18 pounds per day will provide twice the vitamin A required by cows for reproduction.
6. Molasses can replace corn if 6 1/2 gallons of molasses can be bought at a cost less than for a bushel of shelled corn. With corn at \$1.60 per bushel, it would be worth about 24¢ per gallon. If corn is available at \$1.00 per bushel, molasses would be too expensive in most cases, although small quantities might be used profitably to increase the palatability of available low-quality roughage. If molasses is a good buy it can be fed at a rate up to 2 or 3 pounds per day. Plenty of good roughage relatively high in protein should be fed at the same time.
7. If one does not have silage, and about two-thirds enough hay, he can furnish the remainder of the roughage by feeding 7 or 8 pounds of shredded corn stover per day. The grain mixture would need 2 or 3 percent more pro-

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- tein than otherwise, or 16 to 18 percent in this situation.
8. When reduced quantities of legume hay are fed, sufficient quantities of mineral such as odorless steamed bonemeal should be in the grain mixture or fed free-choice to the animals.
 9. Grain can replace roughages to a certain extent, but it is best not to go below 10 pounds of hay without silage. In drouth emergency counties, cereal feeds can be purchased for less than roughages, considering the pounds of total digestible nutrients obtained. Eight-tenths of a pound of grain will replace a pound or more of roughage.

Grain Mixtures

The grain mixtures fed should vary according to availability and prices in various areas. In drouth emergency counties, wheat can be used to replace corn. It is best never to use more than one-third wheat in grain mixture. Barley can also be used to replace corn-and-cob meal. Many areas of the state will use large quantities of low-grade roughage, and because of this most grain mixtures will need to be high in protein (18 to 20 percent total protein).

Suggested Grain Mixtures

Ration 1-19.4% Protein
(To balance low protein roughage)

800 lb. corn-and-cob meal
600 lb. ground oats
560 lb. Cottonseed meal
(or equivalent)
20 lb. Salt
20 lb. Steamed bonemeal

Ration 11-15.5% Protein
(To balance medium protein roughage)

1,000 lb. corn-and-cob meal
600 lb. oats
360 lb. cottonseed meal
20 lb. Salt
20 lb. Steamed bonemeal

Note -- Refer to Extension Circular 474, "Feeding Dairy Cows," for other suggested ration.

Table 1 can be used as a guide as to the amount of grain to feed. It should be pointed out that most dairymen should use the third hay-consumption column when the amount of roughage is limited and it is of a poor quality. (See Table I on following page).

Table I
Grain Feeding Schedule for Cows Not On Pasture*
(Adapted from Circular 474)

Roughage consumed per 100 lb liveweight daily**			Total lb of grain mixture or concentrate to feed daily	
2 1/2 lb. Very liberal feeding of good roughage	2 lb. Usual rate of feeding good hay or good hay and silage	1 1/2 lb Scanty amount of good roughage or feeding poor roughage	Holstein Ayrshire & Brown Swiss	Jersey & Guernsey
Milk Produced Daily			Pounds	Pounds
Pounds	Pounds	Pounds	Pounds	Pounds
17	10	--	--	3
21	14	--	2	5
25	18	11	4	8
29	22	15	5	10
33	26	19	7	12
37	30	23	8	14
41	34	27	10	16
45	38	31	12	18
49	42	35	13	20
53	46	39	15	22
57	50	43	16	--
61	54	47	18	--
65	58	51	20	--
69	62	55	22	--

*To illustrate the use of the table let us assume that a Jersey cow yielding 23 pounds of milk is fed 1 1/2 lb of poor hay equivalent per 100 lb of liveweight. We go down the column, which is for the rate of roughage feeding, until we come to figure 23. We then go horizontally to the right across the Table until we reach the column for Jersey and Guernsey, where we find the figure 14. Therefore, this cow should be fed 14 lb of a good grain mixture to meet her requirements.

**Three pounds of silage will replace 1 pound of hay. Dried fodder may replace a portion of the hay pound for pound.

Caution: Regardless of the amount of grain theoretically required by a cow, she should not be fed more than she can safely digest.

Feeding Beef Cattle

Where the corn crop has been ruined, cattle that normally would have gotten 90 to 180 days of full grain feeding may be sold with only grass finish or, if their weight and quality justify, they may be roughed through the winter and finished on grass next summer with little or no grain. Their older age at that time will result in a nicer grass finish than is possible on younger cattle, and while the selling price might be lower, the cost of grains will also be much lower. Then, too, such cattle will be carried past the usually poor fall market for grass cattle.

Calves produced on the Kentucky Cow-and-Calf plan will be lighter and thinner than usual, because of drouthy pastures. This has been a year when creep feeding has paid well. Calves should be weaned by early November and then fed cracked corn, or other grain, and protein concentrate (preferably pea-sized) in the ratio of about 10 to 1 until they reach at least 600 pounds in weight and a reasonably good market finish. If they get no pasture forage, they should also get at least 4 pounds of good leafy legume hay per day. With such calves it will pay to feed this quality of hay even if it has to be bought, since young calves cannot use entirely coarse, unpalatable roughages to advantage. Calves carrying one-half dairy blood should not be kept much past a year of age because the older they get the plainer they become.

Weanling feeder calves of principally beef breeding and weighing 400 pounds this fall should be wintered so as to gain at least 1 pound per head per day. Rations that will accomplish this without pasture are as follows:

Ration I: Grass hay, 10 pounds; cottonseed or soybean oil-meal, 1 pound.

Ration II: Corn silage, 20 pounds; alfalfa hay, 6 pounds.

Ration III: Corn cobs, 7.5 pounds; and Purdue Supplement A, 3.5 pounds.

Slaughter cattle of rather plain quality and carrying only a medium finish usually sell to best advantage in late spring and early summer. Those farmers who have such cattle that did not reach market finish by the end of the grazing season should consider the possibility of wintering them on roughage, plus a total of about 10 bushels of corn per animal, for sale around next May. Harvested roughage for their winter feeding can be of rather plain quality, such as straw, stover, stover silage, cottonseed hulls, and such provided they are also fed at least 1 pound of protein concentrate and 1 pound alfalfa meal per head per day. Such corn as is to be

fed could well be saved for the last 90 days before they are marketed. Typical winter daily rations for an 800 pound stocker steer would be:

- Ration I: Straw, 10 pounds; shelled corn, 5 pounds; alfalfa meal, 1 pound; and cottonseed meal, 1 pound.
 Ration II: Grass hay, 10 pounds; straw, 6 pounds; cottonseed meal, 1 pound; and alfalfa meal, 1 pound

Slaughter cattle of better than average quality may justify a full feed in drylot, and marketing as soon after the first of the year as the market looks good. Such cattle need at least 6 pounds of roughage, a full feed of corn (or other grain), and 1/2 to 1 1/2 pounds of protein supplement per steer per day depending on the quality of the hay fed.

Breeding cattle should be wintered as cheaply as possible and yet they should be kept in reasonable condition and free from deficiencies of protein, vitamins, or minerals. Some typical daily rations for wintering 900-pound beef cows adequately when no pasture is available are as follows:

- Ration I: Legume hay, 5 pounds; and straw or stover, 15 pounds.
 Ration II: Grass hay, 20 pounds; and high protein supplement 0.5 pounds.
 Ration III: Straw or stover, 20 pounds; high protein supplement 1.5 pounds; and alfalfa meal, 1 pound.
 Ration IV: Corn or cornsilage, 35 pounds and legume hay, 6 pounds.
 Ration V: Corn or cornsilage, 25 pounds; straw, 10 pounds; and high protein supplement, 1.5 pounds.
 Ration VI: Straw, 10 pounds; shelled corn, 7.5 pounds; alfalfa meal, 1 pound; and cottonseed meal, 1 pound.

Note: Salt, and fine-ground limestone should be available to all cattle at all times.

Some general considerations:

1. Now is a good time to sell shy breeders, diseased animals, very old animals, off-type cattle, and those that will sell to advantage as feeders or light slaughter cattle, and put the rest through the winter on as little purchased feed as may be required.
2. After most drouths replacement cattle are scarce. Farmers should keep their breeding herds together if they possibly can, and winter as many thin steers as they can for their 1954 needs.
3. Drouth insurance in the form of a cheap trench silo filled with surplus grass, legumes, or corn and left

until needed, should be provided as soon as normal rainfall produces a surplus of forage and in anticipation of the next drouth. Such drouth insurance may be located back on the farm in an out-of-the-way spot. It needs no firm bottom and no hard road to it, since it will be used only in a drouth. A drouth can "make or break" a beef cattle man, depending on whether or not he has prepared for it.

4. To grow and reproduce normally, cattle must have access to some green forage or at least 4 pounds daily of green, leafy legume hay if their vitamin A needs are to be supplied. If they have neither of the above for as long as two months they should be fed at least 2,000 units of vitamin A per hundredweight daily. Double the amount for pregnant or milking animals. Dry vitamin A supplements are now available at reasonable prices and are especially valuable under drouth conditions.
5. As the quality of the roughage decreases the need for calcium increases. Fine-ground limestone (crusher dust from agricultural limestone is excellent) makes a cheap source of calcium. Feed it and salt in separate compartments of a mineral feeder. See blueprint Ky. 11.772-14, available from your county agent for plans of such a feeder.
6. An acre of corn made into silage will produce twice as much beef as the same acre fed as stover and shelled corn.
7. A ton of corn silage has a feeding value equal to about 600 pounds of legume hay and 4.5 bushels of corn, when properly supplemented. (See the foregoing rations).
8. Ground corncobs, straw, or stover have a feeding value close to that of grass hay when supplemented with adequate protein, vitamins, and minerals. (See the foregoing rations.)
9. Urea can be used in place of part of the protein supplement in beef rations but must be mixed thoroughly with the supplement in the ratio of 7 parts of meal to 1 part of urea because it is poisonous if too much is used. Because it contains the equivalent of 262 percent crude protein, an ounce of it will supply as much protein equivalent as 6 or 7 ounces of soybean or cottonseed meal. Ease cattle onto the urea mixture gradually and never feed a steer or cow more than 3 ounces of urea per day.
10. Urea has no value for non-ruminants such as hogs and chickens.
11. Molasses is a good appetizer when sprinkled on coarse

roughage such as ground corncobs or cottonseed hulls. It is worth one-half to three-fourths as much as corn, pound for pound, and is now selling at a favorable price after many years of high prices.

Feeding Hogs

Farmers who are short of corn should consider the possibility of planting a liberal acreage of barley, both for winter grazing and for fattening next spring's crop of pigs. Ground barley is worth about 90 percent as much as corn, pound for pound, for fattening hogs. Barley should always be ground for hogs, but if it is badly affected with scab, it is not suited for feeding to hogs. The heavier and plumper the barley is, the more value it has for hog feeding. Because of the higher protein content of barley, about one-fourth less protein supplement is needed when barley is fed than when corn is used.

Feeding Sheep

Cull all nonbreeding ewes and those with bad mouths or udders, but keep good ewes even if you have to buy feed. Prospects for the sheep flock to make money are good.

Use pasture, where available, as much as possible. If rains come this fall, small grain pasture and some permanent pastures should furnish some grazing this winter. Save your better quality roughage for feeding to ewes during late pregnancy and around lambing time.

Keep ewes in good thrifty field condition and have them actually gaining in flesh during the last month of pregnancy. Feel their backs at frequent intervals to see if they are improving in condition. If not, increase their ration. Ewes getting little or no pasture may need as much as 4 pounds of hay or its equivalent at least half of which is legume. During the last month of pregnancy add 0.5 pound of shelled corn or corn and small grain. After lambing increase to about 1.0 pound per ewe. In many flocks it may pay to make a separate group of ewes with twin lambs and feed them even more grain than this. If on good winter pasture the roughage allowance may be cut in half or more. Good quality grass hay may replace mixed or legume hay if enough protein supplement is mixed with the grain to balance the ration. Seldom will more than 0.25 pound per day of a supplement such as linseed meal, soybean oil-meal or cottonseed meal be needed.

Grass or corn silage may be used effectively in wintering sheep. About 2.5 pounds of good quality grass silage will replace

each pound of hay in the ration for ewes but it is better to feed some dry roughage along with the silage. Corn silage has about the same replacement value except that from 0.25 to 0.5 pound of protein supplement should be used in the ration.

If feed has to be purchased, grain probably will be a better buy than hay. Corn may be used to replace half of the roughage in the above recommendations if done very gradually and on an equal energy basis at the rate of 1 pound of corn to 1.6 pounds of hay or hay equivalent. Since ewes have a tendency to go off feed as the grain allowance is increased and thus reduce their total energy intake, changes should be made at intervals of at least three days and preferably longer late in the wintering period when the grain level becomes high.

Creep feeding of lambs may be especially profitable this year with little winter pasture available and possibility of late pastures next spring. Cracked corn fed until spring pasture is available is as good a creep ration as more expensive complex mixtures. It should be fed in a grain trough suitable for lambs and should be kept free of any filth.

Be sure to furnish loose phenothiazine-salt mixture and water. On rations containing no legume roughage but adequate grain, ground limestone as a source of calcium may be used as the only other mineral supplement. If on a low grain allowance bone-meal is preferable as it also furnishes phosphorus which tends to be deficient in roughages.

Vitamin A may be deficient in some instances where very low quality hay is used or where poor quality corn silage is used as the only roughage. This is particularly true in instances where ewes have been on very poor pasture during the late summer and fall and have been unable to build up liver storage of vitamin A. Vitamin A supplements suitable for mixing with grain are available and may be used according to directions.

For further aid in formulating rations contact your county agent or write the Animal Husbandry Section, University of Kentucky, Lexington.

Pasture for Pullets

It is generally understood that a good range will save 20 percent of the feed cost in raising pullets for flock replacement. Since very little poultry range was available during the past summer and fall, poultry farmers have had to spend approximately 20¢ extra for feed per pullet housed. Numerous temporary pastures were planted

for poultry range this fall and the majority of these also were failures. Many farmers will have to plant temporary pastures for the spring months of 1954. All of this adds to the cost of raising the flock replacement pullets, but temporary pastures will still be cheaper than buying feed by the bag.

Rape is one of the best temporary pastures for poultry. Sow the rape early in the spring at the rate of 15 to 20 pounds per acre.

Water Supplies for Livestock

Farmers are well aware that, for many of them, the critical point in getting their livestock through the winter may not be feed so much as obtaining water, unless rains come soon.

On most farms little or nothing can now be done to help the immediate water supply situation, except perhaps drilling new wells in areas where such drilling would seem to offer chances of success.

Now may be a good time, however, to clean the old pond and to make plans for new farm ponds, well located and adequate in size and structure to supply plenty of water even during extended drouth. In areas where little difficulty is experienced in constructing ponds which will hold water, farmers will want to consider the possibilities of constructing ponds adequate not only for livestock water but for irrigation of certain critical acreages. No farmer now suffering from drouth needs to be told what it would mean to him in another such emergency to have a pond adequate for irrigation of 10, 20, or more acres of emergency pasture or other crop land.

Both for longer life of the pond and cooler, cleaner water, the pond should be fenced off from livestock and the water piped by gravity to troughs below the dam. See Kentucky Extension Circular 470 and Leaflet 129 on the construction of farm reservoirs and dams.

For livestock water another possibility is the construction of large half-submerged cisterns at the tobacco barn. Costs of such structures are not excessive. Plans may be obtained from the Section of Agricultural Engineering, University of Kentucky.

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