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Suggestions for the Winter Feeding of Steers

BY

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The large steer-feeding barn, Experiment Station farm.

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SUGGESTIONS FOR THE WINTER FEEDING OF STEERS

By E. S. GOOD

In this circular we offer suggestions for the fattening and wintering of steers. The methods outlined have been found efficient and economical from experiments conducted at the Kentucky Experiment Station.

To begin with, it may be well to caution the feeder who intends to fatten his cattle during the winter and spring months not to wait too long in the fall before beginning his feeding operations. Sometimes the amount and quality of the grass on which the steers are running in the fall are over-estimated and the steers may simply be maintaining their weight without making any gains, or actual "shrinks" may occur. These shrinks are costly, as it takes considerable feed, which is now very high in price, to regain lost weight; therefore, it is best to begin feeding steers on pasture before it becomes very much depleted, as this keeps them gaining and at the same time gradually accustoms them to the feed they will receive during the winter.

At times, steers are purchased at the markets and shipped to the farm, or purchased from a neighbor, driven home and turned at once into the feed lot. It may then take several days, or even a week or two, before the steers regain their shrink. This is usually the case if they have been taken off of a succulent pasture and given dry feeds. Tho we feed very little clover hay to the steers at the Experiment Station, on account of the high price, yet during this preliminary feeding period we allow steers a liberal amount of this kind of hay.

The large steer-feeding barn, Experiment Station farm.

Steers relish clover hay and will eat a goodly amount of it; thus they quickly regain a shrink. All the corn stover (stalks and leaves without the ears) the steers will eat should be given at this time. As the animal becomes accustomed to other roughages, the clover hay can be eliminated, unless it is desired to continue feeding it during the entire period.

WATER.

Steers should be furnished with all the water they desire. This is a factor too often neglected in the fattening of animals.

SALT.

After steers have been gradually accustomed to salt, it should be kept before them all the time. This salt should be kept clean.

PLAN OF FEEDING.

As feed stuffs are now high in price it will, in all probability, not pay to put too high a finish on cattle, tho they should be put in good condition. The different grades of condition are medium, good, choice and prime. By condition we mean the amount of fat the animal carries.

The average steer in Kentucky grades too low in form and quality to take on a prime condition, therefore it does not pay to attempt to put him in prime condition. He can be put in good to choice condition and the plan we outline will accomplish this purpose economically.

CORN SILAGE.

Whenever possible, the feeder should provide himself with a silo, for in this way all of the corn crop can be conserved. In this section of the country the stover, if properly handled, is worth about one-third of the total corn crop, and at the

present price of corn one can readily see that this is a considerable item. When corn is husked and stover allowed to remain out and weather all winter, it loses a considerable proportion of its nutrients. Moreover, we have found that from 20 to 50 per cent. of stover in such a state is refused by the steer, on account of its woody and unpalatable condition. Such is not the case if the corn is put into the silo, for then the steer will eat all of it. There is practically no waste in such a procedure. Corn silage decreases, to quite an extent, the cost of fattening the cattle. Also but little trouble is experienced in feeding cattle, where silage is used. It is a disagreeable job to haul stover from the field to stock in stormy weather.

SORGHUM SILAGE.

Tests at the Experiment Station show that sorghum silage compares quite favorably with corn silage in the fattening of cattle and for the present we would recommend that the system of feeding be the same where it is employed as where corn silage is used.

SILAGE NOT A COMPLETE FEED.

While silage is an ideal roughage, the mistake must not be made of relying on it as a complete feed. Silage lacks protein, that substance which is necessary in the production of muscle and bone. The digestive juices also require protein in their production. Silage should be supplemented with some feed containing considerable protein, such as cottonseed meal, linseed oil meal, soy-bean meal, peanut meal, velvet-bean feed, or one of the legume hays. The amount of these supplementary feeds to be given depends upon whether the steer is to be fattened for the market, or whether he is to be wintered so as to produce a limited gain and then be finished on grass the following summer.

SYSTEM OF FEEDING STEERS WHERE CORN OR SORGHUM SILAGE IS EMPLOYED.

In outlining a system of feeding, the amount of silage on hand should be estimated, and then only the number of cattle fed which can use this amount. The cattle should be sold before the silage is exhausted, for when they are deprived of succulent feed to which they have been accustomed they usually shrink. If the feeding period is of five months' duration, and the steers weigh about 1,000 pounds at the beginning of this period, we have found the following plan efficient and economical. For a feeding period of this length we would feed no corn for the first 60 days. Begin by allowing 10 to 15 pounds of silage per head the first day and gradually increase the amount so that at the end of six or seven days the steers will be getting all they will clean up without waste, and so continue thruout the feeding period. In cold weather a two-year-old steer will eat from 45 to 50 pounds of corn silage per day. Toward the end of the feeding period, when the corn is added to the ration, he will eat from 35 to 40 pounds per day. In the absence of corn, more cottonseed meal should be fed than if corn, in addition to that in the silage, was given from the beginning. Begin with a little cottonseed meal, one-half pound per head, mixed with the silage, for if only a few steers have previously eaten cottonseed meal, they will come up to the trough and eat while the others remain back. At such a time it is easy to over-feed the few that eat. As soon as all the steers are eating the meal, which should be in the course of two or three days, increase the amount given to one pound per head, per day, and thereafter increase it gradually every few days so that in 30 days' time they will be getting 3.5 pounds per head, daily; on the 45th day they should be getting 3.75 pounds per head, daily; on the 110th day, 4 pounds; and on the 130th day, 4.25 pounds, which amount should be continued until the steers are sold. (See Table 1.)

At the end of 60 days shelled corn is introduced into the ration at the rate of 3 pounds per head, daily, and gradually

increased so that when the steers go to the market they are getting about 14 pounds per head daily. If 120 instead of 150 days are to be used for the feeding period, then begin with the shelled corn on the 50th day. In addition to these feeds, they should at all times be allowed all the wheat straw, oat straw, stover, or soy-bean straw they will clean up. We have found soy-bean straw particularly good for this purpose, as the steers relish it. If a full feed of silage is given, from 2 to 3 pounds per day of any of the roughages mentioned will suffice. With as much cottonseed meal allowed as noted in Table 1, clover or alfalfa hay is not needed. Cheaper roughages can be used. (See Table 1.)

The following table illustrates the way to increase these feeds for feeders averaging 1,000 pounds. If a feeder weighs more or less than 1,000 pounds, the feeds should be raised or lowered in amount proportionately.

TABLE 1.

	Corn or Sorghum Silage.	Cottonseed Meal.	Shelled Corn.	Roughage other than Silage.
1st day	10 lbs.	½ lbs.		All they will eat
2nd "	10 "	½ "		"
3rd "	15 "	½ "		"
4th "	20 "	1 "		"
5th "	30 "	1 "		"
6th "	35 "	1 "		"
7th "	35 "	1½ "		"
8th "	40 "	1½ "		"
9th "	40 "	1½ "		"
10th "	40 "	2 "		"
11th "	40 "	2 "		"
12th "	40 "	2 "		"
13th "	40 "	2½ "		"
14th "	45 "	2½ "		"
15th "	45 "	2½ "		"
16th "	45 "	2¾ "		"
17th "	45 "	2¾ "		"
18th "	45 "	3 "		2 or 3 lbs. daily
19th "	45 "	3 "		"
20th "	45 "	3 "		"
21st "	45 "	3¼ "		"
22nd "	45 "	3¼ "		"
23rd "	45 "	3¼ "		"
24th "	45 "	3¼ "		"
25th "	45 "	3¼ "		"
26th "	45 "	3¼ "		"
27th "	45 "	3¼ "		"
28th "	45 "	3¼ "		"
29th "	45 "	3¼ "		"
30th "	50 "	3½ "		"
31st "	50 "	3½ "		"
45th "	50 "	3¾ "		"
60th "	45 "	3¾ "	3 lbs.	"
70th "	45 "	3¾ "	7 "	"
80th "	45 "	3¾ "	10 "	"
110th "	40 "	4 "	11 "	"
130th "	40 "	4¼ "	13 "	"
140th "	35 "	4¼ "	14 "	"
150th "	35 "	4¼ "	14 "	"

In our experience we have found that shelled corn produced better gains than did broken ear corn, when fed in connection with corn silage and we would advise its use when practicable. If in the system just outlined shelled corn can not be fed because there is no provision on the farm for shelling the corn, then allow three pounds of broken ear corn, or corn and cob meal, per day, at the beginning of the feeding period, in addition to the silage, cottonseed meal and roughages mentioned. As soon as all the steers eat the broken ear corn, increase the amount to 5 pounds per head; on the 30th day raise it to 8 pounds; on the 50th day to 10 pounds; on the 80th day to 12 pounds; on the 100th day to 15 pounds, and continue this amount until they are marketed. In this system we would decrease the cottonseed meal about 10 per cent. from that indicated in Table 1.

FATTENING CATTLE ON CORN SILAGE AND COTTONSEED MEAL.

From evidence of our experimental work conducted so far, as well as that conducted at other stations, it has been found that a medium to good finish can be put on cattle with corn silage, cottonseed meal and some roughage such as oat straw, wheat straw or clover hay, without the addition of corn, by feeding a liberal amount of the cottonseed meal. Only small amounts of cottonseed meal should be allowed until all of the steers have learned to come up to the trough to eat it, which ought to be in the course of a week's time. Then allow the steers two pounds of cottonseed meal per head. The meal should then be increased half a pound every ten days until the cattle get 3.5 pounds per head; then increase the meal a small amount every ten days so that at the end of the second month they would be getting 4.5 pounds per head daily; at the end of the third month, 5.5 pounds; at the end of the fourth month, 6.5 pounds; and at the end of the fifth month, 7.5 pounds. By this time the cattle ought to be in medium to good market condition, altho if there is plenty of silage and the market warrants the keeping of the cattle, we believe it

would pay to feed another month, during which time the steers could be given 8 pounds per day. The above amounts are based on a thousand-pound steer at the beginning.

We should mention that it is dangerous to feed as much cottonseed meal as is indicated, during the summer months, as it may have a toxic effect at such a time. We have fed the amounts mentioned, during the winter and early spring months with no bad effects.

THE FATTENING OF TWO-YEAR-OLD STEERS WHERE CORN OR SORGHUM SILAGE IS NOT AVAILABLE.

Where silage is not available in the fattening of two-year-old steers, the roughage can consist of such material as corn stover (stalks and leaves without the ears), oat straw, wheat straw, soy-bean straw, clover hay, alfalfa or cowpea hay. Corn and clover hay form a good ration for a fattening steer, but clover hay is so high in price that it is usually advisable to use other roughages in its place, unless the clover hay is on the farm to be used. One of the aims in steer feeding operations is to feed those roughages that other animals on the farm do not relish. When other roughages than clover hay are used, cottonseed meal should be fed to supply the necessary protein to balance the ration, for cottonseed meal at present prices furnishes protein more cheaply than does clover hay. Steers fattened without silage must have corn from the beginning, using 3 pounds of broken ear corn per day at first and gradually increasing to 15 pounds per thousand pounds weight of steers in 35 days' time; then gradually increase to a full feed, in 15 days' time, and continue to give all that they will eat without waste. If no clover or other legume hay is given, cottonseed meal can be fed at the rate of one-half pound per head, to begin with, gradually increased to 3 pounds per thousand pounds live weight at the end of 30 days, and increased at the rate of 3 pounds per thousand pounds live weight as the cattle grow and fatten. If they are allowed all the clover hay they desire, the cottonseed meal can be reduced to one-half of the amounts stated above.

CORN SILAGE, CLOVER HAY AND CORN AS A RATION FOR FATTENING STEERS.

There are times when it is desirable to feed the clover or other legume crops which have been raised on the farm, corn silage also to be used as a part of the ration. The question is often asked whether it will pay to add a nitrogenous concentrate, such as cottonseed meal, linseed meal, etc., to a ration of clover hay, corn silage and corn. Experiments have shown that while a full feed of clover hay furnishes considerable protein, it does not furnish enough with the combination of feeds mentioned, to make as rapid and economical gains as when a little cottonseed meal is used—say, one pound of the meal per day, per thousand pounds of live weight of cattle.

THE FATTENING OF YEARLINGS FOR BABY BEEF.

As young animals have a tendency to grow instead of fatten, they must have grain from the beginning, no matter if corn silage is fed. Shelled corn is a good form in which this grain can be fed to young animals, beginning with a small amount, 2 pounds per head daily, and gradually increasing to a full feed in 30 days' time. This amount will be about 1.2 pounds per hundred weight of animal. Corn silage will add to the efficiency of the ration and much reduce the cost. While young steers can make good use of coarse roughages such as straw and stover, it is well to allow them in addition to these four or five pounds of clover or other legume hay daily. If a full feed of clover hay is allowed, 1.5 pounds of cottonseed meal per thousand pounds live weight will suffice. If 5 pounds only of this are given, then allow 3 pounds of cottonseed meal per thousand pounds of live weight. If no clover hay is fed, allow 3.5 pounds of the meal per one thousand pounds of live weight.

In the feeding of baby beef under 600 pounds, we would advocate the use of linseed oil meal (old process) instead of cottonseed meal because cottonseed meal is liable to have a toxic effect on young animals.

NITROGENOUS SUPPLEMENTS OTHER THAN COTTONSEED MEAL.

In this discussion we have emphasized cottonseed meal as a nitrogenous concentrate to be used in cattle feeding. This is due mainly to the fact that we are near that part of the country which produces this feed stuff in abundance. Other nitrogenous feeds that can be used are linseed oil meal, soy-bean meal, velvet-bean feed and peanut meal. Linseed oil meal and cottonseed meal are usually considered of about equal value in the fattening of cattle. Soy-bean meal is nearly equal to cottonseed meal for the first three months of the feeding period, after which time cattle do not relish it as they do cottonseed meal. Velvet-bean feed is worth from one-half to three-fifths as much as is cottonseed meal, in this connection. Very little peanut meal has been fed in this section of the country. Containing considerable oil, peanut meal does not keep as well as do the other feeds mentioned.

Table 2 gives a comparison of the digestible protein, carbohydrates and fat; also the nutritive ratio of these feeds.

TABLE 2.

Percentage of Digestible Nutrients:

	Protein.	Carbohydrates.	Fat.	Nutritive Ratio
Cottonseed meal—36%	31.6	25.6	7.8	1:1.4
Linseed oil meal (O. P.)	30.2	32.6	6.7	1:1.6
Linseed oil meal (N. P.)	31.7	37.9	2.8	1:1.4
Soy-bean meal, fat not extracted	30.7	22.8	14.4	1:1.8
Peanut with hull	18.4	15.3	32.6	1:4.8
Peanut kernel without hull	24.1	14.9	40.4	1:4.4
Velvet-bean, seed	18.1	50.8	5.3	1:3.5
Velvet-bean feed (seed and pod)	14.9	51.7	3.8	1:4.0

WINTERING CATTLE WHICH ARE TO BE FINISHED ON GRASS THE FOLLOWING SUMMER.

The result of three years' tests at the Experiment Station showed that corn silage greatly reduced the cost of wintering steers, as compared with a system of feeding in which corn silage was not employed. While in two of the tests the lot of steers receiving silage during the winter did not make quite as good gains on pasture the following summer as did the lot not receiving the silage during the winter, yet the cost of the winter and summer gains was less where silage was employed during the winter and the net profit in each test was considerably in favor of silage. No grain was fed to the steers on pasture. We aimed to secure about 1.33 pounds daily gain per steer during the winter, which can be obtained with an average daily ration of 28 pounds corn silage, 1.5 pounds cottonseed meal and, in addition to silage, as much other roughage (corn stover, straw, etc.) as the steers will eat, which will be about 8 pounds per day. When silage is not available, the following average daily ration will produce about 1.3 pounds gain per day: broken ear corn, 6.75 pounds; cottonseed meal, 1.5 pounds; and all the corn stover and straw the steers will eat. In getting at these averages, begin with feeding .5 pound of cottonseed meal and gradually increase to 2 pounds per day, in five months' time. Begin with 3 pounds per head daily of broken ear corn and increase gradually so as to end with about 8 pounds daily, in this same period of time.

FATTENING CATTLE CONFINED VS. OPEN RANGE DURING THE WINTER MONTHS.

In three consecutive tests at the Kentucky Experiment Station, steers confined in the barn made better and more economical gains than did steers having access to the barn and the run of a 20 acre pasture. Also, by keeping the steers confined in the barn, over 60 per cent. more manure was secured than by allowing the steers shelter and range.

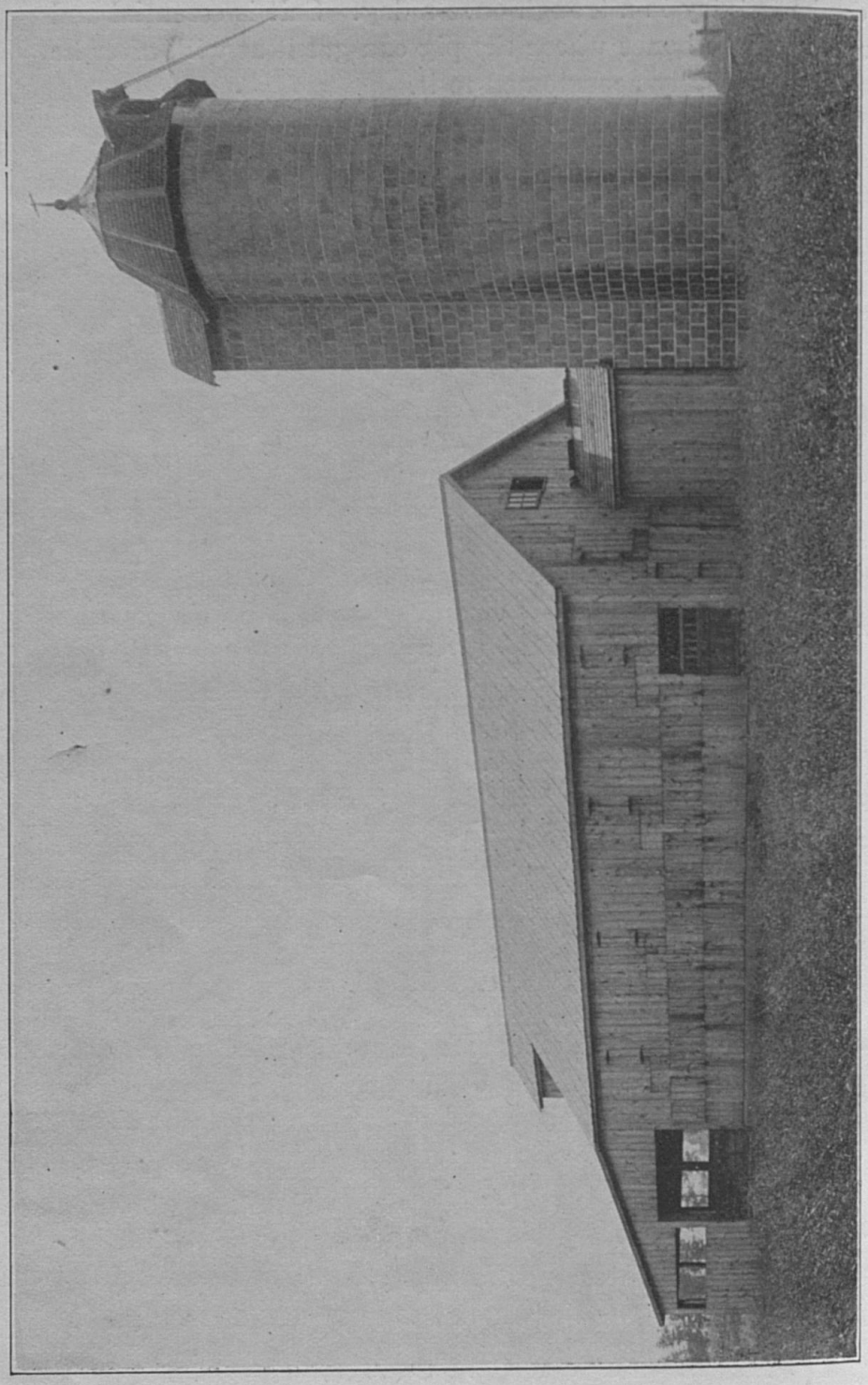
PIGS FOLLOWING STEERS.

It is always profitable to run hogs after cattle being fed grain, as the undigested kernels of corn in the droppings of steers are thus utilized for the production of pork. It should be borne in mind, however, that the steer digests most of the kernels of silage corn, hence little is left for the hog. When silage alone is fed, one 100 pound shote running after twenty 1,000 pound steers will gather up the waste. According to the system of feeding advocated in this circular, where silage is used, corn is introduced into the ration at the end of 60 days, at which time one 100 pound shote may be turned in after 10 steers; four weeks from this date another shote may be turned in with the lot of 10 steers; and three weeks from this date a third pig may be allowed to follow 10 steers, if it is seen that too much corn is being wasted. It should always be borne in mind that if too many pigs are allowed to follow the steers they may get but little more than a maintenance ration which, of course, is unprofitable. A good guide to follow in any ration for steers is to have such a number of pigs running after the steers that they cannot quite consume all the waste; that is, there still will be some kernels of grain left in the droppings.

By feeding grain it is quite often the practis to add a larger number of pigs to a lot of steers than the number sufficient to take care of the waste. This is a good practis, provided the grain is so fed that the steers do not have access to it. This can be done by fencing off a portion of the lot or by feeding in a trough to which the steers cannot gain access. If ear corn is fed the hogs so that the steer can get it, he soon learns of it and will leave his ration to consume it. Too much corn should not be fed the pigs for then they will not consume the waste after the steers.

Tho the pig will get some protein from the droppings of the steers, especially if a nitrogenous supplement such as cotton-seed meal is given the steers, it will be found profitable to feed about .3 of a pound of digester tankage or meat meal, per pig, daily. The pig will soon learn to eat the tankage greedily.

It can be fed dry in a trough once a day. Salt is essential and can be put into boxes where the pig can get it at will, after he has been gradually accustomed to it.



The small steer-feeding barn, Experiment Station farm.