WHEN TO BUY;   AND WHEN TO SELL A BUSHEL OF CORN.

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One of the greatest problems confronting the American people of to-day is the food supply.

In the United States we consume something like 14,000,000 tons of grain as human food and about 6,000,000 tons of beef annually. The amount of beef consumed annually by each person in the U. S. amounts to about 150 pounds. Every pound of beef produced by a choice feeder is worth from one to three cents more than that of the scrub.

As to the time of year to feed, men differ. Many of our largest cattle feeders claim they cannot afford to feed during the winter months, as it requires more feed per pound of gain.

The question of shelter and yards is very important. At the Experiment Station of Kansas there was a saving of 12 per cent in cost of feed on steers well cared for, as compared with those that had but poor shelter and care. An experiment, the average of which out of 100 hogs in winter and 99 in summer, shoes a saving of 11 per cent in favor of summer feeding. Corn will perhaps even hold its place as the chief feed for fattening stock and especially cattle and hogs. It is safe to feed for either grass or dry-lot feeding. In the feeding experiments of the Kansas Station they have been unable to find any combination of feeds that will equal corn and cob meal and good alfalfa hay. It takes all the way from 400 to 1500 pounds of feed to produce a hundred pounds of gain, the amount depending on the kinds of feed used and the length of the feeding period. From a fat-stock show record, the cost of gain

is given as $4.03 for calves, $7.98 for yearlings, and $12.54 for two-year-olds. The amount of grain required per hundred pounds of ga in increases about 10 per cent after 60 days, 15 per cent after 90 days, and 20 per cent after 120 days feeding. Silage ranks with ear corn and corn and cob meal in its ability to make rapid gains in fattening cattle. J. W. Robison says: "On feeding oil meal - hogs following - he makes nearly six pounds of beef and two of pork for every bushel of corn". In this experiment he used matured cattle.

In attempting to estimate the probable number of cattle that will be fed during any given season, and the probable profit or loss to the cattle feeder, there is no factor that is more frequently mentioned than that of the cost of feeds, and especially that of corn. An understanding of the prices of corn and the probable cost of feeding same to cattle with a profit or loss in view is a question that should be thoroughly understood by every man engaged in the business of finishing cattle for market. Livestock journals begin as early as July and August to anticipate the probable size of the corn crop, the probable demand for same, and the bearing of these factors onthe cost of corn to the cattle feeders of the country. The costs of feeds determines the cost of gains, and the cost of making gains has a very direct bearing upon profits and losses in cattle feeding. The following data will throw some light upon the subject of cattle feeding.

This experiment consists of feeding a carload of choice well-bred two-year-old Shorthorn's from November to June, or a period of about four months on broken ear corn and clover hay. These cattle weighed approximately 1,000 pounds at the beginning, and

made an average daily gain per steer for six months of slightly over two pounds.   Just enough hogs followed the steers to consume the whole corn in the droppings to advantage.   No additional feed of any kind was supplied for the hogs.   In this way it was determined that 74.13 pounds gain on hogs was made per steer fed.   It took 57.7 bushels of corn and approximately .8 of a ton of clover hay to secure above gain on steer and pig.   Stated in terms of beef and pork per bushel of corn fed, it would be 6.69 pounds of beef and 1.2 pounds of pork per bushel of corn fed.   These cattle sold for $5.95 when the tops were $6.15 per cwt.   Had these cattle been full fed for a longer time the total and average daily gains would probably have been larger.   From above data we can now discuss quite intelligently the subject of the relation of the cost of these feeds to profits in cattle feeding.

Assuming that each steer makes an average daily gain of 2.2 pounds or 396 pounds for six months winter feeding period, that 75 pounds of pork are made from the droppings of the steer, that 6 pounds of beef and 1.14 pounds of pork are made from each bushel of corn fed, supplemented with clover hay.   On this basis it would require about 66 bushels of corn, supplemented with one ton of clover hay to secure the gain recorded for the whole time.

Granting that we are dealing with a choice 1,000 pound feeder that is worth $4.50 per cwt. in feed lot, the following financial statement might be shown:

Disbursements.

One 1,000 pound feeder at $4.50 per cwt. —	$45.00
66 bushels of corn at 30¢ a bushel ---------	19.80
One ton of clover hay at $5.00 a ton -------	5.00
Total cost -------------	$69.80

The above are sold at home, thus doing away with marketing expenses.

For the first statement 30¢ corn and $5.00 hay is taken as about

the minimum prices that could be figured even from the view point

of the cattle feeder who produced his feeds.   If the choice, well-

bred feeding steer cost $4.50 in the feed lot and the purchaser

gets what he pays for and properly finishes the steer, he ought

to expect $1.25 per cwt. more for the steer at home in feed lot

than cost price delivered in feed lot.

<div align="center">Receipts.</div>

One 1396 pound choice steer a t $5.75 per cwt. - $80.27

75 pounds of pork at $5.00 per cwt. ------------- 3.75

Total receipts ------------------- $84.02

Total expenditures ------------ 69.80

Profit per steer on basis 30¢ corn and $5.00 hay $14.22.   From

this data we realize 60¢ a bushel for the corn.

The following table figured out in the same manner shows the

effect of price of feeds on possible profits:

Assumed price of corn per bushel	Assumed price of hay per ton	Disbursements	Receipts	Profit per steer	Net cost lb. gain pork credited
$0.30	$5.00	$69.00	$84.02	$14.22	$.053
0.35	7.50	75.00	84;02	8.42	.068
0.40	10.00	81.40	84.02	2.62	.082
0.50	10.00	88.00	84.02	3.98*	.099
0.60	10.00	94.60	84.02	10.58*	.116

*Indicates a loss

This table does not mean that profits in cattle feeding are impos-

sible when corn is worth over 40¢, with clover hay at $10.00 per

ton.   It does mean, however, that with the conditions stated that

a larger at home margin between buying and selling price than $1.25

per cwt. is required to make enterprise profitable.

The initial weight of feeding cattle has a direct bearing upon possible profits in cattle feeding. In practice it is difficult to secure examples where differences in initial weight of feeding cattle selected for the feed lot are the only differences. For example, it is not likely that an 800 pound feeding steer will be of the same age, thrift, condition, quality, and price as a 1,000 ppund steer. For comparison we will take a 800 pound feeder and the other a 1,000 pound feeding steer. Assuming that the total gains would be the same in either case, the statement would be something as follows:

One 800 pound choice feeding steer at $4.50 per cwt. - $36.00

66 bushels of corn at 40¢ per bushel ---------------------- 26.40

One ton of clover hay at $7.50 per ton ------------------- 7.50

Total disbursements ---------------------- $69.90

Credit 75 pounds of pork at $5.00 per cwt. ------------- 3.75

Net cost of steer at time of marketing ---------------- $66.15

Granting that the 800 pound feeder would gain 405 pounds in six months feeding period, during which time each steer received 66 bushels of corn and one ton of hay, the steer, when finished, and ready for market, would weigh 1205 pounds. According to the statement of expenditures made above, this 1205 pound steer would have cost at time of marketing $66.15 and in order that the cattle feeder should come out even, that is neither make nor lose by the enterprise, the steer would have to net approximately $5.49 per cwt. in the feed lots at home. Since it was assumed that the steer cost $4.50 per cwt., this would mean a 99¢ margin between buying and selling price. For sake of comparison, let us now as-

sume that we buy a 1,000 pound feeding steer, of the same quality, for finishing:

One 1,000 pound choice feeding steer at $4.50 per cwt. - $45.00

66 bushels of corn at 40¢ per bushel ------------------------ 26.40

One ton of clover hay at $7.50 per ton -------------------- 7.50

Total Disbursements --------------- $78.90

Credit 75 pounds of pork at $5.00 per cwt. --------------- 3.75

Net cost of steer at time of marketing ---------------- $75.15

Starting with a 1,000 pound steer that gains 405 pounds in six months, a 1405 pound steer is produced, which, to meet above disbursements, woulf have to sell for about $5.34 or 84¢ per cwt. above cost.

Putting it in another way, it might be said that other things being equal a 1,000 pound feeding steer can be finished on a 15¢ smaller margin than a steer weighing but 800 pounds at the start.

To give a more clear example we will take a comparison of the 800 and 1,000 pound feeding steers. Suppose when the cattle are marketed a t $1.50 per cwt. margin over cost price is secured in each instance, then the total value of the (800 plus 405 equals 1205 pounds) steer would be worth $72.30. The net cost of this steer, including feed, less value of pork produced, was $66.15. This would leave a profit per steer of $6.15. In case, of the 1,000 plus 405 equals 1405 pound steer, the value at marketing time would be $84.30. The net cost was $75.15, leaving a profit per steer of $9.15; this item above then showing a difference in profit of $3.00 per steer.

The following table shows the effect of differences in initial weight of feeding cattle from 700 to 1200 pounds:

Initial weight of Feeding Cattle	700 lbs	800 lbs	900 lbs	1000 lbs	1100 lbs	1200 lbs
Initial cost of steer at #4.50 per cwt.-----------	$31.50	36.00	40.50	45.00	49.50	54.00
Net cost of feed (total cost less $3.75 for pork) -------------------	30.15	30.15	30.15	30.15	30.15	30.15
Final cost fat steer per cwt.----------------------	5.60	5.49	5.41	5.35	5.29	5.25
Margin required between buying and selling price, home or feed lot values and weights -----	1.079	.989	.914	.849	.792	.746
Difference in cents in margin necessary between each weight -------------	.00	8.95	7.58	6.51	5.64	4.62
Total difference in cents between 700 lbs. and each larger weight -----	.00	8.95	16.53	23.04	28.68	33.30

The cost price of various grades of Feeding Cattle in relation to profits is a very important question. In determining what quality of cattle will be most profitable to feed, there is one consideration not generally understood. The principle referred to is:- The lower the price at which feeding cattle are purchased, whether because of prevailing low prices for feeders, or because of the low grade of the cattle, the larger must be the margin between the buying and selling price in order to secure protection against loss. As suggested, this principle applies not only to the purchase of feeders of various market grades at prices differing materially, but to the purchase of feeders of the same grade at different prices.

The following table shows to what extent this principle operates:-

Market Grades of Feeders	Fancy Selected	Choice	Good	Medium	Common	Inferior
Assumed cost per cwt, in feed lots	$ 4.50	4.15	3.80	3.45	3.10	2.75
Total cost 1000 lb. feeder at above prices	45.00	41.50	38.00	34.50	31.00	27.50
Net cost of feed or cost of feeds for finishing less value of pork produced	30.15	30.15	30.15	30.15	30.15	30.15
Total net cost of steer at marketing	75.15	71.65	68.15	64.65	61.15	57.65
Weight of steer at time of marketing, lbs.	1405	1405	1405	1405	1405	1405
What steer must sell for per cwt. at home to insure cattle feeder against loss	5.35	5.10	4.85	4.60	4.35	4.10
Necessary margin above cost price to insure against loss	.85	.95	1.05	1.15	1.25	1.35

It is obvious that this does not determine a set of values that would obtain in all markets and in all seasons. The assumed values are sufficiently close,to average feed lot conditions to render them valuab le for illustrating an important principle. It is assumed that the steers of the various grades make the same gains in a given time on a given amount of feed. As a matter of fact, the better grades will eat more and gain more rapidly than the more common grades. However, if there was only the one varying factor, and that the cost per cwt. of the feeders, the principle enunciated would hold.

That there should be a difference in margin required between buying and selling price to come out even of 50¢ per cwt. in this instance, and approximately 30¢ per cwt. where all varying factors are taken into consideration, would scarcely be realized by the casual observer. This clearly shows that a greater margin in necessary with the cheaper cattle.

Another data in reference to the price of feeds, cattle and

profit per steer, will perhaps enable us to see these important
points more clearly.

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                                                      Dr.
    To 13 steers 12,662 lbs. @ $4.60 per cwt. -- $582.45
    To  7 pigs      933 lbs. @  5.75 per cwt. --   53.65
    To  3 pigs      430 lbs. @  6.50 per cwt. --   27.95
    To  1 pig       140 lbs. @  6.00 per cwt. --    8.40

    Feed as follows:-
    To 138.27 bu.  corn @ $  .60 -------------------------$  82.49
    To   5.96 tons timothy hay @ $14.00 ----------------   83.44
    To   6.62 tons corn and cob meal @ $19.14 ---------  126.71
    To    .64 tons corn meal @ $23.03 -----------------   14.74
    To   3.18 tons corn stover @ $6.50 ----------------   20.67
    To   2.09 tons gluten meal @ $28.00 --------------    58.52
    To Freight on stock 130 miles, commissions, etc. -   30.00
                                                        $1089.49
    Expense of feed in holding last week ------------    23.47
            Total expenditures -----------------------$1111.96

                                                      Cr.
    By  1 steer      985 lbs. - 25 lbs. @ $4.60 - $44.16
    By 12 steers  14,880 lbs. @ $7.45 --------------1108.56
    By  7 pigs     1,295 lbs. @ $6.50 ------------   84.18
    By  4 pigs       630 lbs. @ $7.00 ------------   44.10
            Total receipts ---------------------- $1281.00
                                                   1111.96
            Profit ----------------------------- $ 169.04

    Average profit per steer ------------------- $14.08
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This experiment gives you feeds and feeders at a high price;
although you received a fair price for your cattle and swine, yet
it is not a very large margin between the buying and selling price.

You can see from the previous data that sixty cent corn was
fed, and profit per steer $14.08.   This gives you an opportunity to
pay a much higher price for your corn, and a profit of about $3.00
per head could have been made, if the above price for corn had been
75¢ per bushel.

The realtion of cattle feeding to soil fertility is a very im-
portant factor to be considered.   More extensive operations in
cattle feeding can consistently be urged upon farmers in general
from the standpoint of maintaining or improving the fertility of the
soil.

The feeding of cattle with hogs as an adjunct seems to the conversion of farm products into cash meat products, furnishing at the same time a valuable machine for the manufacture of farm yard manure.

An experiment carried on for a period of five months with 106 steers, finds that the average daily production of manure for a thousand pound steer amounted to 4o lbs. in one instance, and 46 lbs. in the other.   Seven pounds of these amounts were straw used for bedding.   We can see from this that the normal production of manure from a thousand pound steer varied from three to four tons for a feeding period of about six months.

It is stated that a ton of average mixed farm manure as taken from open barn yards may be expected to contain nine pounds of nitrogen, ten pounds of potassium, and three or four pounds of phosphorous, and that when properly cared for and properly balanced the nitrogen, phosphorous, and potassium in such manure are as effective, pound for pound, as those in the best fertilizing chemicals.

As the cereal crops approach maturity, there is a partial separation of their chemical constituents, the nitrogen and phosphorous accumulating in the grain until about three-fourths fo that held by the entire plant is found there.   This gives us some idea of the enormous amount of nitrogen, phosphorous, and potash stored up in the grain.

Figuring nitrogen at a cost of fifteen cents, potash five cents, and phosphorous five cents in a commercial fertilizer, we can readily see the amount of plant food we are selling off our lands in the crop without any return; and the value of feeding our grain to stock; renewing the land with the manures,which not only adds the desired and necessary plant food, but also adds humus to the soil, thereby enabling the plant to obtain the plant food in a much more available

form.

It is a well established fact that, in order to secure and maintain an increased yield, the crops must be fed on the farm where grown and the fertility, as far as possible, returned to the land. The man who jumps from one business to another should have little sympathy. Cheapen your cost of feeding. Buy when all want to sell, and sell when all want to buy. Good farming cannot be disassociated from live-stock breeding, raising and feeding. It has often be quoted by the best and most prosperous farmers in Kansas and other places,- "That they would sooner try to breed and raise and fee live-stock without farming, than to try to farm without breeding, raising, and feeding live-stock". They meant by that, that if they had to choose between the two, they would put their farms down to pasture, keep live-stock to graze it and buy of their neighbors all other feed needed, rather than put the farm into corn, oats and other crops to be harvested and sold off the farm.

The farmer who raises his own feed, and with it fattens prime beef intelligently, is absolutely sure of a profit. If he keeps the feed for himself and saves the manure and returns it to the field, he will make two ears of corn grow where a nubbin grew before, and when fed to well-bred cattle, this corn will cash him, when concentrated into beef, from 10 to 100 per cent more than when delivered to the elevator.

That man who intelligently farms and feeds out of his own resources one prime steer and one hog per year for each ten acres of land in his farm, raising all the feed and buying nothing but the cattle as calves (and perhaps a little bran and oil cake), will be absolutely certain of success, and he who has found out the certainty of this steady, sure method of farming, has discovered the most

independent life yielding a competency that is available to American Agriculturists to-day.