

HARVESTING AND MARKETING CORN.

by

A. R. Snapp.



## HARVESTING AND MARKETING CORN.

The word harvest is commonly used in connection with wheat or other small grains. To a Kansan, whether native born or only an adopted son, there come to the mind, thoughts of the golden wheat field, stretching away in all directions, shimmering with the summer's sun, waving before the incessant breeze like billows over the ocean, awaiting with equanimity its fate when the sickle shall ruthlessly cut it down, laying low its proud heads of yellow grain. How fiercely does the sun beat down on the stubble and with what exactness does the stubble reflect its heat! And when the hot winds blow, only those who have faced them as they came to him after sweeping over miles and miles of heated stubble know how they burn the face and crack the lips.

From first to last the password during the harvest -- the word by which men time their actions, curtailing ever their hours of sleeping and eating -- is hustle!

Work is prosaic, but some work is less prosaic than other work. In spite of the sweat and grime and weariness of flesh which are necessary during a wheat harvest, there is something about the work which appeals to the poetical if one has only a spark of the poetical in his soul. A true Kansan who has been one of the actors in such a scene, cannot help thinking and feeling several things. He thinks of the labor necessary to produce the world's food supply. He thinks of the enormous output which the earth must yield every year if that supply is to be maintained. If he has ever seen poverty at close range, he looks around at the waste and extravagance and feels that it is not right. Then he feels a sense of responsibility



for of all the states in the union, Kansas has taken it upon herself to feed the most of the world's hungry out of her wheat crop. She is the world's granary and the bins must never be empty.

All of this seemingly irrelevant discourse on the wheat harvest is by way of introduction. The word harvest may lose some of its glamour and charm, it may even take on a slightly different meaning when applied to the gathering of a corn crop, but still it is a harvest and its importance to man kind can hardly be overestimated. It is a harvest about which poets can sing conscious of the dignity of their theme. There has been so much said and written concerning the magnitude and value of the Kansas wheat crop, that it is surprising to most people to learn that Kansas' corn crop exceeds in value that of her wheat crop. Kansans are justly proud of the fact that their state heads the list in any column of wheat statistics, but they are hardly prepared to believe that the aggregate value of the corn crop in Kansas for the last twenty years amount to about 913 million dollars, exceeding by nearly five million the combined value of winter wheat, oats, rye, barley, spring wheat and Irish potatoes for the same length of time. The year 1907 may be taken as a basis of comparison, a fair representative of all the others except that all crops were comparatively short. According to Sec'y Coburn's last quarterly report, the value of Kansas' corn and wheat crops were as follows:

Winter wheat	\$56,187,583.11
Corn	63,040,743.32

The value in any one single county in the corn and alfalfa belt in Northern central Kansas exceeds that of ten or a dozen eastern states.



Heap high the farmer's wintry hoard,  
Heap high the golden corn!  
No richer gift has Autumn poured  
From out her lavish horn.

--Whittier's Corn Song.

The harvesting and marketing of such a large crop must be of considerable importance. In the discussion harvesting will be considered apart from marketing. The word corn unless otherwise indicated, will have reference only to the grain.

The method usually employed to harvest the crop is to husk the corn from standing stalks. The husker goes forth in the early dawn with a team and wagon with high throw-boards. The team straddles every other row, the two rows next to the wagon being the ones husked. The husker jerks the ear out of its husk and throws it towards the side boards. While it is on its way, the husker has proceeded to the next ear and is separating it from the stalk and husks. The fastest huskers, those who make records of one hundred bushels or more per day, are able to keep a constant fire of ears, a rain of projectiles, against the throw-boards of their wagon. It is commonly said of them -- and it is only a slight exaggeration-- that "they keep one ear in the air all the time." Many are the good natured contests between huskers. Some of them are tests of speed and endurance which are really remarkable. The sharp appetites thus developed are also remarkable, except to their owners.

To facilitate the process of removing the ear from its husks many styles of husking pegs and hooks are used -- the most rapid huskers using both a peg and a hook. When an ear points directly towards the husker, it can be stripped more readily with the peg. Otherwise the hook is used. If an ear "husks easily" only two motions



motions are necessary to remove the ear from its husks. Then without looking up it is thrown against the side boards. On a still and frosty morning in November in any of the corn belt states out on the farm, one can hear the huskers around him for several miles in all directions.

Until recent years it was considered that a farmer should have his corn husked and in the crib by Thanksgiving. It was the test by which the hustling farmer was distinguished from his more easy-going, perhaps slovenly, neighbor. However, the great scarcity of labor prevailing everywhere has lengthened the husking period. It is not uncommon to see much corn in the field with several inches of snow on the ground. This is unfortunate as it necessitates some loss, both of the grain and of the stalks.

To save the labor of husking the International Harvester Company has put out two makes of machines -- the "Deering" and "McCormick" designed and to pick and husk the corn without cutting the stalks, which are left standing in the field. The ears are delivered into a wagon driven along the side of the machine. It is claimed for this machine that in either light or heavy corn it will work successfully, will take all the corn off the stalks and husk it as clean as is usually done by hand. Farmers' Bulletin No. 313 speaks of this machine as follows: "Some ears are skipped and others are knocked off and left in the field. Considerable corn will be shelled and lost. For the general farmer who with the aid of his regular farm help can husk his corn by hand these machines are not profitable investments in their present state." One farmer near Concordia, Kansas, states that they do not work good when the husks are damp and that they are not durable, some parts giving constant



trouble by breakage.

In certain sections of the corn belt, especially towards its eastern borders where rough feed and hay are more expensive, it is customary to cut and shock a portion at least if not all of the corn crop. It is stated by Mr. C. P. Hartley that if the ears are removed and no use is made of the stover fully one-third of the corn crop is lost. The cutting may be done by hand in which case a long bladed knife is used; it may be done by means of one horse corn harvester mounted either on a sled or on small wheels, and fitted with automatic knife guards; or it may be done with the more expensive machines known as the corn binder, the harvester, and the shocker. The corn binder cuts and binds the corn in bundles and drops it in windrows just as small grain is harvested. The corn harvester and shocker cut and shock the corn without binding it into bundles. It has the advantage of saving time and labor and allowing the lowing to be done without any delay after the corn is cut. It has a disadvantage in that when the fodder shrinks upon drying, a very loose shock results, making it difficult to handle.

It will depend upon conditions as to which of these methods is preferable. Since there is but slight difference in cost between husking and cribbing corn from the shock and husking and cribbing it from the standing stalk, it is evident that the value of the stover is expected to pay for the cost of cutting and shocking. This it will generally do if properly stored and fed. But if exposed to much weather as is often the case, rapid deterioration of its value is bound to ensue.

There are many farmers who cut up much of their corn crop with no intention of afterwards husking the corn from the stalks. Cattle



feeders in the central and western portions of Kansas who practice winter feeding, quite often follow the custom of "starting their cattle" in the fall on corn fodder. The corn having been cut -- generally with a corn binder -- and allowed to cure, it is hauled to a pasture or dry lot and scattered about on the ground. The cattle first pick off the ears, then eat what they will of the blades and stalks. In rare instances the fodder is thrown into some kind of a rough feed-rack inside the lot. This necessitates that the stubs of the stalks picked over be frequently thrown out. Probably some manure of small value is gained at the expense of time and labor. It may too that a wet muddy season will necessitate the use of feed racks to save waste and trampling in the mire.

Another method of caring for the fodder is by the use of huskers and shredders. Sometimes a crew operates the machine, moving from farm to farm as do the threshing outfits. Sometimes the shredded fodder is blown into a shed around which the feed racks are arranged. It is estimated that by this method a gain of 40 per cent in the feeding value of the stover is obtained. There is however much danger of loss by moulding. Many farmers who have tried feeding stover have abandoned the idea with disgust, claiming that it was not worth what it cost to produce the stover. The statement is made that "cattle will not eat it unless starved to it and cattle may be starved to eat anything. It is also claimed that they do not do well on the feed when they do eat it.

In the opinion of the writer the dissatisfaction is often due to the quality of the stover. Either it was not cut up until it became too dry or it was too long exposed to the weather. If a farmer has both hay and corn fodder he would save more nutriment to stack the hay out doors and put the corn crop under cover, the hay



stacks being better adapted to withstand weathering.

As to the value of the stover, there has been much dispute. Henry concludes that one tone of Timothy and clover is three <sup>worth</sup> tons of stover, and that one ton of clover is worth more than three tons of stover. He also calls it folly to husk corn for cattle when these animals have all day in which to do the work and willingly perform it.

Where grasses, sorghum, alfalfa and Kafir corn grow as luxuriantly as they do in Kansas and where labor is so scarce it is very doubtful whether it pays to cut up the corn crop. Professor Ten Eyck, Kansas Agricultural College, after having made careful estimates, concludes that "there will be a net saving of 25 cents per acre by husking the corn and pasturing the stalks in the field, as compared with cutting up the corn and feeding the stover." This saving does not include the saving in labor to the farmer, which is considerable.

One factor entering into the problem has not in the past received proper attention. When the crop is cut from the field, the ground is left bare, no snow is held and it is at the mercy of all the severe winter winds which are apt to blow. It is a serious drain upon fertility when the entire crop is removed and nothing restored, but when in addition much of the best top soil is blown away for want of a protective covering it is time to call a halt on soil robbing. It may be argued that the stalks or the manure resulting therefrom can be returned to the field. "However, as manure is usually handled on the average farm there is apt to be a great waste, and then comes the expense of hauling and spreading the manure on the land." -- Prof. Ten Eyck -- "the Value of Corn Stover."



Jerking and storing the ears unhusked is a method that is practiced to some extent in the South, where the husks are supposed to afford protection from the ravages of the grain weevil. It is a laborious process to have to husk this jerked corn later in the season. The additional expense will hardly be compensated for by the husks obtained.

Nearly every farmer in the corn belt feeds "snapped" corn for a short time in the Fall and some cattle feeders feed it as a regular article of diet through almost the entire period.

Still another method of harvesting the corn crop remains to be considered. It is known as the "hogging down" or "hogging off" method. These phrases are new but they simply mean turning in hogs and allowing them to do the harvesting. Perhaps because it is apparent shiftlessness, there is an unreasoning prejudice against this method. Sometimes those methods which appear at first glance to be most careless are really the best. The Minnesota Experiment Station has recently issued a bulletin on the subject, answering a list of questions frequently asked concerning this method. These questions with their answers are as follows:

1 Is not a larger amount of corn wasted?

Ans. Less corn was found in going over the three acres after it was hogged off than was found in going over a like area that had been husked or snapped.

2. Do hogs fatten well with so much run?

Ans. The cost of gains was decreased 80 to 90 cents per hundred.

3. Does it cost more to fence than to husk and feed the corn?



Ans. To fence hog tight into plots costs \$1.30 per acre. To pick and feed would cost \$3.00 to \$5.00 per acre.

4. Is not a large amount of the value of the crop lost by not saving the stover?

Ans. Corn stover on which grain has matured is a very poor feed. As compared with timothy hay -- one of the poorest of hays -- for every \$1.00 expended in capital and labor for hay production, \$1.72 worth of nutriment is secured and with the corn stover \$1.19 worth of nutriment -- a difference of 53 cents in favor of hay-production.

5. Are the fields not left in poor condition for the following crop?

Ans. In no case was the soil left so uneven as to make extra work necessary in preparing the land for future crops.

6. Is it not expensive to care for the hogs when away from the buildings?

Ans. Extra work may be required in watering, but about 16 days less feeding was required to give an equal finished weight.

7? How large hogs should be turned in the corn field?

Ans. Pigs weighing from 100 to 140 pounds are best suited. Old brood sows that are thin in flesh fatten up very quickly when turned into the field.

8. How long is the season during which hogs may be in the corn field?

Ans. In 60 to 70 days of feeding, shoats should gain approximately 92 pounds.

9. On how large an area should hogs be turned at one time?



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Ans. No definite data can be found, but will depend largely on circumstances. Where there is but little rain, and the soil is sandy or gravelly, there is perhaps as good reason for limiting the amount of corn beyond that which they can consume before the end of the season.

10. What kind of corn is best suited for hogging off?

Ans. That which is usually grown in the locality.

11. How rapidly will hogs gain?

In 1905 field lot made average daily gain of 1.5 lbs.

"	"	ear corn	"	"	"	"	"	"	.98	"
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In 1906 field	"	"	"	"	"	"	"	"	1.44	"
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"	"	snapped	"	"	"	"	"	"	1.11	"
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"	"	ear corn	"	"	"	"	"	"	1.09	"
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Seven farmers in Minnesots and nine in other states made reports to the Minnesota station. Every one of them were enthusiastically favorable to the method.

In regard to this method the writer of this thesis made inquiries of two of the largest hog raisers in Kansas. Mr. J. G. Arbuthnot, Haworth, a K. S. A. C. alumnus, reports that he has practiced the method for ten years and endorses it unhesitatingly. He has absolutely no waste, and he saves the cost of husking and boarding men, also time that it takes to feed the hogs, and he thinks that his hogs do better in fresh dirt than in dirty pens.

Mr. R. C. Johnston, of Lawrence, Kansas, also unhesitatingly endorses the method. He has "no waste at all" while he saves much labor, fattens his hogs on less grain and in shorter time and is making his land more fertile.

We come now to the other half of our subject -- the marketing.



Farmers as a class do not pay nearly enough attention to the marketing of their products. Glucose manufacturers, distillers, and other corn product manufacturers, have found a great many uses for corn products and have originated a startling number and variety of by-products, but the farmers have had no part in extending the market for their leading product. It would seem that it should be just as important to market a good crop as it would be to raise that crop. It is of little use to raise a large crop if the price received for it is too small to realize a profit. Manufacturers, merchants and millers everywhere have compact organizations so that every detail of their business is under class surveillance. The question of markets receives the consideration to which it is entitled. The shrewdest, sharpest agents are sent into the remotest corners of the earth to open up and develop new markets. Only the very highest prices obtainable is satisfactory. Competition is eliminated as far as possible. It would seem that the farmers, realizing the situation, would have come in closer touch with each other long ago, but as a class they do not seem to co-operate well. Their organizations, e. g. "Farmers' Alliance" have been short lived and almost barren of permanent results. Either because they dabbled in politics or because of a lack of good business sense and executive ability, their downfall has been as rapid as their rise. Such an organization decided one year that wheat was worth the "equitable" value of \$1.00 per bushel and firmly resolved not to sell at a lower price. Presumably they have not yet sold their wheat.

Farmers as a class being rather isolated and not very well acquainted with the rest of the world or even with their fellow-farmers, except when close neighbors, and not understanding the



the conditions in remote districts, have always mistrusted each other to a certain extent, especially concerning business matters. However, the telephone, rural free delivery, and other rapid systems of communication and transportation, together with the dissemination of advanced ideas and the spread of good business methods -- all of which affected the farmers, have gradually brought them closer together so that to-day a compact farmers' organization near is not so nearly impossible as formerly. In fact, there is one organization to-day of national importance but operating chiefly in the South, which seems to be successful in securing for its members higher prices for their products, chiefly cotton. There are numerous examples where fruit producers and market gardeners or truck farmers have formed successful associations that they might more intelligently and profitably market their products. Most of them are simply business organizations, the outcome of a desire to get closer to the consumer and eliminate some of the middle men's profits. The farmers as a class are becoming less and less satisfied to take just what may be offered them at the elevator without knowing whether or not they are receiving a fair price.

There are two methods of marketing a corn crop. It may be fed where produced to the farm animals and thus reach the market in a different form, or it may be thrown on the market directly. The answer as to which is the most profitable method will depend upon circumstances. It can never be foretold in advance just what the prices will be per bushel for corn or per pound for the corn fed animal. It is safe to say, however, as a general assumption, that stock feeders are more prosperous than the grain farmers. Several reasons may be given to explain why this is so.

1. The man who feeds his corn converts it into various pro-



products as beef, mutton, etc. They are concentrated products and concentration pays here as elsewhere. While <sup>there</sup> ~~this~~ is undoubtedly competition between feeders -- sometimes a sharp competition when heavy runs are noticed at the central markets -- it is the opinion of the writer that the grain farmer is the one who has to meet the hardest and sharpest competition. This might be true simply because there are too many grain farmers and not enough feeders; also the farmer feeders are a better organized, better educated, and wealthier class of people. They fight for their rights and are more apt to obtain them than the grain farmer~~s~~ who are simply at the mercy of the railroad and elevator companies.

2. The grain farmer has to meet that ever serious problem -- the labor problem. While planting, cultivating and harvesting the crop the farmer must have help. At other seasons of the year he has no need for hired help and has but little to do himself, while the feeder has need for help the year around.

3. The feeder can make use of an intelligent rotation. He can have part of his land in grass every year and feed his animals on them at a profit, reaping a harvest with but little care from their owner, while at the same time they are actually enhancing the value of the land by increasing its fertility. The grain farmer has no use for grass and cannot use a good rotation. He is the worst kind of a thief -- a soil robber who takes unto himself and needlessly wastes what should be preserved to posterity. Henry in his "Feeds and Feeding" says: "In the depletion of the soil of the Northwest by almost exclusive wheat growing, and in transferring the fertility taken up by this crop to other regions in the by-products of milling, we are experiencing the greatest changes ever witnessed



in American agriculture"

Fertility is not like Tennyson's brook -- it will "not go on forever." More corn and alfalfa must be fed in Kansas and the manure returned to the soil.

4 A mixed farming system has an attractiveness which grain farming does not and can never have. Variety is the spice of life and he who raises but one or perhaps but two crops has no variety; it is the same old grind year after year. The animals about the farm, especially the young animals -- the colts, the pigs, the calves -- give to farm life an interest which is unknown in their absence. The children on the farm need the young animals for playmates; they need them as a means to keep them out of mischief and also to instill into their minds a love of all that is good.

"The eye of the master fattens his cattle." To produce a prize winner or a profitable market animal is a business which appeals to the highest order of intelligence. It requires executive ability and good business management. Grain farming does not appeal to the most intelligent farmer lads and it cannot keep them from flocking to the cities. It is a system which antagonizes executive ability and good business policy. Whoever has observed the tumble-down ramshackle appearance of a tenant grain farm and contrasted it with the neat barns, out-buildings and fences on the farm of a stockman and feeder can not fail to observe the contrast. It is the difference between permanent agriculture and a make-shift hand-to-mouth existence which cannot do otherwise than terminate disastrously.

It will have to be granted, however, that Kansas farmers will not be able to feed all the corn they raise for several years to



come. It becomes a pertinent question then to determine what is the best method of storing corn and which is the best time of year to market the corn. Farmer's Bulletin No. 313 takes to task the careless farmers who store corn in rail cribs. Many farmers use lath fencing supported with posts or poles. If any roof is put on it is nothing better than coarse hay or sorghum. The writer has seen thousands of bushels piled up on the ground and left there for months. Foreign markets discriminate against American corn because of its high moisture content and it is thought to be fit only for stock food. Many commercial organizations have adopted a moisture testing apparatus introduced by the U. S. Department of Agriculture. Kansas has a drier climate in the fall than the eastern states but even here corn cribs with good roofs will pay interest on the investment. Where the slope of the land is such as to make it possible, side hill cribs are advantageous as labor savers. Within the last two years small portable elevators have come ~~been~~ into use, thus saving much labor of scooping. Many huskers dread the labor of scooping more than that of husking.

The time of marketing depends upon many factors. There are some farmers who will not sell a bushel of corn until a new crop is assured. Although when that time comes the price is sure to be lower, it is a form of insurance against failure which is willingly carried.

There is always much shrinkage in corn which is held for any length of time. The first factor in shrinkage of course is drying. In the Fall of 1904 under Kansas conditions, ear corn contained about 15 per cent moisture. In 1903 white corn contained 24.94 per cent, yellow corn 19.73 per cent. These three examples will serve to show



the wide variability in moisture content. Kansas Bulletin No. 147, p. 294, summarizes as follows on shrinkage: "The experiment to determine the shrinkage of corn in the crib has been carried on three years. A summary of the results show a shrinkage of 5.26 per cent for first four months after the corn was placed in the crib, 5.16 per cent for the first six months, 6.80 per cent for the first eight months, 7.44 per cent for the first ten months, and 8.62 per cent for the first twelve months. Yellow corn has given the greatest average shrinkage, namely, 11.21 per cent in twelve months, the next greatest shrinkage occurring in the cribs of white corn, 8.48 per cent in twelve months, while the mixed corn (samples of many varieties) decreased in weight, only 6.18 per cent in twelve months. The average results of all shrinkage trials indicate that when corn is cribbed fairly dry and in good condition, the shrinkage during the winter months should not be over five per cent. It should be observed, however, that in these experiments great care was exercised to prevent loss of corn by other than natural causes.

According to Illinois Bulletin No. 113, the shrinkage under Illinois conditions is much greater, ranging from twelve to twenty per cent for the first year, April and May being the months of greatest shrinkage as was the case in Kansas. After the first year, the shrinkage was very light. In all of these tests for shrinkage, the loss of dry matter was an important factor. In almost every case the loss in weight was greater than could be accounted for by the loss of moisture. The loss of dry matter is of course more costly than the mere loss of moisture content.

Other causes of shrinkage are rats, mice, insects, etc. The



following suggestion is from Farmers Bulletin No. 313: "In southern localities it is best to construct the cribs so that they can be made practically air tight and then to treat the crop with some insecticide such as carbon bisulfid. --- If cribs are built upon solid concrete foundations through which rats cannot burrow, no netting will be needed for the floor and the structure can be kept near the ground. Wire netting is tacked to the inside of the uprights and to the overhead joists."

Other factors which really amount to a loss if corn is held over are the interest on the investment, taxes, and the risk from fire, etc.

As to whether the farmer should hold his corn or sell it early may depend on several factors as the price of corn, size of the general crop, condition at husking time, and storage room at hand. An extended study of the monthly average price of corn on the Chicago market since 1893 causes one to doubt the advisability of holding corn for a higher price. There have been several years when the May price did not exceed the December price more than two to four cents per bushel. Ordinarily, the increase in value will about pay for the shrinkage, taxes, e tc.

If the corn grower wishes to sell his corn rather than feed it, it should be noticed that there is a general demand for well bred seed corn. According to C. P. Hartley of the U. S. Department of Agriculture, properly conducted corn-breeding work will prove highly profitable to the breeder and to the purchaser of the seed corn.

Where it is possible to feed the corn intelligantly and realize a higher profit, the question arises as to the most profitable



systems of feeding. Although the answer will depend in a large measure upon circumstances, several experiments may be cited in an attempt to give a definite answer.

The Missouri station seems to have done more along this line than any other, recently. Bulletin No. 76 from that station on "Fattening Cattle for the Market" is very complete and exhaustive. The author declares that although not considered so by many feeders, the value of roughage is a very important point. Shelled corn and timothy hay prove very unprofitable in every trial. Corn and corn stover proved to be even less profitable. Millet hay proved to be most unprofitable of all rough feeds. Sorghum hay proved to be a better hay than stover or millet but still the result was disappointing. By substituting clover or cow peas hay for timothy, the efficiency of these rations was doubled. Alfalfa was without doubt more efficient than either clover or cow peas hay. At the Nebraska station, Bulletin No. 85, cattle fed corn and oil meal on grass gained 2.02 lbs per day, while another lot fed corn only on grass gained only 1.63 lbs. per day. Corn and alfalfa hay made a satisfactory ration without commercial protein foods, being much superior to corn and prairie hay. Corn stalks with corn and a little oil meal caused large and cheap gains. For calves a small grain ration added to hay or stalks or both proved economical. In a later experiment at this station in Bulletin 90 results rather favorable to the use of stover were obtained. Five different supplementary rations were tried. Alfalfa hay and corn stover in equal amounts gave the most profit, \$3.32 per steer. Corn fodder would have been more profitable than the stover. Alfalfa hay alone gave a profit of \$2.86 per steer. Alfalfa hay and oil meal gave a profit of \$1.92



Unfortunately supplementary feeds have not been so commonly used in pork production. Cotton seed meal while very profitable to cattle feeders seems to be poisonous to hogs. Linseed meal, on the contrary, has been fed to fattening hogs with profit. It seems that they need a protein diet just as do fattening cattle. Several recent experiments at the Kansas station prove this. In the winter of '05-06, an experiment with meat meal and alfalfa hay gave the following results:

[illegible]

A year later this experiment was repeated on a larger scale:



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[illegible]



4. Do you figure the price of corn at its average value, or what it costs to buy or produce it?
5. How much more is corn worth in your vicinity than it would be if there were no feeders?
6. Profit per bushel on corn fed?
7. How much is manure made worth with you?
- 8? What supplementary feeds do you use?
9. A short digest of methods used. (Racks, sheds, watering, disposal of manure).

The replies to these questions will be taken up separately.

I.

Walter Williams, Hanover, Kas., Cattle of good quality and flesh.

Edgetown Live Stock Co., Holton, Ks., Cattle.

Thos. M. Potter, Peabody, Kas., Three and four year old range cattle.

Levi Rayl, Hutchison, Ks., Bulls, stags, heifers and a fair grade of steers.

H. H. Marshall, Leon, Ks., 3 year old native steers and hogs to follow.

Henry Schweiter, Wichita, Ks., Mostly cattle and hogs. Some sheep.

W. C. Detter, Nickerson, Ks., Mostly steers, but has fed all ages and classes. No decision as to most profitable but inclined to favor a yearling or a well bred close built western.

S. S. Wells, Edgerton, Ks., Most money in cheap kind of steers.

D. H. Myers, Clay Center, Ks., Natives mostly. Some Panhandle and black cattle.

J. C. Edwards, Stockton, Ks., Cattle and hogs.

L. W. Smith, Erie, Ks., Cattle of all ages and both sexes. Also hogs.



J. A. Hepler, Manhattan, Ks., Horses, hogs, and cattle.

Geo. Washington, Manhattan, Ks., Steers principally.

F. H. Penley, Augusta, Ks., Grades of the beef breeds, twos and threes.

H. H. Harris & Sons, Champaign, Ill. The best grades, Shorthorns, Hereford, and Black Pole Cattle, Poland China and Duroc hogs.

## 2. How long have you been feeding, etc?

Harris & Sons had fed forty years.

D. H. Myers thirty seven years.

No others had fed so long as these two.

All who answered with two exceptions fed every year.

## 3.

Walter Williams, Hanover, Ks., 20 C. per bushel to raise it.

Edgetown Live Stock Co., Raise only a very small part of corn.

Thos. M. Potter, Raises and buys.

Levi Rayl, Raises 600 acres that costs for labor and machinery about 15 cts per bushel.

H. H. Marshall, Raises corn -- 25 cts and less.

Henry Schweiter, Raises corn, about 15 cts per bushel to raise not counting interest on land.

W. C. Detter, Raises and buys. It costs 15 to 20 cents to raise.

Average buying price last five years 42 1/2 cents.

G. S. Wells, Buys corn.

D. H. Myers, Raises most of corn, but costs more than to buy it.

L. W. Smith, I buy all my corn.

J. A. Hepler, One-half less.

Geo. Washington, Depends on the market price and average yield per acre.



F. H. Penley, 20 cents per bushel.

H. H. Harris & Sons, Corn I raise costs 18 to 20 cents per bushel.

4.

Walter Williams, Its average price.

Edgetown Live Stock Comapny, What it costs to buy the corn, not an average.

Thos. M. Potter, At average value.

Levi Rayl, What it costs to buy it.

H. H. Marshall, Average value.

Henry Schweiter, What it costs to buy it.

W. C. Dettter, Average value during feed season.

G. S. Wells, I buy my corn.

D. H. Myers, Average.

J. C. Edwards, Average value.

L. M. Smith, Ibuy all my corn.

J. A. Hepler, To produce it.

Geo. Washington, At its market value.

F. H. Penly, Average price.

H. H. Harris & Sons/ Corn I raise costs from 18 to 20 cents per bushel.

5.

Walter Williams, 3 to 5 cents per bushel.

Edgetown Live Stock Co. Corn is no higher on account of feeders, sold on basis of K. C. Market with freight deducted.

Thos. M. Potter, From 15 to 20 per cent more.

Levi Rayl, About 5 cents per bushel.

H. H. Marshall, At least 10 to 15 cents p er bushsl.

Henry Schweiter, about the same price now. We are buying on the market.



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W. C. Detter, Cant say its worth more. Western demand takes corn.

G. S. Wells, An average of 2 cents per bushel.

D. H. Myers, 5 to 10 cents this year and about same every year.

J. C. Edwards, About 10 cents.

L. W. Smith, I think 10 cents per bushel.

J. A. Hepler, No answer.

George Washington, 10 cents. per bushel.

L. H. Penley, 10 cents.

H. H. Harris & Sons, The feeding cuts no figure as there are very few cattle fed in this county.

## 6.

Thos. M. Potter, Varies as to price of beef.

Levi Rayl, Average 10 cents. Last year and this 25 cents.

H. H. Marshall, About 20 cents per bushel.

W. C. Detter, From 10 to 30 cents per bushel.

D. H. Myers, Some years a loss, but good profits mostly.

J. C. Edwards, Tenndcents.

L. W. Smith, 10 cents per bushel.

F. H. Penley, 8 cents.

The others could not tell or had no way of finding out.

## 7.

Walter Williams, \$1.00 per load or more.

Edgetown Live Stock Co., Manure is valuable and we use all of it.

Thos. M. Potter, About 1.00 per ton.

Levi Rayl, \$1.00 per load

Henry Schweiter, I feed in big fields and they get very rich by it.

W. C. Detter, Depends on how much land is run down. I had a field of corn that made 20 bushels more when fertilized. 20 X .50=\$10.

L. W. Smith, Dont use it.



J. A. Hepler, About \$4.00 to \$5.00 per ton.

Geo. Washington, \$3.00 per ton.

F. H. Penley, 50 cents per load.

H. H. Harris & Sons, 100% on corn ground.

Others could not tell.

## 8

Walter Williams, Oil meal and ground corn, not cob, meal. Alfalfa and corn fodder.

Edgetown Live Stock Co., Cotton Seed and Oil Meal.

Thos. M. Potter, Cotton Seed Meal.

Levi Rayl, Cotton seed meal or cake, prairie hay & corn fodder.

H. H. Marshall, Alfalfa preferred.

Henry Schweiter, Cotton Seed meal & alfalfa hay. Corn fodder.

W. C. Detter, Corn fodder and alfalfa.

G. S. Wells, Cotton seed meal & alfalfa

D. H. Myers, Oil cake and Cotton seed meal. Some alfalfa hay. Also prairie hay.

J. C. Edwards, Some cottonseed meal.

L. W. Smith, Cotton seed meal.

J. A. Hepler, None except what are raised on the farm.

Geo. Washington, Cottonseed meal or cake.

F. H. Penley, Caddo cake.

H. H. Harris & Sons, Linseed oil meal about 2 to 4 lbs per head per day.

The large number who use cottonseed meal is remarkable. It is possible that some did not understand what was meant by "supplementary" feeds. It seems probable that all feeders use some kind of hay.



9.

Walter Williams, Feed in open yard, Water with engine. Haul out manure as soon as possible.

Edgetown Live Stock Co., Pump water with gasoline engine. Use sheds and haul manure away with spreader.

Henry Schweiter, Move feed lots mostly every year to another field. Pumps with gasoline engine.

W. C. Detter, No sheds, fairly good windbreaks, pumps with gasoline engine, cemented around tanks. I haul manure all winter with spreader.

G. S. Wells, All feed is under a shed. Will it pay me to haul manure 2 miles from under a shed.

J. A. Hepler, Manure hauled as accumulated.

Geo. Washington, Open lots with natural timber. Spring water piped to corrals.

F. H. Penley, Use no sheds. Water from tank with tank heater. Use manure spreader.

H. H. Harris & Sons, Feed in self feeder barns. Oil meal manure is very valuable as a manure.

In closing this thesis attention is called to Farmer's Bulletin No. 282, by W. J. Spillman, entitled "A Successful Hog and Seed Corn farm." This bulletin speaks in detail of the methods employed by Mr. W. H. Rowe on a farm of 131 acres in West Central Illinois. On eighty acres of the farm divided into four fields, the cropping and rotation system has been as follows: (1) Corn  $4/5$  and soy beans  $1/5$ ; (2) corn; (3) oats; (4) clover. This system has been followed for ten years. It gives a yield of corn of  $80 \frac{2}{5}$  bushels per acre for the past four years. Adjacent land yields probably 35



bushels. What hay is needed, not much, is bought. Last year 450 bushels of seed corn were sold at average price of \$1.82 per bushel. Only 15 brood sows are kept but they raise eight pigs to the litter on the average, being very carefully handled.

Mr. Rowe believes that when fed without waste a bushel of corn will produce 10 pounds of increase in live weight.  $80.4 \times 10$  equals 804 pounds per acre; an acre of clover 400 pounds; an acre of soy beans 600 pounds. Attention is called to the high feeding value of corn. A change in the cropping system is contemplated, it being desirable to replace the oats with alfalfa.

As a result of the intelligence, enterprise and business ability used in managing this small farm, the owner has made sufficient profits in ten years to buy two similar farms of 96 and 80 acres, paying nearly \$20,000 for them.

This study in harvesting and marketing corn is convincing as to two things. (1) The efficiency of better and more scientific methods; (2) the golden opportunity of the farmers of Kansas who can produce with so little cost and with such abundance, the two great feeds, corn and alfalfa, which of themselves make a balanced ration for all classes of stock. The opportunity does not end here, for Kansas has almost ideal weather conditions for winter feeding. Having produced magnificent crops they should be fed on the same farm and the manure returned to the soil in order that it may go on producing the same magnificent crops indefinitely. This is of a certainty the most profitable method -- at least in the long run -- of marketing corn.