

AUTHOR'S NOTE

The paper "Where Are We in Modernizing Our Grain Markets?" is something of a cry of frustration. At a five-year checkpoint time, the neat package that I thought should develop was developing at a slow rate and only partially in the direction that I expected. It is illustrating the tedious ways in which major economic evolutions take place.

WHERE ARE WE IN MODERNIZING OUR GRAIN MARKETS?

CHAPTER 25

My quick answer to the question posed in the title is to ask another question: In relation to what? If it is in relation to where we were five years ago, I should observe that a limited amount of progress has been made. If it is in relation to where we are going, I should say that there is a long, long way to go. Quite frankly, I am surprised that so little progress has been made during the past five years.

My comments today are brief and will touch on four areas: (1) developments in country grain marketing, (2) technology of conditioning and storage, (3) transportation, and (4) quality and its evaluation. They are much more a recitation of unknowns than knowns.

IN THE COUNTRY

I recently reviewed comments that I made five years ago. At that time I said that I thought the job of conditioning and storing corn harvested as shelled corn rather than ear corn would be done in the country, either on farms or at country elevators. While I expected a part of the job to be done at each, I thought that the economies of scale and specialization greatly favored the country elevator and that elevators should gear up to do the job. I further said that to survive in the long run required elevators to (1) dump corn as fast as farmers wanted to bring it in, (2) allow farmers to retain ownership of conditioned and stored corn so that they would not be forced to sell before or at harvest, (3) perform the storage and conditioning jobs cheaply enough to price them off the farms, and (4) change firm and plant technology so that the receiving, conditioning, and storage functions would be sufficiently profitable to attract new capital.

My biases have not changed during the intervening five years. The long-run survival of the country elevator system depends upon successful expansion activities in receiving, conditioning, and storing field-shelled corn.

I have tried to briefly quantify the developments from the 1963 through the 1969 crops in the following table.

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CORN: HARVESTING, DRYING, STORING IN ILLINOIS

(figures in millions of bushels)

	1963	1964	1965	1966	1967	1968
TOTAL PRODUCTION	770	740	919	827	1,092	902
Harvested shelled ¹	312	352	505	485	704	600
Harvested ear	458	388	414	342	388	302
STORAGE						
Marketed from field ²	143	179	224	148	177	149
Warehouse ³	22	28	53	83	148	95
Total commercial	165	207	277	231	325	244
Crib	437	372	391	325	369	287
Bin and silo	168	161	251	271	398	371
Total farm	605	533	642	596	767	658
Percent farms	79	72	70	72	70	73
DRYING						
Custom, returned to farms	13	19	8	9	14	10
Custom, warehouse storage ⁴	22	28	53	83	148	95
Other commercial ⁵	143	179	224	148	177	149
Total commercial	178	226	285	240	339	254
Natural	513	417	494	401	400	329
Artificial	79	74	195	225	352	329
Total farm	592	491	689	626	752	648
Percent farms	77	66	75	76	69	72

Source: Reports of the Cooperative Crop Reporting Service, Illinois, and USDA.

¹ Combines, picker-shellers, and stationary sheller in field.

² Assumes all corn is stored.

³ For farmers.

⁴ Assumes all warehouse storage was custom-dried.

⁵ Assumes all corn moving at harvest was dried.

Production increased rapidly and shows every promise of continuing to increase. The amount of the crop that was harvested shelled also increased rapidly. The striking thing is that the amount harvested by conventional pickers has not gone down rapidly. The decrease from 1963 to 1964 was significant, but it appears that a limited number of pickers have since been retired.

The amount of corn marketed from the field increased through 1965 and has since declined. Offsetting this decrease in harvest selling has been an increase in warehouse storage by farmers. This bit of information tends to make the point that farmers are not going to be tolerant of a system that does not permit them to retain ownership past harvest.

Storage in corn cribs necessarily parallels the use of corn pickers. The existence of corn cribs perhaps explains much of the continued use of corn pickers. The high cost of conditioning and storing shelled corn is delaying the rate of change to corn combines. But the existing corn cribs are mortal. Replacing them is very expensive, and they will not be replaced as they fall down, blow down, or burn down.

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The drying data first tells us that not much corn gets commercially dried and returned to farms. At least in this instance, data confirms expectations.

There has been a fairly rapid increase in commercial drying of corn—from 178 to 339 million—an increase of 161 million bushels. The numbers overstate—some corn that moves off farms at harvest is not dried but is held under heavy aeration, and not all of the corn that's dried is dried at country locations.

It is interesting to note that natural air drying exceeds the crib storage. Some corn that is field-shelled is stored under natural air.

Artificial drying on farms increased from 79 million bushels in 1963 to 352 million bushels in 1967, an increase of 273 million.

In summary, I would make three points: (1) the increase in off-farm storage has been substantially less than the increase in on-farm storage; (2) the increase in on-farm drying has been substantially greater than the increase in off-farm drying; and (3) there is still a large amount of corn harvested and stored in the ear that will eventually be harvested and stored as shelled corn.

From these data it follows that I was wrong initially, or that country elevators have not and are not expanding to take advantage of their opportunities, or that farmers are acting irrationally. Most likely, it is some combination of all these: that a part of the job belongs on farms, that elevators have not adjusted, and that farmers have acted irrationally. But I remain disappointed in the relative rates of expan-

sion on farms and at country elevators. A few explanatory observations are in order.

First, developments vary widely by areas of the state and by elevator territories within areas. There are territories in which elevators have expanded; the on-farm conditioning and storage is limited; and elevators are profitable. At least in some areas, the job can be done to the satisfaction of both elevators and farmers.

Second, there is a serious lack of knowledge about relative costs on farms and at elevators. For one thing, we do not know costs, and for another, the decision makers have not been taught that which is known. For this, we at the university must take much of the blame.

Third, some elevators are charging too much. I can point to elevators that charge one cent per point for moisture removal, shrink corn to 14 percent, and charge 1 1/2 cents per bushel per month. Customers of these elevators are forced to either sell at harvest or go to on-farm operations. I would not be critical of such elevators if they were making money, but they are not.

Fourth, there are inherent problems in shrinking an industry that is composed of many firms. It is clear that there are far too many country elevator plants in the state for them all to expand and operate efficiently. There is a great deal of sunk capital, management, and labor that is not mobile and must be consumed in place. These sunk resources operate very cheaply while they last and furnish severe competition. This requires a very high level of efficiency of new capital and management.

Fifth, the long-run development of the system may be accompanied by a major change in ownership and management form. In the main, country elevators have been small, independent businesses operating with local management and capital. This applies to both independents and cooperatives. The huge amounts of capital required, the changes in technology, and the enlarged managerial function may require vertical integration that extends down to the country from processors, exporters, and large, horizontally integrated firms. If the capital and management is not forthcoming locally, it will move in from the outside.

TECHNOLOGY

A key problem in adjustment to field-shelled corn is the lack of development of new technology. The most efficient ways of receiving, conditioning, storing, and shipping corn are not known. What is the optimum size, in capacity or volume, of the country elevator plant? What combination of aeration and drying is most efficient? What is the maximum feasible moisture removal? What is the best combination of handling and dead-storage space? What traffic layout will maximize

speed at lowest cost? These are some of the unanswered questions. We lack systems engineering for country elevators.

In addition to these physical problems, there are organizational, capital, and managerial problems that have not been solved.

TRANSPORTATION

Uncertainty about transportation developments in the future has had a retarding influence on modernization of the grain marketing system. It would be desirable if we knew what kind of transportation system and rate structure would exist a decade from now. Most particularly, it would be desirable to know what the real inbound and outbound transportation economies are. It appears that large outbound shipments are of lower cost than smaller ones. But as the distance from farm to country elevator increases, so does inbound transportation cost. At some point efficiency is offset by inefficiency, but the point is unknown.

Rapid progress has been made in modernizing the transportation system. Large trucks move cheaply on the improved highway system. Barge rates have declined to quite low levels. These declines have been accompanied by loud cries of losses, but I do not note a decrease in the offering of service.

The rail rate structure has changed more rapidly during the past decade than might reasonably have been expected. The basic change has been from a value of service to a cost of service and from a package of services to minimum services basis.

The transition is far from complete. There is much further to go before rates are fully rationalized with cost.

QUALITY

Almost nothing has been done by way of modernizing our quality standards or the measurement of quality. There are especially urgent problems relating to corn quality.

It appears that the system has gone backward in the maintenance of the quality of corn. The changed harvesting, conditioning, and storage methods are literally beating corn to pieces. This appears to start at the combine and continue through all points to final use.

A great deal of difficulty is encountered in making the measurements of quality as described by current grade standards. A major problem is the measurement of foreign material in high-moisture corn. The confusion with regard to moisture testing has not been reduced. There is a need for a device that measures not only

the average moisture of a sample but the range of moistures as well. There is a significant difference in test weight between high and low moisture content of corn.

Revisions in corn quality standards are under consideration. Possible changes relate to allowable moisture, seed coat damage (stress cracks), and foreign material. It appears likely that foreign material will be divided into two parts: small and large. The latter may well be known as "large broken kernels."

We may be approaching a time when several different marketing and quality tracks for corn develop. Quality and its measurement relate to cost of marketing and value in use. It may be that the system is not really beating corn to pieces and reducing its value but, rather, increasing its value by pregrinding it.

What I am suggesting is that the different uses of corn require corn of different specifications. The pregrinding that may be desirable for feed manufacturing may be highly undesirable for long-term storage and ruinous for dry milling.

It may be that the cheapest way to harvest, condition, store, and transport corn creates a large proportion of large broken kernels and foreign matter. This may not be greatly damaging for some purposes but may be very serious for others. If these things are true, then corn intended for different uses must go over different tracks and be evaluated against different quality standards.

There are currently several kinds of corn: normal, white, high amylose, waxy maize, and flint. The development of high-lysine corn may lead to many kinds of corn, each of which must be put over a different marketing track. Quality and measurement problems will become increasingly serious in the future.

CONCLUSION

Modernization of the grain marketing system is taking place. It is taking place at a rate slow enough that there appears to be an increasing rather than a decreasing need for modernization. It seems that the most profound conclusion that I can reach about where we stand in modernizing our grain markets is that it is unlikely that we will run out of problems in the near future.

