Cribbing This 1942 Corn

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Much of It May Not Keep if It Is Picked Too Soon and Isn’t Stored With Considerable Care

SOME IOWA CORN that is going into cribs this fall will mold unless farmers realize the situation and do something about it.

We have had more rain than usual in most parts of the state this summer and fall. Add to this the fact that we have had about four crops in a row that dried out pretty well in most of the state. As a result, many farmers have been getting larger and later hybrids that would yield just a little more.

There you have the reasons why we are in danger of some spoiled corn in cribs this fall—a wet year; strains of corn being grown that are too large and too late.

Some northern Iowa folks have been growing hybrids that were produced for southern Iowa. But in the last few years one could get almost any corn ripe anywhere in the state. This year may help us get back to strains adapted to our regions.

Our experience has given us some rather definite opinions about storing corn, ventilation, moisture in corn, crib construction and other related problems.

One of the biggest mistakes, we believe, that farmers make in corn storage is to start cribbing corn too soon. The moisture content of corn at the time it is cribbed should not be above 20 percent. Even then it should not be put into cribs wider than the recommended width for the locality. With narrower cribs and favorable drying conditions no excessive spoilage has occurred with corn cribbed at a moisture content 22 to 24 percent.

If the moisture content is down to 14 percent, or less, it can be stored safely in real wide cribs or in tight-walled cribs.

Corn will dry far faster in the field than in the crib. Triple A samplings of corn from all parts of the state from the time it has been sealed show that the moisture content of corn kernels actually does not drop between December and the middle of March in most years and usually goes up for a while instead of down. This is true with corn of both high and low moisture content when cribbed.

Don’t be surprised if the moisture content runs up after the corn has been in the crib for some time. Samplings which we have made here at the Iowa Station in our 5

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have to get a machine when one is available. Then, too, the corn picks better with a machine early in the fall."

All of this is true and you will have to hit a compromise between picking early when the corn picks best and later when the corn has dried out more but the loss in the field is larger with machine picking. Corn which is to be fed before warm weather next spring can be picked early if weather is cool enough to prevent molding.

One must not judge the corn's fitness this year to go into the crib by the calendar, by the date we picked it last year or even in the last 3 or 4 years. The only safe way is to keep checking the moisture by taking samples for tests until the moisture is down to where one feels reasonably sure that the corn will keep.

Where to Check

The place to take these samples in the field is not where the corn is driest, but where it is least mature. When corn in those areas reaches a safe stage, you needn't worry about the rest. Some ears have a moisture content 10 to 15 percent higher than others, but a reliable sample usually can be secured by shelling two rows of kernels from each of 10 to 20 ears.

Left (above): This double crib on a Northwestern Iowa farm is a desirable type if it is not too wide. If doors to the driveway are left open in good weather, corn will dry out much better.

Left: Because of greater exposure to sun and wind, single cribs are most effective in drying out high-moisture corn. Corn with 21 percent moisture in December dried rapidly enough in this crib to hold damage to 6.3 percent in September of the next year. It's a good plan to examine corn with an ear corn probe in the winter and early spring to find how it's keeping.

Below: This crib with an alley 2 feet wide has almost as good exposure as a single crib. The clearance under the floor aids somewhat in ventilation.
Using Driveways

We had an opportunity to observe a crib of corn in North Central Iowa which was picked with probably about 24 percent of moisture. We did not have a check on the moisture content at cribbing time, but when we did check it later it ran 20 to 24 percent moisture. The percentage of damaged corn in that crib in some samples which we took during July ran as high as 85 percent.

Crib space on that farm was short, as it is on thousands of farms this year. The farmer had a double crib, the two cribs being each 8 feet wide, and there was an 8-foot driveway. Because space was short, the farmer boarded up the driveway and filled it too.

So this man was, in effect, using a crib 24 feet wide. It certainly was no economy to use the driveway and have spots in that crib with 85 percent damaged kernels.

There will be temptation this fall to use driveways of cribs. Our advice from the observation of cribs such as the one described above is, don’t do it unless the corn is dry so that it will keep without ventilation (not over 14 percent) or ventilators between the driveway and the cribs are installed. The corn in those two 8-foot cribs probably would have come through all right, but when the two cribs and the driveway became a 24-foot crib, it was a different story. The corn didn’t keep.

Ventilators

Many of you may be wondering about ventilators. Our studies and observation of farmers’ cribs show that a ventilator will help if it is large enough and properly built. Some farmers have used with apparently good results in a rectangular crib a ventilator that runs the length of the crib and most of the way to the top. One way these ventilators have been built is to use slat cribbing to divide the crib so that you have really two cribs, each of which will be 4 or 5 feet wide instead of the 8 to 10-foot width if the crib had not been divided.

A good many round cribs have been used in recent years in our crib shortage. These almost always are greater in diameter than is safe for corn high in moisture.

On a Northwest Iowa farm we observed the successful handling of the ventilation of such a crib. This farmer had a crib 16 feet in diameter. On the floor he built a slatted wooden ventilator 12 by 16 inches across the center of the crib, each open end of the ventilator extending to the outside of the crib. In the center he built an 8-inch vertical slatted ventilator which opened at the floor into the 12 by 16-inch horizontal ventilator and extended to the top of the corn.

Corn went into this crib with 19 percent moisture. The next July a test showed the moisture had been reduced to 14.8 percent.

If that crib had merely the 8-inch vertical ventilator, the chances are that the corn would not have dried out nearly so well. The important
thing with ventilators is to make sure they are large enough and that there is a free movement of air through them. Small ones will help, but in a year when the corn is high in moisture, ventilators must be large and the air movement good.

Another type of ventilator for round cribs which we have been testing is the pressure or downdraft type. This is simply a swinging type ventilator on top of the roof connected to a large ventilating flue in the center of the crib. The ventilator always faces the wind, which makes the air go into the ventilator, into the flue, through the corn and out through the walls. Tests with fairly high moisture corn during the past two seasons show that the corn dries as well as that in a crib 8 feet wide. Tests were made with a 500 and a 1000-bushel steel crib, 14 and 18 feet in diameter.

Ventilators properly built will help, but no farmer should feel that he can put corn into the crib with say 25 percent moisture and expect it to dry out satisfactorily with ordinary ventilation. Corn dryers, such as the ones with heat which hybrid corn companies use, would do the job, but few farmers can provide that kind of drying facilities.

One of the facts that few realize is that at picking time the moisture content of the cob is about twice that of the kernels, except when the corn is very dry. So if you have corn with 18 to 20 percent moisture in the grain, you can figure there is just about twice as much in the cobs, and that moisture in the cobs will increase the moisture content of the kernels. That is one of the reasons why our moisture tests show that almost invariably there is a rise in moisture content after corn is in the crib—the moisture in the cobs is absorbed by the grain.

To reduce a bushel of ear corn from 20 percent moisture to 13 percent, about 8 pounds—nearly a gallon—of water must come out. That's one reason why we can't just pick this corn when we get ready and expect ventilation to dry it out.

We have found in our tests and from AAA samplings that corn in single cribs will dry faster than in double cribs. That's because there is more free movement of air around and through the corn. So, if you have a double crib, keep the doors at the ends of the driveway open on good drying days when there is a good wind and low humidity.

**Move Elevator Spout**

Another thing that makes some difference in the way corn dries out is the way it is put into the cribs. That is, if the shelled corn and husks are dropped in one spot by the elevator and the corn is high in moisture, you can look for a moldy spot there.

Generally there is no trouble with husks and shelled corn piling in one spot where corn is hand picked and shoveled into a crib. The trouble comes with machine picking and an elevator if care is not used in moving the spout about the crib.

Now if the corn is cribbed with too high moisture content, what shall you do? Check the condition of the corn by taking samples once a month with an ear corn probe from different locations in the crib.

If the samples show considerable spoilage the only alternative is to turn it. Get the corn out of the crib, sort out the worst ears, and recrrib or dispose of it.

This sounds like a lot of hard work, and it is. But after all it's better than to have a crib spoil. The AAA followed that kind of procedure with a good many cribs in Northeastern Iowa in the spring of 1941. The 1940 crop in that region went into the cribs with a lot of moisture and it had to be turned in the spring to save it.

**Ventilator Tests**

Going back to ventilators, you may be interested in some studies we made in cooperation with the Illinois Station in 1937 and 1938. We had four 8-foot cribs, three with a 240-bushel capacity and one held 230. The corn put into these in late October, 1937, had from about 27.5 percent to a little over 28 percent moisture.

Corn was cribbed with too much moisture for successful storage and was removed in March to prevent complete spoilage. However, the tests show the effect of ventilation.

One of the four cribs was slatted with cribbing to the top, another was slatted one-fourth of the way up, and the other two were slatted one-half their height. One of the two slatted half way up also had an A-type ventilator extending the length of the crib and nearly half the height. Corn in this crib lost about 1.5 percent more moisture than corn in the identical crib which had no ventilator.

The moisture content dropped from 28 percent in October to about 21 percent in March in the crib. In the crib slatted all the way up; that in the crib slatted a fourth of the way up dropped from 27.4 percent to 24.4 percent; the corn in the crib with the ventilator came down from 27.6 percent to about 21.5 percent; and the corn in the crib slatted half way up but with no ventilator was decreased from about 28 percent to 22.5 percent. So the ventilator did help, but the corn still was not as dry as that in the crib which had cribbing its full height but no ventilator.

The damaged corn in October

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These maps show the average moisture content of 1940 corn in cribs in Iowa during December, 1940, and the following February. Highest moisture was in Northeastern Iowa. Most of all, these maps show no drying occurred during the 2-month period from December to February. In fact, a rise in moisture has occurred in most of the state, but especially in areas with the drier corn during the December tests.
intake of calcium.

The third animal protein which may be used as a meat alternate also is patriotic, in view of the fact that Iowa is the top poultry-producing state and increased egg production is being encouraged. The recommended egg-a-day can profitably be increased by using eggs alone, as meat alternates or in other dishes. Besides the other food value in eggs, the iron content is 100 percent usable by the body—and that's more than is true even of such recognized sources of iron as liver and beans.

The iron content is not the only reason beans are suggested as meat alternates, for navy and lima beans, as well as dried peas and soybeans, are sources of protein. Soybeans may be used more and more as transportation facilities are used for carrying vital war goods. Although the proteins in these vegetables are incomplete, they might be combined with a little meat—like salt pork in baked beans—as a satisfactory alternate for meat.

It may be a good idea anyway, from a flavor standpoint, to use meat with vegetables and in casseroles. Stews, combining meat and vegetables, or a pot roast with the vegetables cooked around the meat, also provide variety in the limited-meat diet. The vegetables cooked around meat absorb some of the flavor and help to satisfy the desire for meat.

Another advantage of combinations of meats with vegetables is the fact that smaller quantities of higher grade cuts—prime and choice—will be available. Economy of good and common grades is greater due to fewer trimmings and less fat. These serve as well for combining with other foods as the higher grades and have just as much food value. A nutritious combination that also stretches the meat supply is the use of whole cereals with meat in loaves. Wild or brown rice, for instance, can be used in meat loaf. The loaf may be baked in an angel food cake pan, then turned upside down and its center filled with vegetables. Rice contains proteins that are of good nutritional quality. Although it is more expensive than other cereals, rationing and shortages sometimes necessitate use of less economical products.

Whole cereals are a good source of protein and may become more and more important as the war continues and transportation facilities are required for moving troops and vital war materials. The proteins of whole cereals are not as good nutritionally as animal proteins, so milk and other animal proteins should be used generously with them. They are rich sources of vitamin B; and some minerals.

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when the corn went into the cribs ran from about 2 to nearly 4 percent. The next March, that in the crib with no ventilator and with cribbing only a fourth its height had 22.2 percent of damaged corn as compared with 10.7 percent in the crib slatted half way up and with the ventilator. The crib slatted its full height had only 5.4 percent of damaged corn in March.

Our Food for Freedom production program is closely tied to this business of having good corn in sufficient amount for feed. We cannot afford to take chances of its spoiling. We must make sure that corn isn't cribbed until it is ready even if some has to stay out part of the winter.

When Combining Beans

Mature, dry soybeans are easily knocked from the pods, but because they often do not ripen uniformly, or owing to adverse weather, some threshing action is needed. But soybeans tend to crack as a result of the action of the cylinder, and therefore the threshing action should not be too severe.

The speed of the cylinder should be reduced to about half that used for other grains. On most combines the cylinder speed is reduced by varying the size of the cylinder and drive pulleys, and, in some cases, by interchanging the cylinder and drive pulley.

Never reduce the speed of the cylinder by throttling down the tractor engine for this reduces the speed of the entire combine.

After the cylinder speed has been reduced, the concaves should be adjusted to produce the desired threshing action.