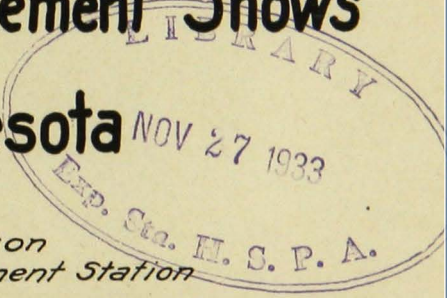
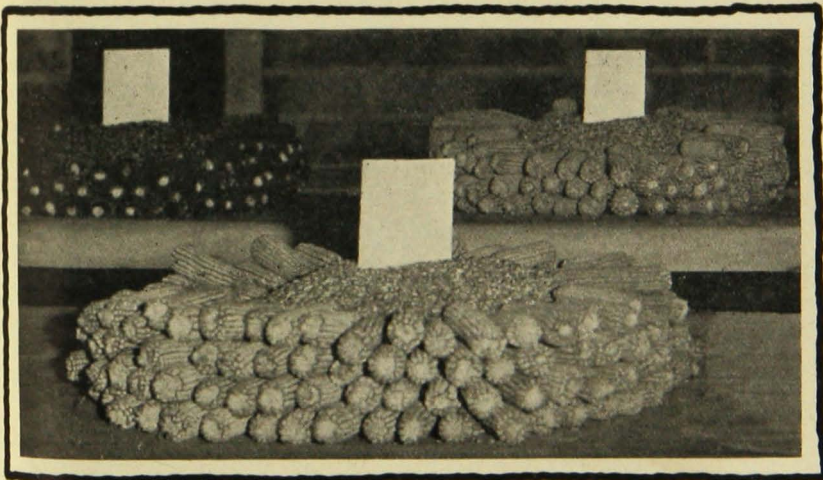


A Field-Run Corn Contest for Crop Improvement Shows in Minnesota



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EMPHASIS OFTEN MISPLACED

Crop shows now award the best prizes for ten-ear samples of corn, chosen with the utmost care to conform with certain standards commonly accepted as varietal characteristics. Uniformity, filling at tip and butt, number of rows, and shape of kernel are the fine points that often decide the order of placings. Maturity is important, but in a large show most of the prize-winning samples are beyond criticism in this respect.

CORN IS CROSS-BRED

Uniformity attracts the eye of a judge and is one essential of a sample selected for exhibition. The difficulty of finding ten ears closely approaching the ideal for the variety calls for skill on the part of the exhibitor and makes the corn show interesting.

The corn plant is naturally cross-fertilized, and it takes years of patient selection to secure a strain of corn in which most of the ears conform to given standards. In making such close selections for type of ear, the yield of sound, marketable corn is not always given first consideration.

CORN IS GROWN FOR PROFIT

In southern Minnesota, farm management plans usually call for as large an acreage as the operator can care for with the help available, as corn usually gives a larger net return per acre than small grains. The net return, however, depends upon the value of the crop harvested as compared to the cost of producing it. The expense of producing an acre of corn is more or less fixed. The cost per bushel is the cost per acre divided by the number of bushels produced. High yield per acre is of prime importance in making a corn crop profitable.

CORN SHOWS ARE CONSTRUCTIVE

If a corn grower spends considerable time selecting a ten-ear show sample and wins, he has the honor and satisfaction of leading the growers and perhaps a small cash prize. If he loses, he still has the knowledge gained from studying his own corn and that of others. On the other hand, if he spent the same amount of time trying to increase his yield by a little more care on all the processes of production he might have the same satisfaction of winning a contest and have more corn for feed. At all events his labor would have benefited himself, and his study would have been conducive to better farm management. Efforts have

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been made to work out a contest that would retain the popular appeal of the present corn show and direct the attention and skill of the exhibitors more specifically toward practices that encourage profitable yield.

FIELD-RUN CONTESTS

A field-run contest was tried in 1931 by the Dairyland Crop Improvement Association, of Rice, Steele, and Waseca Counties. The exhibit was later taken to the state show and brought so much favorable comment that the idea was made widely used in 1932. It has been called the "Field-Run Corn Contest" and is an attempt to combine the good points of the ten-ear sample show with the most valuable features of the acre-yield contest.

Sampling.—For the purpose of sampling, a field of 10 acres or more is divided equally north, south, east, and west. In each quarter of the field the grower selects 25 consecutive hills in either direction. He tries to avoid missing hills and one- or two-stalk hills, emphasizing the importance of stand. Looking through a corn field for 25 consecutive perfect hills will impress almost anyone with one of the most important factors in high yield, namely, stand.

Husking.—When the four sample plots are selected, a disinterested party (the county agent or an officer of the Crop Improvement Association) is called in to assist with the harvesting. It is his duty to check the number of hills and the weight of the husked corn from each plot in order to protect the exhibitor from possible criticism in case he has an outstanding yield. If the plots are selected in advance, it takes only a short time to do the actual husking and weighing so one official may collect several samples in half a day.

Weighing.—The husked corn from each 25 hills is immediately weighed and tagged to show the quarter of the field from which it came and the exact weight of husked ears. Nubbins will be included to show the greatest possible weight of corn from the plot. The husking may be done any time after the corn stops growing, but the date should be recorded, to be taken into consideration by the judge in allowing for moisture.

Drying.—The four husked samples—showing the date harvested, the owner's name or number, the variety, the weight, and the quarter of the field it represents—are taken to a central place for drying and shelling. The Dairyland people have sent their samples to the Southeast Experiment Station, at Waseca. The experiment stations could probably do much of this work, but it is expensive to ship the corn both ways and the results should be just as good if the weighing is done at home. The sacks may be hung in a well ventilated place

until dry enough to shell; or a local seed company might run them through the dryer.

Shelling.—Just before shelling, each sample is weighed, in order to compute the moisture lost. Care should be taken to see that mice do not help with the “evaporation.” Two of the four samples are then shelled and the shelled corn is weighed to compute the shelling percentage. The shelled corn is thoroly mixed and a representative sample is put into a pint jar or other air-tight container for a complete moisture determination. These pint samples of shelled corn, one for each field entered, can be tested at the nearest experiment station or arrangements may be made with a local seed house or elevator. The rest of the shelled corn should be cleaned with a blower or fanning mill, to put it in good condition for exhibition. Table 1 shows the complete data for computing final yields for five samples harvested in Waseca County in 1932.

Table 1
Data for Five Samples of Corn, Waseca County, 1932*

Exhibit No. and variety	Green weight	Dry weight	Weight shelled corn	Moisture in shelled corn	Total moisture	Shell- ing	Shelled corn, 14 per cent moisture
	lb.	lb.	lb.	per cent	per cent	per cent	bu. per acre
A Silver King	51.0	43.4					
	50.0	42.5	34.8				
	52.7	43.5	...	15.0	28.7	81.6	91.4
	59.2	49.2	40.0				
B Rupp's Yellow	53.8	42.9					
	59.3	46.2	37.3				
	53.8	44.1	...	16.8	33.9	81.0	88.8
	57.6	45.2	36.7				
C Golden Glow	52.9	40.9					
	60.1	53.7	41.7				
	57.1	43.5	...	18.2	37.1	77.6	83.6
	52.9	40.2	33.0				
D Silver King	50.7	39.7					
	57.6	45.3	36.6				
	51.9	41.4	...	15.6	33.0	80.9	84.2
	50.3	40.7	33.0				
E Yellow Dent	44.4	38.8					
	47.6	39.7	31.8				
	51.6	43.9	...	15.2	27.8	80.3	84.0
	47.9	40.7	32.8				

* Hills were spaced 3 feet 6 inches apart.

Computing Yields.—Figuring yields is simple arithmetic, but an example of the process may be of some value. For instance, the ears from 100 hills of exhibit A weighed 212.9 pounds when harvested. At shelling time they weighed 178.6 pounds, a loss of 34.3 pounds of water. The moisture test made on the shelled corn immediately after

shelling showed 15 per cent moisture, so $0.15 \times 178.6 = 26.79$ pounds of water still in the samples. The total water in the husked corn was $26.79 + 34.3$, or 61.1 pounds. The proportion of moisture when the corn was husked was $61.1 \div 212.9$, or 28.7 per cent. It is perhaps the most reliable indication of maturity.

Samples 2 and 4 weighed $42.5 + 49.2$, or a total of 91.7 pounds before shelling. The same samples gave $34.8 + 40$, or 74.8 pounds of shelled corn. Then $74.8 \div 91.7 = 81.57$, or practically 81.6 per cent of the sample was corn and 18.4 per cent was cob.

The ear corn from 100 hills at shelling time weighed 178.6 pounds, of which 81.6 per cent was corn. The shelled corn from 100 hills was therefore 178.6×0.816 , or 145.7 pounds containing 15 per cent moisture. It is customary to figure all yields on the basis of 14 per cent moisture, so it is necessary to reduce this yield to the "air dry" basis of 14 per cent moisture. To do this, multiply the weight of shelled corn from 100 hills by the percentage of *dry matter* shown by the moisture test of the shelled corn and divide the result by 86, or the percentage of dry matter desired. Thus, 145.7 pounds of shelled corn from 100 hills had 15 per cent moisture; $145.7 \times 85 = 12,384.5$; $12,384.5 \div 86 = 144$. The yield from 100 hills is therefore 144 pounds of shelled corn with 14 per cent moisture.

Acre Yields.—The next step is to figure yields on the acre basis. When planted 3 feet 6 inches each way there are 3,556 hills in an acre. If 100 hills yield 144 pounds of shelled corn with 14 per cent moisture, one hill will yield 1.44 pounds. Then 3,556 hills will yield 5,120.6 pounds, or 91.4 bushels of shelled corn per acre with 14 per cent moisture.

For convenience in computing yields, Table 1 may be used. The weight of shelled corn with 14 per cent moisture from 100 hills multiplied by the factor under the proper hill spacing gives the bushels of air-dry shelled corn per acre. For example, if 100 hills in Sample A yielded 144 pounds of shelled corn with 14 per cent moisture, and the hills were spaced 3 feet 6 inches each way, $144 \times 0.635 = 91.4$ bushels per acre.

For computing bushels of air-dry shelled corn per acre, multiply the pounds of 14 per cent moisture shelled corn per 100 hills by the factor given.

Table 2

Spacing	3 ft.-2 in.	3 ft.-4 in.	3 ft.-6 in.	3 ft.-8 in.
ft. in.				
3-2.....	0.776			
3-4.....	.737	0.700		
3-6.....	.702	.667	0.635	
3-8.....	0.670	0.636	0.606	0.579

The factors are calculated as follows: The square feet of space per hill is divided into 43,560 square feet per acre. This gives the number of hills per acre.

$$\frac{\text{No. hills per acre}}{100} \times \frac{\text{lbs. of 14 per cent shelled corn}}{56 \text{ lbs.}} = \text{factor} \times \text{pounds of 14 per cent shelled corn.}$$

SHOWING

A display of field-run corn is just as attractive as 10-ear samples. As half the corn is shelled and half is on the ear, it shows just what the corn looked like in the field, and what it would look like if marketed. It represents what the exhibitor actually grew in the field and not what he was able to find by diligent search.

One suggested arrangement for display is to pile the ears in a ring with the butts out. This circular container should be large enough to leave room for the shelled corn in the center. An attached card (Fig. 1) gives the information.

JUDGING

The basis of judging used by the Dairyland Crop Improvement Association was as follows:

	Per cent
Quality and appearance of ear corn	25
Quality and appearance of shelled corn	25
Yield per acre	40
Moisture at harvest time	10
	<hr/>
Total	100

The values could be varied to suit local conditions. If it is wished to lay stress on moisture at harvest time, due consideration should be given to the dates of planting and harvest, some method being used that will insure uniformity. If this is not feasible, it may be better to add the points allowed for moisture to the quality and appearance of corn. Immaturity is considered in deciding on the quality of the corn.

The Field-Run Corn Contest makes an exceedingly attractive show when well arranged, and has many of the elements that made the ten-ear contest popular. In addition, it does have a direct bearing on practical corn production, and directs attention to the most essential factors in making corn growing profitable, namely, stand, yield, and maturity. It answers by facts and figures some of the questions usually left to the opinion of the judge, who may place undue weight on uniformity because he has no means of knowing the other factors involved.

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**Dairyland Crop
Improvement Association**

Field Run Corn Contest

Entry John Doe

Yield 91.4 bu.

Weight per bu. 55.3#

Moisture 28.7%

Shelling % 81.6

Place

Yield _____ %

Shelled Corn _____ %

Ear Corn _____ %

Moisture _____ %

Final Placing _____

○

CROP HISTORY

Weight when husked

N.E. 51.0 N.W. 52.7

S.E. 50.0 S.W. 59.2

Total 212.9

Weight when shelled 178.6

Seed Home Grown

Size of field 24 acres

Spacing 3 ft. 6 in. x 3 ft. 6 in.

Stalks per hill 3

Lodging 1%

Planted _____

Harvested _____

Previous Crop Corn

Plowed Fall Depth 8 in.

Fertilizer None

Amount _____

How Applied _____

Notes _____

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Fig. 1. Printed Tags Are Convenient