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VRB 71-07

1971 Corn Validation Project

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General: This report contains the major findings from the 1971 corn validation project. It is intended to be a brief summary to be used in analyzing the 1971 crop year. A more detailed report will be issued later.

The project was conducted in Illinois and Iowa. The regular objective yield fields provided the frame for the project. A sample of these fields were contacted during September to determine the method of harvest. A sample of twenty fields were drawn for each method of harvest (ear or shelled form) in each State. Supplemental fields were also selected to be used for replacements. It was intended to complete 80 samples in the entire project.

Survey Procedures: In each sample field, an area of approximately one acre was laid out. Prior to harvest, 24 regular objective yield units were laid out and final pre-harvest observations made. Enumerator teams were present when the sample field was harvested by the farmer. The harvested corn (ear or shell) from the sample areas was taken to commercial scales for weighing. If the field was harvested in the shelled form, a sample of grain was taken at the scales to determine the moisture content. If the field was harvested in the ear, a sample of ears from the 'picker chute' was obtained to determine the shelling fraction and moisture content. Following the harvest, the field was measured and then 12 regular post harvest units were laid out and counts made.

Analysis: Two random variables under consideration were:

1) The net yield determined from the regular objective yield plots (OY) less the yield from the weighed area (T) divided by the objective yield; this variable, (OY-T)/OY, expresses the difference as a fraction of the objective yield; the second variable is the difference between the two yields (OY-T) expressed in bushels. All data were adjusted to grain at 15.5 percent moisture.

Tables 1 and 2 show the sample sizes, means, and standard errors by method of harvest and State for the two variables mentioned above. The difference between table 1 and 2 is that one sample in Iowa from the shelled group is not included in table 1. This sample had a difference of 35.532 bushels between the objective yield and the weighed yield. The field weights of the hand harvested corn appear to be in error.

The average weight per ear based on the two laboratory ears (third and fourth ears from row 1) from each of the 24 units were less than the average weight per ear based on the field weight determined by the enumerator. Since the two ears are a subsample of the total ears, the expected values of these weights would be the same. It is believed that the enumerator failed to subtract the weight of the container (about 2.5 pounds) when recording the field weights. Results including the sample are found in table 2.

The overall mean difference from the objective yield plots and the yield from the weighed area (OY-T) is 1.386 bushels excluding the one sample and 1.824 bushels including all samples. The overall mean difference expressed as a percent of the objective net yield is 1.40 and 1.76 respectively.

Conclusions: The survey did not confirm that a 3 to 6 percent difference ~~of~~ between the net yield from the objective yield procedures and the farmers weighed yield. The point estimate is 1.4 percent with a standard error of 0.7. The 95 percent confidence interval is 0 to 2.8 percent. The point estimate of (OY-T) is 1.386 bushels with the standard error of .751 bushel. The 95 percent confidence interval is -0.108 to 2.880 bushels. It is interesting to note that zero is contained in both intervals. Table 3 shows the differences between the ear and shell samples. There were no significant differences between the two harvest methods.

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Table 1 Means and Standard Errors by Method of Harvest, State and Random Variable
Variable: (OY - T)

State	Ear		Shell		Combined	
	Mean bu	S.E. bu	Mean bu	S.E. bu	Mean bu	S.E. bu
Iowa	1.466 (19)	1.465	2.657 (19)	1.260	2.062 (38)	.966
Illinois	.062 (18)	1.278	1.299 (21)	1.822	.728 (39)	1.145
Combined	.783 (37)	.976	1.944 (40)	1.128	1.386 (77)	.751

Variable: (OY - T)/OY

State \ Method	Ear		Shell		Combined	
	Mean	S.E.	Mean	S.E.	Mean	S.E.
Iowa	.02041 (19)	.01733	.02390 (19)	.01326	.02216 (38)	.01091
Illinois	.00157 (18)	.01195	.00990 (21)	.01374	.00606 (39)	.00922
Combined	.01124 (37)	.01063	.01655 (40)	.00959	.01400 (77)	.00714

Table 2 Means and Standard Errors by Method of Harvest, State and Random Variable

Variable: (OY - T)

State	Ear		Shell		Combined	
	Mean bu	S.E. bu	Mean bu	S.E. bu	Mean bu	S.E. bu
Iowa	1.466 (19)	1.465	4.301 (20)	2.028	2.920 (39)	1.261
Illinois	.062 (18)	1.278	1.299 (21)	1.822	.728 (39)	1.145
Combined	.783 (37)	.976	2.763 (41)	1.360	1.824 (78)	.852

Variable: (OY - T)/OY

State	Ear		Shell		Combined	
	Mean	S.E.	Mean	S.E.	Mean	S.E.
Iowa	.02041 (19)	.01733	.03747 (20)	.01851	.02916 (39)	.01269
Illinois	.00157 (18)	.01195	.00990 (21)	.01374	.00606 (39)	.00922
Combined	.01124 (37)	.01063	.02335 (41)	.01145	.01761 (78)	.00787

Table 3 Comparison of the Harvest Method from the 24 Regular Objective Yield Units and from the Weighed Area by State

State	Method			
	Ear	Shell	Difference Ear - Shell	t
Iowa				
Samples	19	19	-	-
(OY - T)	1.466	2.657	-1.191	
S.E.	1.465	1.260	1.932	-.616
Illinois				
Samples	18	21	-	-
(OY - T)	.062	1.299	-1.237	-
S.E.	1.278	1.822	2.012	-.615
Combined				
Samples	37	40	-	
Mean	.783	1.944	-1.161	-.773
S.E.	.976	1.128	1.502	

NOTE: The computed t values are not significantly different from zero at the 95 percent confidence level.