YRB 68-11

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Special Follow-Up to the 1967 Corn Objective Yield Survey

General:

Harvest of the 1967 corn crop was delayed in some important corn producing States because of unfavorable weather conditions. Much interest was being expressed over what effects late harvest might have on the yield and production of corn. This prompted a special follow-up survey to the regular corn objective yield work to be conducted in two States, Ohio and Indiana.

Procedures:

All sample fields from the Objective Yield Survey remaining for harvest as of early February were included in the Follow-up Survey. Each of these fields, 14 in Ohio and 17 in Indiana, were revisited and an additional pre-harvest count form completed. New units were laid out because the ears had been picked from the original units during the earlier pre-harvest visit. Location of the new units was determined by adding 5 to the number of rows used in locating the original units. In addition to the usual count of stalks and ears, the position of the ears was observed and recorded. Each ear was classified into one of three positions: (1) ear attached to standing stalk; (2) ear attached to lodged or broken stalk which is still rooted in ground; (3) ear found loose in row middle, including ears attached to stalks that were broken off from the ground. Ears in row 1 of each unit were weighed and sample ears for lab determinations submitted in the usual manner. Also, the ears in row 1 of each unit found in the third position classification were tagged and mailed separately to the State lab.

Post-harvest or gleaning work was completed for each field that had been harvested by February 29. Gleanings were completed for 8 of the sample fields in Ohio and for 12 fields in Indiana.

Results:

Comparisons were made between the data obtained from the Special Follow-up Survey and that from the November 1 Objective Yield Survey for the same sample fields. The averages from the two surveys are presented in Table 1 for the comparable items, which include stalks per acre, ears per acre, weight per ear (adjusted to pounds of shelled grain at 15.5 percent moisture) and gross or biological yield. The ear counts include all ears counted, regardless of position.

Table 1: Counts and Weights Obtained from November 1 Objective Yield and Follow-up Survey

State	Time of survey	Stalks per acre	Ears per acre	Weight per ear (lbs.)	Gross yield (bu.)
Ohio	Nov. 1	14,056	14,309	.287	73.3
	Follow-up	13,234	13,074	.307	71.6
Indiana ...	Nov. 1	14,709	14,723	.345	90.8
	Follow-up	13,993	13,793	.360	88.6
Combined ..	Nov. 1	14,414	14,536	.319	82.9
	Follow-up	13,650	13,468	.337	81.0

Statistical tests were made for each State and combined for each item to determine if any of the observed differences were significant at the usual 5 percent level. While no significant differences were found, the number of samples in the survey was quite small, making the detection of small differences difficult. It is believed that the consistency of the data does indicate that some changes did occur between the dates the surveys were conducted. There appears to be some decline in numbers of stalks and ears counted between the November 1 survey (conducted in late October) and the survey made in February. At the same time, the average weight per ear was higher for the late survey resulting in only a slight decrease in gross yield. This would suggest that ears lost were the smaller ears which contribute little to yield and which may have developed from tillers or weak stalks. Their disappearance might be attributed to wildlife. It was noted that several of the ears found loose on the ground and forwarded to the State laboratory had been partially eaten or had only a few kernels.

Data on the position of the ears counted (expanded to ears per acre) are given in Table 2. It had been presumed that ears on standing stalks and most of the ears attached to lodged stalks would likely be harvested but that none of the ears found loose on the ground could be harvested except by hand gleaning. These assumptions were generally supported by the data from fields in which gleanings were obtained.

Table 2: Average Counts of Ears Per Acre from Follow-Up Survey by Position

State	Ears on standing stalks	Ears on lodged stalks	Ears detached and on ground	Total ears per acre
Ohio	10,494	2,530	50	13,074
Indiana	8,431	4,301	1,061	13,793
Combined	9,363	3,501	604	13,468

It is apparent that the fields observed in Ohio were standing somewhat better than those in Indiana. Although the data give no explanation for this, some of the related factors might include wind and weather, corn rootworm, corn borer infestation and variety.

Laboratory determinations for ears found loose on the ground indicate the average weight of these ears is less than for other ears in the units. Under the assumption that the loose ears are lost in the harvesting process, these losses averaged only 0.2 bushels per acre for the 14 sample fields in Ohio and 5.6 bushels per acre for the 17 fields in Indiana.

Harvest loss data from the Objective Yield Survey and for the Follow-up Survey are given in Table 3. Included in the Objective Yield Survey are those sample fields originally assigned post-harvest work in which the gleanings were completed. Averages for the Objective Survey represent losses for the State although it is recognized that gleanings are not completed for all assigned fields for reasons, including late harvest, which might influence the averages. Average harvest losses from the Follow-up Survey represent fields that were harvested during the month of February.

Table 3: Harvest Losses from Objective Yield and Follow-up Survey

State	Regular Objective Yield			Follow-Up Survey		
	No. of samples	Harvest loss	Percent of gross yield	No. of samples	Harvest loss	Percent of gross yield
	Number	Bushels	Percent	Number	Bushels	Percent
Ohio	26	9.4	10.3	8	10.2	11.9
Indiana ..	25	12.0	11.3	12	18.2	19.0
Combined..	51	10.7	10.8	20	14.3	16.4

The data indicate that the losses were somewhat greater for the late harvested fields, particularly in Indiana. It is apparent that harvest losses are highly related to how well the corn is standing at the time of harvest.