MISSOURI
HYBRID POPCORN
YIELD TRIALS
1955

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COLLEGE OF AGRICULTURE
AGRICULTURAL EXPERIMENT STATION
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COLUMBIA, MISSOURI
BULLETIN 671
JUNE 1956
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INTRODUCTION

The production of popcorn in Missouri fluctuates annually from 8,000 to 14,000 acres with a 10-year average (1944-1953) of 12,700 acres. The average yield during this period was about 1,600 pounds an acre with an average price in 1954 of $2.85 per 100 pounds.

Missouri ranks 6th in average acre-yield among the 11 largest commercial popcorn growing states. The largest popcorn acreage is located in the northwest section of the state with scattered production in other areas. The acreage in these scattered areas varies with the acreage allotments and with the prices of the different crops.

Seed Source

Seed of the various hybrids tested was obtained from the Iowa, Purdue, and Kansas Agricultural Experiment Stations, and the M.F.A. Seed Division, Marshall, Mo.

Planting

Each hybrid was planted by hand in four plots (replications) consisting of two rows, five hills long. Five seeds were dropped in each hill and later thinned to three plants per hill.

Ear Height Grade

The ear height grade is the approximate number of feet from the base of the plant to the point of attachment of the upper ear.

Yield Determinations

Plots were harvested by hand and weighed individually. Samples of shelled corn were taken for moisture determinations and acre yields in pounds were adjusted to 15.5 percent moisture. Yield adjustments were made for missing hills but not for missing plants.

Moisture

Moisture at harvest was determined by taking two rows of kernels from each ear of 10 randomly selected ears of a single replication. These kernels were bulked and moisture derived by a Steinlite moisture meter.

Lodging and Dropped Ears

Plants were classified as root lodged when they leaned more than 30° from the vertical and stalk lodged when broken below the ear. Dropped ears are the number of ears detached from the stalk by harvest time. Both lodging and ear drop percentages were based on the total number of plants per plot.

Popping Volume

The popping volume for the hybrids tested at Sikeston, Mo., was determined by the Purdue Agricultural Experiment Station and the popping volume for the Marshall, Mo., test was made by the Iowa Agricultural Experiment Station. The usual procedure before determining popping volume is to bring all samples to the correct moisture content for maximum expansion, which is about 13.5 percent. This may be accomplished by placing samples in a humidity room for a specified length of time. Popping volume is the amount of "popped" corn obtained from a unit of shelled un-popped corn. For example, a popping volume of 34 would mean one unit of shelled popcorn gave 34 units of "popped" corn.

RESULTS

The 1955 hybrid popcorn yield trials were conducted at Marshall and Sikeston, Mo. All hybrids tested were developed by state experiment stations except South American Mushroom and South American Dynamite. The growing season for corn at both Marshall and Sikeston where these tests were conduct-
ed was considered above average. The large amount of root lodging for the Marshall tests was high due to late August rain and wind storms whereas conditions at Sikeston were ideal for excessive stalk lodging.

The performance records for the two tests are reported in Tables 1 and 2. The three highest yielding hybrids other than the experimental hybrids tested at both locations were Iopop 6, Purdue 31, and Iopop 8. In the tests at Sikeston, both Iopop 6 and 8 were very susceptible to stalk lodging, whereas Purdue 31 had superior resistance. The tests at Marshall indicated the two Iowa hybrids to be less susceptible to root lodging than Purdue 31.

The popping volume for each hybrid tested was excellent with the exception of SA Dynamite and several of the early white types. Most of the white type hybrids are too early for Missouri growing conditions, resulting in extremely low yields, and are not recommended for commercial production. However, these hybrids are suitable for home gardeners who are willing to sacrifice yield and popping volume for the fine eating qualities usually associated with these types.

**RECOMMENDED POPCORN HYBRIDS**

The following yellow popcorn (open-pedigree) hybrids are recommended for Missouri: Iopop 6, Purdue 31, Purdue 22, and Purdue 32 (K4). Several new experimental hybrids from Purdue and Iowa showed considerable promise in the 1955 tests. None of the white hybrids is recommended for large scale commercial production because of their low yield and low popping volume. However, Iopop 5 and Iopop 7 are recommended for small scale production for home consumption. A new white experimental hybrid, Purdue 2332 W, appears to be well adapted to Missouri conditions.
DESCRIPTION OF OPEN-PEDIGREE POPCORN HYBRIDS IN COMMERCIAL PRODUCTION

Purdue 20 (Sg30A x Sg18) is a single cross of the Supergold type with the highest quality of any released Purdue hybrid. It combines high popping volume with good flavor and freedom from hulls. It silks late but matures rapidly and stands well until harvest. The ears are small (5 1/2-6 inches long) and the plants are 5 1/2-6 feet tall. Purdue 20 is also used as seed parent for Purdue 32 (K4).

Purdue 22 (Sg16 x Sg18) is another single cross of the Supergold type. It is more productive than Purdue 20 and is a single cross parent of Purdue 31. The quality of popped corn is nearly as good as that of Purdue 20. It stalk lodges more than Purdue 20 but has longer ears (6-7 inches) and is more vigorous, growing 6-6 1/2 feet in height.

Purdue 202 (A1-6 x 1490) a single cross of the Amber Pearl-South American type. It is one of the first large-kernel yellow hybrids of early maturity. Therefore, in Missouri, it can be planted later than Purdue 31, 32, or Iopop 6, and still mature. It has excellent popping quality with yielding ability less than the aforementioned hybrids plus better root lodging resistance. The plants are uniformly short with broad, dark green leaves.

Purdue 31 (Sg16 x Sg18) x SA24 is a very popular three-way cross of Supergold-South American type. It combines high yield with good quality and fair lodging resistance. The ears measure 7 to 8 inches in length and the plants are vigorous and are 6 1/2-7 feet tall.

Purdue 32 (K4) (Sg30A x Sg18) x SA24 is another three-way cross of Supergold-South American type. At present this is one of the most popular hybrids grown in Missouri. It yields well and has good lodging resistance. The popped corn is of excellent quality. The ears are tapering and 7 to 8 inches long. The plants average 6 1/4 feet in height.

Iopop 6 (Sg17 x Sg30A) x Iowa 28 is a yellow three-way cross with very high yield and excellent popping volume. The stalk lodging resistance appears to be not as good as other yellow hybrids of the same maturity.

Iopop 5 (15 x 11) x (5 x 12) is a white double cross with an ear and kernel type very similar to the Japanese Hulless variety. It is very early in maturity for Missouri and yields less than most yellow hybrids. It has a fair popping expansion and produces a "popped" corn of excellent quality with fewer hulls than most yellow types.

Iopop 7 (29 x 27) x (5 x 12) is another white double cross of the hulless type that usually yields slightly better than Iopop 5 with better lodging resistance and slightly higher popping volume.

SEED SOURCES

1. Where to Obtain Seed for Seed Production.

Anyone interested in producing seed can obtain the single crosses and released inbreds to produce single, three-way, or double cross hybrids by contacting the seed certification agencies of the various states such as Iowa and Indiana.

2. Where to Obtain Seed for Hybrid Popcorn Production

Lists of seed producers can be obtained by contacting state seed certification agencies for the names of seed producers or of the larger seed companies. In addition, some organizations contract for the production of popcorn. These firms either produce seed or have access to large quantities of seed for this purpose. Small quantities of popcorn seed for garden scale production can be bought at almost any local seed store, and larger quantities can be ordered from local seed dealers for later delivery.

These brief descriptions were taken in part from publications received from the Iowa and Purdue Agricultural Experiment Stations.

Popcorn Production Information

The following bulletins on methods of producing popcorn can be obtained through your County Agricultural Extension Office or by writing to the station that publishes them.

USDA Farmers' Bulletin 1679.
University of Missouri Agricultural Extension Cir. 609.
Iowa Agricultural Experiment Station Bulletin P 54.