



The Charm of . . .

INDIAN CORN

by A. D. Day, R. K. Thompson & D. R. Grove*

Author A. D. Day with left hand points to the ears on the Mexican June variety of corn standing tall in background. It is marketed as livestock feed. With his right hand he points to ears on Indian flower type corn. This demonstrates the shorter growth characteristics of the Indian corns which are grown for human consumption.

Corn became adapted to semiarid regions on Indian reservations in the southwestern United States, as its cultivation spread throughout the world. Hopi and Papago Indians have been superior dry-land farmers who have retained corn as one of their most important foods. Corns grown on Indian reservations in Arizona differ greatly in appearance and growth characteristics.

Since 1958, a number of corn collections have been made on the Hopi and Papago Indian reservations in Arizona. Samples of flour, dent, flint, squaw, and sweet corn types were obtained. All collections were grown under irrigation at Mesa, Arizona, to produce seed for future studies and distribution. In 1967, seed of the same age of 20 representative corn selections from the collection were compared at Mesa, Arizona. They included 16 selections of the Indian flour and dent types (Arizona corn numbers 115-130) and 4 selections from the Mexican June Complex (Arizona

corn numbers 131-134). Planting was on March 15, using a nested design with 4 replications. Two hundred seeds of each corn (50 seeds per replication) were planted in 7.6 m (25 ft.) rows with a 1 m (40 in.) spacing between rows. Seed spacing was 30.5 cm (12 in.) and depth of planting was 3.1 cm (1.2 in.) A total of 114 cm (45 in.) of water were applied as needed throughout the growing season. All plants were allowed to open-pollinate. The following data were collected from each plot: (a) average plant height, (b) average leaf length, (c) average leaf width, (d) average number of nodes in the main stalk of each plant, (e) number of plants, (f) number of stalks, (g) dry weight of six main stalks, (h) refractometer reading (% soluble solids), (i) grain yield, and (j) grain volume-weight. At the dough stage of kernel development, six main stalks were removed at the soil level from each plot and green weights recorded. Three of these stalks were separated, weighed green, oven-dried for 24 hours at 71.1 C and weighed dry for silage comparison. Leaves measured for leaf length and width were the first leaf above the first ear from the soil. At silage harvest, a refractometer reading was made for sugar content of the juice extracted from the first node

below the top ear on the main stalk of one plant in each replication. Grain yield and volume-weight were obtained at maturity from the main stalk of six plants in each replication. Data were analyzed using the standard analysis of variance, and treatment means were compared using Duncan's multiple Range Test.

Seed Color

Seed color ranged from white, light red, dark red, amber, striped, to different color mixtures.

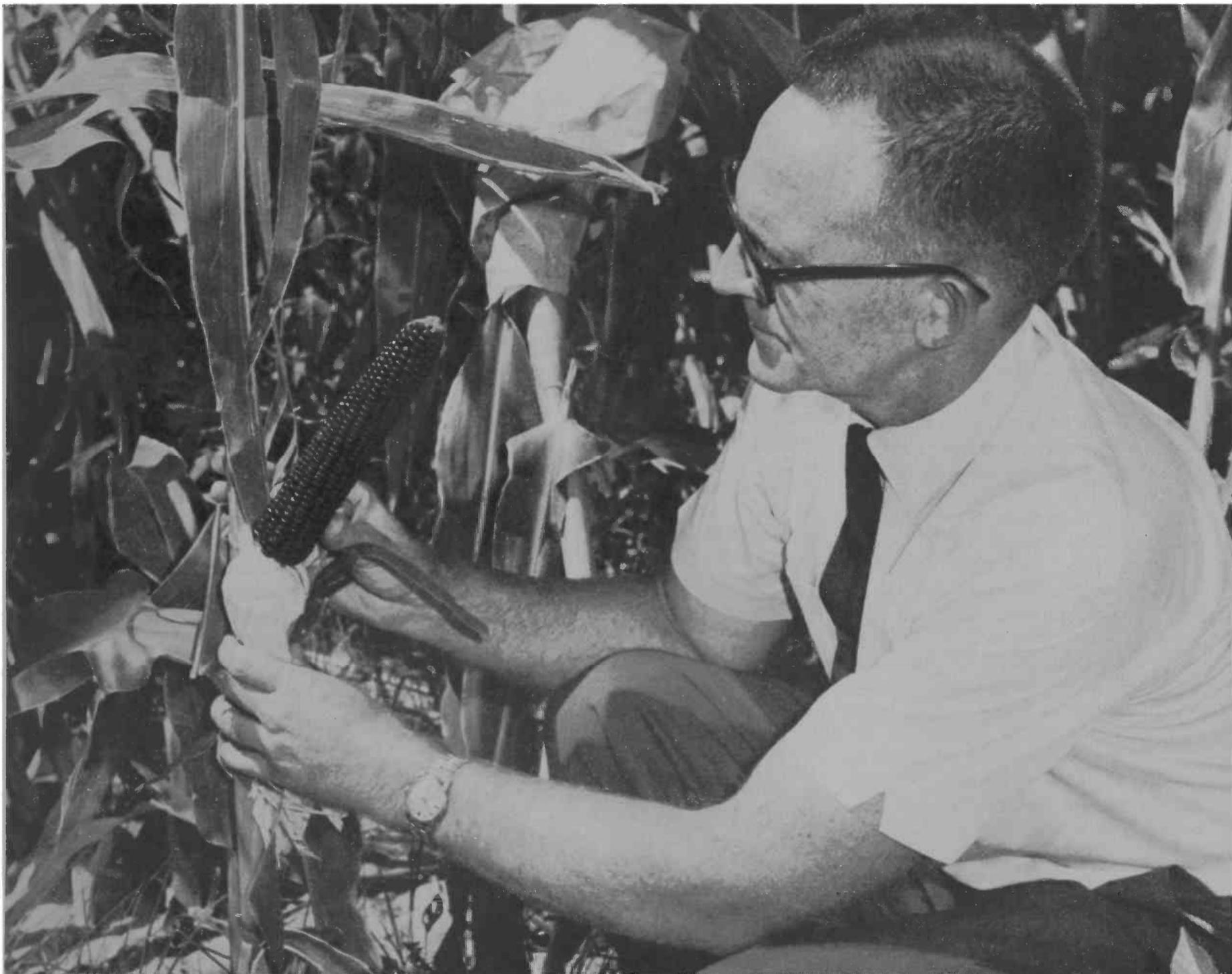
Type Classification

The older Indian types (numbers 115-130) were predominately flour types with some dents and flour-dent mixtures. The Mexican June Complex (numbers 131-134) were all white dents.

Maturity

The number of days from planting to maturity ranged from 99 to 142. Most Indian corns were much earlier than the Mexican June group.

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Plant Height

Of the 20 selections, the Mexican June types were significantly taller than the 16 Indian corns.

Leaf Length and Width

In general, Indian flour corns and flour-dent mixtures had longer leaves than Indian dents and Mexican June selections. Indian dents and Mexican June dents had wider leaves than other types.

Nodes Per Stalk

Five dents, including the four Mexican Junes and one Indian type, had the most nodes per stalk. A positive relationship existed between node number and plant height.

Stalks Per Plant

Mexican June plants were single-stalked, while plants from the Indian corns were generally multi-stalked.

Forage Production

Dent corns of both Mexican June and Indian origin outyielded flours and flour-dent mixtures in dry forage production. Dent selections produced plants that were taller and with stalks of a larger diameter than other types.

Soluble Solids In Stalks

Indian selections were among those of highest and lowest soluble solids content and the Mexican Junes were intermediate.

Grain Yield

Selections differed significantly in grain yield. The top producer was an Indian dent, which also yielded high in silage and was in the top 25% in grain volume-weight. Other high yielding groups were Indian flour-dent mixtures, Indian dents, and a Mexican June type.

This is typical of an ear of the Indian flour type corn. It is used for human consumption. These corns were grown at the University of Arizona Campbell Avenue farm in Tucson.

Grain Volume-Weight

Indian flour corns were among the highest and lowest in grain volume-weight. Mexican June types produced grain of intermediate volume-weight.

Future Potential

Seed of corns in the Arizona Corn Collection is available for distribution. Since Indian and Mexican June types are well adapted to environmental conditions in the semiarid southwestern United States and northwestern Mexico, they will be useful to corn breeders interested in developing silage and grain cultivars for the Southwest and regions having similar climatic conditions throughout the world.