

## Reference

Bhat, B. K. and N. L. Dhawan (1969) Effect of cytoplasm on quantitative characters of maize. Indian J. Genet. 29:321-326.

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3. Dominant genes in the evolution of maize.

Observations on a series of crosses involving primitive and evolved varieties of maize including SP 1 and SP 2 (Himalayan primitives), Chapalote, Nal-Tel (Yucatan 7), Pollo Segregaciones (Latin American primitives), KT 41 and Mexican June (evolved types) have shown that the genes determining early maturity, increased plant height, grain yield, ear length and the 1000 grain weight show a partial or complete expression of dominance in the first generation hybrids. The dominant genes were found to be contributed by the evolved varieties. It is generally believed that the primitive populations of a species show a greater concentration of wild type genes, and in the course of their evolution, they produce a large number of mutant alleles. Thus, the recessive genes are expected to show a greater preponderance in the evolved types. In the case of maize, many mutant genes having dominance effects have also been produced in the course of evolution. These mutant genes were obviously of great value and have been unconsciously or consciously selected by the early farmers and the present day plant breeders.

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4. Primitive and evolved varieties of maize and generation of heterosis.

A number of crosses between the primitive varieties of Himalayan and American distribution on the one hand, and highly evolved maize on the other, have provided evidence of a heterotic response. In the crosses between the primitive and evolved types, significant negative heterosis was more commonly generated when the Himalayan primitive varieties were involved as one of the parents. A significant positive heterosis for various characters of economic value was observed only in a few of the crosses, as shown in Table 1.