

What causes purple corn?

Written by Ron F. Meyer, area CSU Extension agent

Purple corn is not a new phenomenon. It has been observed over the years in many inbred and hybrid lines all over the world. Wild corn found growing in the cool mountain regions of Peru and Mexico is often purple.

Purple seedling color results from the expression of genes for anthocyanin pigment formation. Several plants have similar genes. For example, red maples have red leaves in the spring, but other maple varieties have green leaves. Similarly, most cabbage is green, but there is also red cabbage.

The differences between the varieties—corn, maple, or cabbage—include the genes for pigment production. That trait, along with other traits people do not see, is inherited in the hybrid or variety.

Most of the corn grown in the United States contains five of eight genes required to produce the purple color. The other three genes are present in certain hybrids, and some of these genes are cold sensitive. When exposed to cool temperatures, they induce purpling in the young plants. Nighttime air temperatures in the 40s when day temperatures are in the 60s are often adequate to trigger purpling.

These temperature-sensitive genes are only expressed in seedlings prior to the six-leaf stage. Since there are likely to be early spring cold temperatures somewhere each year, hybrids with the eight genes for pigment formation will probably produce some purple seedlings each spring.

Purple pigments can accumulate in mature plants as well, but pigmentation then results from the action of different genes. Corn breeders often use hybrids with the genes for purple leaves and husks as plot markers in yield tests.

Yield differences have not been observed due to leaf purpling characteristics.

Source: Pioneer Agronomy Library, www.pioneer.com.

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Holyoke Enterprise June 6, 2013