



Agri-Facts[®]

Why is my corn turning purple?

As the Eastern and far Northern cornbelt growers struggle to get their corn crop planted, a new, disturbing observation is occurring in corn fields that are between the two- and six-leaf stage of growth. The lower leaves and stems are turning purple. The traditional pessimists in the group will probably draw the conclusion that you have created a phosphorus deficiency as a result of cutting back on fertilizer this spring. Although phosphorus does play a role in the purple expression, it is likely not the primary cause. The corn plant only takes up about 4% of its total phosphorus needs in the first 25 days of its life. The symptoms are aptly named "Purple Corn Syndrome".

The purple color is expressed from anthocyanin pigment formation due to the accumulation of simple sugars in the leaves and stems. These simple sugars back up inside the plant tissue due to limited root growth and the inability of the plant to take up enough phosphorus. Soil conditions that limit root development include: cool soil temperatures, dry soils, wet poorly drained soils, soil compaction, side wall compaction and shallow planting. The rush to plant in short rain-free windows caused growers to plant in soils that needed at least another day of drying before they hit the fields and may experience more compaction. The slow early growth we have experienced also subjects the seedlings to more insect damage, seedling diseases, herbicide or fertilizer injury that can make the purple corn expression more severe. When you combine cool nighttime temperatures (in the 40's), bright sunlight during the day and wet soils, you are almost sure to see purple corn plants in some fields.

Technically, all hybrids have the capability of showing the purple corn syndrome as they have 5 of the 8 genes that can produce the symptoms. Some hybrids contain the other 3 genes and are genetically more likely to show more purpling.

The good news is that the purple tint is short lived and rarely lasts beyond the V6 growth stage (12" high). Corn will outgrow the condition once temperatures warm up and the seedlings begin to grow rapidly in favorable conditions. Extensive studies have shown that it should not have an impact on yield potential. If the purple color persists much past the six-leaf stage, you may be lacking sufficient phosphorus and corrective actions should be taken to minimize the negative effects that will result. Topdressing phosphorus is not a common practice in North America, but is done throughout the world. Although not as effective as preplant incorporation, it may be economically beneficial as a rescue treatment. Additional nitrogen may be warranted if excessive rain was received early.

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