

Drought Tolerant Corn: A Key Crop Improvement

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Importance of Corn :

Anyone who has enjoyed delicious foods such as enchiladas, tamales or even just the simple corn tortilla along with any food that contains high fructose corn syrup can appreciate the need for corn (or maize as it is internationally known). Corn is cultivated throughout the temperate and tropical regions of the world and serves as a staple grain for many countries of the world. Top producers of the crop include the United States, China, Mexico and Pakistan. However, farmers around the world grow corn in environments that are not as moist as the highly productive Midwest including many regions of Africa and even the state of Texas. Since this crop is grown in many dry regions such as these the development of drought tolerant lines is critical to allow the expansion and improvement of corn cultivation to feed an increasing population. Countries around the world rely on a good corn harvest to feed both man and beast.

Sharing with the World:

- CIMMYT has recognized the usefulness of its drought tolerant corn research and started a project to help Africa, which feeds 300 million of its people with corn.
- Most environments in Africa where corn is grown the limiting factor for production is available water.
- The Drought Tolerant Maize for Africa Initiative (DTMA) hopes to increase yields of maize in drought prone areas by 20-50% in the next ten years.



The Corn Goddess



Breeding for Drought Tolerance:

CIMMYT, the International Center for Maize and Wheat Improvement has recognized the need to develop drought tolerant lines of corn and has made some discoveries that have benefited not only Mexico, but countries around the world. In the 1990's two crop physiologists J. Bolanos and G. O. Edmeades studied genetic responses of corn to drought stress and selected plants that were more tolerant to drought stresses. The most famous trait that was used by these to men was the Anthesis Silking Interval (ASI). Their diligent documentation of their selection process has served as a foundation for many other programs breeding for drought tolerance. They also introduced and defended the fact that the corn must not only produce well in drought conditions, but also have the potential for high yields when water becomes available. They also described many visible and easily scored traits related to drought tolerance.

Drought Tolerance Traits:

- Anthesis Silking Interval – ensures there is pollen to pollinate the female organs.
- Deeper Root Systems – deeper roots allow the plant to explore the soil for water.
- Osmotic Adjustment – roots chemically change to allow for better water uptake.
- Leaf Rolling – Protects the plants from drying out.

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