Harnessing African Sorghum Biodiversity

Ethiopia is a key center of genetic origin for sorghum. A collection of over 10,000 sorghum lines was curated at the Ethiopian Biodiversity Institute, providing the basis for a panel of 2,200 lines to be assembled within the Ethiopian Institute of Agricultural Research (EIAR) national sorghum program collaborating with other researchers of a global network supported by the Kansas State University-led Sorghum and Millet Innovation Lab (SMIL).

A core working collection of 300 lines was then phenotyped in multiple locations in Ethiopia and also fully genotyped by the EIAR national sorghum program team in collaboration with Purdue University. This global collaboration and core working collection enabled unique gene discovery by multiple teams in areas of disease resistance, stiga resistance, water use efficiency, etc.

In the case of host plant resistance against fungal pathogens, genes responsible for anthracnose resistance were identified and a rapid effort to translate these genes into farmer-appreciated local produced sorghum varieties in western Ethiopia was realized.

As one key example, the national registration and release of the improved sorghum variety ‘Meres’a with up to 40% yield gain under high disease pressure was realized. Over 14 metric tons of this improved seed has been multiplied and is being scaled and commericalized in Ethiopia. A second disease-resistant sorghum variety with white color has also been released and will be further scaled into the national seed system through public, private and community-based pathways.

10,000 lines preserved → 2,200 lines evaluated → 300 lines in core collection

Developed through phenotyping in multiple locations and genotyping

Improved seed with up to 40% yield gain

Core collection led to the release of two varieties with superior productivity under high disease pressure of western Ethiopia

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