P51

S1 - Posters

Adaptation of bio-fortified sorghum hybrids (*Sorghum bicolor*) to drought resilience in Mali

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Sorghum is a staple food in Mali, yet grain yields are low and do not contain high lysine, threonine, iron and zinc content. Drought is the most significant cause of crop yield loss, especially in water limited areas where most of the world's poorest farmers live. Development of drought tolerant bio-fortified sorghum hybrids will enhance food production and the livelihood of farmers in these areas. To assess the adaptation, yield potential, and to identify the traits contributing directly and indirectly to drought resilience, a study was conducted in two locations. Thus, a total of 49 F1hybrids were developed and used in this study along with three commercial hybrids. Ten (10) bio fortified hybrids were identified with grain yield ranging from 3774 to 5068 kg ha-1 with an average heading date of 74-83 days. The new bio-fortified sorghum hybrids in this study yielded three times as much as the local varieties, which yielded 1 to 1.5 tons. The index of varietal sensitivity varied 253.43 to 81.12 %. For drought resilience, a significant correlation was identified with index of varietal sensitivity through mibrid, stay green and leaf senescence. A positive and negative correlation among grain yield, stay green and mibrid were observed. This study identified bio fortified sorghum hybrids with high grain yield and tolerant to drought stresses. These ten hybrids are worthy to be utilized in participatory trials for their registration in the seed catalog.

Table of contents