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Diversity for grain oil content and seed hardness in Sorghum [*Sorghum bicolor* (L.) Moench]

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Sorghum [*Sorghum bicolor* (L.) Moench] is the fifth most important cereal crop across the world, which is mostly cultivated in the arid and semi-arid tropics for its better adaptation to various stresses, including drought, heat, salinity and flooding. India tops the world in terms of area under sorghum cultivation representing almost 17.3% of world area and 11.4% of the total world sorghum output. Sorghum is fast losing ground in India to other crops due to its loss of relevance as food crop. Thus, exploration of alternate uses of sorghum for other purposes assumes much importance. On the other hand sorghum grains are often susceptible to damages due to stored grain pests. Seed oil content and seed hardness is linked to damages to insect pests. A total of 293 sorghum genotypes representing the mini core collection and popular varieties as well as parental lines were evaluated for oil content and seed hardness using bench-top pulsed NMR analyser and seed hardness tester, respectively. Grain oil content ranged from 1.58% (IS 29914) to 6.59% (IS 30466) with an average of 2.97%. Seven genotypes (IS 30466, IS 30443, IS 1212, IS 30507, IS 30383, IS 29654 and IS 30451) recorded oil content above 5.0%, and 23 additional genotypes recorded oil content between 4.0% and 5.0%. Average seed hardness of the genotypes was 5.79 kg with a range of 1.96 (IS 33023) to 17.3 kg (IS 19153). No correlation (r = 0.06) between seed hardness and oil content was recorded. Lines with contrasting oil content and seed hardness need to be studied for their response to stored pest damages. Lipid profile of oil content of lines with very high oil content also need to be studied so that potential utility of sorghum oil, as by product in grain processing may be worked out.

Marker assisted selection in Pearl millet for drought tolerance

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Pearl millet [*Pennisetum glaucum* (L.) R. Br.] (2n = 14) is an important cereal crop grown in the hottest, driest regions of sub-Saharan Africa and the Indian subcontinent. Terminal drought stress is one of the most common and serious environmental constraints in these regions, reducing mean grain yields and increasing the magnitude of the annual variation in harvests and the incidence of crop failure. As a result, improving the adaptation and/or tolerance of pearl millet to drought stress is an important objective in most pearl millet breeding programmes. Marker assisted selection is an important molecular tool for improving its yield. SSR markers linked to two major QTL's (located on LG2 and LG5) were used for marker assisted selection. The present investigation aimed to improve drought tolerance in HBL 11, the male parent of pearl millet hybrid HHB 226 by transferring genomic segments linked to drought tolerance from PRLT 2 and 863 B. Out of eleven SSR markers, three markers from LG2 and one from LG5 were found polymorphic. Recurrent parent and donor parents were crossed to raise F_1 generation. Phenotypic parameters were closed to donor