



Assessment of genetic diversity among Egyptian sorghum landraces for grain yield variability using ISSR markers analysis.

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Abstract:

Abstract Genetic diversity is an important tool for providing desirable parents during plant breeding programs. Landraces are good source for genetic variability. Thus, this study was performed during two successive seasons to determine the usefulness and genetic diversity among four sorghum (*Sorghum bicolor* L. Moench) landraces they were collected from three different regions in the New Valley governorate of Egypt, in addition to Giza 15 as a control. These genotypes were studied for grain yield performance and inter simple sequence repeat (ISSR) molecular marker analysis. The results showed that all the genotypes were significantly different for grain yield, whereas SL2 landrace produced the highest grain yield of 121.13 g/plant, while the lowest value of 77.13 g was produced by SL3 landrace. In addition, Genetic variability was estimated using ISSR markers where highly polymorphism of 87.8% was observed and moderate similarity relationships were detected. The highest similarity of 0.69 was found between SL4 and SL2 landraces, but Giza 15 and SL1 showed the lowest similarity of 0.48. Interestingly, UBC846 primer was able to produce negative specific unique band for highly grain yield which would be used as highly grain yield marker. On the other hand, dendrogram analysis isolated the check cultivar in one cluster, while all landraces were located in one other cluster. Furthermore, both SL4 and SL2 which collected from the same region formed one group and exceeded the control. The diversity that observed among landraces and superiority of some of them in grain yield suggested that landraces could be a beneficial tool for sorghum improvement.

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