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Adaptability, variability, heritability genotypic and phenotypic coefficient of variability among Acha accessions from north eastern Nigeria

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Fourteen Acha accessions consisting the two cultivated species of acha (*Digitaria exilis* kipps Stapf and *Digitaria iburua* Stapf known respectively as white and black fonio were collected from TafawaBalewa and Bogoro districts of Bauchi state in north eastern Nigeria. The objective of this study was to asses these genotypes for genetic diversity, agronomic performance under the Bauchi environment and estimate yield and yield components among them. Accessions were first examined in preliminary evaluation trialsin the screen house of the Abubakar Tafawa Balewa University, Bauchi, Nigeria in 2007 while field studies were conducted at the Teaching and Research farm during the 2009 and 2010 cropping seasons. Accessions were laid out in a randomized complete block design and replicated three times. Data was collected on yield and reproductive attributes and subjected to analysis of variance using the Genstat computer software version 16. It was observed that some accessions could notproduce seeds under screen house condition, the analysis of variance for studies on the field in subsequent planting seasons revealed that acha accessions show highly significant differences (P≥0.00) in almost all the characters understudy except for straw weight. Genotypic variances were higher than their corresponding error variances indicating that an environmental effect was less. High percent broad sense heritability values were recorded for important characters like seed yield, day to first flower and number of tiller per plant and high phenotypic and genotypic coefficient of variability are indicative of preponderance of additive gene action. The wide ranges in the data observed for most of the traits and the significant mean square obtained have shown the existence of genetic variability for the traits studied. This indicates that these traits can be improved through selection. We concluded that considerable progress in Acha breeding could be achieved by exploiting these traits.

Biography

Umar Muhammad Buba is currently working at Abubakar Tafawa Balewa University, Nigeria.

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