



Agro-morphological characterization and genetic diversity study on tepary bean (*Phaseolus acutifolius* A. Gray) collection introduced in Burkina Faso

ZIDA Wend-Pagnagde Felicien Marie Serge^{1, 2*}, BATIENO Teyioué Benoit Joseph¹, OUEDRAOGO Mahamadi Hamed², OUEDRAOGO Tinga Jeremy¹, SAWADOGO Mahamadou²

⁽¹⁾ Institut de l'Environnement et de Recherches Agricoles (INERA), CREAM de Kamboinsé Département Productions Végétales, Laboratoire de Génétique et de Biotechnologies Végétales, Ouagadougou, Burkina Faso

⁽²⁾ Université Joseph KI-ZERBO, École Doctorale Sciences et Technologies, Laboratoire Biosciences, Équipe Génétique et Amélioration des Plantes (EGAP), Ouagadougou, Burkina Faso

Corresponding author: Email: felicienzida@yahoo.fr BP: 476, Ouagadougou (Burkina Faso)

Tel: 00226 76 47 44 09

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ABSTRACT

Objective: The present study was conducted to evaluate 36 Tepary bean (*Phaseolus acutifolius* A. Gray) genotypes introduced in Burkina Faso and to determine genetic diversity in this collection using both quantitative and qualitative traits.

Methodology and Results: A field experiment was conducted following an augmented bloc design with an extra early maturing cowpea variety as control. Data was recorded on six qualitative and seven quantitative traits. Results show existence of important genetic diversity among Tepary bean accessions. For all quantitative traits assessed, ANOVA were significant and PCV (Phenotypic Coefficient of Variability) was slightly superior to GCV (Genotypic Coefficient of Variability) indicating low effect of the environment on traits expressions. GCV and PCV were also high for number of pods per plant, plant height and hundred seeds weigh. H (Heritability) ranged from 90.61% to 99.91% and GA (Genetic Advance) from 9.56% to 54.88%. Tepary bean genotypes were clustered into three groups separated from the control.

Conclusions and application of findings: The present study revealed that these 36 Tepary bean accessions introduced in Burkina Faso are perfectly adapted to the ecological conditions of the country. The genetic diversity, both qualitative and quantitative, will help enrich local biodiversity in terms of grain legumes whilst constituting an important basis for a future Tepary bean-breeding program. High heritability coupled with high expected genetic advanced calculated for seeds yield related traits namely “number of pods per plant”, “plant height” and “hundred seeds weigh” suggest an important genetic gain for future breeding activities on these traits in tepary bean for Burkina Faso

Keywords: Tepary bean (*Phaseolus acutifolius* A. Gray), genetic diversity, heritability (H), expected genetic advance (GA).