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Cowpea (*Vigna unguiculata*) Variety Mixtures to Optimise Vegetable Leaf and Seed Yields and Stability in Central Tanzania

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Abstract

Cowpea (*Vigna unguiculata*) is among the top three or four African indigenous leafy vegetables used in many parts of Africa. Both seeds and leaves of cowpea have excellent nutritional value that may contribute to feed resource-poor communities and, thereby, reduce malnutrition especially in Sub-Saharan Africa. Despite its importance, however, as leafy vegetable cowpea is ignored and has received little attention in research and development. This study was conducted within the project “Promotion of Neglected Indigenous Leafy and Legume Vegetable Crops for Nutritional Health in Eastern and Southern Africa” – *ProNIVA* (largely financed by the German BMZ). Four previously investigated promising cowpea varieties plus one local variety were tested as different mixture components at different locations through participatory research. The objective was to evaluate variety mixtures in different environments in optimizing and stabilizing cowpea leaf and seed yields as compared to pure variety production. Selected cowpea varieties included determinate and indeterminate as seed and leafy types, respectively. Established mixtures and their corresponding components were intercropped with maize (Situka M1) as the typical practice applied by farmers. Agronomic evaluation was conducted during the 2007 dry season at Makutupora Agricultural Research and Training Center (on station) and Veyula village (on farm) in Dodoma district, with irrigation according to need. Among the variables determined were fresh and dry matter leaf yields from up to five consecutive harvests, pod and seed yields with or without leaf harvesting, and phenology. All treatments (mixtures and their corresponding components) significantly differed in total fresh and DM leaf yields both on station and on farm, however, total pod and seed yields only differed on station. Using contrast analysis, mixtures showed no advantage over the mean of their components neither in leaf nor in seed yields. However, higher yield stability across different harvests was more observed for complex mixtures than in simple ones or mixture components. When interviewing farmers around villages in Dodoma district, they expressed their favouring variety mixtures because of their need for stability of both leaf and seed yields, also because they were familiar with different ways of mixtures for a better use of their scarce lands.

Keywords: African leafy vegetables, cowpea, indigenous african vegetables, Tanzania, underutilised crops, *Vigna unguiculata*, vegetables