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## Grain and Tuber Yield of the African Yam Bean Intercropped with Cassava

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### Abstract

The African yam bean (*Sphenostylis stenocarpa* (Hoechst ex. A. Rich.) Harms.) can be considered an orphan crop, yet interest in the crop has increased recently. In DR Congo, farmers still grow the crop and keep a few varieties for grain and tuber production. The Genetic Resource Unit at the International Institute of Tropical Agriculture, Ibadan, Nigeria is keeping African yam bean (AYB) germplasm and exchanged some with DR Congo. Knowledge on AYB varietal traits and agronomic performance are lacking. A trial was conducted in 2017–2018 season on the Plateau de Bateke to assess the suitability of 4 AYB varieties for grain and tuber production and intercropping with cassava, the most common crop on the plateau. Varieties Feshi, Ngidinga, TSS10 and '209013' were seeded as sole crop and with cassava variety TME 419. Plots were 5×5 m<sup>-2</sup>, plant density was 2 AYB m<sup>-2</sup> and 1 cassava m<sup>-2</sup>. Soils are poor, coarse textured sand, receiving over 1200 mm rainfall, yet vegetation is grassland. Crop establishment and survival to harvest of the AYB was poor in TSS10 (0.5 plants m<sup>-2</sup>) and moderate for the other varieties (0.9 plants m<sup>-2</sup>). Grain yield was higher in AYB sole crops and highest in variety '209013' (268 kg ha<sup>-1</sup>) followed by Feshi (191 kg ha<sup>-1</sup>), TSS10 and Ngidinga produced 102 and 89 kg ha<sup>-1</sup>, respectively. When intercropped grain yields were 24–60% lower with highest losses in '209013'. Tuber yields were highest in Feshi sole crop (13.02 t ha<sup>-1</sup>) followed by Feshi intercropped (10.16 t ha<sup>-1</sup>). All other varieties produced significantly less (in t/ha): Ngidinga 2.85 (sole), 2.26 (intercropped); TSS10 0.09 t ha<sup>-1</sup> (sole), 0.31 (intercropped) and '209013' 0.32 (sole) and 0.07 (intercropped). Feshi is the only variety with a reasonable grain yield to keep seed and a sufficient tuber yield that matches that of cassava. The cassava root yield did not respond to the presence of AYB varieties '209013', Ngidinga and TSS10 but produced significantly less (7.67 t ha<sup>-1</sup> fresh roots) when intercropped with Feshi. Cassava sole crop attained 11.2 t ha<sup>-1</sup> fresh roots. AYB tubers fetch a higher price than cassava roots thus AYB Feshi is an alternative to cassava.

**Keywords:** DR Congo, intercropping, orphan crop, *Sphenostylis stenocarpa*