

Structural morphology of cassava (*Manihot esculenta* Crantz) genotypes influences yield and yield components and responses to weed management in the Guinea savanna zone of Nigeria

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ABSTRACT

Objective: The effects of nine weed management options on the yield and yield components of two cassava (*Manihot esculenta* Crantz) morphological-types were evaluated for two cropping seasons in a guinea savanna site of Nigeria.

Methodology and result: Field experiments were carried out during the cropping seasons of 2008 and 2009 at the Teaching and Research Farm of the Department of Crop Production, Kogi State University, Anyigba (Lat 7° 29' N and Long 7° 11' E), Nigeria. The experiment was laid out in a split-plot in randomized complete block design replicated three times. The main plots consisted of the two cassava morphological-types ('NR 8082' (short with profuse branching) and 'TMS 30555' (tall non-branching). Nine weed control strategies (i.e. application of 3.0, 3.5 and 4.0 kg a.i/ha of Primextra (atrazine x metolachlor), 2.0, 3.0 and

4.0kg a.i/ha of Taxastomp (atrazine x pendimethalin), three-time manual weeding, weedy and weed-free checks were the subplot treatments. The experimental site were infested predominantly with *Cynodon dactylon*, *Panicum maximum*, *Andropogon gayanus*, *Chloris pilosa* and *Bracharia deflexa* constituting about 80% of the weed mass in the field. Besides the weedy check, weed fresh biomass (1.03 - 1.19 t/ha) and weed dry matter (0.06 - 0.09 t/ha) were highest in plots to which 2.0kg a.i/ha of taxastomp was applied. Expectedly the two cassava morphological-types exhibited significant ($P < 0.05$) differences in plant height across the two-year trials and weed management system, with the highest plant stem height (153.5cm) obtained from the non-branching variety in the P3.0 treated plot. The highest cassava biomass (12.1 - 14.1 kg) was obtained from the P3.0 treated plots across morphological-types and year; and closely followed by plants in the T3.0 plots. However, harvest index was highest in the T2.0 treated plot irrespective of cassava morphological-types. Of all the treatments, P3.0 and T3.0 (i.e. 3.0 a.i. kg/ha) gave the highest root tuber yield (119.7 and 117.0 t/ha, respectively) from the non-branching type in both years as against 100.67 and 103.67 t/ha for the branching morphological type.

Conclusion and application of findings: Variable response pattern of the two cultivars to the weed management options evaluated suggested that morphological differences of the cultivars may have influenced effectiveness of herbicides applied. However, the application of Primextra and Taxastomp at 3.0 a.i. kg/ha seemed most appropriate for weed control in cassava fields in the guinea savanna zone of Nigeria.

Key Words: *Cassava morphology, Yield and yield components, Weed management*