Correlation analysis of tuber yield and yield related characters in two cassava (*Manihot esculenta* Crantz) morphological-types grown under nine weed management systems in the Guinea savanna zone of Nigeria.

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ABSTRACT

Objective: The interplay of weed management options and temporal environment on correlative responses in two cassava morphological-types were studied. This is to elucidate growth and yield correlations pattern under weed management and temporal environment.

Methodology and result: The two cassava morphological-types 'NR 8082' (short with profuse branching) and 'TMS 30555' (tall non-branching) were subjected to nine different weed management options in a split plot design replicated three times. Data on weed biomass, cassava growth and yield parameters were subjected to multiple correlation analyses. Results revealed that weed dry matter had significant negative correlation with plant height (r = - 0.975**), plant girth (r = - 0.796**), tuber diameter (r = - 0.841**), tuber weight (r = - 0.929**), and average whole plant

biomass yield (r = -0.921**) in 2008 cropping season for the branching cultivar. In 2009, a similar correlative response trend was also obtained, weed dry matter showed highly significant negative correlation with plant height (r = -0.984**), plant girth (r = -0.789**), tuber diameter (r = -0.822**), tuber weight (r = -0.911**), and average whole plant biomass yield (r = -0.901**). For the non-branching cultivar, weed dry matter also demonstrated strong and significant negative relationship with the following growth and yield parameters: plant height (r = --0.910**), plant girth (r = -0.763**), tuber diameter (r = -0.805**), tuber weight (r = -0.864**), and average whole plant biomass yield (r = -0.860**) in 2008. And in 2009, the data revealed strong and significant negative relationship between weed dry matter and plant parameters as follows: plant height (r = --0.966**), plant girth (r = -0.772**), tuber diameter (r = -0.898**), tuber weight (r = -0.940**), and average whole plant biomass yield (r = -0.928**). Irrespective of cultivar or cropping year, plant height was significantly and positively correlated with average tuber weight and average whole total plant biomass yield (in most cases, with r-values > 0.90**).

Conclusion and application of findings: The correlative responses obtained for the two cultivars expectedly suggest that weed interference limits genetic productive potentials of the crop. The implication is that, weed management strategy that reduces weed dry matter will indirectly enhance genetic expression of the cultivar thereby improving yield.

Key Words: Cassava morphological-types, correlative responses, multiple correlations, weed biomass