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Plant water relations and photosynthetic properties of polyploid cassava grown in the Nigerian savanna

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Abstract. Cassava (*Manihot esculenta* Crantz) genotypes of varying ploidy levels (diploid, triploid and tetraploid) were investigated for their plant water relations and photosynthesis to better understand the modalities of selecting for adapted and high yielding genotypes. Data from trials conducted in the savanna agroecological zones of Nigeria were used for this purpose. Anatomy and stomatal morphology showed significant genotypic and ploidy differences. Water use efficiency, stomatal resistance and carbon exchange rates elucidated significant ploidy differences as well as genotypic differences in physiological behavior. Stomatal parameters gave an array of sensitivity and resistance to water deficit stress suggesting desirable selection indices. This paper presents satisfactory and contradictory factors associated with the use of photosynthesis and water relations in an attempt to select for improved productivity in an intensive agroecological zone-based breeding program for cassava.