**Response of initial shea (*Vitellaria paradoxa*) growth to climate change**

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**Abstract**

Shea (*Vitellaria paradoxa* C.F.Gaertn.) is socio-economically one the most important plant species in Africa. Apart from being widely distributed in semi-arid and arid zones covering up to 6000km across Africa, it contributes essentially to ecosystem services. Several Countries benefit economically in international export markets where shea butter is valued for use in luxury cosmetic, pharmaceutical and confectionary industries. It is also the main cooking oil for over 86 million inhabitants. Research has acknowledged the chemical and nutritional composition as well as the ethnobotanical uses of shea which has resulted in its butter being used in a wide array of products.

However little is known about the responses of shea growth to the foreseeable changes in climate. Because shea is still generally a wild species, shea/grass competition is inevitable in shea parklands. We hypothesized that increase in future atmospheric CO2 levels will decrease the effect of drought on shea seedlings. The specific objectives of the study are 1) contribute to a better understanding of the initial growth variation under drought, competition drought, competition and different CO2 levels 2) assess dry matter production and allocation of shea seedlings and 3) examine the leaf physiology of shea seedlings under carbon dioxide regimes, competition and drought. A 2x2x2 factorial experiment of CO2, drought and competition as parameters is setup in two Greenhouse chambers of ambient and elevated CO2. It is expected that this research will contribute not only to knowledge on shea initial growth but the response of shea seedlings to drought and CO2 under global climate change.

**Keyword**: Shea, Climate change, competition, ambient, elevated and drought.