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Increasing Cassava Productivity in the Context of Sustainable Intensification

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Abstract

Cassava is one of IITA's major mandate crops, which traditionally received high attention by the institute's breeding programs for high yield potential and pest & disease tolerance/resistance. More recently, with the “cassava transformation” cassava has emerged as or is becoming a cash crop for many farmers in Sub-Saharan Africa. This trend is reinforced as cassava is used in food (high quality cassava flour) and industrial processing (starch, sweetener, glue) and also continues to be a staple food for growing urban populations. Thus, avenues of sustainable intensification for cassava production of high agronomic efficiency are key to several cassava related programs and projects. Central is the concept of integrated soil fertility management, which has been validated for cassava in Central Africa by the “Consortium for the Improvement of Agriculture based Livelihoods in Central Africa” (CIALCA). The approach encompasses the stepwise application of improved germplasm, fertiliser, legume inter-cropping and locally adapted optimised cassava husbandry including spacing, planting time and weeding. A planting pattern of 0.5m × 2 m cassava intercropped with 4 rows of short duration legumes, optionally followed by 2 rows of second legume, between cassava rows appears not to reduce cassava yield but increases land productivity. Establishing the response of cassava to fertiliser composition, amount and application timing, as well as interaction with manure is an integral part of cassava agronomy research in the programme “Support to Agricultural Research for Development of Strategic Crops” (SARD-SC). In collaboration with the International Plant Nutrition Institute (IPNI), fertiliser response data are used to develop the first site specific cassava nutrient manager, which will replace “blanket recommendations” with an OPEN ACCESS decision support system that considers farmers' conditions, yield targets and investment capacity. Agronomic efficiency in cassava is severely compromised when weeds are not efficiently controlled. Weed management consumes about 40 % to 50 % of the total labour in cassava production. The effect of management options such as tillage, fertiliser application, intercropping, cassava plant density and growth type, on weed suppression and cassava yield is a major research component of the ‘Sustainable Weed management in Cassava Systems’ project together with the screening of herbicides to reduce drudgery specifically of women and children.. Varietal choice, tillage and plant density are suitable options to attain higher root yields and suppress weeds. The next step is combining component technologies and developing efficient approaches to take cassava agronomy to scale across the major producer countries in Sub-Saharan Africa.

Keywords: Agronomy, decision support tools, fertiliser, improved germplasm, legume inter-cropping, locally adapted optimised cassava husbandry, weed control