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Soybean breeding in Africa: IITA achievements and future outlook

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The success of a breeding program is measured by how varieties developed perform in the target production environments based on the yield advantage or any other trait of interest over the local checks, farmers' or unimproved varieties. Thus, the number of varieties released, the proportion of the cropped area to improved varieties and varietal turnover are some of the basis of measuring genetic gain in the farmers' fields. IITA in collaboration with NARS in Nigeria and Ghana initiated comprehensive soybean international trials (SIT) in the early 1980s and today this has expanded to include many more African countries. The trials have been an important platform for germplasm testing and exchange and for building partnerships with the different stakeholders in the soybean industry who have specific requirements in order to overcome their production constraints and improve profitability.

Soybean production constraints faced by both the commercial and small-scale farmers in sub-Saharan Africa are drought, low soil fertility especially phosphorus and nitrogen deficiencies, pod shattering and foliar diseases such as rust. Specific production constraints faced by many small-scale farmers include lack of suitable varieties, unreliable seed supplies and poor quality, insufficient information on best production practices including a lack of appropriate post-harvest mechanization options and access to the markets. Although some work has been done on the quantitative and qualitative genetics and seed systems research there are gaps in the elucidation of the inheritance of importance traits and deployment of the improved varieties. These major areas need to be addressed so that breeding, selection and deployment of improved varieties are done in a systematic and effective manner.

The objective of this presentation is to describe the success and failures of the past and present IITA soybean breeding program in Africa in order to set future breeding objectives and priorities for tropical soybean breeding in Africa.