



Tropentag, September 16-18, 2015, Berlin, Germany

“Management of land use systems for enhanced food security:
conflicts, controversies and resolutions”

Maize Breeding at IITA

ABEBE MENKIR, SAMUEL AJALA, BAFFOUR BADU-APRAKU

International Institute of Tropical Agriculture (IITA), Nigeria

Abstract

Maize is a major staple through sub-Saharan Africa. However, a wide yields gap remains to be bridged in many areas. Thus farmers require varieties able to realise more of their potential under sub-optimal conditions. Here the approach of the maize breeding programme in IITA is presented. The Goal: Supply productive and broadly adapted germplasm to breeders in the national program, seed companies, NGOs and extension system to accelerate their efforts for making good quality seeds available to farmers in WCA. The Objective: Exploit diverse germplasm to develop inbred lines, high-yielding varieties and hybrids with increased yield dependability under stresses prevailing in different agro-ecological zones. The Research Strategy: (1) Breed for high yield potential with good post-harvest quality, (2) Improve stability of performance by incorporating multiple types of genetic defenses useful to withstand biotic stresses (diseases, insects, and parasitic plants) and abiotic stresses (drought, low soil nitrogen), (3) Develop distinct inbred lines, varieties and hybrids for each agroecological zone. The Research approach: • Germplasm Enhancement, • Cyclical Improvement of Adapted populations, • Development of Open-pollinated Varieties, Inbred lines and hybrids.

Our targets for different agro-ecologies are in the Savannahs: • High-yielding hybrids • Open-pollinated varieties of different maturity, • Inbred lines, • Resistance to Maize Streak Virus, • Resistance to *Striga spp.*, • Nitrogen use efficiency, • Tolerance to drought, • Resistance to lodging; in the Midaltitudes: • High-yielding hybrids • Open-pollinated varieties of different maturity, • Inbred lines, • Resistance to Maize Streak Virus, • Resistance to foliar diseases, ear rots, • Resistance to lodging; in the Forest zone: • Open-pollinated varieties of different maturity, • Inbred lines, • Resistance to downy mildew, • Resistance to stem borers, • Resistance to foliar diseases, ear rots, • Prolificacy.

Other targets are Postharvest quality: • Dry milling quality, • High micronutrient content (Vitamin A, Zn, Fe), • Resistance to Aflatoxin contamination; Improved knowledge base and Information: • Better screening methods, • Inheritance of traits, • Heterotic patterns of inbred lines, • Molecular maps for key traits, • Genotype × Environment interactions, • Varietal databases, • Impact of technologies; Enhancing the capacity of NARS: • Provide support to the NARS (WECAMAN, AMS, DTMA), • Provide funds through special projects • Supply elite germplasm through Regional Trials, • Distribute breeders' seed for on-farm trials, • Training.

Keywords: Hybrids, multiple resistance, open pollinated, quality, yield