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Improvement of Matooke and Plantain

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Abstract

Bananas are a major staple food and source of income for millions of people in Africa. West and Central Africa produce 50% of all plantains in the world. In East Africa, one third of the available land is grown to East African Highland bananas (EAHB, also known as matooke). In Eastern and Central Africa, EAHB cooking and beer bananas (AAA) constitute 80% of the bananas grown. The remaining 20% are ABB cooking (10%) and dessert bananas (AAA and AAB, 10%). Poor agronomy, pests (weevils and nematodes) and diseases (black Sigatoka) cause low yields in banana. Breeding offers the most sustainable intervention to tackle yield, diseases and pests in both EAHB and plantains. Through breeding, yields have the potential to be increased from the current 7.8 t ha⁻¹ yr⁻¹ to 20 t ha⁻¹ yr⁻¹ for plantains and from 5–30 t ha⁻¹ yr⁻¹ to 70 t ha⁻¹ yr⁻¹ for EAHB.

Twenty years of IITA-NARO collaboration has produced 27 improved triploid hybrids and named NARITAs. These are the results of crosses between triploid (3x) EAHB female fertile clones with a wild diploid (2x) to generate tetraploids (4x). The latter were then crossed with improved diploids (2x) to generate improved secondary triploids (3x). These were subject to three levels of evaluation (early evaluation trial, followed by a preliminary yield trial and then an advanced yield trial), which resulted in the selection of the 27 NARITAs. The 27 NARITAs were selected because they were resistant to black Sigatoka, had a good yield and had well pending bunches. A complete report on the NARITA performance during 3 cycles can be found: <http://www.banana.go.ug/index.php>. NARITAs are going to be further tested with farmers in Uganda and Tanzania and other Eastern and Central Africa countries.

For plantain breeding, for the first time IITA has achieved the production of tetraploids from colchicine or oryzalin-treated diploids. This strategy will shorten the breeding cycle otherwise needed for the production of 4x through 3x × 2x crosses. Moreover, classical plantain breeding was resumed and seeds from tetraploid-diploid crosses have been germinated. Additionally, IITA plantain hybrids developed years ago are now being tested in Ivory Coast, Ghana, Benin, Nigeria, Rwanda, Burundi, DR Congo, Uganda, Tanzania, The Comoros and Colombia.

Keywords: East African Highland bananas, banana, black Sigatoka, plantain