In December 2011, the Nigerian Government approved the release of three new “yellow” varieties of cassava that are rich in vitamin A. The varieties, TMS 01/1368 or UMUCASS 36, TMS 01/1412 or UMUCASS 37, and TMS 01/1371 or UMUCASS 38, were selected from a pool of over 25,000 progenies, evaluated across agroecologies in Nigeria for five years, and finally tested in over 100 on-farm trials prior to their release to farmers by the Variety Release Committee last year. Given the importance of cassava in Nigeria, these new varieties could provide more vitamin A in the diets of over 70 million Nigerians and contribute to reducing vitamin A deficiency, which is widespread in Nigeria. This first wave of “yellow” cassava contains enough vitamin A to provide 25% of the daily vitamin A needs of children and women. The second wave of varieties to be released in 2013 is expected to provide 50% or more of the daily need of vitamin A.

Not only are these crops excellent sources of vitamin A, they perform the same or better than cassava varieties that farmers are growing. The high level of vitamin A in these varieties will be maintained as farmers cultivate them year to year.

Vitamin A Cassava Released in Nigeria

Vitamin A Cassava for Nigeria

What is Biofortification?

Vitamin A cassava was developed through conventional breeding similar to most other improved varieties that are cultivated by farmers in Nigeria. Beta-carotene exists naturally in cassava, but the level is very low, usually below 0.5 parts per million (ppm). To increase vitamin A in cassava to a level that can have an impact on health, breeders conducted a series of crosses among selected parents and evaluated their promising progenies during a period of over 10 years. The result is the release of 3 new varieties with intermediate content of vitamin A ranging from 5–6.5 ppm. New varieties with higher content of vitamin A will continue to be bred, using conventional approaches, to meet nutrition targets. This is biofortification, a sustainable and cost-effective approach to reduce malnutrition.

HarvestPlus is an international research organization that leads a global alliance to breed and disseminate micronutrient-rich crops to reduce hidden hunger. Members of the cassava Alliance include: IITA, NRCRI, CIAT, and EMBRAPA, as well as the Ministries of Agriculture and Health and NGOs in Nigeria.

In addition to cassava, nutrient-rich varieties of bean, maize, pearl millet, rice, and wheat are being developed for Africa and Asia.

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Why Vitamin A?

Vitamin A deficiency (VAD) is a global public health problem that impacts millions around the world. VAD can lower immunity and impair vision and may also lead to blindness and even death, particularly in children. It afflicts almost 20% of pregnant women and about 30% of children under-five in Nigeria.

Although, vitamin A can be found in many foods, including green leafy vegetables, carrots, mango, and eggs, these are rarely eaten in the quantity needed, so strategies exist to provide additional vitamin A. In order to address VAD, Nigeria provides vitamin A supplements to children (6 months to 5 years) during immunization days and has mandated the fortification of wheat and maize flours, vegetable oil, and sugar with vitamin A since 2000. The development and dissemination of “yellow” cassava will complement current efforts to address VAD by delivering vitamin A through a staple food consumers eat every day.
What’s Next for Vitamin A Cassava

This initial release of the three first-wave varieties is just the beginning of vitamin A cassava development in Nigeria. Second-wave varieties are already in advanced stages of development and are targeted for release in 2013. Thereafter, biofortification will gradually become mainstreamed in breeding programs, ensuring the development of more productive and nutritious varieties that meet up to 50% of daily vitamin A needs for women and children in the future.

Studies are ongoing on consumer acceptance of vitamin A cassava, variety mapping and adoption processes, and processing methods that retain nutrients in processed foods, as well as bioavailability and feeding trials.

These households will grow and eat vitamin A-rich cassava and will be able to share cuttings with their neighbors. By mid-2014, more than 150,000 household members are expected to be eating vitamin A cassava products. Commercial stem multiplication will be supported to ensure vitamin A cassava stems reach millions of interested farmers in the coming years.

Promotional activities, such as field days, awareness campaigns, and press conferences, will precede stem delivery to households in order to encourage adoption and consumption of vitamin A cassava.

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Partners:
HarvestPlus works with international and local partners to develop and disseminate vitamin A cassava.

Partners in Nigeria include:
- Federal Ministry of Agriculture
- Federal Ministry of Health
- National Root Crops Research Institute (NRCRI)
- International Institute of Tropical Agriculture (IITA)
- Universities
- Colleges of Agriculture
- State Agric. Dev. Projects - ADPs
- NGOs (ENVOY, RUWOF, JDPM, SAWEC)

Partners outside Nigeria include:
- Brazilian Agricultural Research Corporation (EMBRAPA)
- International Center for Tropical Agriculture (CIAT)

For Vitamin A Cassava Target States

Processed products from vitamin A cassava

Vitamin A Cassava Target States

Next Steps for Delivery

More than 60 hectares of stems of the three vitamin A cassava varieties were multiplied in 2011, and 500 or more hectares will be multiplied in 2012. Over 25,000 farm households in 260 villages in Akwa Ibom, Benue, Imo, and Oyo states will receive planting materials of these varieties by 2013. Stem multiplication for dissemination to more households in other interested states will be initiated in 2012.

Vitamin A gari processed by women in Eruwa, Oyo State for consumer acceptance studies.

Vitamin A Cassava Target States

Vitamin A Cassava Target States

HarvestPlus partners (international and local) met at Ibadan in September 2011.