



## Delivery of Orange Sweet Potato (OSP) in Uganda

DELIVERY

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Staple Food	Daily Per Capita Consumption (all age groups, grams/day) <sup>1</sup>	Total Annual Production (thousand metric tons) <sup>2</sup>
Cassava	264 g/d	4,924
Sweet Potato	199 g/d	2,650
Maize	61 g/d	2,734
	Daily Per Capita Consumption (grams/day) <sup>3</sup>	Provitamin A Density and Intakes
Sweet Potato	Children (4–6 years): 100 g/d Women: 200 g/d	White Sweet Potato: 2 parts per million (ppm) Provitamin A Target Increment: +30 ppm Biofortified Sweet Potato Target Density: 32 ppm
		At the target level, biofortified sweet potato provides about 70–100% of the Estimated Average Requirement (EAR).

<sup>1</sup>FAO Stat 2009; <sup>2</sup>FAO Stat 2012 <sup>3</sup>HarvestPlus Surveys

### Current Vitamin A Status

Prevalence of Vitamin A Deficiency (2011 UDHS)	Children under five: 38%
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**Varietal Release:** In addition to two vitamin A-rich landraces (Ejumula and Kakamega), which were identified and released prior to the start of the HarvestPlus activities in the country, two OSP varieties with the full provitamin A target, NASPOT 9 O (VITA) and NASPOT 10 O (Kabode), were released in 2007. In 2013, two other OSP clones (SPKOO4/2006/1136 and NAS7/2006/292) were released as NASPOT 12 O and NASPOT 13 O, respectively. New OSP varieties are subject to both on-station and multi-location treatment as part of the release process. These were evaluated before release and bulking of vines in on-farm trials for palatability and acceptance tests with farmers participating in the project. It is expected that there will be more OSP releases after 2014.

### Released OSP Varieties

Variety	Release Date	Mean Yield (tons/ha)	Dry Matter (%)	Fresh Weight (ug B-carotene (BC)/100g)	Fresh Weight (ug all-trans BC/g)	Dry Weight (ug all-trans BC/g)
Kakamega	2004	9.5	35.0	4,071	41	116.3
Ejumula	2004	6.0	34.6	9,062	91	261.9
NASPOT 9 O (VITA)	2007	8.5	30.3	7,460	75	246.2
NASPOT 10 O (Kabode)	2007	10.4	30.7	9,655	97	314.5
NASPOT 12 O	2013	12.2	32.7	7,230	72	221.1
NASPOT 13 O	2013	12.5	31.2	9,450	95	302.9

**Strategic Factors Driving Delivery:** The level of vine commercialization is variable across the target areas. Activities are underway to popularize the use of clean vines and encourage farmers and institutions to buy quality declared planting materials by demonstrating their performance, advertising multipliers who sell OSP varieties, and enabling the use of low-cost irrigation technologies to ensure vines are available when farmers need them.

**Seed Commercialization:** HarvestPlus initially focused on production and consumption at the household level. With increasing market presence, HarvestPlus has initiated market linkages and business support activities for OSP roots and vines. Training materials have been developed for extension workers and farmers, and HarvestPlus has facilitated linkages between farmer groups and traders. Given these additional activities, HarvestPlus is working to supply urban markets by expanding to more districts where sweet potato production is already high. Deliberate effort was made to work with farmers who are aware of the market dynamics for sweet potato; HarvestPlus supplied these farmers with OSP vines that could be integrated into their production systems. In the absence of a highly commercialized vine market in Uganda, HarvestPlus is nurturing a strong public-private partnership aimed at maintaining production and supply of clean OSP planting materials that are accessible to farmers. Vine commercialization channels include direct marketing, cooperatives, and small-scale vine dealers.

**Marketing:** Educating household decisionmakers on the recommended feeding practices for children under five and mothers, as well as the health benefits associated with consuming these crops, creates awareness and demand for OSP vines. Building product acceptance is further facilitated by outreach activities in the target communities and mass awareness campaigns, as well as demonstrations of the agronomic superiority of the nutrient-dense varieties compared to older varieties currently farmed. Promotional campaigns targeting urban consumers, traders, and retailers are conducted in markets and on the radio in tandem with production seasons.



Photo: HarvestPlus

**Stakeholders:** In supplying virus-free planting materials, HarvestPlus, in partnership with Makerere University and International Potato Center (CIP), has engaged with BioCrops Ltd., a private tissue culture laboratory, to clean and multiply tissue-culture OSP vines, which are then sold to farmers and public-sector or nongovernmental organization (NGO) vine producers. Implementation of the project is done through development partners, including: World Vision, Samaritan Purse, Caritas, Africa 2000 Network-Uganda, Volunteer Efforts for Development Concerns (VEDCO), Millennium Village Project–Ruhira, Community Enterprise Development Organization (CEDO), and Mbarara University of Science and Technology (Healthy Child Project) with additional support from Farm Radio International and TRAC FM.

**Potential Impact:** HarvestPlus and its partners have been disseminating OSP since 2007, reaching more than 149,000 farming households in Uganda for whom sweet potato is a staple food. The project has generated extensive evidence on the impact of growing and consuming OSP on vitamin A intake and status of women and children. The medium-term objective is to reduce micronutrient malnutrition and improve dietary intakes of vitamin A for 237,500 households in 20 districts of Uganda by 2018.

**Cost:** HarvestPlus will spend an estimated total of US \$7.5 million for OSP delivery activities, 2013–2018.

#### **Delivery Challenges and Recommendations:**

- Because sweet potato vines are bulky and highly perishable, it is best practice to minimize moving them over long distances. Therefore, individuals and farmer groups in target areas have been identified to handle vine multiplication.
- Government support is absolutely critical for sustainability, both in terms of integrating biofortification into agricultural and social sector policies and programs and creating regulations and standards that support private sector development and engagement. In addition to public support, the government must create a regulatory environment and policies that are conducive to private-sector participation in developing sustainable vine and root markets in Uganda.