

## **HarvestPlus CROP IMPROVEMENT: STATE-OF-ART AND FUTURE IN DEVELOPING MICRONUTRIENT-DENSE CROPS**

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Plant breeding for micronutrient density (biofortification) gained legitimacy when micronutrient deficiencies were recognized as global public health challenge of the 21<sup>st</sup> century. In response, HarvestPlus was established to add food nutritional quality to agricultural production research paradigms and reduce micronutrient malnutrition among poor at-risk populations by capitalizing on agricultural research as tool for public health interventions. HarvestPlus' applied and strategic research is driven by an impact/product pathway that integrates crop development, nutrition, socio-economic disciplines and country specific crop delivery plans. As for novel traits, biofortified product concepts must consider factors associated with probability of success in achieving: i) *technological goals* with trait discovery and expression in adapted genotypes, ii) *crop improvement goals* to generate a biofortified germplasm product without compromising agronomic performance, nutrition, or end-use quality; and iii) *commercial goals* to guide the design and delivery of the technology. HarvestPlus has three project phases: i) discovery (2004-2008), ii) development (2009-2013), and iii) delivery (2014-2018). An enhanced knowledge base allowed shifting from an emergent to a deliberate strategy and prioritizing 10 country/micronutrient crop profiles for six crops. Progress is evident in variety release schedules: for orange sweetpotato, the breeding mission is accomplished with releases in numerous African and Latin American countries; the crop is in the delivery phase. For cassava, bean, lentil, banana/plantain and cowpea, 1<sup>st</sup> wave varieties from breeding or fast-track are released. 2<sup>nd</sup> wave cassava varieties with release projected in 2011, 1<sup>st</sup> wave maize and pearl millet leads for release in 2012 are in official registration trials, and rice and wheat releases are projected for 2013. These themes are developed in the context of global HarvestPlus crop development.