



The Biofortification Challenge Program

2007 Annual Report for the Executive Council of the CGIAR

Submitted by
Howarth Bouis, Director
and
Bonnie McClafferty, Donor Relations and Communications Coordinator
(September 2008)

HarvestPlus Program
c/o IFPRI
2033 K Street, NW
Washington DC, 20006
USA
Tel. 1 202 862 5600
Fax. 1 202 467 4439

HarvestPlus 2007 Annual Report

Submitted to the Executive Council of the CGIAR

(September 2008)

1.0 EXECUTIVE SUMMARY

Program Objectives

The goal of HarvestPlus is to reduce global micronutrient malnutrition by breeding and disseminating staple food crops high in bioavailable iron, zinc, and pro-vitamin A to have a measurable impact on human nutritional status.

Since January 2004, full-time breeding programs are under way for six staple foods—rice, wheat, maize, cassava, sweetpotato, and common beans—that are consumed by the majority of the world's poor in Africa, Asia, and Latin America.

The primary objectives of HarvestPlus' 10-year plan (2004-2013) are to:

- select and breed nutritionally improved varieties of six major staple food crops with superior agronomic properties that make them attractive to farmers to grow;
- establish nutrient retention in promising varieties consumed as staples and that these nutrients are sufficiently bioavailable, and micronutrient status in malnourished human subjects is improved;
- identify varieties with superior agronomic, socioeconomic, and end user-acceptable traits and develop efficient, accelerated mechanisms for testing promising materials with farmers, consumers, and other end users, including those in the most nutritionally disadvantaged areas;
- measure the nutritional and other impacts of these improved varieties in community-based studies where these varieties have been adopted.

Management and Oversight

In 2007, HarvestPlus developed and received approval for a proposal for one-year funding from the Bill and Melinda Gates Foundation to bridge from Phase I (2004-2007) to Phase II (2009-2013). The proposal of US\$8.85 million will be used to continue advancing HarvestPlus's strategy that moves biofortification research from discovery to development and plans for the next phase of the program that will be organized around specific biofortified crop product development for target countries and populations.

HarvestPlus continues to fulfill reporting requirements and the development of the Medium Term Plan of the Executive Committee (ExCo) of the CGIAR, annual reports to donors (USAID and ADB), and to the Bill and Melinda Gates Foundation (2 grants), and responding to comments on reports. In addition to reporting requirements, HarvestPlus was subjected to external reviews commissioned by the Science Council of the CGIAR and the BM Gates Foundation.

The role of the Nutrition Coordinator substantially expanded as HarvestPlus moves toward product testing. Additional 14 contracts under the HarvestPlus nutrition component were implemented in 2007 for several nutrition research in the US, Australia, Denmark, Bangladesh, and Africa. In 2007, a senior research assistant was hired to support the Nutrition Coordinator and a co-coordinator will be hired in 2008 to apportion the expanding research in nutrition.

Since the number of HarvestPlus contracts has increased since the beginning of the program in 2003, a full time Budgets and Administrative Specialist was hired to provide secretarial assistance to the Project Director and the PMT members based at IFPRI, and to monitor budgets of the different components of the program. The existing Senior Administrative Coordinator monitors the contracts and provides administrative assistance to program staff.

Research Accomplishments in 2007

With much biofortification *discovery* research completed under HarvestPlus I, the program can now launch the second phase, which will be characterized by investments on promising crops. In HarvestPlus I, where discipline based *discovery* research drove the research agenda, HarvestPlus II research will concentrate on the *development* of specific biofortified products in target countries for target populations with specific nutrition objectives. HarvestPlus II will make full use of the methodologies, protocols and proof of concept research achieved under HarvestPlus I to move ahead with focused and intensive research related to crop improvement and testing and the establishment of nutritional efficacy in target regions and within specific populations. This new way of doing business in HarvestPlus II (by product rather than across disciplines) allows the team to reshape the program to maximize impact.

Highlights of research accomplishments in 2007 are presented based on the following topics:

- High Zinc Rice for Asia
- High Zinc Wheat for Asia
- Pro-vitamin A Maize for Africa
- Pro-vitamin A Sweetpotato for Africa
- High Iron bean for Africa
- High Iron/Zinc Pearl Millet in India
- Pro-vitamin A Cassava for Africa
- Pro-vitamin A Banana/Plantain for Africa
- Iron Lentil for Asia
- Iron Potato for Africa
- Iron Sorghum for Africa
- Phase-out Activities: Yam and Cowpea
- Analytical Techniques

Sub-programs and Programs

Reaching End Users with OFSP

HarvestPlus REU conducted a diagnostic research on the cost of vine multiplication in Mozambique. The research showed that cost of multiplying vines in the southern Zambézia is higher than the cost for producing the same sweetpotato vines in the north due to differences in agro-ecological conditions. Other diagnostic research focused on the cost effectiveness of existing extension programs promoting OFSP namely “Toward Sustainable Nutrition Improvement” (TSNI) and “Eat Orange”. TSNI seems to be more cost-effective than “Eat Orange” in terms of levels of OFSP adoption, increases in the nutritional knowledge, and increases in the consumption of vitamin A-rich foods, except for OFSP.

HarvestPlus China

Eight research proposals related to the development of biofortified rice, wheat, maize, and sweetpotato have been initiated under HarvestPlus with counterpart funding from Chinese institutions (50% funding from HarvestPlus and 50% funding from Chinese institutions). The HarvestPlus China coordinates and provides oversight for these eight research projects and undertakes promotional activities to encourage investment by the Chinese government in biofortification. An annual meeting was held in 2007 in China.

India Biofortification Program

The Indian parliament has approved \$3 million to be spent over five years in developing biofortified varieties of rice, wheat, and maize. Indian Biofortification Program invited HarvestPlus to participate in planning and coordination meetings. A memorandum of agreement has been signed between the Department of Biotechnology and HarvestPlus to facilitate this collaboration.

Brazil Biofortification Program

The primary objective of the HarvestPlus activities in Brazil is to establish EMBRAPA as a leader in biofortification research in Latin America. EMBRAPA has invested \$1.5 million of its own funds, augmented by funding from HarvestPlus and AgroSalud. Research activities in EMBRAPA focus on beans, cassava, and maize. Biofortification research is also being undertaken for cowpeas, sweetpotato, and wheat. HarvestPlus provides funding to EMBRAPA to coordinate these activities and for advocacy within Brazil, for outreach to other Latin American countries, and for capacity building in nutrient analysis outside of Brazil (training programs in measuring pro-vitamin A carotenoids, run by EMBRAPA, were held in Africa and China).

Finance

As of December 2007, the Cash on Hand for HarvestPlus amounted to \$17.84 million which represents 455 days of projected expenditures of \$14.307 million. Funds from the CGIAR make up merely 27%, or \$17.86 million of total funding of \$52 million. The Gates Foundation, the main donor of the program, has signified funding for the program of up to \$9.0 million per year for 2009-2013. It is vital that the CGIAR come forward with the balance funding required for Phase II, and manifest a commensurate support to the program.

Revenues received for Phase 1 of the program in the amount of \$52.438M supported expenditures of \$51.891 million. Estimated revenues of \$14.0 million for 2008 Bridge Year are expected to fund activities of the same amount. As of the first quarter of 2008, \$12.0 million of Bridge Year funds have already been received.