

Challenge Program: High Value Crops - Fruits and Vegetables

Plugging the income and nutrition gap in food security development

Introduction

The CGIAR System Priority 3A was identified on the premise that high value crops (in particular fruits and vegetables), provide poor farmers the opportunity to derive additional income and increase enterprise stability through crop diversification. A Challenge Program on this topic could support poor communities to reduce their reliance on basic staple pulses, cereals and starch crops and, through diversification of their cropping systems into high value commodities, to make the transition from subsistence to market-oriented agriculture, with the concomitant improvement in human health¹.

High value crops generally refer to non-staple agricultural crops such as vegetables, fruits, flowers, ornamentals, condiments and spices^{2, 3}. Most high value agricultural crops are those known to have a higher net return per hectare of land than staples or other widely grown crops. They therefore generally have a monetary value higher than staple crops in emerging and expanding local, national, regional and global markets. High value crops and products present an ideal opportunity for the poor in many developing countries to increase their income by participation in commodity value chains, provided there is effective vertical coordination to ensure that supply is in relative balance with demand.

A number of CGIAR Centers work on various high value crop species, including aromatic plants, spices, nuts, oil, medicinal and cosmetic species. There is also some emerging emphasis on research relating to high-value differentiation in certain commodity and basic staple crops. In this proposed Challenge Program, however, the scope would be generally limited, in the first instance, to research on fruits and vegetables, to ensure focus and impact, and to take advantage of their nutritional value for food security. The Challenge Program will also include investigation on some key process research challenges, involving links between high value commodities, value chains and poverty alleviation. This is aimed at producing some results (of generic nature) that could be adopted and applied to other high value commodities and products. It needs to be emphasized also, that this Challenge Program will have a strong pro-poor orientation in its research mandate.

Why the focus on Fruits and Vegetables? Fruits, in the context of the CGIAR mission and areas of focus, comprise tropical and temperate fruits, including tree crops, which are pertinent to developing countries. Vegetables comprise both exotic and indigenous vegetables, many of which are a multi-purpose food source. The high value of fruits and vegetables not only include their monetary, social and cultural, aesthetic and environmental value, but also, their significant strategic role in improving the diets of people around the world. The World Health Organization⁴ estimates that low fruit and vegetable intake contributes to approximately 2.7 million deaths a year from chronic diseases and causes about 31 percent of ischemic heart diseases and 11 percent of strokes worldwide. It ranks low fruit and vegetable intake as the 6th main risk factor for mortality in the world.

The main rationale for focusing on fruits and vegetables can be summarized as follows:

¹ Weinberger, K. and Lumpkin, T.A. 2005 Horticulture for poverty alleviation - the unfunded revolution. Shanhua, Taiwan: AVRDC - The World Vegetable Center, AVRDC Publication No. 05-613, Working Paper No 15, 20pp

² Temu, A.E. & A.A. Temu 2005. High Value Agricultural Products for Smallholder Markets in Sub-Saharan Africa: Trends, Opportunities and Research Priorities. *International Workshop on How can the poor benefit from the growing markets for high value agricultural products?* 3-5 October 2005 International Center for Tropical Agriculture, Cali, Colombia

³ CGIAR 2005. CGIAR System Research Priorities 2005-2015. CGIAR Science Council Secretariat 96pp

⁴ World Health Organization 2002. The World Health Report 2002: Reducing Risks, Promoting Healthy Life. WHO, Geneva, Switzerland. 230pp.

- the production of fruits and vegetables tends to require more labor input compared to other crops, so the horticulture sector can contribute to poverty reduction by providing employment and wages to laborers;
- fruits and vegetables generate high economic returns per unit of land, thus the production of fruits and vegetables has a comparative advantage under conditions where arable land is scarce;
- low fruit and vegetable intake is a main contributor to micronutrient deficiencies in the developing world, and it is increasingly recognized as one of the key risk factors for cardiovascular diseases and some forms of cancers, the two leading causes of death in the world today^{1,2};
- fruits and vegetables are generally perishable so they experience serious marketing problems which can be addressed with appropriate public investments in research, infrastructure, and institution building; and
- the growth in demand for fruits and vegetables in developing countries combined with growing export demand creates new opportunities for poor farmers in the developing world, but developing countries need assistance in adapting policies, institutions, and infrastructure to take advantage of these trends.

Harmonized investment - higher rates of return

In the context of increasing income through fruits and vegetables in developing countries (CGIAR Priority Area 3A), there are many opportunities for impact through the production of international public goods by both the CGIAR, AVRDC - The World Vegetable Center and other partners. The CGIAR works on different aspects of production, enhancing water use efficiency, value addition, human nutrition and environmental concerns related to high value crops and products, either as individual centers (usually in partnership) or within one of the four current Challenge Programs. There is some coherence and synergy between the centers, but scope for substantive increases in activities exists thus requiring a new, more effective, coordination and funding mechanism. Also, the field of high value crops – fruits and vegetables - is one in which a lot of expertise exists in other non-CG institutions (AVRDC, CIRAD, CABI, EMBRAPA, etc.), that could be coupled with the CG experience and capacity with great effect. A coordinated approach, through a Challenge Program, with a broad range of partners is essential to ensure impact on this topic.

There are many opportunities for poverty alleviation in developing and emerging countries, through high value crops, including added value brought by application of advanced technology tools in biology and communication, market opportunities brought by global trade and changing demand, and value addition possible through supermarkets, fair trade and exports. Other, more immediate, opportunities include the diversification of cropping systems, which can make better and more secure use of available land, water, labor and other resources, thus reducing risk for income generation. In addition, this diversification can provide, through high value crops, opportunities to diversify diets through local consumption, as well as increasing local income while diversifying, and perhaps improving, diets globally. Although fruits and vegetables have received insufficient research and development attention from the international community, commodity chains and competitive organizations have developed because of the high demand and high value of the products. Tremendous improvement can still be made for each of the commodities at each marketing step, and any improvements must build on previous successes.

To maximize the output and impact of the proposed Challenge Program, it is imperative that interaction between partners is established and optimized, that effective synergies are developed and that resources are disbursed efficiently and equitably. Effective mechanisms to monitor the delivery and application of the resulting local, regional and international public goods will be prerequisite to ensure that impact is appropriately documented. However, this is

also the ideal juncture for a Challenge Program to provide leadership and coordination of the CGIAR's activities with its partners in high value crops.

A Challenge Program on High Value Crops - Fruits and Vegetables

This Challenge Program must deliver regional and global international public goods, both to increase the income of poor rural and urban families, as well as contribute to improving their livelihoods (including nutrition) through sustainable and efficient use of natural resources. Both are vital topics, and the CGIAR and its partners are ideally placed to contribute, through research and development, to the alleviation of poverty and reducing malnutrition in developing countries and countries in transition, while building on the environmental benefits which accrue through crop diversification and good natural resource management

The Challenge Program must address the need to promote added value, and fairly share that added value, in the value chain, as well as how to sustain added value in a competitive context. It must include the following elements, taking into account that added value is stimulated by the 'fresh market', by export, by quality standards, by processing, by information systems and by stakeholders' organization which leads to technological and organizational innovations fitting market demands:

- Strategic positioning and priority setting in research and development on high value crops for impact;
- Research to improve economic and environmentally sustainable production; including optimum use of genetic resources, species diversification, seed systems, suitable multiplication techniques and strategies, crop protection and good practices in using inputs and natural resources (including soil and water);
- Research to understand the diverse interests and risk management strategies at the household and landscape level which will affect the uptake, and to reduce any vulnerability, of the advocated technologies and products. This will include gender dimensions and the specific opportunities for women empowerment.
- Research in markets, institutions and policies required for moving selected commodities, products and systems into high value outputs, and to sustain this added value in the context of complex and dynamic relationships between the components;
- Postharvest management and small-scale processing in the early stages of the value chain;
- Market-chain development, involving various forms and levels of linkages (e.g. rural-urban linkages, private-public sector linkages, formal-informal markets);
- Identification of nutrition and health opportunities of selected high value crops and how to exploit those opportunities most effectively;
- Identification of policy measures and other mechanisms to facilitate increased income generation from fruit and vegetable production and increased consumption of fruits and vegetables, particularly among women and young children
- Determination of policy implications and support mechanisms including Sanitary and Phytosanitary (SPS) measures, food safety issues, and regional or global standards.
- Key elements of cropping system information, processes and tools that that provides insights on whether business models actually reduce poverty. Results of such research are likely to be of generic nature that permits adaptation to other products.
- Strengthening capacity within the CGIAR, AVRDC and other partners in research and value chain development related to fruits and vegetables.

Capacity-building will have a vital role in this Challenge Program. High value crops are particularly knowledge and technology intensive, and it is important that the information and technologies reach the end-users as quickly and effectively as possible. Capacity building at many different levels will be critical to ensure the success and sustainability of proposed research and development activities.

Impact / monitoring

This Challenge Program must quickly demonstrate quantifiable impacts. It will be managed in order to provide clear impact of the Challenge Program as a whole, as well as for the individual research activities, or of single interventions. Ex-ante studies will be required to give detailed baseline information, followed by assessments during the research activities and then surveys to quantify impact of the research activities on the target populations and environment. Whenever appropriate, the Challenge Program will link data from natural scientists with that of social scientists in assessing the impact of its interventions.

Partnership and Coordination

A Challenge Program on High Value Crops - Fruits and Vegetables will require effective partnerships. The Program must be carefully managed to ensure integration of all the partners to address geo-political as well as programmatic issues. Partners will be not only the CGIAR centers and AVRDC, but also other international centers, national agricultural research and extension services (NARES), advanced research institutions, the private sector, regional and sub-regional organizations, non-governmental organizations and other stakeholders. The private sector has traditionally played an important role in high value crops, but their role has not always benefited the poor in developing countries where the sharing of the added value has not been equitable.

There must be transparent and participatory mechanisms to ensure all stakeholders provide input into the process of setting priorities, whether these are geographical, commodity or systems priorities. This prioritization will ensure that the available funding is targeted to articulated pro-poor needs to meet the goals of this Challenge Program. Funding will be available for the research and development activities in the participating CGIAR Centers and AVRDC, the other partnering international centers, and the national agricultural research and extension systems (NARES) while also facilitating a support network with advanced research institutions. Such funds will support staffing as well as operation expenses. The best scientific competencies from both within and outside the CGIAR will be mobilized to address the research, development and capacity-building objectives of the Challenge Program.

Collaboration and linkages with relevant programmes and platforms such as the Global Horticulture Initiative (GHI), the Global Facilitation Unit on Underutilized Species (GFU) and the International Centre on Underutilized Crops (ICUC) will be explored and facilitated. Coordination of the Challenge Program must result in clear timelines for outputs and associated monitoring. Timelines and verifiable outputs will facilitate the coordination, allow weak links to be identified and supported to ensure the overall success of the goals of the program. It is expected that a light bureaucratic and governance mechanism can be employed in response to lessons learned from earlier established Challenge Programs.

Conclusion

This Challenge Program is an ideal mechanism, with effective and streamlined coordination, and visionary leadership, to ensure that international public goods of the CGIAR and AVRDC, and the research, capacity building and development activities of other international centers, are coordinated with those of the NARES and the private sector, and other global interventions, to meet the needs of the poor in developing countries.

This Challenge Program is just one part of a larger vision to improve the livelihoods of the poor. It must coordinate its activities with other programs within the CGIAR, and with other global interventions. The greatest impact of this Challenge Program will result from interaction with other research and development programs around the world, creating synergies and ensuring maximum impact toward the Millennium Development Goals which are the globally agreed highest priorities of research and development for the next 10 years.