Global Horticulture Initiative

Strategic Plan

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Executive Summary

Advances in biological sciences and in information and communication technologies provide unprecedented opportunities for the scientific community to take collective action for impact on poverty and malnutrition. The Global Horticulture Initiative will utilize these advances to enlist a consortium of national and international organizations, institutions, and agencies working towards the common goal of improving global health and prosperity through horticultural technologies and research for development programs.

Globalization, trade liberalization and changes in consumer demand are creating new market opportunities for farmers and landless laborers especially through horticultural systems in the tropics and subtropics. Many cereal farmers are already converting a portion of their land into production of high value horticultural crops. A strong horticulture sector is an engine for economic growth: it creates jobs, supports agri-businesses, and generates income to a greater degree than staple crops. Furthermore, horticultural crops can provide the micronutrients that are essential, yet lacking in the diets of half of the world's population.

The mission of the Global Horticulture Initiative is to improve the health and income of the poor in developing countries through sustainable, demand driven, horticultural production, processing and marketing systems. The Global Horticulture Initiative will promote higher education and output-oriented research, and expand outreach activities through broad-based partnerships. Information and communication technologies will substitute for much of the conventional physical infrastructure of a more traditional institutional model. The Global Horticulture Initiative will energize global systems of horticultural research, production, processing and trade. It will also enable the formulation of policies and programs that support small-scale farmers and horticultural commerce both domestically and internationally.

Four core activities are envisaged and will develop according to the allocated staff:

- promoting research for development projects through complementary grants programs
- networking of the world's fragmented community of horticulture for development players
- coordinating training and capacity building in both private and public sectors
- advocating and lobbying for horticulture and horticultural sciences

Priority crops and research themes will be driven by demand. Using the internet as the medium, the coordination team will develop information management and interactive tools to organize tenders and calls for research, training and capacity building in a more integrated rather than competitive process. Activities will focus on Sub-Saharan Africa and South Asia, with secondary emphasis in Central Asia, Southeast Asia, and Latin America.

To significantly contribute to the goal of alleviating poverty and malnutrition, considerable investment in horticulture is required. Outputs from the Global Horticulture Initiative will increase support opportunities for horticultural research, information exchange and capacity building. Higher awareness of all horticulture issues will contribute to improve nutritional security (especially for women and children), by increasing production and consumption of fruits and vegetables, reducing malnutrition and childhood mortality, and enhancing environmental quality and human health.

Strategic Plan

The Global Horticulture Initiative seeks funds and granted positions for base funding over a 3-year period to promote and focus horticulture use and activities. The consortium will provide a coordinated approach to efficiently utilize funding, share expertise and advance horticultural technologies and programs. An investment of US$50 million per year will bring horticulture in line with the funding of cereal crops and ensure significant measurable impacts are achieved, that contribute to all eight Millennium Development Goals.

Introduction

World leaders at the United Nations World Food Conference in Rome in 1974 proclaimed that "every man, woman and child has the inalienable right to be free from hunger and malnutrition in order to develop their physical and mental faculties". This statement resulted from the scarcity of food available to the poor as a result of political and social instability, trade constraints, population growth and natural disasters in developing countries. At the World Food Summit in 1994, representatives of 185 countries and the European Community pledged to strive to eradicate hunger. As a first decisive step, they set the goal of halving the number of undernourished in the world by 2015.

The term 'food security' does not have one global definition but is used to describe a situation in which the population has continuous and stable access to food. More precisely, food security is when everyone has access to enough (quantity), nutritious (quality) and safe, personally acceptable and culturally appropriate foods, which are produced in a manner which does not degrade the environment. The stages of food insecurity range from food secure situations to full-scale famine. Food security interventions usually comprise the development of local, national or regional means to combat hunger and malnutrition.

Since the United Nations World Food Conference, considerable progress has been made to improve food security at the individual, household, national and regional levels in many regions of the developing world. Nevertheless, 1.2 billion persons continue to live in extreme poverty and even more people suffer from malnutrition. While problems of under-consumption and poor nutrition continue to exist, new health issues have arisen as a result of poor diets and chronic diseases. A global shift from hunger to obesity is occurring, leading to the number of overweight people outnumbering the undernourished ones (Popkin, 2006a,b). The World Health Organization (WHO) confirms that more than 1 billion adults around the world are overweight and 300 million of them are obese, putting them at much higher risk of diseases such as diabetes, heart problems, high blood pressure, stroke and some forms of cancer. People in wealthy countries are leading the world in over- and unbalanced-eating, however, developing countries have joined the ranks of nations encumbered by obesity as the population increasingly takes up an urban life style.

As a scientific community, we have learned much over the past 30 years; especially that agricultural development has a key role to play in the battle against poverty and malnutrition. Through the Green Revolution, agricultural research programs provided basic dietary staples to millions of families through the development of high yielding cereal varieties. However, we have also learned that abundant calories are not enough, we must help create new economic opportunities for farmers and landless laborers, sustain the quality of the environment, and provide balanced nutrition. With more than half of the world population living in an urban environment (UNDP source), food security has become more a consequence of sanitary, economic and social constraints than agricultural or technological ones. The challenge lies in addressing both types of constraints which guide farmers decision making.

In 2000, the United Nations declared a series of development goals for the new millennium. Similar to the goals proclaimed in 1974, it again called for reductions in poverty and hunger.
But this time, the UN has taken a broader view, calling for improving access to education, protecting childhood and maternal health, and sustaining the environment.

Horticulture has a unique role to play in addressing the Millennium Development Goals. It can

directly address poverty and food security issues in both urban and rural areas of the developing world (Serageldin, 2004). Strengthening of the horticulture sector can build on experiences gained over the past 60 years in understanding the economic potential of horticulture as well as the nutritional needs of developing countries (Hopper, 1989). Developing countries have considerable experience of trading in 'traditional' commodities. There are many potential cross-cutting trends which can be identified and lessons learned to facilitate the development of new horticultural products and new market opportunities for small-scale farmers both regionally and internationally (Davis, 2005). A strengthened horticulture sector can have a considerable positive impact on all eight Millennium Development Goals, because:

- Horticultural crop production is an engine for economic growth, it creates jobs, supports agri-businesses and generates more income than staple crops per unit area and per person.
- Horticultural crops create new income opportunities for farmers and landless laborers.
- Horticultural crop production diversifies crop production, and when integrated into cereal-based cropping systems, breaks disease cycles and conserves soil and water.
- Horticultural crops offer appealing foods that provide essential micronutrients lacking in the diets of billions, and also nutraceutical food, or parts of food, that provide medical or health benefits, including the prevention and treatment of disease.

Today's advances in biological sciences and in information and communication technologies provide the scientific community unprecedented opportunities for collective action on a global scale. The Global Horticulture Initiative will utilize these technologies efficiently and effectively to serve the needs of the poor. Using these advances a global network will be mobilized to develop and adapt technologies to improve economic opportunities and food security for the poor. The international community must rally the political will to reprioritize resource allocations to fund the Global Horticulture Initiative. This initiative will provide one of the highest returns on investment to address the Millennium Development Goals.

The international community has been slow to realize the diverse needs of the rural and urban poor and malnourished, and has been particularly negligent in appreciating the opportunities offered through collective action in horticultural research and development.

Horticulture is a global issue, that needs a global initiative. Now is the time to promote horticultural research for development, through the Global Horticulture Initiative.

Horticulture to Achieve the Millennium Development Goals

1 Eradicate extreme hunger and poverty

Horticultural crops generate more jobs per hectare, on-farm and off-farm, than staple based agricultural enterprises (Ali *et al*., 2002). This benefits farmers and landless laborers in both rural and urban areas. Value-addition to horticultural crops generates further employment in the associated agri-businesses and further down the commodity chain from the producer to the consumer.

Horticulture crops can generate higher profits than staple crops, especially when land is relatively scarce and labor is abundant (Cock and Voss, 2004; Gabre-Madhin and Hagglade, 2003; Minot and Ngigi, 2004; Subramanian *et al*., 2000). The value of horticultural products per unit area is significantly higher than the value of the cereal crops. Although the costs of inputs such as labor can be higher, the profits are higher and the income thus generated can be used for many different purposes in terms of eradication of hunger and affording access to education and health care.

Over two billion people suffer from micronutrient deficiencies through poor diets (UN/SCN, 2004). Fruits and vegetables are the most appealing and affordable sources of these micronutrients. Diet improvement increases a person's productivity, reduces health care related costs and therefore raises the productivity and incomes of the poor.

2 Achieve universal primary education

Micronutrient deficiencies impair cognitive and psychomotor skills, particularly in young children. These deficiencies can be alleviated through eating a balanced diet, rich in vegetables and fruits. With these improved, micronutrient-rich diets, children's cognitive and psychomotor skills are enhanced. Children who learn more and do well in school are more likely to want to stay in school and their parents are more likely to see the financial benefits of supporting their children's education (Haddad *et al*., 2002). Increased education also enhances the ability of the new generation of farmers to adopt more advanced technologies and crop management techniques.

3 Promote gender equality and empower women

Horticultural production, in particular, provides women with economic opportunities. Women are the principal producers of most horticultural crops in developing countries and are predominantly involved in the value-addition activities from production to marketing. Targeting women in agricultural technology dissemination can have a greater impact on poverty than targeting men. The enhanced social and economic status of women, for example achieved through horticultural activities, leads to greater household food and nutrition security (IFPRI, 2005). In addition to the financial benefits of horticultural production, increasing women's access to vegetables and fruits for themselves and their families, will improve their health and work performance, thereby contributing to higher incomes. The sale of garden surplus is often a major source of income for rural women, and largely used for
crucial family needs.

4 Reduce child mortality

Malnutrition is one of the major causes of, or is a significant contributing factor to, child mortality in developing countries. The link between horticulture and child mortality is indirect, but important. The absence of essential micronutrients exacerbates poor children's vulnerability to disease. Improving access to vegetables and fruits in their diets reduces mortality and morbidity of infants and children under five years old, particularly in rural areas (von Braun *et al*., 2004). Improving diets of women of child-bearing age and specifically pregnant women, reduces infant mortality and may reduce maternal transmission of HIV/AIDS to infants.

5 Improve maternal health

Maternal health depends on having achieved food security during girlhood as well as a diet rich in micronutrients during conception, pregnancy and the first few months after childbirth (von Braun *et al*., 2004). The health of women before conception directly impacts their health during pregnancy and child birth. The majority of pregnant women in developing countries suffer from anemia and other micronutrient deficiencies. This affects both their productivity during pregnancy and can lead to complications for the fetus during and after childbirth. Horticulture can benefit maternal health directly by improving the quality of women's diets. Vegetables and fruits are the most appropriate sources of micronutrients in the diets of these women, and are critical in regions where vegetarian diets predominate.

6 Combat HIV/AIDS, malaria and other chronic diseases

Healthy, well-nourished people are able to resist many infectious diseases and have better resources to be able to fight infections. The human body's immune system relies on a balanced diet, rich in micronutrients, to be effective. Diets rich in vegetables and fruits bolster the body's immune system, helping it to resist HIV/AIDS, malaria, diarrhea, tuberculosis and many other infectious diseases (FAO/ILSI, 1997). A balanced diet, rich in micronutrients, is likely to reduce the number of chronic infections, prevent some infections and help the body to combat the severe infectious diseases which are common in developing countries and which are the leading causes of adult and childhood mortality. Fruits and vegetables are also considered by FAO and WHO as the primary nutritional tools to prevent non-communicable and micronutrient deficiency related diseases (WHO-FAO, 2005). Diabetes type 2, obesity and certain cardio-vascular diseases and cancers can be significantly reduced via increased consumption of fruits and vegetables (WHO, 2003).

7 Ensure environmental sustainability

Legume vegetable crops increase soil fertility through atmospheric nitrogen fixation. Leguminous vegetables integrated into cereal-based cropping systems in rotation or as part of a mixed-cropping system enrich the soil and can break plant disease life cycles. Perennial tree crops can conserve and protect the soil in hilly and high rainfall regions.

Disease-resistant varieties, mixed cropping and the use of integrated pest management (IPM) technologies reduce pesticide use. Understanding the concepts of low-input agriculture allows maximum outputs with minimum inputs (Moustier *et al*., 2003). This can even include promotion of 'organic' practices for niche market trade.

Micro-irrigation technology permits efficient use of water, allowing the water to be delivered to the point it is required with minimal evaporative losses. This is particularly important where water supplies are scarce. Through fertigation, plant nutrients can be safely and economically delivered through irrigation systems. High value horticultural crops produce more profit per unit of water used, compared to most traditional crops and cropping systems.

8 Develop a global partnership for development

The Global Horticulture Initiative is a global partnership, focused on improving the quality of life of the poor in developing countries through collective action by the research and development community. The Global Horticulture Initiative will be the efficient broker of research needs identified by virtual teams of national agricultural research and extension services, advanced research institutions, international agricultural research centers, and the private sector. Global knowledge and technological solutions for horticultural research and development will be directed by the Global Horticulture Initiative to overcome constraints in the developing world, while the developing world can articulate its research needs through the Global Horticultural Initiative for collective action by the global horticultural research and development community.

The Importance of Horticulture: Areas of Impact

New Jobs and Economic Opportunities

Horticultural crop production creates jobs. On average it provides twice the amount of employment per hectare of production compared to cereal crop production (Ali *et al*., 2002). The move from cereal production towards high-value horticulture crops is an important contributor to employment opportunities in developing countries (Joshi *et al*., 2003). The horticultural commodity chain is also longer and more complex than the cereal crop one and as a result job opportunities are more abundant (Temple, 2001).

Women have the most to benefit from the increasing importance of horticulture in rural economies. Women, in general, play a much more significant role in horticultural crop production compared to starchy staple crops. For example in Bangladesh, women account for 48% of all labor in vegetable production compared to only 11-20% for cereal production (Rahman, 2000). Similar findings were made in Latin America and Africa (Weinberger and Lumpkin, 2005). Throughout the developing countries of Africa, women play a dominant role in the production of horticultural crops and cultivate more than half of the total smallholdings.

Besides creating jobs on the farm, the horticultural sector also generates off-farm employment, especially for women. This is the case for export and value-added processing industries, which are important sectors of the economies of Latin America and Africa. In Mexico, for example, 80-90% of people engaged in packing operations are women, and even higher percentages of women workers are involved in fresh produce field operations. Evidence from Africa reflects a similar trend: women comprise 91 % of horticultural employees in Zimbabwe (Dolan and Sorby, 2003). Since horticultural production is very labor-intensive, landless laborers also benefit from the new employment opportunities created by horticultural crop production. These jobs usually provide more income than jobs obtained by the laborers in most other sectors (Weinberger and Genova, 2005; Weinberger and Lumpkin, 2005).

Higher Incomes and Stronger Rural Economies

Horticultural crop production provides new and profitable sources of income for farmers. The production of horticultural crops can be especially important for small-scale farmers since these crops are well suited to smallholdings and family enterprises (Serageldin, 2004) and are often adaptable to urban areas and small plot gardens (Smith *et al*., 2004). Horticultural crops have a comparative advantage over cereal crops when land is scarce and labor is abundant, which is often the case in developing countries.

Studies from the developing countries of Asia and Africa consistently show that farmers engaged in the production of fruits and vegetables earn higher net farm incomes than farmers engaged in cereal production alone (Abedullah *et al*., 2002; Ali and Hau, 2001; Cock and Voss, 2004; Francisco, 2004; Hau *et al*., 2002; Siphandouang *et al*., 2002; Thuy *et al*., 2002). In India, for example, fruit and vegetable producers generate five to eight times more profits than cereal farmers, depending on the crop (Subramanian *et al*., 2000). In Kenya, the production of fruit, vegetables and flowers for export can provide farmers with six to twenty times more profit than maize (Gabre-Madhin and Hagglade, 2003; Minot and Ngigi, 2004). Horticultural crops also have potential as alternatives to the illegal, unstable and dangerous production of opium and other narcotics in Afghanistan and Latin America (USAID, 2004).

Horticultural production contributes to the overall growth of markets and agri-businesses in rural economies. Producers of horticultural crops are usually more integrated into markets than cereal farmers. For example, Bangladeshi farmers on average sell 89% of their vegetable production compared to selling only 22% of their cereal output (Ali and Hau, 2001). Studies show that the agro-industrialization process has been faster for nontraditional products such as fruits and vegetables (Escobal *et al*., 2000; FAO, 1997).

Globally, international trade is opening new markets for farmers in developing countries. In many African countries, export horticulture is providing opportunities in an otherwise poor agriculture sector (Dolan *et al*., 1999). In Zambia, for example, cut-flower exports have increased from US$ 0.3 to US$ 43.0 million over the past 15 years (Gabre-Madhin and Hagglade, 2003). Although export horticulture may favor capital-intensive medium to large-scale farmers, it can also benefit small-scale producers through cooperatives or consolidators, or by providing increased employment opportunities. Trade liberalization would, according to the Copenhagen Consensus in 2004, be ranked in the top three opportunities to address the challenges posed by the Millennium Development Goals (Economist, 2004). Requirements for horticultural exports will also establish quality and safety assurance programs in the horticulture sector at the national and regional levels which will help normalize, maintain and optimize product quality, and improve efficiency throughout the marketing sector (Moustier *et al*., 2003).

Improved Food Security and Nutrition

All of the hungry and many of the overweight are afflicted with micronutrient deficiency (lack of vitamins and minerals). Over two billion people, the vast majority of whom are women and children, suffer from micronutrient deficiencies (UN/SCN, 2004; Gardner and Halwell, 2000). Horticultural crops can play a vital role in solving this global micronutrient crisis. Vegetables and fruits are the most sustainable and affordable sources of micronutrients in diets (UN, 2004).

Healthy diets improve the learning capacity of children and the productivity of workers (Weinberger, 2004). In contrast, micronutrient-deficient diets lead to reduced mental and physical development, poor performance in school, loss of productivity in the workplace, and the likelihood of poverty in future generations (Haddad *et al*., 2002),

Vitamin A deficiency alone weakens the immune system of 40% of children in developing countries (UN, 2004). This deficiency increases a child's risk of severe illness and death from infectious diseases, which are the leading causes of death in developing countries. Vitamin A deficiency contributes to higher rates of anemia as well as morbidity from common childhood infections such as respiratory and diarrheal diseases (Sommer and West, 1996), measles (West, 2000) and malaria (Shankar *et al*., 1999). Deficiencies of vitamin A and other micronutrients may increase the likelihood of HIV/AIDS transmission from mother to child and hasten the progression of the disease in infected persons (Fawzi *et al*., 2002; Semba *et al.*, 1994).

Iron deficiency affects at least 2 billion, and perhaps up to 3.5 billion people. Shortage of iron in the diet causes reduced productivity, which results in economic losses of billions of dollars globally (Weinberger, 2004; UN, 2004). These losses are so substantial that economists at the Copenhagen Consensus in 2004 agreed that relieving iron and other micronutrient deficiencies should be the second highest priority in world development initiatives, second only to relieving the HIV/AIDS crisis (Economist, 2004).

Although essential in diets, not enough vegetables and fruits are available, especially to poor families in developing countries. Rates of production of vegetables and fruits cannot satisfy consumer demand and these micronutrient-rich food sources are often too expensive for the poor. Production of vegetables and fruits unfortunately is often accompanied by misuse and abuse of pesticides with their negative effects on human health and potential impact on the environment. In the least developed countries, the consumption of fruits and vegetables is declining (FAO 2004b). Steps must be taken to reverse this trend through provision of a range of safe, affordable and nutritious vegetables.

A Global Network

Research as Development Tool

Globalization, trade liberalization and changes in consumer demand are creating new market opportunities for horticultural products from developing countries (Reardon *et al*., 2003). Consumers in all countries now look for more diversity and year-round availability in their foods. This creates a wide range of economic opportunities for horticultural systems in the tropics and subtropics.

As our global economy becomes knowledge-based, the management and utilization of information will increasingly drive agricultural development. Knowledge-intensive technologies (variety selection, pest management, irrigation and fertilization strategies, and value-added markets) will continue to increase in importance.

Recent advances in information and biological technologies open up a wide range of new mechanisms to fight poverty and hunger. The Global Horticulture Initiative will take advantage of these modern technologies, from marker-assisted breeding to mobile phone text messaging, and through specialized partners like the Technical Center for Agricultural and Rural Cooperation ACP-EU (CTA), efficiently and effectively improve incomes, diets, and family health in developing countries.

Special emphasis will be given toward developing output-oriented research and development projects and to expand outreach activities through broad-based partnerships. Information and communication technologies will substitute for much of the conventional physical infrastructure of a more traditional institutional model and will create an environment for innovative research and development through networking around the world in both developed and developing countries.

Knowledge and skills worldwide will be mobilized through this network, especially through the 6,500 members of ISHS. Information and communication technologies will facilitate interactive meetings to identify knowledge gaps, prioritize research agendas, and mobilize training and other avenues of technology diffusion. The Global Horticulture Initiative will energize collective action for global horticultural research, production, processing and trade, particularly within and from economically bypassed regions of the South. It will also enable the formulation of policies and programs that support small-scale farmers, landless laborers, urban horticulture and horticultural commerce both domestically and internationally.

Global Issues

There are global concerns which need global action. It is vital that the international community coordinates, and prioritizes its activities to ensure that this global program has the resources it needs to be effective and have an impact. Four key-issues are targeted: i) the nutritional value of horticultural products, ii) the economic potential of horticulture, iii) the safety and environmental constraints attached to horticultural practices, iv) opportunities for fresh horticultural food supply in urban areas. These issues have been detailed as main research themes to be promoted and supported by the Global Horticulture Initiative (Appendix 1).

Global Partnerships

Equity and subsidiarity are two important principles in such a global program (Frison *et al*., 1997). It is important that the partners, regardless of their function and background, are of equal status. The benefits of this global program will be shared equally, benefiting all partners equitably. Following the principle of subsidiarity, the primary responsibility for any activity will be at the national or local level wherever possible and appropriate. However, if the activity requires a regional approach it will be handled at the regional level, and similarly at the global level. Activities will be devolved as far down the chain from global to regional to national levels, ensuring that projects are carried out in the most effective and efficient manner.

The partnerships in the Global Horticulture Initiative will utilize the best advances in the biological sciences to address the many constraints which are presented in this document as key research and development issues, and will communicate using new technologies of information and communication (NTIC) to ensure the optimum use of resources. Research priorities have been identified at the regional level for horticultural research and development (GHA Team, 2005); however, the Global Horticulture Initiative will allow research priorities to be set at the global level, and in an interactive process, through broad based networks, expert consultation workshops, open forum and debates on the web.

Prioritizing Global Needs

Within the horticulture sector, prioritization of research and development needs is critical if the Global Horticulture Initiative is to show impact. Some priorities had already been identified through international horticulture congresses, workshops, strategy planning documents, and reports (AVRDC, 2004; CIAT, 2004a,b; FAO, 2004a; ISHS, 2003a,b,c,d; ISHS, 2004a,b). Through stakeholders meetings in sub-Saharan Africa, Latin America and the Caribbean, and Asia and the Near East, the Global Horticulture Assessment identified the most important crops, as well as those underutilized and high potential crops (GHA Team, 2005).

Horticultural produce and processed products are enjoying increasing domestic and international demand. The expansion of markets and liberalization of trade policies provide new opportunities to escape poverty through production and exchange of non staple crops. However, much more focused effort is needed to help resource-poor farmers and landless laborers take advantage of these opportunities (Lumpkin *et al*., 2005). Post-harvest losses of fruits and vegetables vary greatly among commodities, production areas and seasons, however, it is estimated that between 20 and 50% of crops are lost in the varied steps from farmer to consumer (Kader, 2003). A study in Brazil found that an average of 200 g/capita/day were lost in fruit and vegetables between harvest and consumption (Fehr and Romao, 2001).

Horticultural crops include a wide range of species. These include vegetables, fruits, nuts, aromatic and medicinal crops, flowers and ornamentals, as well as trees, shrubs and grasses (ISHS, 2005). The Global Horticulture Initiative will encourage activities focusing on, tropical and subtropical species, indigenous vegetables and tree fruits especially where demand driven opportunities are apparent. Activities for ornamentals and medicinal herbs will be considered as good opportunities for diversification and high added value.

The Global Horticulture Initiative will initially focus its activities in Sub-Saharan Africa and South Asia, where most of the world's extreme poor live. Secondary regions of emphasis will be in Central Asia, Southeast Asia, and Latin America. The objective is however, to create generic tools and opportunities from these regions for any developing area, and to share knowledge and experience throughout the world.

From the diversity of needs and constraints with different priority crops, it is clear that some regionalization within the Global Horticulture Initiative will be necessary. However, prioritization of resource allocation will be done globally to ensure equity and transparency. The final prioritization of activities will be approved by the Global Horticulture Initiative Board of Directors.

The Global Horticulture Initiative

The Global Horticulture Initiative is a worldwide program intended to foster more efficient and effective partnerships and collective action among the stakeholders. To be efficient, it is organized in a consortium, a group of a limited number of national and international institutions formally organized to collaborate in research, training, and technology-generating activities designed to meet mutually-agreed-upon objectives. Because the issues at stake transcend national and regional boundaries, the Global Horticulture Initiative is the first chance to target the global concerns carried by horticulture. Under this initiative horticulture crops are defined as fruits and vegetables, ornamentals, aromatics and medicinal plants, mushrooms, roots and tubers and non-forest timber trees (e.g. bamboo shoots) that are typically cultivated on a small scale using hand labor, are highly perishable when fresh, and possess high added value when fresh or processed.

Vision

The Global Horticulture Initiative trusts in a world where horticulture is prized by the poor for its valued contribution to present and future generations.

The final beneficiaries of the research championed by Global Horticulture Initiative are resource-poor households in developing countries working within the agricultural sector and food processing industries in rural, peri-urban and urban areas. Special efforts will be made to empower women, the principal workers in most horticultural crop production and related industries. Resource-poor households outside the commodity chains will also gain improved access to affordable and nutritious vegetables and fruits.

Mission

The Global Horticulture Initiative acts as a global facility for coordinated horticultural research that provides solutions towards increasing health, productivity and safety in sustainable environments, to uplift the quality of life of the poorest populations in the world.

It will contribute to improve interest, support and resources to the horticultural sector, public and private, from donors, research and development agencies, and decision makers.

Objective and Core Activities

The Global Horticulture Initiative promotes research in horticulture and horticultural sciences for the developing countries. Four core activities fulfil this general objective:

1 Promoting research for development projects through complementary grants programs

2 Networking the development players of the world's fragmented horticulture community

3 Coordinating training and capacity building in both private and public sectors

4 Advocating and lobbying for horticulture and horticultural sciences

The Global Horticulture Initiative will maintain a flexible open-door policy as regards to the submission of ideas and research proposals requesting support. Ideas may be submitted to the following web address: www.globalhort.org. The criteria for research funding was identified at the Global Horticulture Initiative launch workshop in Montpellier, March 2006. Proposed research should demonstrate a positive impact on health and nutrition, poverty alleviation and environmental integrity; be sustainable beyond project implementation; have a high return on investment; and be interdisciplinary, bridge horticulture sectors (public-private-partnerships) and have an international component.

1 Promoting research for development projects through complementary grants programs

Promoting research for development projects is the best way for establishing sustainable scientific network linkages, sustainable and consistent networks. It also provides opportunities for effective training and capacity building. An annual program of granted projects will be launched as an opportunity for donors to take part in the global network through identified, regional and inter-connected projects.

This activity includes:

- Facilitating, hosting and managing programs of research for development implemented by research for development partners
- Encouraging pooling of partners and facilitating proposal writing
- Stimulating, fostering and guiding additional horticultural research on problems that are neglected, especially by the private sector, or topics relevant to international development
- Small grants for activities in the developing world including scoping studies, test application of new technologies, proof of concept development, fostering linkage between horticulture and the health communities, mapping and statistics for horticulture

An administrative officer will manage these programs, as member of the Executive Secretariat

and report to the Executive Secretary.

2 Networking the development players of the world's fragmented horticulture community

A key component of the Global Horticulture Initiative will be to establish interactive hubs for gathering and organizing information that will help research and development organizations and farmers to seize new opportunities and solve problems constraining horticulture systems. Since many local partners and stakeholders in the poorest developing countries do not have internet access today, media for information delivery will be diverse and appropriate for local contexts.
This activity includes:

- Set-up, maintenance and animation of a virtual portal of horticultural research for development
- Establishment of partnerships and agreements with data base owners and information providers (FAO, WHO, ISHS, CABI …) for free access to scientific and technical information for South partners
- Stimulating networks and encouraging new ones
- Maintaining networking links during gaps between funded projects (bridge funding)

An expert in the technologies of Information and Communication with experience in setting-up and managing electronic portals will join the Executive Secretary, to establish strong links with CTA, FAO, ISHS ASHS, e-managers etc.

3 Coordinating training and capacity building in both private and public sectors

- Establishing linkages and partnerships with high education institutions for promoting training and capacity building
- Organizing in situ training sessions with the skilled and experienced partners in developing countries
- Organizing e-learning programs with specific partners (CTA, FAO)
- Organizing workshops and seminars open to policy makers and private sector actors (retailers and distributors in particular), to better implicate these partners in the horticultural sector

The administrative officer will also be in charge of the management of these training programs, and link them to the research projects as much as possible.

4 Advocating and lobbying for horticulture and horticultural sciences

- Advertising and supporting horticulture events targeting developing countries
- Creating new funding opportunities and resources for horticulture from institutional or private donors
- Promoting any program for assessing productivity, profitability, safety and sustainability of horticulture crop production in developing countries
- Stimulating and promoting the creation of new and sustainable economic opportunities for small-scale farmers and landless laborers in developing countries
- Interfacing with other global initiatives (FAO-WHO, GAIN, …) to strengthen human health and horticultural plant sciences

A communication officer will advertise and organize the communication road map and content of the Global Horticulture Initiative, with special and strong links to the institutional partners in order to synergize the messages and emphasize their impacts.

Organizational Structure

The Global Horticulture Initiative is a consortium of national and international organizations, institutions, and agencies working towards the common goal of improving global health and prosperity through horticultural crops. It is a virtual international center of excellence dedicated to research for development in horticulture and based on the idea that horticultural themes must be addressed in an integrated and harmonized way rather than in a disciplinary, competitive environment.

Horticultural information management experiences with HORTIVAR, RADHORT, VEGINET initiatives have highlighted the need for concerted and synergized efforts in promoting and supporting horticulture. The Global Horticulture Initiative offers an umbrella for the horticulture community to filter and facilitate horticultural information and research programs. Through a virtual platform of horticultural information, the Global Horticulture Initiative with its member links will provide a portal for the scientific community to submit ideas for tender, identify partnerships in public and private sectors, learn from end users about their needs, and develop project proposals for more integrated, efficient and effective research programs .

This Consortium will establish partnerships that are inclusive, interdisciplinary and international. The core membership of the Global Horticulture Initiative will be international agricultural research centers that focus on horticultural crops, such as AVRDC - The World Vegetable Center, national agricultural research and extension systems, advanced research institutes such as CIRAD or WUR, private sector institutions, nongovernmental organizations, and other international organizations concerned with horticulture and human nutrition such as the Food and Agriculture Organization of the United Nations (FAO), the International Society for Horticultural Science (ISHS), and the World Health Organization (WHO).

The Global Horticulture Initiative will function through a Global Horticulture Initiative Board of Directors with an Advisory Group that is potentially implemented by the constituencies of the Board of Directors, to keep the start-up structure of Global Horticulture Initiative as simple as possible. A Secretariat will host the administrative staff and coordinate as many technical, monitoring and evaluation experts as needed, according to Global Horticulture Initiative activities.

Board of Directors

The Global Horticulture Board of Directors will define strategic objectives and priorities after consultation with the General Assembly. The Board of Directors will approve strategies, policies, and the research and development agenda and will oversee its implementation.

The Board of Directors comprises 8 voting members: one representative from AVRDC - The World Vegetable Center, one from the International Society of Horticultural Science (ISHS), one from the Alliance of the CGIAR, two from national agricultural research and extension systems from developing countries, mandated by the Global Forum on Agricultural Research (GFAR),

one from advanced research institutes (ARI), one from the health and nutrition community, one from a donors' representative, and one from the private sector which has not yet been filled.

The Board of Directors was constituted during the first meeting of the Executive Committee of the Global Horticulture Initiative, 6-8 April 2007, in Accra, Ghana. The Board of Directors comprises the following institutions:

- AVRDC – The World Vegetable Center
- ISHS – International Society for Horticultural Science
- Alliance of the CGIAR
- FARA (for GFAR)
- APAARI (for GFAR)
- CIRAD (for ARI)
- Private sector (to be identified)
- NEPAD (for health and nutrition sector)
- ICDF (for donors) – International Cooperation and Development Foundation

Advisory Group

The Global Horticulture Initiative Advisory Group will be nominated by the Board of Directors, to act as scientific experts mandated with providing information and advice to the Executive Secretary to facilitate the decision making process. The Advisory Group will play an important role in formulating strategies and members will be invited as often as needed to the Board of Directors meetings as reporters and observers. The members of the Advisory Group will network from their institutional site, thus representing regional and sector-based understandings of the horticultural issues.

The Advisory Group will report to the Global Horticulture Initiative Secretariat and will review tendered proposals and sponsorship applications submitted to the Global Horticulture Initiative. The Advisory Group will evaluate proposals for funding according to the criteria defined by the Secretariat with approval from the Global Horticulture Initiative Board of Directors.

Secretariat

The Global Horticulture Initiative Secretariat, hosting administrative, technical and virtual network operations, is based at AVRDC - The World Vegetable Center, Regional Center for Africa, Arusha, Tanzania, from August 2007. This official hosting will contribute to minimize operational and infrastructural costs, and will keep the Secretariat in contact with the needs and constraints of research for development, as AVRDC's Regional Center for Africa has over 10 years of experience in vegetable research and development.

Administrative Duties

The Global Horticulture Initiative Secretariat will provide administrative support to the Global Horticulture Initiative Board of Directors and the Advisory Group through its administration staff. The staff will handle fiscal affairs, budgetary and personnel issues, administrative management aspects, and legal and logistic support.

Communication and Strategic Capacity

Technical staff will be responsible for planning and implementing the work agenda, covering all of the research for development themes. This staff duty will also include the information and communication networks. The networking partners are not necessarily gathered in one place, and will therefore benefit from the virtual status of the Global Horticulture Initiative.

Program Management

The Global Horticulture Initiative will not implement research projects, but will enable its partners implementing and managing ones, including education, training and capacity building components. Program managers will be positioned at the Secretariat to elaborate, initiate, and manage any program under the umbrella of the Global Horticulture Initiative (Challenge Program of the CGIAR, Plateform for African-European Partnership of the European Commission, …). They will be employed by the consortium and directly report to the Executive Secretary.

Monitoring and Evaluation

The monitoring and evaluation activities would appraise the impact of Global Horticulture Initiative operations and propose adjustments to increase effectiveness. Evaluations will be mainly conducted by a virtual group of external agents that will report to the Global Horticulture Initiative Secretariat.

Research Forces

As a consortium, the Global Horticulture Initiative will share the scientific resources from its partners rather than hire additional ones. It will need scientists to provide core expertise, or to be the national or regional coordinators of the global network. Most of these scientists will be from national and international agricultural research and extension systems, or from the civil sector, NGOs or private enterprises. Joint appointments of national scientists to conduct work on issues that represent an international public good will be encouraged: seconded staff from national or international institutions fulfilling the role of the secretariat will be acknowledged. Some international agricultural research centers may nominate regional scientific representatives for the Global Horticulture Initiative to facilitate global interactions between the centers on critical horticultural research and development issues and to tap existing networks. Additional Global Horticulture Initiative scientific partners will work in close collaboration with many other relevant international or regional organizations and regional offices of global centers. Many institutions, including universities, non-governmental organizations and private research and development institutions will be brought in to the Global Horticulture Initiative through specific projects offered for tender. The Global Horticulture Initiative will tender research and development projects to centers of excellence to implement projects and training, and accomplish specific tasks. Directed research, development and extension projects will be contracted with required capacity building of scientists from developing countries and/or involvement of developing country institutions through an affirmative action mechanism.

Outputs and Milestones

Direct and indirect outputs of the Global Horticulture Initiative are listed in Appendix 2 and include:

- **High quality applied research** will be conducted by national, regional and international research for development partners, through laboratories and on-farm experiments and field activities, with specific adaptation and adjustment to local conditions and priorities,
- **Capacity for training** at several levels, from executive staff and technicians to trainers and extension specialists, and the private sector. This will include programs for specific national and regional workshops, field trips and seminars.
- **Education at university level** of scientists and decision-makers will be promoted and co-organized in selected universities and colleges, through adapted curriculum programs, and in consultation with developing country stakeholders and the private sector.
- **Scientific and technical information and research results** will be broadly and extensively disseminated through various media to all Global Horticulture Initiative partners, at national, regional and international levels.
- **General awareness raising** within public and private institutions will be managed through international events and promotion for fund raising with an expectation to approach US$50 million per year for research for development in the horticultural sector.

Since the Global Horticulture Initiative will have a less centralized framework than traditional institutions or initiatives, with partners and task forces distributed throughout regions of need and opportunity in the developing world, the activities will be more relevant and the outputs will disseminate more quickly and have greater impact on the status of horticulture in the developing countries. Most efforts will be undertaken with partners already active in these areas.

The milestones along the next 3-year frame of this strategic plan period are detailed in Appendix 3. Among these the most significant are the following:

- **Inception of a European Awareness Raising conference on Horticulture for Development: under the aegis** of the European Commission and the ACP Secretariat**,** the decision makers and stakeholder representatives are invited to present and debate horticulture issues, with focus on health and nutrition, economic growth and environmental concerns. The objective is to present the vision and core activities of the Global Horticulture Initiative, to discuss the respective contribution and output of the partners, at national, regional and international levels, and to convince partners and donors about the legitimacy and the consensus for the Global Horticulture Initiative to be the unique integrator for horticultural research for development.

- **Inception of an African Awareness Raising conference on Horticulture for Development: under the aegis** of the Africa Union that participates to the primary one in Brussels, and recommends a similar event at Addis Ababa to place horticulture into political strategies and programs for the development of the African continent.

- **Bi-annual Board of Directors Meetings**: combining institutional matters and technical

review and guidance. One meeting will be scheduled to coincide with the AGM of the CGIAR, the other to be scheduled with another international event (e.g. FARA meeting).

- **General Assembly Meetings:** to occur at an international event in order to attract as many participants as possible, or virtual, as soon as NTIC are available.

- **Launch workshop:** to share networking tools and information platform for projects granted by the Global Horticulture Initiative at the end of the selection and adjustments process.

Funding Requirements

Budget

The global networking of all major players in horticultural research and development will bring considerable synergy to this initiative by focusing personnel, research infrastructure, and resources through collective action on the constraints and opportunities in horticultural systems. In addition, existing and pending horticultural cropping and marketing system activities of the partners will complement the activities of the Global Horticulture Initiative.

The Global Horticulture Initiative will require from US$4 to US$6 million per year for base funding over a 5-year period and seeks up to US$50 million per year for worldwide efforts at full funding. Approximately 50% of the funds dedicated to research, development, information and communication activities will be awarded through a streamlined tendered grant process. Human capacity building is embedded in all themes. Funds for institutional development in developing countries are included to develop regional centers of excellence for priority needs and opportunities. Funds for virtual networking and e-learning are provided in all themes under the category of collaborative or communication activities.

Sustainability

A diverse mix of funding agencies is being sought to increase the long-term stability and sustainability of the Global Horticulture Initiative, which itself will be a broad-based coalition of partners. Resources are sought from the Consultative Group for International Agricultural Research, the development partner community, human health funding sources, activist foundations, and from strategic alliances within the private sector.

The Global Horticulture Initiative will generate new interest in international development and attract new donors, thus increasing research and development support for the developing world. The Global Horticulture Initiative seeks to expand the financial resources for international agricultural development rather than further dilute today's inadequate support to global agricultural research and development efforts.

As the Global Horticulture Initiative develops, the benefactors from the outputs of the research and development will be encouraged to contribute to further funding of new activities. New

resources will be forthcoming from the private sector, national governments, community based organizations and other agencies which have profited from the technologies developed and disseminated by the Global Horticulture Initiative. The international donor community will see the numerous impacts and public goods resulting from the Global Horticulture Initiative and will continue their support of a more balanced approach to international agriculture research and development.

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Appendix 1 – Research for Development Themes

As part of its character and structure, the Global Horticulture Initiative will coordinate activities in a framework of broader issues which were identified in the Global Horticulture Assessment (GHA, 2005), and will focus on:

1 Improving health and enhancing the nutritional value of diets in rural, peri-urban and urban areas
2 Creating added-value along horticulture commodity chain, from production to consumption
3 Contributing to sustainable and ecologically sound practices in horticulture, and strengthening organizations
4 Providing opportunities for horticulture in urban areas that are a new frontier for agricultural research in some developing countries

Each theme will be an entry point for submitting concept notes, expressions of interest, and organizing a concerted program for funded projects.

1 Improving health through horticulture-based food and nutrition

Fruits and vegetables are the major sources of micronutrients that are essential yet lacking in the diets of half of the world's population. Many contain essential micronutrients such as vitamin A, C, D, iron or selenium and are recognized for having preventive effects and regulatory properties against heart diseases, digestive cancers, type II diabetes or obesity, as well as alleviating immunity or mineral deficiencies like anaemia or eye macular degeneration.

A three step framework is needed:

- The first step is the chemical characterization of the fresh horticultural products and the production of a comprehensive guide of the nutritional value of fruits and vegetables due to their contribution in the diet (fibers, lipids, anti-nutritional factors).
- The second step will focus on the impact of practices, from farm to fork, such as storage, packaging, food processing and culinary practices, and on the nutritional status and value of the products.
- The third step, shared with industrial and medical partners is to evaluate the nutritional and preventive impact of fruits and vegetables, in relation with health and well-being.

2 Creating added value along horticulture commodity chain

Tropical horticultural products are considered as high value-added crops compared to staple food or commodity crops. Added value is stimulated by the local or regional "fresh markets", exports, quality standards, post-harvest processing, and by information systems, leading to technological or organizational innovations fitting market demands. These initiatives are mainly driven by the private sector and generate intensive employment.

Project proposals should aim to answer three key questions:

- How to promote added value in the value chain?
- How to fairly share added value all along the value chain?
- How to sustain added value in a competitive context?

The Global Horticulture Initiative will facilitate the Horticulture partners to propose, promote and transfer new technologies and processes leading to innovative practices, new products and

market analysis, with specific and valuable characteristics recognized by quality traits (organic product, labels, geographic origin). The innovations should take into account the agronomical and technological aspects as well as the organizational, commercial and social elements along the commodity chain: producers' association, distribution network, negotiation processes and contracting types.

3 Sustainable and ecological tropical horticulture

Production of horticultural crops usually has a higher level of risk compared to staple crops. Horticulture has to take into account simultaneously phytosanitary risks, biodiversity management, market laws and food safety all along the commodity chain along with high perishability. Horticultural cropping systems, particularly in tropical regions, are also known for some negative environmental impacts due to the high use of fertilizers and pesticides. Horticultural risk management addresses these main issues: reducing pesticide and fertilizer impacts on food safety and environment, early detection and management of emerging and invasive pests and diseases, encouragement of contracted production, and appropriate packaging and cold chains to extend shelf life.

Projects main objectives for sustainability should be:

- to develop and refine cropping systems for improved ecological and production sustainability and effectively disseminate methodologies and scientific knowledge.
- to develop new technologies to conduct epidemiological surveys to use in anticipating phytosanitary hindrances, and for encouraging networking at regional and international levels.
- to design and employ new in-field and post-harvest practices to reduce the use of chemical inputs, by applying the principles of Integrated Pest Management (IPM) and Integrated Fruit Production (IFP) for tropical fruits and vegetables.
- to evaluate and monitor the biodiversity losses, due to genetic erosion and land pressure.
- to promote institutional innovations (farmer groups, marketing associations, facility sharing, formal contracting, official certification and labelling, etc.), to ensure small scale producers, handlers or processors are informed and in compliance with safety regulations.

The markets of tropical fruits and vegetables are competitive and fragile. To face marketing risks and identify opportunities (niche markets), Global Horticulture Initiative will encourage and contribute to continuously enrich specific databases, to improve econometric methods adapted to these markets, and to define specifications for labelled products. Global Horticulture Initiative's strategy for sustainable and ecological tropical horticulture is based on the integration of multidisciplinary knowledge all along the food chain: from the producers to the consumers, and from the field conditions to the market trends.

4 Horticulture in urban areas

More than fifty per cent of the world's population is now living in cities. This has led to the growth of urbanized areas, competition for natural (land, water) and human resources, and to new demands and priorities for food and environment. Global Horticulture Initiative's vision is to address these challenges as new opportunities for horticulture. It is recognised that perishable products must be produced close to the cities, and produced through intensive cropping systems that are constrained by space and market.

Three output-oriented research for development topics should be emphasized:

- Market driven production: small scale farmers still have a place and access to the markets if their products meet demand. Our objective is to develop methods and skills to analyse the demand, to convert it into farming, trading or marketing recommendations, and to generate and organize information flow and tools.
- Food quality and safety: these consumers' requirements are connected to supply, freshness and diversity. Education and capacity building, and information and control systems acknowledged by the stakeholders will be the main strategic tools targeted.
- Multifunctional role of horticulture: horticulture is not only a food provider to cities, it also provides job employment and opportunities to women, to less educated people and the poorest populations, as well as products to the richest classes. It is essential to include and consider horticulture in the urbanization strategy, as an environmental moderator and as a socio-economic factor. Global Horticulture Initiative will develop methodologies through international partnerships, and share experiences and interests on peri-urban horticulture.

All of these research-for-development themes are interwoven with the following basic research and development topics, implemented by most of the research institutions, at national or international levels:

- Information Management and Dissemination
- Germplasm Conservation and Evaluation
- Genetic Improvement
- Sustainable Production Technologies
- Efficient and Profitable Supply Chains
- Post-harvest Storage, Processing, Packaging and Marketing
- Impact Analysis and Policy Planning

Appendix 2 – Logical framework for the Global Horticulture Initiative

Mission: to improve the health and income of the poor in developing countries through sustainable horticultural production, processing and marketing systems

General Objective: to promote horticultural research as a tool for development, to synergize and increase available resources for horticulture.

Components: 1. Virtual platform of research for development (R4D) in Horticulture
2. Networking tools and opportunities
3. Programs of horticultural R4D funded projects
4. Programs of training and capacity building
5. Sponsored or supported events related to human health and horticultural sciences

Components	Expected outputs	Strategies	Year of implemen-tation	Milestones	Leading constituency / External collaboration	Indicators of impact
1: A virtual platform of research for development in Horticulture						
Build up of a portal on horticultural science for development	1.1. Generate and disseminate information to assist priority setting in horticultural R&D	Recruitment of staff	2007	Webmaster and communication officer recruited and posted at the Secretariat	ISHS / CTA, CIRAD and FAO	Citations of the Portal in both communities, Anglophone and Francophone
	1.2. Develop methodologies and establish systems for gathering and analyzing local and expert knowledge within its social and ecological context	Discussion with database managers and owners to get free access for South partners	2006	Information Technology System expert recruited and posted with Global Hort leading constituency		Number of visits per week
	1.3. Make available a database clearinghouse (metabase) on genetic resources, botany, agro-ecology, horticulture, seed production, nutritional composition, functional properties, nutraceutical properties, integrated pest management, post-harvest handling, and uses of horticultural crops	Development of a specific search engine on horticulture distinct and original compared to Google or Yahoo ones	2009	Operational search engine dedicated to horticultural science for development		Number of shared databases Bulletins and newsletters released/number of downloads
	1.4. Promote publication and dissemination of information bulletins on production practices, insect pest and disease management practices, nutritional studies and socio-economic impacts	Parallel development of on-line and printed information	2007	Agreement or MOU for sharing databases access free for GlobalHort partners		
	1.5. Establish an on-line bulletin and printed newsletter to encourage sharing of information	Bilingual information to fill the gap between Francophone and Anglophone communities, mainly in Africa	2007			

Strategic Plan

2: Networking tools and opportunities

Stimulating networks and linkages between a horticulture communities	2.1. Set-up management and synthesis of forum discussions, debates and information exchanges on horticultural topics 2.2. Open forum for technical or scientific questions addressed by horticultural stakeholder or decision maker 2.3. Open desk for proposals, concept notes or expression of ideas, searching for partners support and resources 2.4. New opportunities for establishing, strengthening and lasting scientific linkages, beyond official meetings, funded projects or granted training courses 2.5. Complementary information and links with HORTIVAR (FAO) or SINGER networks, to establish links between researchers and farmers' associations to support multi-locational testing of promising lines of selected horticultural species	Promotion of GlobalHort during symposia, workshops and assembly meetings Promotion of the Global Portal on Horticulture for Development Forum moderators chosen amongst GlobalHort constituencies 100% Horticulture Development of regional coordination partnership	2007 2007 2008 2009	E-forum on consultation around events organized or promoted by GlobalHort, to enlarge its audience and ensure feedbacks: - Expert Consultation, workshop Wageningen, June 07 - FROTA Forum Nairobi, Sep. 07 - VECINET Fortaleza, April 08 Development of an information desk on horticulture for development: - Tropical Africa - South Asia	AVRDC/CTA FAO CAB	Number of organized e-forums Published document synthesizing each e-forum Increasing number of participants to each e-forum Number of proposals and going through GlobalHort for servicing before submission Number of proposals funded by donors under the "label" of GlobalHort

3: Programs of horticultural research for development funded projects

Tendered research projects for development	3.1. New approach of prioritization, using interactivity 3.2. Set-up and management of program calls and tenders 3.3. Organization of projects launch workshops	Proposal submitted to government funders Adjustment of partners and topics Follow-up of each program	2007 2009	Program launch for South Asia and Tropical Africa Selection of project leaders Program launch for Tropical Africa	ICDF/MOFAs (Taiwan, France, Canada), European Commission	Financial support for each program Number of tendering programs Number of running projects on selected topics

Strategic Plan

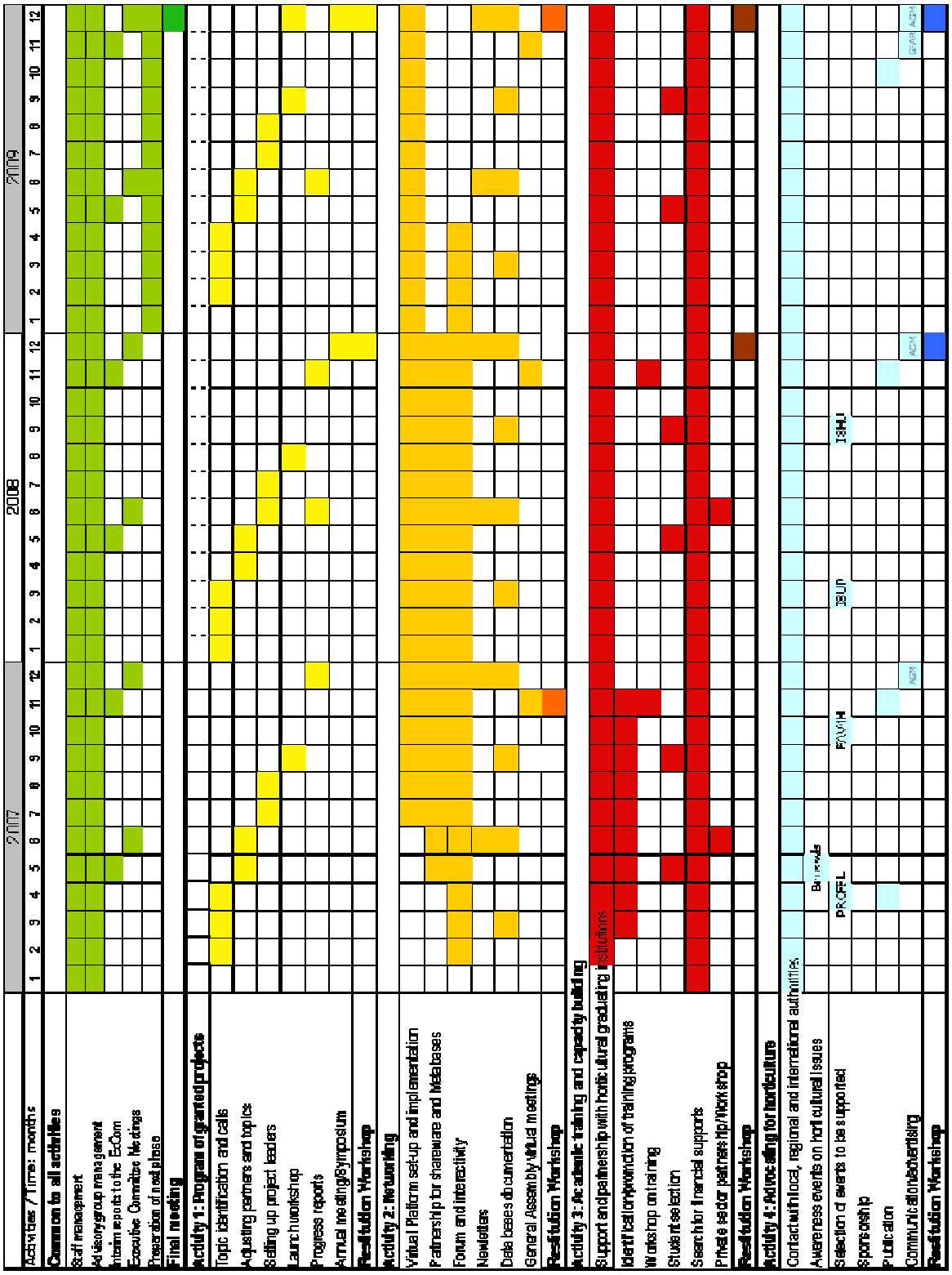
4: Programs of training and capacity building

Training the trainers, to educate from the farmers to the consumers	4.1. Establish the Virtual World Horticulture College for implementation of distance education programs 4.2. Support initiatives to provide educational materials in multiple languages as needed 4.3. Conduct regular on-line study courses on general topics and more specific topics on demand. 4.4. Publish information and educational materials derived from ISHS symposia 4.5. Produce videos on a broad range of horticulture topics involving production, post-harvest handling, consumption, and international trade	Negotiating with educational partners for increased capacity and better quality of high level training Linkage education with program of research for development projects Ensuring equal participation of women and men Ensuring participation of private and public sector actors	2009	Survey on the capacity expectation from the private sector, seed, retail, quality control ... New academic courses dedicated to tropical horticulture in Europe (WUR, SupAgro, IAM ...), in the USA (UC Davis, Wisconsin, Cornell ...) Joint academic sessions between North and South Universities (Bénin, Dakar, Nairobi ...)	CIRAD, ISHS/USAID, ASHS, CIARD	Publication and dissemination of the results of the survey; number of new initiatives for training accordingly Number of academic curriculum opened for tropical horticulture Number of MOU between North and South Universities for joint curriculum in tropical horticulture

5: Sponsored or supported events related to human health and horticultural sciences

Overall promotion of research in Horticulture for Development	5.1. Lobbying the European Commission 5.2. Lobbying the Africa Union 5.3. Support for increasing participation and representation of developing countries to ISHS international symposia and congresses 5.4. Participation in CGIAR, GFAR, FARA, APAARI, FORAGRO annual meetings 5.5. Support to the FAO-WHO initiative on consumption and production of fruits and vegetables for health	Global Hort as a consensus platform on horticultural science Global Hort as a validation body for research and education projects in horticulture for the development	FARA Science Week – Sandton, South Africa, Jun 07 ARCH for Development – Brussels, Belgium, Jun. 07 FAV for Health symposium – Houston, Texas, Jul. 07 PROFEL workshop – Yaounde, Cameroon, Oct. 07 Challenge Program on High Value Crops/Fruits and Vegetables – preparation meetings along 2007 and 2008 ISUP symposium – Arusha, Tanzania, March 08 ARCH for Development – Addis Ababa, May 08 Hortus in Urbe (urban horticulture) – Kampala, Uganda, Oct 08 FAV for Health symposium – Marseille, France, Jul. 09	Legal Statutes as an international non-profit association Number of MOU with institutional donors Number of invitations as speaker, scientific organizer, convener of symposium

Appendix 3 – Milestones 2007-2009



Appendix 4. Contact Information and Board of Directors Members

Executive Secretary
Dr. Rémi Kahane

Chair of the Board of Directors
Dr. Thomas A. Lumpkin
Director General of AVRDC – the World Vegetable Centre

Members of the Board of Directors (constitutive member)

Dr. William D. Dar (the Alliance of the CGIAR)
Director General of the International Crops Research Institute for Semi-Arid Tropics (ICRISAT), India

Ms. Boitshepo Giyose (Health sector)
Food and Nutrition Security Advisor at the New Partnership for Africa's Development (NEPAD) Secretariat, South Africa

Pr. Herath. P.M. Gunasena (GFAR-APAARI)
Executive Director of the Council for Agricultural Research Policy (CARP), Sri Lanka
Member of the Asia-Pacific Association of Agricultural Research Institutions (APAARI)

Ms. Assétou Kanouté (GFAR-FARA)
Executive Secretary of ADAF/GALLE (NGO), Mali
Member of the Forum on Agricultural Research for Africa (FARA)

Dr. Norman E. Looney (ISHS)
President of the International Society for Horticultural Science (ISHS)
Principal Scientist Emeritus of the Pacific Agri-Food Research Centre, Canada

Mr. Gilles Saint-Martin (ARI)
Director of the European and International Relations (DREI), CIRAD, France

Dr. Paul M.H. Sun (Donors group)
Board Chair of AVRDC – The World Vegetable Center
Ambassador at large for Agriculture, Taiwan

Appendix 5. Acronyms and Abbreviations

ACDI/ CIDA	Agence Canadienne de Développement International/Canadian International Development Agency
AGM	Annual General Meeting (of the CGIAR Centers)
APAARI	Asia Pacific Association of Agricultural Research Institutes
ARI	Agricultural Research Institute
AVRDC	AVRDC- The World Vegetable Center
CABI	Centre for Agriculture and Biosciences International
CGIAR	Consultative Group on International Agricultural Research
CIAT	International Center for Tropical Agriculture
CIRAD	Centre de Coopération Internationale en Recherche Agronomique pour le Développement
CORAF/ WECARD	Conférence des Responsables de la Recherche Agronomique Africaine/West and central African Conference on Agronomic Research and Development
CRDI/ IDRC	Centre de Recherche pour le Développement International/International Development Research Center
CTA	Technical Centre for Agricultural and Rural Cooperation ACP-EU
EU	European Union
FAO	Food and Agriculture Organization (United Nations)
FARA	Forum for Agricultural Research in Africa
GAIN	Global Alliance for Improved Nutrition
GFAR	Global Forum on Agricultural Research
GHA	Global Horticulture Assessment
GTZ	Gemeinsamschat für Tropische Zusammenarbeit/Tropical cooperation agency
HORTIVAR	FAO's Horticulture Cultivars Performance Database
HIV/AIDS	Human Immunodeficiency virus/Acquired Immune Deficiency Syndrome
ICIPE	International research Centre for Insect Physiology and Ecology
ICRAF	World Agro-Forestry Centre
ICRISAT	International Crop Research Institute for the Semi-Arid Tropics
IFM	Integrated Fruit Management
IFPRI	International Food Policy Research Institute
ILSI	International Life Sciences Institute
IPM	Integrated Pest Management
ISHS	International Society for Horticultural Science
IITA	International Institute for Tropical Agriculture
NEPAD	The New Partnership for Africa's Development
NGO	Non-Governmental Organization
NTIC	New Technologies of Information and Communication
PROTA	Plant Resources Of Tropical Africa (foundation)
RADHORT	African Network for the Development of Horticulture

SPS	Sanitary and Phytosanitary Agreement
SINGER	The System-wide Information Network for Genetic Resources
SSA	Sub-Saharan Africa
USAID	United States Agency for International Development
UN/SCN	United Nations/Standing Committee on Nutrition
UNDP	United Nations Development Program
VEGINET	Vegetable Science International Network
WHO	World Health Organization
WTO	World Trade Organization
WUR	Wageningen University and Research Centre