FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

TECHNICAL COOPERATION PROGRAMME

Country: **EGYPT**

Project Title: Strengthening of the Horticulture information Support Network for Small Farmers in Egypt (HORTISUN)

Project Number: **TCP/EGY/3403**

Starting Date: 1/01/2013

Completion Date: 31/12/2014

Government Ministry responsible
for project execution: Ministry of Agriculture and Land Reclamation, MALR

Executing Entities: Agricultural Research Centre, ARC

Budget Covering FAO Contribution: **US$ 300 000**

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EXECUTIVE SUMMARY

Egypt has accumulated knowhow in various domains of the agriculture and horticulture value chains as a result of intensive agriculture research and cooperation with private sector initiatives. However these achievements and experiences remain largely unknown or underexploited by the small holder farming sector, which is predominant in Egypt. The Ministry of Agriculture and the Agriculture Research Centre are aware of the need to capitalize on the available horticulture information and the need to facilitate and strengthen the access to and exchange of horticulture knowledge and information among the growers and other stakeholders in the horticulture sector to utilize the in-country know-how more efficiently and effectively.

FAO has developed HORTIVAR, a WAICENT based database platform on the performance of horticulture cultivars worldwide and knowledge base on the horticulture sector. At present this database in available in English. Although many growers and stakeholders of the horticulture sector in Egypt can work in English, the Arabic language is more commonly used especially in the small holder agriculture sector. Therefore, the proposed project is timely in assisting the Government of Egypt in preparing the Arabic version of Hortivar for facilitating access and exchange of horticulture information and facilitates its recurrent updating to small farmers and target stakeholders groups.

The objective of the project is to strengthen the capacity of the Ministry of Agriculture to establish an effective and efficient horticulture sector information support network/system that will support small-scale producers and market services providers for poverty reduction and sustainable agricultural and rural development, based on the needs and demands of its stakeholders and integrating the various resources in the MALR.

Over a period of 24 months, the Ministry with the help of FAO's Technical Cooperation Programme is committed to achieve the following outputs: i) identify a stakeholder analysis and formulate a national information dissemination strategy for horticulture science and technology, in compliance with the National Agricultural Development Strategy (2030), (ii) establish a central horticulture information and press communication unit within ARC for the selection and release of information and training materials for dissemination, (iii) Develop a Horticulture Information Support Network (HORTISUN) and an Arabic version of Hortivar and related website to improve members' access to, facilitate interaction and exchange of information, (iv) strengthen the operational agriculture TV satellite channel for communication with growers and horticulture business operators, (v) enhance interface with small holder farmers in order to debate on their constraints and facilitate interaction with specialised research units, central laboratories, private sector stakeholders, stakeholders of the horticulture industry, and donors' community, (vi) train and scale-up capacities of a team of professional staff in the horticulture sector, in modern horticulture information management through Hortisun and Arabic Hortivar, (vii) evaluate the project to prepare a project proposal for further improvement and development of Hortisun.

The generation of these outputs would improve horticulture information dissemination and interactions among national horticulture stakeholders Groups and help in enhancing the information flow and knowledge sharing by adapting and making use of available communication infrastructure, mechanisms and tools previously developed with FAO support. The outcome of this project will be increased capacities at different levels to capitalize on experiences, disseminate horticulture information and share knowledge through modern information and communication technologies and databases to the benefit of the small farmers' community in particular and the horticulture industry at large for sustainable agricultural development and food security. In accomplishing these tasks, the horticulture information support network would benefit from the backing of 6 weeks of FAO Technical Support Services in horticulture and knowledge management technology and 7 weeks of international consultants in horticulture, evaluation and training in horticulture management and development and 26 mm of national consultants in horticulture, knowledge management, ICT training and horticulture training. FAO contribution also

includes hosting awareness workshops and meetings with 760 small farmers and providing facilities for 100 trainers in additions to funding purchase of non-expendable supplies and equipments and other general operating expenses.

ACRONYMS

AERDRI	Agriculture Extension-Rural Development Research Institute
ALARC	Arid Land Agricultural Research and Services Centre
ARC	Agricultural Research Centre
CCIC	Climate Change Information Centre
CLAC	Central Lab for Agricultural Climate
CLAES	Central Laboratory for Agricultural Expert Systems
DES	Dietary Energy Supplies
DSA	Daily Subsistence Allowance
FAO	Food and agriculture Organization
FIMP	Farm Level Irrigation Modernization Project
GAP	Good Agriculture Practices
GDP	Gross Domestic Product
GOE	Government of Egypt
HDI	Human Development Index
HEIA	Horticulture Export Improvement Association
HPI	Human Poverty Index
HRI	Horticulture Research Institute
IHC	International Horticulture Congress
IPP	Integrated Production and Protection
LOA	Letter of Agreement
LTU	Lead Technical Unit
MALR	Ministry of Agriculture and Land Reclamation
MDG	Millennium Development Goals
NENA	Near East and North African
NGO	Non Governmental Organizations
NPC	National Project Coordinator
PCG	Project Consultative Group
PSC	Project Steering Committee
RNE	Near East Regional Office

SADBP	Sustainable Agricultural Development Business Plan
SADS	Sustainable Agricultural Development Strategy
SWOT	Strengthens, Weakness, Opportunities and Threats
TCDC	Technical Consultant among Developing Countries
TCP	Technical Cooperation Program
TOR	Terms of Reference
TSS	Technical Support Services
UN	United Nations
UNDAF	United Nations Development Assistance Framework
UPEHC	Union of Producers and Exporters of Horticultural Crops
USAID	United States AID
WAE	When Actually Employed

I.   BACKGROUND

1.1 General Context

Egypt is in general a food-secure and adequately fed nation – with very low and declining undernourishment levels. The proportion of the undernourished in the total population in 2001-03 was 3 percent. The country's per capita dietary energy supplies (DES) are high and are estimated to be 3 330 kcal/person/day. The majority of energy supplies are derived from carbohydrates (about 74 percent of the total energy supply), followed by fats and protein which provide 15 and 11% of the total energy, respectively. The major constituents of the Egyptian food basket include cereals (mostly wheat, maize and rice), potatoes, vegetables, vegetable oils, fruits, milk, meat (red and white), fish, sweeteners, pulses and eggs.

Undernourishment in Egypt is very much related to poverty. Low per capita income, compounded by the uneven distribution of national income, paves the way for poverty, and hence food insecurity, irrespective of the more than sufficient average daily per capita supply of food. Hence, the high average per capita calorie daily intake does not necessarily mean that food security has been realized for all of the population. Per capita calorie daily intake differs among different groups in different regions of the country. Although there are no data available on daily food intake for these groups, the high difference in their per capita income supports this statement. The 1991 data showed that on the lower end, 20 percent of the population got 8.7 percent of the national income, while the upper 20 percent captured 41.1 percent.

In 2004, Egypt ranked 111 in the Human Development Index (HDI) among the 177 countries with available data. The HDI provides a much more complete picture of a country's development situation than other indicators, such as Gross Domestic Product (GDP) per capita. On the other hand, Egypt with Human Poverty Index (HPI) of 20, ranks 44 among the 102 developing countries for which this index was calculated.

The prevalence of poverty in Egypt is estimated to be 17 percent of the population. That amounts to roughly 11 million people, who are estimated to fall below the poverty line of US$1 per day. At a poverty benchmark of US$ 2 per day, it is estimated that 20 percent of the Egyptian population is considered poor. However, the averages of undernourishment and poverty mask the underlying pressing problems of regional disparities, prevalence of malnutrition among vulnerable groups and inadequacy of diet among the poor. The number of poor in absolute and relative terms has gone up in Upper Egypt while it is reported to have declined in Lower Egypt. Two thirds of the poor who cannot meet their dietary energy supplies are in Upper Egypt.
Hence, the poor are not a homogeneous group, especially with reference to income and expenditure patterns. They are unevenly distributed between urban and rural areas (42 percent and 58 percent of total poor population respectively), and between Lower and Upper Egypt (36 percent and 48 percent of total poor population respectively).

Egypt's poverty profile reveals that the poor are usually occupied in marginal activities and low-wage work or unemployed. They are either illiterate or of low educational level. Poor households are highly dependent on the household head's income generating activities. They pay relatively more for their food and consume less. Moreover, poverty in rural areas is a multifaceted problem. Its causes and effects are reflected in number of socio-economic indicators characterizing the countryside. The first is related to arable land endowment. The per capita agricultural land in rural areas is hardly 0.20 Feddan. The impoverishing effect of this very low average is largely accentuated by unequal distribution of this land. Almost 70 percent of total landowners possess less than one feddan. The property of 94 percent of landowners is, on the average, less than four feddans each. One-half of total cultivated land belongs to the owners falling in this bracket while the other half is owned by only 10 percent of the total number of landowners. It is also estimated that only 2 percent of owners appropriate one third of the total cultivated land. Wages in the agricultural sector have always been considerably low. The average annual wage per worker in agriculture is only half the national average. While productivity differences might largely explain the wide wages gap, these productivity differences are a function of multiple factors, of which labour might not be the most important.

The link between environmental and sustainable agricultural and rural development, enhancing food security, and reducing poverty is a central issue for achieving economic and social development in Egypt. The contribution of the agriculture sector in Egypt exceeds 13% of GDP and over 30% of employment opportunities. Meanwhile, about 57% of the total population in Egypt lives in rural areas, where poverty prevails. As such, enhancing sustainable agricultural and rural development as a means to reduce poverty and food insecurity within the expected climate changes is a prerequisite for sustainable social and economic development and hence should be considered as a social and political priority for Egypt. In Egypt, agriculture is recognized as a way of life and crucial for socio-economic development, but with due attention, also as an engine for growth.

There is a strong correlation between economic growth and the reduction of hunger and poverty as well as a strong link between poverty and food insecurity. Most of the poor are either under-nourished or food insecure. Lower income households spend a large share of their income to purchase food. They are particularly vulnerable to variations in food prices and food scarcity. Nearly 70% of the poor or food-insecure live in rural areas and a large share of these people depend very much on agriculture for their food supplies (produced locally) and for generating incomes. Economic diversification starts at the farm household, and agricultural and non-agricultural development levels. Pro-poor policies and strategies must emphasize food security, access to land and water, agriculture and rural development. Large numbers of rural households depend on agriculture and farming (production) but it is rarely the main income contributor. Farm incomes account on average for about 25-40% of total rural income, agricultural related off farm incomes account for an additional 20-35%, and non-farm revenues and wages account for about 40% of rural household incomes.

1.2 Sectorial Context

The agriculture is a key sector for the socio-economic development in Egypt and plays a significant role in the country's national economy. It contributes to the overall food needs and provides domestic industry with agricultural raw materials. About 50% of the Egyptian population relies

on agriculture for income generation and employment opportunities. In 2007, Egypt's GDP (Gross Domestic Product) was estimated at US$ 128 billion. The agricultural sector accounted for 14.07 % of GDP and employed about 30 percent of the labour force, of which 49 percent were female. The agricultural sector provides about 20% of the country's exports. A large portion of the important processing industries depend on raw materials produced by the sector. Although the total area of the country is about 1 million km^2, most of it is desert; land suitable for agriculture represents less than 4% and is a major constraint. The cultivated area was slightly more than 3.5 million ha in 2005. The Nile Valley and Delta of Egypt accommodate over 95% of its people and represents the same percentage of its agriculture.

In Egypt, only 0.2% of GDP is allocated to R&D and about 95% of spending comes from the government. The recent establishment of the Higher Council for Science and Technology provides the basis for high-level coordination and prioritization of R&D aligned with national development goals and strategies. The new Science and Technology Competitive Fund and the EU-Egypt Innovation Fund provide incentives for raising research quality and linking research activity with industry development needs. However, one major structural impediment to the development of future capability is the separation of research from university education and knowledge exchange and the continuing predominance of a supply-driven approach to research and innovation.

Horticulture products cover vegetables, fruits, root and tuber crops as well as flowers and ornamental plants, condiments and mushrooms. These products are high in demand in Egypt and also qualify for export when targeting for specific market niches. The Horticulture sector offers considerable potential for food, income and health. It has become a key component of food security strategies and public health schemes. According to the recommendations of the World Health Organization, the daily intake of fruits and vegetables should not be less then 400g for an adult person. "Ad hoc" advocacy strategies should be implemented to foster consumption of fruits and vegetables which in turn will lead to increased demand, requiring more production and generating related job opportunities and income. Horticulture can be practiced by almost everyone (man and women, young and old, able and disabled) and almost everywhere, even on very restricted areas in urban environments using micro-garden technologies.

Egypt has developed over the last few years a sizeable protected cultivation industry. It is estimated that this sector covers an area of about 36 580 ha (35 002 hectares of low tunnels and mulch and 1 552 hectares of greenhouse area representing a number of 36 356 greenhouses of 500 m^2). The protected cultivation sector produces a large range of crops, predominantly vegetables (cucumber, sweet and hot pepper, green beans, cantaloupe melon, strawberries), but also flowers (roses, carnations, chrysanthemum) and more recently fruit crops (dwarf mango, citrus, grapes). Protected cultivation is practiced both for local consumption as well as for export.

Horticulture is expected to further expand in Egypt since per-capita consumption of fruits and vegetables is still relatively low as compared to the WHO recommendations with a minimum daily intake of 400 grams. At the same time, Egypt has a high population growth rate. Its population in 2012 was estimated at 83 million and with the current growth rate of an additional 2 million people per year; it can double in the next 30 years. The population growth, combined with higher consumption levels, is expected to lead to increased demand, which could be met by increased local production.

The small holder farming sector will have to play a key role in meeting this increased demand since it represents about 90% of the horticulture farms. Geographically, 70% of the horticulture farms are located in the north of the country in the newly reclaimed areas, and 30 % in mid and southern Egypt. In Egypt almost all the agriculture production is irrigated and horticulture is considered to be water use efficient for high economic return per cubic meter of water, provided Good Agriculture Practices (GAP) are applied through appropriate communication and knowledge sharing channels.

Organic agriculture has expanded from 5000 feddan in 2002 to 70 000 feddan in 2008. Major crops currently grown under organic agriculture practices in Egypt are: Medicinal plants and condiments, potato, sweet pepper, strawberry, onion, green beans (under plastic tunnel), garlic, citrus for fruit and juice, cotton. The demand for organically produced horticulture products is increasing year by year in Egypt and on foreign markets. Farmers get premium price for organically produced crops, which may reach up to 40% for potato. At present there are some 135 companies registered for organically produced food in Egypt.

Egypt has accumulated a considerable amount of knowledge and information on the agriculture and horticulture sectors. Large commercial companies have specialised on high quality and safe production of horticulture commodities for export and are certified by the most common GAP protocols. They have established market agreements with major food distribution chains in Europe like Tesco, SinSubry and Marks & Spencer. These companies have well trained managers and technical staff and are exemplary undertakings. They have adopted and continue to fine-tune production technologies and post-harvest practices based on research results available from Egypt and abroad. This situation illustrates the fact that Egypt has accumulated know how in various domains of the horticulture value chains as a result of private initiative and cooperation with the agriculture research. However these achievements and experiences are largely unknown and underexploited. They could be usefully capitalised and disseminated to the benefit of the horticulture industry at large including the small holder private sector.

The market demand for horticulture produce is expected to further expand in Egypt since per-capita consumption of fruits and vegetables is still relatively low as compared to the WHO recommendations with a minimum daily intake of 400 grams. At the same time, Egypt has a high population growth rate. Its population in 2012 was estimated at 83 million and with the current growth rate of an additional 2 million people per year, it can double in the next 30 years.

1.2.1 Development priorities and MDGs

Egypt has taken important steps towards attaining the MDGs. The UN Common Country Assessment points out that reaching the MDGs and ensuring economic growth, poverty reduction and social protection is not possible without sustainable agriculture/horticulture development and the integration of the small scale farming sector (50 percent of the total farming community) into commercial agriculture production systems and protect natural resources from the increased pressures due to rapid population growth and adaptation to climate change. The Government of Egypt

gives high priority to the development of the horticulture sector. In response, UN Country Team has included necessary agendas in Egypt's UNDAF 2007-2011.

1.2.2 UNDAF and National Agriculture Development Strategy 2030

The main message which emerges from the United Nations Development Assistance Framework (UNDAF), 2007-2011 is that the state needs to strengthen its capacities to build the human capabilities of all citizens in an equitable way, so as to ensure that all Egyptians can realize their full potential and benefit from the expansion of choices in their lives. Here the 'state' is considered broadly and holistically to encompass government, civil society, the media and the private sector, all as key players and stakeholders in the human-state development paradigm. It is therefore, clear that empowering and capacitating the small scale farmers for the sustainable intensification of the Horticulture sector in Egypt is a prerequisite for future agriculture development.

The project will directly contribute to achieving at least two of the five UNDAF priority areas and namely to:

Outcome 1: the state's performance and accountability in programming, implementing and coordinating actions, especially those that reduce exclusion, vulnerabilities and gender disparities, are improved, in relation to National priority 4: Improving the standard of living of citizens and upgrading services and National priority 5: Achieving a major boost for the national economy

Outcome 2: unemployment and underemployment are reduced and worst forms of child labour are eliminated, in relation to National priority 1: Creating employment and National priority 2: Fostering investment

Outcome 3: regional human development disparities are reduced, including reducing the gender gap and environmental sustainability improved, in relation to National priority 3: Improve income levels and care for limited income citizens

Within the framework of poverty reduction, Institutional and Human Capacity Building for Managing Agricultural and Rural Development is one of the Strategic objectives of the Sustainable Agricultural Development Strategy towards 2030, have been laid down as follows:. The main objectives for this priority include: (1) upgrading the scientific and technical skills of research, extension, and technology transfer staff; (2) upgrading the scientific and technical skills and expertise with specific attention to the fields of agricultural policies formulation, analysis, monitoring and evaluation; (3) modernizing agricultural education programs in all educational institutions and at all levels; (4) strengthening linkages between agricultural education programs and the requirements of the labour market; (5) sensitizing farmers leaders about the importance of monitoring agricultural developments, and (6) encouraging rural leaders to share their experiences and knowledge with other farmers.

The Egypt national agriculture development strategy 2030 has significantly realized that information is the corner stone of development and utilization of Information and communication technology has increased, but not enough as it is highly required to be more integrated in all

agricultural development sectors and at the national level. Databases and expert systems have been introduced under the Rural and Agriculture Development Communication Network (RADCON) and other platforms and supporting networks.

The Sustainable Agricultural Development Strategy towards 2030 calls the attention to the fact that the economic liberalization era has led to noticeable shortcomings in market management and organization, leading to marketing bottlenecks and market distortions that harmed producers and consumers. To face these challenges the production chain of high quality and safe horticulture crops needs to be upgraded in order to secure employment and income for the rural population and take the opportunity of locally available land, water and labour to produce for local market supply and export.

This project "Strengthening of the horticulture sector information Support System for small farmers in Egypt" clearly applies to 6 out 10 of the Strategic objectives of the Sustainable Agricultural Development Strategy towards 2030.

Increasing the productivity of both the land and water units is one of the Strategic objectives of the Sustainable Agricultural Development Strategy towards 2030, have been laid down as follows: (i) Sustainable use of natural agricultural resources; (ii) Increasing the productivity of both the land and water units; (iii) Raising the degree of food security in the strategic food commodities;(iv) Increasing the competitiveness of agricultural products in local and international markets; and (v) Improving the living standards of the rural inhabitants, and (vi) reducing poverty rates in the rural areas.

Enhancing Productivity and Competitiveness of Agricultural Products throughout the Value Chain is another Strategic objectives of the Sustainable Agricultural Development Strategy towards 2030, have been spelled out as follows: At the agricultural sector level, there are many elements and areas that have to be targeted for improvement. Strategic priority areas include: (1) establishing quality standards for agricultural products; (2) keeping abreast of modern and advanced techniques that support the economic efficiency of agricultural production; (3) using modern information and communication techniques that serve the agricultural sector; (4) developing marketing facilities and services and agricultural markets in general; (5) developing pre and post-harvest practices for improving product quality; (6) applying modern techniques in monitoring, analyzing, and forecasting natural, technical and marketing risks, through a special unit for the management of agricultural risks; (7) linking farmers, particularly small farmers, with markets, including the development of marketing systems and channels; (8) activating and strengthening the role of the government in exercising supervision on quality standards of both inputs and outputs; (9) strengthening institutional and organizational mechanisms that support the linkages between local and external marketing; and (10) reducing losses throughout the value chain

1.3 Sectorial Policy and Legislation

As indicated in the Sustainable Agricultural Development Strategy Towards 2030, and its Business plan (2010-2011 – 2016/2017) a special attention has been given to articulate needed amendments in Agricultural Reform Policies and institutions for MALR, cooperatives and Farmers Organizations and Farmer's Participation. Within this context, this project will be implemented.

II.   RATIONALE

2.1. Problems and issues to be addressed.

The ARC is composed of 37 independent bodies (16 institutes, 11 central laboratories, and 10 research stations) with a total of more than 5,000 researchers. The institutes and laboratories are spread over two campuses in Cairo and Giza. The research stations are scattered all over Egypt. All institutes have units in the research stations. The mandate of ARC is Conducting applied and basic research to generate a continuous flow of technologies, Transfer of new technologies to the farming community through extension and knowledge service; and monitoring their adoption by the end users; and Human capacity development.

Agriculture research for innovation and adaptation of technologies to Egypt's environment remains a priority for ARC. However the links and transfer mechanism of knowhow to the growers and stakeholders of the agriculture and horticulture sector remain weak. Therefore, ARC intends to play a more pro-active role as facilitator of a mechanism and process that will help the growers to get access to knowledge, experiences and known technologies with the aim of enhancing the transfer of technologies and ensuring continuous flow of information to keep the agriculture and horticulture sector stakeholders updated by offering sustainable rural economic growth combined with significant rural welfare improvement. It is intended to use the same mechanism as a means for raising awareness in the public sector at large for agriculture and environmental related topics. In view of the geographical area to be covered, due to the scattered and isolated locations of the extension and knowledge agents, modern communications systems will be needed to reach extension agents and growers even in remote areas. The agricultural sector communication and information support system will be developed based on successful experience gained with the National Agricultural Research Information Management System (NARIMS) and Rural and Agricultural Development Communication Network (RADCON) networks implemented by MALR that recognized the importance of information and communication for development with support of FAO.

The National Agricultural Research Information Management System (NARIMS) is an integrated, bilingual (Arabic/English) web-based system that aims to capture and disseminate information about research institutes, researchers working in those institutes, publications printed by those researchers, completed or currently active projects, and the national plan on agricultural and veterinary research in Egypt. The system was developed during (2004-2008) for the Agricultural Research Centre (ARC) by the Central Laboratory for Agricultural Expert Systems (CLAES), building on existing FAO tools and methodologies, and working in cooperation with FAO staff. The MALR decided to establish NARIMS as a means of meeting the imperative challenge of building capacity in agricultural information management, a priority area in its agricultural development policies in order to overcome the lack of adequate information management and communication between researchers in the various

research sectors which had a significant weakness, preventing the national agricultural research system from properly addressing issues of agricultural development.

2.2. Stakeholders and target beneficiaries

The target beneficiaries are the small holder horticulture farmers and the rural farmering communities with livelihood largely dependent on the agriculture and horticulture industry, horticulture-related small-scale market services providers, and the rural unemployed. Female's labour forces of the agricultural sector are close to 50% and will be indirect beneficiaries of the project; in addition, due effort will be made to ensure the participation of women to the capacity building sessions and other activities of the project. Other beneficiaries are the agriculture and horticulture scientists, extension and knowledge staff of the Centre administration of extension and the public at large who will be informed about the recent progress and developments of Egypt's research results, information and know-how to enable them to improve and sustain crop productivity.

In summary, the main target groups for partnership and participation are:
- Farmer Associations, rural community: small farmers (male/female),farmers NGO, micro/SMEs
- input suppliers: seeds, agri chemicals, equipment, mechanization.
- market aggregators: exporters, large operators, retail chains.
- financial services: banks, specialized micro finance entities,...
- agriculture experts: universities, research centres, extension and knowledge services,...
-   Minia University, Faculty of Agriculture, Community Service and Environmental Development Centre, Egyptian, established on 1969. Nationality/Country of registration: Egypt. Legal status: state-owned organization
- MDG -F Pro-Poor Horticulture Small Farmers in Upper Egypt, Salasel project developed by UNDP, international organization, established on 2010, within Millennium Development Goals. Nationality/Country of registration: int'l organization. Legal status: non-profit organization.
-   UPHEC/Union of Producers and Exporters of Horticulture Crops, Egyptian, largest agricultural professional organisation established on 1971, under special law, to boost horticulture production. Nationality/Country of registration: Egypt. Legal status: established in 1971 under a special law.
- IICD, International Institute for Communication and Development, non-profit foundation, Netherlands, established on1985. Specializing in ICT as a tool for development. Nationality/Country of registration: Netherlands. Legal status: nonprofit organization.
- Intel Grameen Social Business, India, private organization, established on 2008, between Intel world leading computing group and Grameen pioneer in microfinance and rural dpt.
  Nationality/Country of registration: India. Legal status: joint venture.
- PCUWA: Policy and Coordination Unit for Women in Agriculture.
- Agricultural Cooperatives, Youth clubs, and Local Community Associations. Central Laboratory for Agricultural Expert Systems, Central Laboratory for Agricultural Climate, Plant Pathology Institute, Crop Protection Institute, Horticulture Research Institute, Horticulture Export

Improvement Association, Agriculture Extension and Rural Development Research Institute , Small holder farmers' organizations and representatives, Agricultural Research & experimental stations.

2.3 Project justification

Enhancing the information support system is more than ever a priority requirement. Egypt's agriculture sector needs to rapidly adapt and adjust its technologies to face critical threats related to water scarcity, population expansion and new environment conditions resulting from climate change. The efficient monitoring and use of agriculture information system has become critical in light of the globalisation and liberalization of trade and the fast changing human and environmental conditions.

The per capita water availability is constantly decreasing as a result of the population growth. In addition new risks stemming from climate change have emerged over the past few years. According to IPCC reports, Egypt is considered to be highly vulnerable to climate change impacts. Current and future changes in climatic conditions constitute a major environmental risk that may jeopardize Egypt's development gains and efforts for poverty reduction. Coastal zones, agriculture and water resources are identified by the Initial National Communication (INC) of Egypt's as the country's most vulnerable sectors to climate change. Temperature rises will likely reduce the productivity of major crops and increase their water requirements and irrigation demand. This could bring about substantial reductions in the national grain production and an increase of its reliance on costly food imports.

The Horticulture sector could be heavily affected since it is mostly located in Egypt's Mediterranean coast and the Nile Delta, which have been identified as most vulnerable to sea level rise as a result of climate change. Estimates indicate that a 50-cm increase in the sea level would lead to the permanent submersion of 1,800 km^2 of cropland in low lands of the Nile Delta.

Egypt has accumulated knowhow in various domains of the agriculture and horticulture value chains as a result of intensive agriculture research and cooperation with private sector initiatives. However these achievements and experiences remain largely unknown or underexploited by the small holder farming sector, which is predominant in Egypt.

The Ministry of Agriculture and the Agriculture Research Centre are aware of the need to capitalize on the available information and to strengthen the communication links between research, extension and growers and the need to facilitate the communication and access to knowledge and information among the growers so that best use can be made of the in-country know-how. FAO has developed HORTIVAR, a WAICENT based data base on the performance of horticulture cultivars worldwide and knowledge base on the horticulture sector. At present this database in available in English. While many growers and stakeholders of the horticulture sector in Egypt can work in English, the Arabic language is more commonly used especially in the small holder agriculture sector. Therefore, the proposed project is timely in assisting the Government of Egypt in preparing the Arabic version of Hortivar to facilitate access and exchange of information/knowledge and assist in its recurrent updating

Similarly, ARC with the assistance of FAO has established Rural and Agricultural Development Communication Network (RADCON), an electronic information and communication system which is still largely underutilised. This project will allow making use of the established RADCON "nodes" in 50 villages and 250 nodes/centres covering 19 Governorates out of a total of 28. These information and communication nodes are operated by 300 facilitators who have been trained to help farmers in finding the answer to their question.

The project will allow enhancing the information flow and knowledge sharing related to agriculture and horticulture by adapting and making use of available communication mechanisms and tools.

2.4 Past and Related Work and FAO's Comparative Advantage

FAO has facilitated the initiation of field demonstrations and training related to "Integrated Production and Protection" (IPP) for greenhouse crops in the context of a regional project for Near East and North African countries (NENA countries). Egypt is a member of the FAO regional working group for greenhouse crops in the NENA countries which comprises 4 thematic working groups.

FAO has been a partner of the Egyptian Government in launching several initiatives that relate to crop production intensification and diversification that have allowed developing horticulture-based farming systems in the reclaimed land areas and in the Nile delta.

In addition FAO maintains and offers free access to HORTIVAR, a database on the performances of horticulture cultivars worldwide and a gateway providing free access to horticulture based information systems.

GAP is part of FAO's Strategic objective A: Sustainable intensification of crop production and more specifically to the Organizational Result A1 – "Policies and strategies on sustainable crop production intensification and diversification at national and regional levels, unit result: A0102: Capacity of member countries enhanced to implement sustainable crop intensification and diversification strategies.

Support provided to strengthen national capacities for improved information management and knowledge exchange in Near East region is part of Strategic Objective HO4 to enhance Capacity for improved access to scientific and technical information and sharing knowledge on agricultural innovations is strengthened in Near east is also part of Strategic Objective FO6 of FAO

Knowledge, information and data and the related social and physical infrastructures which are necessary to carry them are widely recognized as key determinants of a more sustainable agriculture and rural development. The processes by which knowledge, information and data are generated and shared are being deeply transformed by the use of information and communication technologies (ICTs). In line with general orientation of FAO in this field, *RNE is highly credited* for conducting a large array of ICT-based projects and activities which could provide massive opportunities for

innovation along the entire agricultural value chain. NARIMS- the National Agricultural Information Management System project, VERCON- Virtual Extension Research Communication Network Project, and RADCON- the Rural and Agricultural Development Communication Network Project are a good example of projects that have been successfully implemented in Egypt, and which is being proposed as an effective communication tools and modality for agricultural innovation and rural development in the Near East region.

The Ministry of Agriculture and Land Reclamation (MALR) recognizes that there is a considerable gap between research, extension and the rural population involved in agriculture and agrarian businesses. It is unfortunate that research is in many cases still not demand driven, and that research results are not translated into practical extension and knowledge packages and accessible to the target group. Latest information in research and technologies and even very practical research issues are not available in good time. The National Agricultural Research Project (NARP) funded by USAID has significantly contributed to strengthen the agricultural research system of ARC. After a slow start, the project has made significant increases in the production of rice and wheat and horticulture crops. It has supported the development of a well articulated system of financial and administrative management for ARC. Its deficiencies has been established as the slow involvement of the private sector in the ARC research systems, the slow development of institution building efforts, and the ponderous bureaucracy, which emphasizes centralized planning and micromanagement, poor delegation of authority and weak process for the establishment of research priorities.

In order to solve these problem; the Government of Egypt requested the assistance from FAO under its Technical Cooperation Programme. The MALR undertook with support of FAO a very challenging pilot project called "Development of a National Agricultural Research Information Management System" (NARIMS). The project TCP/EGY/3001 was implemented from July 2004 to July 2007, with a budget of 217,000 US$; in addition, the Government of Egypt provided approximately $150,000 in cash as well as in-kind contributions. FAO inputs consisted of technical assistance and training by FAO staff, national and international consultants, as well as the procurement of some computer hardware equipment.

The objective of the pilot project NARIMS was to strengthen the capacity of the Agricultural Research Centre (ARC) of the Ministry of Agriculture and Land Reclamation to develop, manage and apply a relevant and effective national agricultural information management system in support of agricultural development and food security policies. NARIMS is an information and communication system that enables agricultural researchers and scientists to carry out research more effectively by creating access to research information from Egypt and elsewhere. It is designed to preserve needed resources, prevent redundancy and duplication, and ensure maximum co-ordination among various agricultural research, institutes, programs and personnel.

To this end a National Agricultural Research Information Management System (NARIMS) and a website covering five modules on agricultural research "personnel, institutes, projects, publications and research results, and national five years research plan" were established making use of computer facilities. Technical staff was trained in the use, operation and management of modern information systems. In addition 111 decision-makers/ researchers were introduced to the use of modern information technologies as a means of accessing relevant agricultural information. 50 specialized persons were trained on AGRIS Application Profiles- Arabic translated version for indexing resources.

The TCP project achieved, and in some cases exceeded, its expected outputs. The NARIMS prototype is operational and available on the Internet at www.arc.sci.eg; all NARIMS modules identified in the operational framework are in place (personnel; institutes; projects; publications and research results; and national five years research plan). Technical staff was trained in the use, operation and management of computerized information systems. In addition, decision-makers and researchers were introduced to the use of modern information technologies as a means of accessing relevant agricultural information.

The development of NARIMS has required considerable inputs and the continuing commitment of the government. A National Agricultural Research Information Centre (NARIC) has been established. The basic infrastructure to link all ARC institutes has been created. Networking and email fiber optics connectivity have been established to 28 of the ARC institutes. Agricultural Information Resource Centres have been established at each of these institutes

The Ministry of Agriculture and Land Reclamation (MALR) recognized that there is a considerable gap between research, extension and the rural population involved in agriculture and agrarian businesses. It is unfortunate that research is in many cases still not demand related, and that research results are not translated into practical extension and knowledge packages and accessible to the target group. Latest information in technologies and even very practical issues such as costs and prices, market information etc. are not available in good time.

In order to solve this problem, the MALR undertook with support of FAO a very challenging pilot project called "Virtual Extension and Research Communication Network" (VERCON). The objective of the pilot project VERCON was to improve agricultural advisory services through strengthening the linkages between research and extension. To this end the Agricultural Research Centre (ARC), the Central Administration for Agricultural Extension Services (CAAES), the Agricultural Directorate (AD) of the Kafr el Sheikh governorate established a communication network making use of computer facilities and creating the website VERCON. Staffs were trained in serving and servicing the facilities, and the various stakeholders took active part in the Pilot Project.

The VERCON was very successful and exceeds its expectations. The project evaluation team supported an expansion of the network and provided some ideas on how such a network could be put on a sustainable basis. The proposed expansion has three dimensions: Expansion of the existing services (regional expansion); Creation of new services and contents; and expansion of the stakeholder participation including other institutions/organizations involved in rural development

The government therefore requested a technical assistance from FAO to prepare a proposal to extend VERCON horizontally by engaging more sites and vertically by engaging more services and stakeholders. FAO had prepared in close collaboration with CLAES a project entitled "Rural and Agricultural Development Communication Network" (RADCON) and submitted it to the Italian Debt Swap (IDS) for Development Program on behalf of the Government. IDS approved the project and provided the requested fund which was one and half million US$.

The Rural and Agricultural Development Communication Network (RADCON) project was implemented in Egypt, drawing on the achievements of its predecessor (VERCON). The RADCON concept combines the use of a modern internet-based information system with participatory communication approaches to link various actors and service providers from public and private sectors, including research and extension institutions, universities, NGOs, marketing and credit organizations, to provide farmers with timely access to relevant and technically sound information and services. Thus, RADCON (http://radcon.sci.eg) helps establish a community of practice to share knowledge and experiences and foster communication for development. The most significant impact of ICTs on agricultural technology generation, as inferred from the RADCON Project, is connecting and engaging communities in participatory agricultural innovation. Towards this end, with the technical assistance from FAO Departments/Divisions (RNE and OEK) and in response to its various stakeholders, RNE is providing significant contribution in addressing the real needs of sustainable agricultural and rural development of the farming communities and local population at large in the Near East Region.

As Rural and Agricultural Development Communication Network (RADCON), an electronic information and communication system is still largely underutilised. This project will allow making use of the established RADCON "nodes" in 50 villages and 250 nodes/centres covering 19 Governorates out of a total of 28. These information and communication nodes are operated by 300 facilitators who have been trained to help farmers in finding the answer to their question.

The implementation of the project on Strengthening of the Agriculture Sector information Support System for small farmers in Egypt creates excellent opportunities for synergies between the project and the regular programme priorities as outlined in the PWB 2012-2013 and the medium term development plan 2010-2013

These past experiences and current ongoing projects and programmes could be valued in order to launch the programme on Strengthening of the Horticulture sector information Support communication network/System for small farmers in Egypt.

III. PROJECT FRAMEWORK

3.1 Project Objective and Impact

The objective of the project is to strengthen the capacity of the Ministry of Agriculture to establish an effective and efficient horticulture sector information support network/system for improving access and flow of horticulture information and knowledge sharing to support small-scale producers and market services providers for poverty reduction and sustainable agricultural and rural development, based on the needs and demands of its stakeholders and integrating the various resources in the MALR.

The immediate impact of the project will be the easy and continuous access to agriculture and horticulture related information and awareness of growers and other stakeholders on new technologies and new opportunities in the agriculture/horticulture value chain. Strengthening of the current horticulture information support network/system in terms of improving access, flow of information, knowledge sharing, skills of small-scale producers, market services providers, and the introduction of modern communication technologies can reasonably be expected to lead to productivity and quality gains which will increase access to both domestic and export markets, improve food security and safety and augment small-scale producers and market service providers incomes.

The expected long term impact of the project is a better livelihood of the small holder farming system as a result of improved production in terms of both quantity and quality and related poverty alleviation and sustainable economic growth and national food security. Greater productivity and market access will offer opportunities for further entrants from the rural unemployed into production as operators or as wage labour at different levels of the horticultural value chain; especially if efficiency gains in land and water use, ease in growing natural resource base and climate change constraints.

3.2 Project outputs and Activities

The outcome of this project will be increased capacity at different levels to capitalize experiences and disseminate information and share knowledge through modern communication technologies and databases for transfer of technologies to the benefit of the small holder farmers' community in particular and the horticulture industry at large.

The project is going to focus and identify the knowledge precisely in two dimensions: horizontally by selecting a number of crops according to the needs in Egypt such as Pomegranate, Tomato, Potato, Dates, Onions, table grapes, green beans as pilot and vertically to cover the most required components of the value chain (inputs – production – harvest & post harvest – marketing) of these selected crops. The project is expected to produce the following specific outputs and implement the related activities:

Output 1: A stakeholder analysis identified and a national information dissemination strategy for horticulture science and technology formulated, in compliance with the National Agricultural Development Strategy (2030).

Activity 1.1   Organizational arrangements:
        a. Designation of the National Project Coordinator (NPC).
        b. Establishment of the HORTISUN Project Steering Committee (PSC).
        c. Establishment of the Technical Task Force (TTF).
Activity 1.2   Supervisory Technical Service mission to launch project activities.

Activity 1.3:   Stakeholder analysis through a survey to identify: (i) stakeholders involved in the value chain of Horticulture, (ii) the information source, the type of information needed (available and required), and the information flow (iii) the stakeholders preferred information and communication systems building on existing systems.

Activity 1.4:   Initial workshop of representatives from horticulture institutions and stations and other stakeholder groups, including donors participating in HORTISUN to reach a consensus on the Implementation Plan for the proposed horticulture information support Network/System and to contribute to the formulation of a national information dissemination strategy for Horticulture science and technology.

Activity 1.5:   Workshop to debate on the outcome of the survey and discuss the modalities to operate the Horticulture Information Support Network/System (HORTISUN) and to discuss the draft national information dissemination strategy for horticulture science and technology with the steering committee and stakeholders.

Activity 1.6:   Preparation of the stakeholders' analysis and the national information dissemination strategy for horticulture science and technology based on the project launching workshop and in compliance with the National Agricultural Development Strategy (2030).

Activity 1.7:   Workshop to present the revised stakeholders analysis and national information dissemination strategy for horticulture science and technology to the steering committee and stakeholders.

Output 2: A central horticulture information and press communication unit within ARC established for the selection and release of information and training materials related to Horticulture for dissemination.

Activity 2.1:   Source information from specialised communication units along the value chain at national level (ARC Institutes, Centres, Laboratories, Universities, Private sector, NGOs) to cover the different components of the production-distribution chain, from farm to fork.

Activity 2.2:   Source information and experiences related to agriculture/horticulture from international information systems (e.g. National geographic, FAO, IARCs-CGIAR, NARs, ISHS, universities, etc...).

Activity 2.3:   Develop criteria and measures to capture, process and upload information related to specific requirements for each system.

Activity 2.4:   Screen, prepare, edit and format the contents of information and training materials (e.g. author's contracts).

Activity 2.5:   In conjunction with the Ministry of Health and its nutrition division, design a programme to promote the consumption of fruits and vegetables for health. (e.g. annual celebration of a fruit and vegetable day).

Activity 2.6 :   Prepare videos and news clips suitable for online publishing.

Activity 2.7:   Collate documentation and publications related to selected priority crops and edit into a consolidated document to cover the different components of the value chain.

Activity 2.8:   Publication and printing of the monographies.

Output 3: A Horticulture Information Support Network (HORTISUN) and an Arabic version of Hortivar and related website

Activity 3.1: Consultative development of a functional specification for the HORTISUN, with a phased and prioritized development plan, which defines the following general principles applying to all areas of MALR operations:
- current and required potential users and contributors and their horticulture information resources and demands;
- horticulture information resources in text, numerical and image form at local, national and regional level;
- methodologies and workflows for data collection, processing and dissemination for key types of information as above;
- data and systems standards,
- current and required organizational structures and staffing;
- human resources development plan.

Activity 3.2: Developing the functional and operational specifications for system components

Activity 3.3: Assigning FAO experts group or issuing Letter of Agreement (LOA) for the HORTISUN Systems Development.

Activity 3.4: Implementation of HORTISUN system development:
- Preparation of implementation plan for HORTISUN system development.
- Building prototypes of the cross-cutting system modules, adopting/adapting FAO tools and methodologies, as appropriate, and with capabilities to export and import data to XML based on FAO supplied DTD.
- Testing functionality and interoperability
- Developing technical specifications and requirements of the software and hardware that will be required to fulfill the functional specification, including networking requirements.
- Prepare complete conceptual design and requirement specifications documents.
- Development of a HORTISUN web site.
- Populating the system modules with data.
- Testing the modules with a variety of users in a variety of settings, including transfer of existing Egyptian bibliographical references from AGRIS database into HORTISUN system, to test robustness and user-friendliness of the system.
- Revise the modules according to the testing results.

Activity 3.5: Implementation for deployment of HORTISUN modules:
- Making the various products and components of HORTISUN available via Internet and notifying project participants of the release;
- Completing any upgrades to the network and/or individual systems to better reflect the priorities established by the stakeholders and recommended by the Steering Committee;
- Putting in place data maintenance programmes based on accepted data standards and potential collection/management partnerships with other agencies;
- Preparing and introducing draft information management policies with respect to information access and draft standards, such as a metadata standard;

- Determining and publishing standards taking into consideration existing capacities for data collection, updating and management; and assisting in defining precise roles of different systems to avoid overlap and duplication;
- Developing an operational framework to manage the HORTISUN and to provide guidelines for further development;
- Monitoring and assessing the use of the information systems, and collecting feedback through to assess effectiveness and identify areas of demand;
- Continually updating the HORTISUN according to the results obtained and feedback received.

Activity 3.6:   Develop an Arabic version of Hortivar

Activity 3.7:   Integrate an Arabic version of Hortivar in RADCON and HORTISUN

Activity 3.8:   Develop a separate interface for horticulture growers' problems based on growers' problems system of RADCON

Activity 3.9:   Animate a forum and other web2 tools for information exchange

Activity 3.10: Develop a tool for collecting information from the stakeholders related to the Horticulture value chain

Activity 3.11: Monitor a topic trapping system through data mining and knowledge discovery

Activity 3.12: Develop analytic reports based on the information collected which could be used for early warning system

Output 4: The operational agriculture TV satellite channel strengthened for communication with growers and horticulture business operators.

Activity 4.1: Establish an advisory panel of crop (commodity) and subject matter specialists to guide the development and monitor the programme through quarterly communication plan

Activity 4.2:   In collaboration with the Agricultural channel board, broadcast a weekly episodes based on the network content in varied treatments (latest news and warnings, interviews, field inspections, on air problem solving, crop variety introduction and revisions ...etc.)

Activity 4.3:   Set up a network of international and/or regional collaborating institutions with focal points including links with market intelligence providers

Activity 4.4:   Develop a module in the HORTISUN to accommodate the advisory panel

Activity 4.5:   Develop a platform within the network to implement, facilitate the tasks performed by the information and press communication unit

Activity 4.6:   Explore the possibilities for private sector sponsorship with a view to ensuring long term sustainability of the HORTISUN

Output 5: Interface with small holder farmers enhanced in order to debate on their constraints and facilitate interaction with specialised research units, central laboratories, private sector stakeholders and stakeholders of the horticulture industry and donors' community.

Activity 5.1:   Conduct thematic workshops between farmers, researchers, dealers, and companies, etc., to publicize the network and to work on common ground together. (14 workshops, 46 days per cycle, 20 small farmers and/or agronomist per workshop, estimated numbers of trainees is 280 small farmers).

Activity 5.2:   Conduct a monthly meeting and short campaigns with small farmers to appraise their needs to focus on common and emerging problems tackled in the network systems either to solve it collectively or to be included in the research agenda

Activity 5.3:   Conduct monthly performance appraisals with field staff to explore the constraints and update their information (refresher training)

Activity 5.4:   Organize awareness workshops with a subject matters specialist as moderator. (Twelve workshops, 1 day per cycle, 40 small farmers per workshop, estimated numbers of trainees is 480 small farmers).

Activity 5.5:   Organize quarterly briefing meetings for the donors' community and associated Ministries and Public services to report and exchange information related to ongoing initiatives and projects.

Activity 5.6:   Introduce and Develop a mobile service platform to small farmers as a pilot to benefit Farmers' decision-making processes at six key stages: what to plant, seeding, preparing land and planting, (4) growing, (5) harvesting, packing, and storing, and (6) selling.

Output 6: A team of professional staff in the horticulture sector trained and scaled-up their capacities in modern information management through HORTISUN and Arabic HORTIVAR.

Activity 6.1: Prepare and validate of IPP cards to illustrate "Good Agriculture Practices (GAP)" throughout the production-consumption chain and uploading in Hortivar

Activity 6.2: Prepare, review or update available guidelines, standards and training materials to be disseminated in electronic format, based on the needs identified in the need assessment survey, carried out at the start-up of the project.

Activity 6.3: Conduct training for trainers for 50 extension/knowledge workers and subject matter specialists in operating and using the HORTISUN and Arabic HORTIVAR network systems to provide awareness workshops for 480 small farmers.

Activity 6.4: Training of national staff in: i) collection and compilation of relevant horticulture information (bibliographic information; data on horticulture development and research projects, subject specialists, etc; if possible, gender disaggregated); ii) data entry, processing and output of data in web page form; iii) use of horticulture information management tools; iv) horticulture database management and system development; v) HORTISUN/Arabic Hortivar Web content management; and vi) Web development. This training will also include some of IMARK e-learmimg modules, available HORTISUN modules.

Activity 6.5: A study tour for two Egyptian scientists to attend an international meeting and/or gain experience in Hortivar implemented in other countries, for a duration not exceeding two weeks.

Output 7: A project proposal for further development of HORTISUN for enhancing its resource mobilization capabilities to fund its operations.

Activity 7.1: Mission by TCDC consultant to evaluate the HORTISUN, assess resources and budget needed from Government and donors so as to ensure sustained functioning of the horticulture information centre established through the project and HORTISUN, and assist in the formulation of an action plan for possible expansion of HORTISUN and a project proposal for its further development for submission to potential donors organizations.

Activity 7.2: HORTISUN official inauguration and national briefing workshop to present project outcomes, impact assessment, cost-benefits, and recommendations and action plan regarding possible expansion of the HORTISUN.

Activity 7.3: Preparation of project's Terminal Statement.

3.3 Sustainability

It is expected that by the end of the project ARC will be in the position (technically and financially) to continue the horticulture information and communication system put in place with the help of the project. At the completion of the project, the ARC and partner stakeholders will be endowed with the institutional framework and human resources capacity to implement the horticulture information and communication system programme. The needed equipment as well as national human and financial resources will be available to secure its operation and maintenance.

During the project it is expected that trust will be developed with the clients and beneficiaries of ARC's information and communication system paving the way for future financial contributions from the private sector and ensuring long term sustainability.

3.4 Risks and assumptions

The design and operation of Horticulture information support network implies the awareness, and participation of different stakeholders involved, at private and public level to ensure the programme development and its sustainability. The exclusion of important stakeholders or possible misinterpretations regarding the objectives of the programme may put at risk the overall achievements of the project. In this respect the project will include a detailed mapping and SWOT analysis of stakeholders and beneficiaries at the inception of the project.

It is assumed that sufficient information will be available and generated to run the programme on a continuous basis. Therefore the sources and flow of information should be clearly defined.

The risks that could also disrupt the smooth implementation of project activities are related to: delays in recruiting the international and national consultants and exogenous factors which may affect the implementation of planned Project activities and delay in IT equipment of the centre given as in-kind contribution from the government to the centre.

IV. Implementation and management arrangements

4.1 Institutional framework and coordination

The institutional framework for the implementation of this project is fully integrated with the institutional set-up of the Ministry of Agriculture and Land Reclamation.

The project will be coordinated through a Project Steering Committee (PSC), comprising representatives of the principal entities responsible for the project implementation (CLAES, HRI, and FAOR in Cairo, Egypt). The PSC will seek advice and liaise with a Technical Task Force (TTF), comprising representatives of other Ministries (Trade, Mass Media...) of beneficiaries, and other stakeholders of the agriculture/horticulture value chain (CLAC, plant pathology institute, plant protection institute, HEIA, growers' representative, marketing, processing, logistics...). The chairman of the PSC will be the President of ARC and the national project coordinator will be the co-chairperson.

The main functions of the PSC are to monitor progress of the project and to decide on adjustments to the work plan and other elements of the project, as appropriate. The frequency of the PSC meetings will be decided by its chairperson.

The National Project Coordinator (NPC) is designated by the Government of Egypt (GOE) in close collaboration with FAO. S/he will be in charge of supervising and monitoring the technical, operational and administrative activities of the project, and of ensuring appropriate implementation and monitoring of all the components, while also participating directly in project activities. S/he reports to FAO and contributes to the organization of the meetings of the PSC and calls for meetings with TTF as necessary.

4.2 Strategy and methodology

A Comprehensive assessment of the needs and available know-how will be carried out at the inception of the project providing vital information and data which could serve for dissemination to the small holder farmers' community.

A framework of interventions to orient the information flow will be elaborated to enable the implementation of the information management system in support of the small holder farming community based on a SWOT analysis.

Successively a project inception workshop will be held with the aim of fine-tuning the work plan and finalizing the methodology to conduct the activities of the project. Training needs will be identified and "ad hoc" workshops and consultancy services will be planned to strengthen the required national capacities.

A midterm workshop will be scheduled to share and discuss the project progress with all the stakeholders and agree on eventual corrective measures to be taken in order to ensure the successful completion of the project.

An end of project workshop will be held to inform the project beneficiaries, stakeholders as well as the representatives of the donor community of the achievements, conclusions and recommendations of the TCP project.

Annex 2: PROJECT Work Plan

OUTPUTS / ACTIVITIES	1 Year												2 Year											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Output 1: A stakeholder analysis identified and a national information dissemination strategy for horticulture science and technology formulated, in compliance with the National Agricultural Development Strategy (2030).																								
Activity 1.1:Organizational arrangements: (i) Designation of the National Project Coordinator (NPC), (ii) Establishment of the HORTISUN Project Steering Committee (PSC), and (iii) Establishment of the Technical Task Force (TTF).	▓	▓																						
Activity 1.2: Supervisory Technical Service mission to launch project activities.	▓	▓																						
Activity 1.3:Stakeholder analysis through a survey to identify: (i) stakeholders involved in the value chain of Horticulture, (ii) the information source, the type of information needed (available and required), and the information flow (iii) the stakeholders preferred information and communication systems building on existing systems.	▓	▓																						
Activity 1.4: Initial workshop of representatives from horticulture institutions and stations and other stakeholder groups, including donors participating in HORTISUN to reach a consensus on the Implementation Plan for the proposed horticulture information support Network/System and to contribute to the formulation of a national information dissemination strategy for Horticulture		▓	▓																					

OUTPUTS / ACTIVITIES	1 Year												2 Year											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
science and technology.		▓	▓																					
Activity 1.5: Workshop to debate on the outcome of the survey and discuss the modalities to operate the Horticulture Information Support Network/System (HORTISUN) and to discuss the draft national information dissemination strategy for horticulture science and technology with the steering committee and stakeholders.		▓	▓																					
Activity 1.6:Preparation of the stakeholders' analysis and the national information dissemination strategy for horticulture science and technology based on the project launching workshop and in compliance with the National Agricultural Development Strategy (2030).		▓	▓																					
Activity 1.7:Workshop to present the revised stakeholders analysis and national information dissemination strategy for horticulture science and technology to the steering committee and stakeholders.		▓	▓																					
Output 2: A central horticulture information and press communication unit within ARC established for the selection and release of information and training materials related to Horticulture for dissemination.																								
Activity 2.1 Source information from specialised communication units at national level (ARC Institutes, Centres, Laboratories, Universities Private sector, NGOs) to cover the different components of the production-distribution chain, from farm to fork.				▓	▓	▓	▓																	
Activity 2.2 Source information and experiences related to agriculture/ horticulture				▓	▓	▓	▓																	

OUTPUTS / ACTIVITIES	1 Year												2 Year											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
from international information systems (e.g. National geographic, FAO, IARCs-CGIAR, NARs, ISHS, universities, ..)				■	■	■	■																	
Activity 2.3: Develop criteria and measures to capture, process and upload information related to specific requirements for each system.				■	■	■																		
Activity 2.4 Screen, prepare, edit and format the contents of information and training materials (e.g. author's contracts)				■	■	■																		
Activity 2.5: In conjunction with the Ministry of Health and its nutrition division, design a programme to promote the consumption of fruits and vegetables for health. (e.g. annual celebration of a fruit and vegetable day)				■	■	■																		
Activity 2.6: Prepare videos and news clips				■	■	■																		
Activity 2.7: Collate documentation and publications related to selected priority crops and edit into a consolidated document to cover the different components of the value chain.				■	■	■																		
Activity 2.8: Publication and printing of the monographies				■	■	■																		
Output 3: A Horticulture Information Support Network (HORTISUN) and an Arabic version of Hortivar and related website																								
Activity 3.1: Consultative development of a functional specification for the Hortisun, with a phased and prioritized development plan				■	■	■																		
Activity 3.2: Developing the functional and operational specifications for system components.				■	■	■																		
Activity 3.3: Assigning FAO experts group or		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■							

OUTPUTS / ACTIVITIES	1 Year												2 Year											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
issuing Letter of Agreement (LOA) for the HORTISUN Systems Development.		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█							
Activity 3.4: Implementation of HORTISUN system development		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█						
Activity 3.5: Implementation for deployment of HORTISUN modules											█	█	█	█	█	█	█							
Activity 3.6: Develop an Arabic version of Hortivar.				█	█	█	█	█																
Activity 3.7: Integrate an Arabic version of Hortivar in RADCON and HORTISUN			█	█	█	█	█	█																
Activity 3.8: Develop a separate interface for horticulture growers' problems based on growers' problems system of RADCON.				█	█	█	█	█	█															
Activity 3.9: Animate a forum and other web2 tools for information exchange.				█	█	█	█	█																
Activity 3.10: Develop a tool for collecting information from the stakeholders related to the Horticulture value chain							█	█	█	█	█													
Activity 3.11: Monitor a topic trapping system through data mining and knowledge discovery				█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Activity 3.12: Develop analytic reports based on the information collected which could be used for early warning system.								█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Output 4: The operational agriculture TV satellite channel strengthened for communication with growers and horticulture business operators.																								
Activity 4.1: Establish an advisory panel of crop (commodity) and subject matter specialists to guide the development and monitor the programme through quarterly communication plan				█	█	█																		
Activity 4.2: In collaboration with the				█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	

OUTPUTS / ACTIVITIES	1 Year												2 Year											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Agricultural channel board, broadcast a weekly episodes based on the network content in varied treatments (latest news and warnings, interviews, field inspections, on air problem solving, crop variety introduction and revisions etc)				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Activity 4.3: Set up a network of international and/or regional collaborating institutions with focal points including links with market intelligence providers				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Activity 4.4: Develop a module in the HORTISUN to accommodate the advisory panel							■	■	■	■	■	■	■	■	■									
Activity 4.5: Develop a platform within the network to implement, facilitate the tasks performed by the information and press communication unit										■	■	■	■	■	■	■	■							
Activity 4.6: Explore the possibilities for private sector sponsorship with a view to ensuring long term sustainability of the HORTISUN				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Output 5: Interface with small holder farmers enhanced in order to debate on their constrain and facilitate interaction with specialised research units, central laboratories, private sector stakeholders and stakeholders of the horticulture industry and donors' community.																								
Activity 5.1: Conduct awareness workshops between farmers, researchers, dealers, and companies, etc., to publicize the network and to work on common ground together.																		▩	▩	▩	▩	▩	▩	▩
Activity 5.2: Conduct a monthly meeting and short campaigns with small farmers to appraise their needs to focus on common and					▩	▩	▩	▩	▩	▩	▩	▩	▩	▩	▩	▩	▩	▩	▩	▩	▩	▩	▩	

OUTPUTS / ACTIVITIES	1 Year												2 Year											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
emerging problems tackled in the network systems either to solve it collectively or to be included in the research agenda.					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Activity 5.3: Conduct monthly performance appraisals with field staff to explore the constraints and update their information (refresher training)					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Activity 5.4: Organize thematic workshops with a subject matters specialist as moderator.					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Activity 5.5: Organize quarterly briefing meetings for the donors' community and associated Ministries and Public services to report and exchange information related to ongoing initiatives and projects.					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Activity 5.6: Develop a module within the HORTISUN to host the consultation platform.						■	■	■	■	■														
Output 6: A team of professional staff in the horticulture sector trained and scaled-up their capacities in modern information management through HORTISUN and Arabic HORTIVAR.																								
Activity 6.1: Prepare and validate of IPP cards to illustrate "Good Agriculture practices (GAP)" throughout the production-consumption chain and uploading in Hortivar.						■	■	■	■	■														
Activity 6.2: Prepare, review or update available guidelines, standards and training materials to be disseminated in electronic format, based on the needs identified in the need assessment survey, carried out at the start-up of the project.								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Activity 6.3: Conduct training for 100 knowledge workers and subject matter specialists in operating and using the								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	

OUTPUTS / ACTIVITIES	1 Year												2 Year											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
HORTISUN and Arabic HORTIVAR network systems.								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Activity 6.4: Training of national staff								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Activity 6.5: A study tour for two Egyptian scientists to attend an international meeting and/or gain experience in HORTISUN implemented in other countries, for a duration not exceeding two weeks.	■	■	■	■																				
Output 7: A project proposal for further development of HORTISUN for enhancing its resource mobilization capabilities to fund its operations.																								
Activity 7.1: Mission by TCDC consultant to evaluate the HORTISUN, assess resources and budget needed from Government and donors so as to ensure sustained functioning of the horticulture information centre established through the project and Hortisun, and assist in the formulation of an action plan for possible expansion of HORTISUN and a project proposal for its further development for submission to potential donors.																							■	■
Activity 7.2: Hortisun official inauguration and national briefing workshop to present project outcomes, impact assessment, cost-benefits, and recommendations and action plan regarding possible expansion of the HORTISUN.																								■
Activity 7.3:Preparation of project's Terminal Statement.																								■