FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

TECHNICAL COOPERATION PROGRAMME

Country:	The Republic of Armenia
Project title:	Development of the Vegetable Breeding and Seed Systems
Project symbol:	TCP/ARM/3403
Starting date:	01 October 2012
Completion date:	30 June 2014
Project Duration:	21 months
Government Ministry Responsible for project execution:	The Ministry of Agriculture
Budget covering FAO contribution:	USD459 000

Signed: .....
(on behalf of the government)

Signed:……
Fernanda Guerrieri,
Assistant Director General,
Regional Representative for Europe and Central Asia (On behalf of the Food and Agriculture Organization of the United Nations - FAO)

Date of signature: .....

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Executive Summary

Agriculture generates 23% of Armenia's gross domestic product (GDP) and employs more than 43% of the labour force (World Bank 2006). The vegetable production (see Annex 15 – List of crops page 32) with 27,000 hectares represents more than $200Million of income around 20% of the whole agriculture sector, which is more than the potato ($78M) and wheat ($27M) sector (FAO source 2011 – data 2009). However, the size of the Armenian vegetable market is very small (2%) as compared to Turkey. Therefore, it is important to take this relative small size of the Armenian market into account, when considering to compete with neighbouring countries.

Currently, 5% of the seed market is provided by the Scientific Centre for Vegetable, Melon and Industrial Crops (SCVMIC) (governmental institution) with mostly open pollinated (OP) varieties; 25% with imported seeds, mainly hybrid, with a very limited control and 70% by the informal seed market and farm saved seeds without any control. There is a high probability of dissemination of diseases with seeds' infected by virus and others diseases through these non-controlled seeds.

The impact of the development of the vegetable breeding and seed systems will sustain the vegetable sector by making available to smallholders and professional vegetable growers improved varieties, quality seed and seedlings. The project will contribute to the sustainable development of Armenian vegetable production based on local seed production.

The outcome of the project is to provide a basis for the development of viable and sustainable certified seed production, based on local germplasm for the vegetable sector

The outputs of the project are the following: a) Seed law and regulations are analyzed and/or amended. b) the capacity of seed agency to implement international rules for vegetable seed production developed and c) the capacity of the SCVMIC to produce and market new varieties of high quality seeds well adapted to Armenian conditions

FAO will provide technical assistance to the government with its pool of qualified technical officers and consultants to reach the objective of the project.

It is expected that the project will reach a broad range of beneficiaries, divided into targeted and final beneficiary groups. The project will contribute to the sustainable national agricultural development through establishing the basis for the improvement and modernization of the vegetable seed production sector with significant contribution to the food security, employment opportunities and income generation.

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Acronyms

Counterpart	Government or intergovernmental organization having requested TCP assistance
DUS	Distinction, Uniformity, Stability
DSA	United Nations Daily Subsistence Allowance
FAORep	FAO Representative
FPMIS	FAO Field Programme Management Information System
GDP	Gross Domestic Product
GOE	General Operating Expenses
Ha	hectare
HQ	FAO headquarters
ISTA	International Seed testing Association
NMTPF	National Medium-Term Priority Framework
NPC	National Project Coordinator
NVU	National Vegetable Union
OECD	Organisation for Economic Co-operation and Development
OP	Open Pollinated
REU	FAO Regional Office for Europe and Central Asia
SCVMIC	Scientific Centre for Vegetable, Melon and Industrial Crops
TCP	Technical Cooperation Programme
TCPF	Technical Cooperation Programme Facility
TOR	Terms of Reference
TSS	Technical Support Service by FAO technical staff
TTT	True to type
UNDAF	United Nations Development Assistance Framework
UPOV	Union pour la Protection des Obtentions Végétales
VCU	Value for Cultivation and Use

Section 1. BACKGROUND

Armenia is a landlocked country with limited natural resources, covering an area of 29,800 km^2. It is located in the Caucasus region, neighbouring Georgia, Azerbaijan, Iran and Turkey. It is essentially made up of high rolling plateau and wide river valleys, together with sharp mountain ridges from the southern edge of the Caucasus range.

In spring 1991, even prior to the declaration of independence, considering the importance of the sector, a policy of privatization of land and other means of agricultural production, service infrastructures, food marketing and processing facilities was adopted. As a result, a market driven liberal economic system has now been established in the Agri-food sector that includes about 340,000 private farms and a large number of private companies involved in agricultural services and in marketing and processing of agricultural products.

One of the most important branches of the Armenian economy, food and agriculture sector provides 22.0% of the Gross Domestic Product. The share of agriculture is around 17.0% (2007). In the agricultural production sphere, the main land users are private farmers who own 71.7 % of arable lands, of which 78.3% are under perennial crops. As a result, the private sector produces over 98% of the gross agricultural product.

In 2007, the sectorial structure of agriculture was as follows: crop production – 67.8%, livestock management – 32.2% compared to 49.4% and 50.6% in 1990 respectively. When compared with the beginning stage of the transition period, areas under agricultural crops have undergone the following changes: cereal crop areas have increased by more than 35%, and about 50% increase in areas under potato has been recorded.

The Republic of Armenia is in the List of "Special Attention" countries (as of 22 August 2009)

1.1 General Context

The soils and climate of Armenia are favourable for vegetable production throughout much of the republic, but most (65%) of its vegetable and nearly all (98%) of its melon production can be found in Ararat and Armavir marzes of the country (Ararat Valley), where vegetable production relies on ground irrigation, while in the mountainous districts only rain fed production is implemented.

Agriculture generates 23% of Armenia's gross domestic product (GDP) and employs more than 43% of the labour force (World Bank 2006). According to 2003 data, per capita annual vegetable consumption was 218 kg, which corresponds to a consumption of 597 g/day or 144 kcal/day. This indicator includes fresh, dried and processed vegetables (Statistic Bulletin of Armenia).These numbers, however, do not reflect the constraints of the agriculture sector caused by limited agricultural resources. Indeed, the republic is facing several challenges to improve the food security for its population of 3.1 million, 64.2% of whom reside in urban areas and 35.8% in rural areas.

Armenia's overall area under vegetables reached circa 29,000 ha (27,227 ha in 2010 with a total production of 707,593 t - Arm Stat data 2010). Major vegetables include tomato, cucumber, onion, cabbage, eggplant; sweet pepper and watermelon (see Annex 12 - Vegetable production Arm Stat - page28)

1.2 Sectorial Context

Vegetable is a major sector as it represents 20% of the whole agricultural production. The value of the vegetable sector is 3 times the value of the potato production and 8 times the value of the wheat production (Annex 13 - FAO Stat. 2009 - page27)

However, the size of the Armenian vegetable sector is small compared to other regional countries and will limit the capacity to compete with others foreign vegetable seed companies (Annex 14 – Regional vegetable production - page30)

The quantity of "small vegetable seeds[1]" needs is around 25 to 30 tons. Currently, the farmers are using farm saved seeds and seeds coming from the informal sector (circa 70%), imported seed mainly hybrids for green house production and field crop production for food processors (circa 25%) and "local seeds" from the Scientific Centre for Vegetable, Melon and Industrial Crops (SCVMIC) (5%).

The informal sector represents around 2/3 of procurement of the surface using a higher rate of seeding and in specific crops like herbs it represents 100%. It is useful to highlight the situation for onions where the informal sector represents 80% with a possible degeneration of "varieties" driving to lower yield.

Few imported seeds comply with the regulation regarding registration, quarantine and "Seed Agency" control, a large part is imported without control.

SCVMIC has an important catalogue[2] of varieties registered on the Armenian Catalogue. The pipeline of varieties is significant 50 varieties are under the registration process, 5 varieties were released in 2010, 13 in 2009, 29 in 2008, 39 from 2000 to 2007.

SCVMIC markets around one ton of Elite seeds in different packaging including 5 grams "Packet Seeds" and through contracts with processors (seedlings and seeds). Few hybrid varieties are marketed is small quantities. SCVMIC do not sell "Reproduction 1" but Elite seed. All the packaging is done by hand as there is no equipment.

SCVMIC has 21 ha of land, used for breeding, multiplication of Super Elite, Elite seeds and crop rotation. In addition SCVMIC has 0.5 ha of greenhouse. This limitation of hectares conducts SCVMIC, in order to fulfil the programme of multiplication, to establish "barters" with growers. SCVMIC procures seedlings of Super Elite and harvest selected "fruits" for Elite seed.

The know-how of the seed growers is limited and improvement of the capacity of the growers is necessary to increase the quantity and quality of the seeds produced. The establishment of grower's contract and not barter will secure SCVMIC for his further development.

Except SCVMIC production there is no other vegetable seed certified. Elite seeds from SCVMIC are "feeding" the informal market with no control from the breeder even when the variety is "Patented". For example, some dealers come nearby SCVMIC's office in spring and offer the seeds at half the price of SCVMIC! The Seed Law needs to be enforced in order to protect the breeder from counterfeit varieties. A model of licensing with a reasonable payment (royalty) should be developed. The economic model for vegetable seed "enterprises" is the entire control of the variety including the commercial seed (R1) preventing any producer to market the variety (certified or not).

[1] Small vegetable seed means crops with small quantity of seed per hectare (like 500 g/ha). Beans, green peas are part of this small vegetable seed sector (100 kg/ha). When comparing quantity in the vegetable market tomato seeds and bean seeds cannot be added

[2] See SCVMIC_Catalogue.pdf in separate annex.

The pricing of SCVMIC Elite is based on cost price + 20% and not based on the value of the varieties due to state enterprises' regulation. Old varieties, new varieties are offered at the same price. Moreover, one eggplant hybrid is marketed at the same price than open pollinated (OP) varieties. This "business model" needs to be reviewed due to the market possibilities and the performance of the varieties.

The basic offer of SCVMIC is OP varieties; however few hybrids varieties are available in tomato, eggplant and cucumber. The ability to produce these hybrid seeds is identified as a limiting factor; however the market demand for these varieties has not been checked.

For the 3rd year, SCVMIC publishes a catalogue in Armenian and English with the varieties available and a short description to guide the farmer. SCVMIC website: www.rcvc.agro.am. SCVMIC covers 75% of the crops; we may consider the completion of the catalogue in order to cover a larger part of the market including cabbage, carrots, turnip, and leek.

"Herbs" (parsley, coriander…) are multiplied by the informal sector; the size of this market needs to be assessed. Regarding the conservation of ecotype, SCVMIC will be in charge of safeguarding this resource and could check the possibility to improve the ecotypes; by rouging, define a type, build a True To Type (TTT) variety and propose new varieties to the market.

Regarding vegetable breeders: in order to keep the involvement of the current team and attract new generation of breeders; the possibility to establish a profit sharing with "Authors" should be studied.

Regarding the registration in the Armenian catalogue, the present situation of 2 to 3 year registration is considered as a limiting factor: too heavy – too long. A registration in one year will be an improvement.

1.2.1 Development priorities FAO Strategic Framework and MDGs

The development of the vegetable seed and production systems fulfil the Strategic Objectives:

- The larger use of certified or controlled improved vegetable varieties will contribute to:
  - "A. Sustainable intensification of crop production"
  - "D. Improved quality and safety of food at all stages of the food chain"
  - "F. Sustainable management of improved responses to global environmental challenges affecting food and agriculture"
- The market development, "market driven", of SCVMIC in connection with a stronger commitment of all stakeholders of the vegetable supply/value chain will contribute to :
  - "G. Enabling environment for markets to improve livelihoods and rural development."
  - "H. Improved food security and better nutrition."
  - "I. Improved preparedness for, and effective response to, food and agricultural threats and emergencies."
  - "L. Increased and more effective public and private investment in agriculture and rural development."

1.2.2 Country Programming Framework (CPF) and UNDAF

The Government of Armenia has adopted a set of documents that articulates the country's national and agricultural development priorities. This include the Armenian Government's "*Draft Strategy on Sustainable Development of Armenia's Agriculture"* (2004); *the Strategy on Food Safety Policy* (2005) and the updated version of the "*Strategy on Sustainable Development*

of Armenia's Agriculture" (2006). In November 2010, the 2010-2020 Strategy on Sustainable Development of Armenia's Agriculture was approved by the Government of Armenia.

The 2010-2020 Strategy on Sustainable Development of Armenia's Agriculture identifies the following as major priorities for the development of the country's agro-food sector:

- Addressing the effects of the logistics crisis in agriculture and agro-food industry; strengthening the integration links,
- Developing agricultural inter-field cooperation for the establishment of diversity farm management in the agrarian sector,
- Improving agricultural and agro-processing products sales and increasing export volumes,
- Enhancing agricultural competitiveness and fostering "know-how" technologies,
- Effective use of land, water, labour and intellectual resources to improve the productivity potential of the agricultural sector,
- Developing a food safety system in line with the international standards,
- Expending non-agricultural employment in rural areas and improving farm income of the rural population,
- Developing community infrastructures in rural areas,
- Strengthening agricultural support services and improving their accessibility,
- Improving branch structure of agriculture and promoting production of high-value products,
- Protecting natural and environmental landscapes; developing agro-tourism and organic agriculture.

Section 2. RATIONALE

The Country Program Framework (CPF) for the period 2012-2015 was signed in 2012 in which the development of the vegetable breeding and seed systems has been identified as one of the priority areas for FAO-Government of Armenia collaboration and FAO immediate assistance.

2.1 Problems/Issues to be addressed

The government of Armenia has adopted a Seed Law and different regulations regarding the registration and protection of varieties. However, the enforcement of the Law and regulations is not fully implemented; this does not permit a fair economic development of the formal seed sector as unfair competition is preventing the certified and controlled seed to develop on the Armenian market. This enforcement will permit to bring better seeds with higher yield and quality to the entire market including the most vulnerable segment of the rural society (rural poor, young rural women, female headed households) and aim at improving their livelihoods.

The vegetable seed production sector is in a rather weak position including the SCVNIC. There is no equipment at all for vegetable seed processing and packaging activities which are all performed manually. SCVMIC sells Elite seeds as they have no capacity to produce more even when they have a market demand.

In most case, seed farmers are directly marketing the vegetable seeds with no field control, no sanitary control nor purity; some are going through retailers and are offered in bulk.

Aims and Purpose: The Development of vegetable breeding and seed systems will contribute directly to numerous organizational results of FAO's strategic framework:

- Strengthening of production and support systems in the agricultural vegetable sector by bringing improved, registered and controlled seeds.

- Contribute to food security and nutrition elevation by improving the yield and the quality of the harvest.
- Secure natural resources by safeguarding indigenous vegetable crop varieties.
- Contribute to enhance policy and strategy formulation by the enforcement of the Law.

Critical Gap or Problem:

- Currently the portfolio of varieties are mainly OP varieties, breeding programmes to create hybrid have started and need to be developed in order to bring better performance and diseases tolerance or resistance to cover a greater part of the market's need.
- The capacity to produce more seed is limited by the non-equipment and the limited knowledge of seed growers, few trial of sub-contracting through barter with seed growers needs to be adapted.
- Seed sorting, storing, drying, grading, treatment, granulation and packaging do not exist and constitute a limiting factor for bringing quality seeds on the market.

2.2 Stakeholders and Target Beneficiaries

The project will mainly focus on strengthening the capacity of the SCVMCI on the different domains; breeding, safeguarding indigenous germplasm, production and marketing; to produce new varieties adapted to the climate of Armenia and provide quality seed to the market. It will target the Seed Agency involved in the oversight of the seed sector. Equipment and training will be provided in order to improve their functioning.

The capacities of growers will be built in a way to provide services to vegetable seed producers who are going to certify the seed "reproduction 1" in Armenia, to vegetable seed growers for relaying new genetics and techniques to neighbourhood. Those growers will be trained on use of the modern varieties, control of diseases and technologies including processing. Training management of seed production as a business, included marketing issues, should be conducted. Those trained growers will disseminate the knowledge through Open Field Day to others farmers involved in vegetable production (including the producers in greenhouse).

Thus, the SCVMIC, the Seed Agency and the Ministry of Agriculture will benefit from the project directly. The project will strengthen the main institution involved in the vegetable seed sector, and equipment and training will be provided in order to improve their functioning. Armenia may benefit from the project with the development of the vegetable production.

It is important to underline that women are equal partners in horticultural operations, and capacity building activities under the project will be gender sensitive in targeting the main users of different technologies.

Secondary beneficiaries of the project will be the vegetable seed growers , the vegetable growers and the whole value chain including the consumers.

2.3 Project Justification

Developing and increasing the use of well adapted and high quality vegetable varieties will be a major improvement of the present situation where the major part of the procurement is done by the informal seed sector and imported seed with very limited control. The catalogue of varieties, well adapted, of the SCVMIC is important but due to equipment constraints the production and marketing are limited to 5% of the market. However, the vegetable breeding programme should

be improved to address the new demand, adaptation to climate change and competition with imported seed. The present economic position of SCVMIC will not permit to remain sustainable without a major improvement of the market share. This development needs that the legal framework of the Seed Law and the relative regulations about the protection of breeders' right and quality control is reinforced.

If the SCVMIC is not supported and sustained, the risk of losing all the vegetable germplasm of indigenous variety is significant.

In addition, the effects of climate change in the country call for an evolution of cropping systems. Developing and increasing the use of adapted varieties of vegetable could be part of the solution. Therefore, to mitigate the expected effects of natural disasters, caused by climate change, it is important to increase the productivity of the farm and production by provision of high quality seeds of improved varieties adapted to climate change. The development of the country's seed sector through the improvement of access to and use of quality seeds, evolution of cropping systems and intensification of agriculture practice, is expected to increase the feasible yield significantly.

2.4 FAO's Comparative Advantage

FAO's Plant Production and Protection Division, through their Seed and Plant Genetic Resources team, are assisting a number of countries in Africa, Central Asia and Asia in the area of seed policy and regulation, seed production, seed quality assurance, support to the private seed sector. They have therefore developed a unique expertise in these thematic areas that are particularly relevant to the project.
A strong knowledge of this type of issue combined with the important network of consultants, national and international experts will permit FAO to monitor efficiently this TCP.

Section 3. PROJECT FRAMEWORK

3.1 Impact

The project will contribute to the sustainable development of Armenian vegetable production based on local seed production.

3.2 Outcome and Outputs

Project will provide a basis for the development of viable and sustainable certified seed production, based on local germplasm for the vegetable sector

Output 1: Seed law and regulations are analyzed and/or amended

Activity 1.1: Analysis of the legislative and regulatory framework is performed in order to elaborate implementation, enforcement and/or amendment to protect breeders' right "Patent" and adapt the process of registration in the catalogue and certification for vegetable seed.

Activity 1.2: Analysis of the legislation and regulation regarding the pricing of seeds' fixing and elaborate proposals.

Activity 1.3: Analysis of the legislation and regulation regarding the "authors" profit sharing in order to create a stronger commitment and attract young generations and elaborate proposals.

Activity 1.4: Analysis of the seed legislation and regulation regarding the harmonisation with international framework, conduct a workshop with the staff of the Ministry of Agriculture, present the results of the "Seed Policy Workshop" and discuss the need of amendments.

Output 2: The capacity of seed agency to implement international rules for vegetable seed production developed

Activity 2.1: Set-up an action plan of control for "counterfeit" of "patented" varieties.

Activity 2.2: Sensitize and adapt process in VCU registration to lighten the process of registration in one year.

Activity 2.3: Conduct training in DUS control in the process of registration in conformity with UPOV guidelines to prepare the UPOV membership.

Activity 2.4: Conduct training courses on ISTA procedures for vegetable crops.

Activity 2.5: Conduct training courses on OECD seed scheme for vegetable crops.

Output 3: The capacity of the SCVMIC to produce and market new varieties of high quality seeds well adapted to Armenian conditions

Activity 3.1.: Conduct a baseline survey of the vegetable sector and organize a stakeholder workshop to identify the major constraints to vegetable value chain and develop an action plan

Activity 3.2: Analyse short term limiting factors of breeding capacity and train breeders on the use of new equipment; and analyse the long term breeding goal and elaborate an action plan with the support of an expert consultant.

Activity 3.3: Analyse possible source for new germplasm included parents' lines to complete the portfolio of SCVMIC. Action plan is written.

Activity 3.4: Set-up a programme to safeguard indigenous vegetable crop varieties with the identification and collection of the different ecotypes. Set-up a programme of description of the ecotype and possibly restore the varieties with a "True To Type" programme to create foundation seeds for such varieties in order to enhance the production of the growers.

Activity 3.5: Set-up a department of seed production in SCVMIC and create an action plan. Set-up a network of growers and create a standard contract. Set-up the list of equipment needed. Train the SCVMIC production department for the production of commercial seed. Train the seed growers for seed multiplication and processing.

Activity 3.6: Analyse through a market survey of the different segment of the vegetable seed market (OP, F1, Informal, FSS…) Image of the varieties of SCVMIC. Based on a market driven approach, create a business plan for the next 3 years including sell of Reproduction 1, F1 and seedlings. Set-up a new price policy with the approval of the regulatory body to sustain the activity of SCVMIC. Update the SCVMIC's Website toward a more commercial development i.e. "Customers and retailers driven". Set-up a network of "farmers relay" to promote the performance of the SCVMIC varieties in the market. Analyse and set-up the possibility to build a retailer network for SCVMIC varieties. Analyse and set-up a contract of license of "patented" varieties with seed growers with royalty payment to SCVMIC. Analyse and set-up the development of seedlings activity.

Activity 3.7: At the end of the project, set-up a working group to explore the opportunity of the creation of a "National Vegetable Union", between the different actors of the chain, in order to develop a friendly framework for the development of the vegetable supply chain.

Activity 3.8.: Build a public-private-partnership to sustain the vegetable seed systems.

3.3 Sustainability

The project primarily focuses on strengthening the existing institutions through training as well as facility upgrading. The revision of the existing seed legislation, will provide the basis for the institutions to carry out their activities in a more coherent and efficient manner.

At the end of the project, the Government will ensure the continuation of the current support of the SCVMIC. The balance sheet and "profit and loss" of the SCVMIC has been strengthened allowing further investments and sustain the activity.

The project will be instrumental in promoting the adoption of improved varieties and seed for vegetable production in open fields and greenhouses and the management as well as pest management, soil and water management. The project will also promote the emergence of local small vegetable enterprises. The involvement of technical, extension and research staff in the various capacity building activities in the demonstration farms will provide for a sound knowledge base of the key actors.

It is expected that in the end of the project a vegetable producers Association which be created.

Outcome: Project will provide a basis for the development of viable and sustainable certified seed production, based on local germplasm for the vegetable sector	**Follow-up action to ensure sustainability of each Output**	**Institution responsible for this follow-up action and the resources it will provide (human, physical and financial)**	**Contribution of each Output to the sustainability of project Outcome**	**Contribution of each Output to the impact and the catalytic effects expected to be generated**
Output 1: Seed law and regulations are analyzed and/or amended	Elaborate analyses and proposals	Ministry of Agriculture	The enforcement of the Seed Law and regulation will create a better environment for the development of SCVMIC	Clear national seed policy regarding in the enforcement of the Seed Law or others related regulations.
Output 2: The capacity of seed agency to implement international rules for vegetable seed production developed	Training of the Seed Agency personel	Ministry of Agriculture	Well trained field inspectors and lab staffs	Higher rate of well controlled seed. Partial limitation of informal seed infringing the patent owner.
Output 3: The capacity of the SCVMIC to	Providing training to the different department of	SCVMIC and the seed growers and the farmers	Well trained staff of SCVMIC and farmers	Higher used of certified and controlled seeds

Outcome: Project will provide a basis for the development of viable and sustainable certified seed production, based on local germplasm for the vegetable sector	**Follow-up action to ensure sustainability of each Output**	**Institution responsible for this follow-up action and the resources it will provide (human, physical and financial)**	**Contribution of each Output to the sustainability of project Outcome**	**Contribution of each Output to the impact and the catalytic effects expected to be generated**
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produce and market new varieties of high quality seeds well adapted to Armenian conditions	SCVMIC. Providing the necessary equipment to operate Training the farmers			increased the quality and quantity of vegetable produce in the country

3.4 Risks and Assumptions

Risk	Impact	Probability	Mitigation
1. The government shows insufficient commitment towards the reinforcement, amendment of the Seed Law and regulations	TCP implementation is ineffective	Medium: implementation arrangements are well designed to parallel with the enforcement of regulations	Ensure that the counterpart drive the entire process related to the enforcement process and all political stakeholders approve the "enforcement"
2. Involved stakeholders show insufficient commitment or are inadequately involved to support TCP implementation	TCP implementation is delayed and ineffective	Low: implementation arrangements are well designated	Ensure that the Ministry and the NPC drive the entire preparation process from the very beginning and maintain all parties constantly involved. The TCP puts all the required instruments in place to this end, including SCVMIC and Seed Agency..
3. Implementation timing is constrained by plant cycle.	Project timing is disrupted; outcomes and outputs are at risk.	Low if the project starts on time: project timing is designated to match biological phase. High if the project does not start on time	Make sure that the project start on time and detailed calendar of activities are well programmed according to the seasons.
4. Capacity needed for breeding, seed multiplication and processing is not in place	Project timing is disrupted: outcomes and outputs are at risk	Low: project capacity building is designed to match the needs.	Make sure that the project start on time and detailed calendar of activities are well programmed according to the requirements

Section 4. IMPLEMENTATION AND MANAGEMENT ARRANGEMENTS

4.1 Institutional Framework and Coordination

The project will be implemented over a period of twenty months by FAO, in close co-operation with the Ministry of Agriculture, the SCVMIC and the Seed Agency. The Government will designate and appoint a National Project Coordinator, who will assist in the implementation of the project. The SCVMIC, which will be the major partners, will also have to identify a focal point. As the budget of this project is limited, the involvement of these national counterparts in the implementation of the project will be essential to its success. The procured equipments will be used for training purposes. A Gender Focal Point – if any – in the Ministry of Agriculture will be invited to meetings and consultations.

The FAO project team will continuously monitor the progress and outputs of the project. FAO will provide support related to the implementation of the project activities, including:

1. recruitment of international and national project staff,
2. procurement of equipment and supply necessary for the implementation of the project,
3. technical guidance and backstopping,
4. training of national staff,
5. direct and general operating costs.

4.2 Strategy / Methodology

The project will be divided into three components: 1) Seed Law and regulation reinforcement, 2) Seed Agency new mission and training and 3) Strengthening the SCVMIC. Strengthening SCVMIC is by far the main component of this project. Breeding – Production (multiplication, processing and packaging) – Marketing are the three main elements that need to be developed and coordinated during the process of implementation of the project. In addition but independently the programme of safeguarding the indigenous vegetable crop varieties will be implemented.

- The first challenge is to strengthen the capacity of SCVMIC in vegetable breeding and production of basic seed and design strategies for the emergence of local seed enterprises through public-private-partnership.
- The second challenge is the three elements Breeding – Production – Marketing are part of the same supply chain and needs to be addressed in the same time.
- The third challenge is the equipment availability. The equipment needs to be delivered at the onset of the project as it is necessary to operate.

A deeper market analysis or market survey will be the first element of the detail implementation and action as the results could drive possible decisions. A synthetic work plan is issued; the different activities are schedules; however contain of each activity needs to be divided in different sub activities (see Annex 2 - Work Plan – Page19). During the inception period a detail work plan will be reviewed possibly through a Gantt chart in order to interconnect the different activities and "sub activities" The Term of reference (TOR) in the general description of tasks and objective contains the different "sub activities".

The regular review of the follow-up and realisation of the general work plan and the detail work plan will be the guideline of the project. The first step is the establishment of the detail work plan by the International consultant during the inception report. It will be approved by the stakeholders (NPC, TSS, SCVMIC focal point). Three meetings will be planned during the time period of project to review, take corrective measures and necessary adaptation for further development. The results will be shared with a working group that the Ministry of Agriculture will nominate. In between this process of reviewing the detail work plan, one of the assignments of the national consultant will be to identify gaps and report on the major obstacles or constraints regarding the project implementation process.

4.3 Government Inputs

Financial and/or contributions in kind:

- The National Project Coordinator (NPC) and national counterparts (SCVMIC) and their salary for the whole duration of the project;
- Nomination of project steering committee or working group;
- Office space for project staff;
- Identification of trainees (e.g. Government staff, private sector);
- Arrange for customs clearance of equipment imported by the project and tax-free local purchase of equipment and supplies.

4.4 FAO Contribution

1. **Personnel services**
   - **International experts.**
     - Vegetable seed policy specialist for 4 months in 4 missions (4 times 3 weeks in Armenia and 1 week home base work) 112 days, including international travel.
     - Seed expert – vegetable breeder for 28 days in 2 missions (2 times 2 weeks in Armenia), including international travel.
     - Seed expert – vegetable seed production and seed testing specialist for 42 days in 2 missions (2 times 3 weeks in Armenia), including international travel.
     - Seed expert – vegetable seed marketing specialist for 42 days in 3 missions (3 times 2 weeks in Armenia), including international travel.
   - **FAO Technical Support Services (TSS)**
     - Duty Travel

       Technical backstopping and monitoring travel (including FAO's TB and project review), 30 days in five missions, five days/mission (excluding travel time) by AGPM/REU Technical Officers and 20 days of desk work
   - **National experts.**
     - National Consultant, Agronomist – Seed Specialist (16 months on WAE Basis)
     - Locally hired non-professional services translator and administrative work.
2. **Travel**
   - **Other travel**: Transport costs of official travel within the country for the FAO officers and consultants, as well as key national staff directly involved in the execution of the project.
3. **Materials, supplies and equipment:**
   - **Expendable materials and supplies**.
     Purchase of materials and inputs for vegetable crop production (breeding), seedlings production, granulation, treatment and packaging; and for diseases lab control. Office supply.
   - **Non-expendable equipment:**
     Purchase of equipment required for the implementation of the project, and necessary for the training part of the project for breeders, seed growers, seed processors and seed packers.
   - List in Annex 11 – List of Materials, Supplies and equipment –.

4. **Training and Workshops:**

- Workshop will be organised for sharing and adopting the inception report. One day workshop for 25 participants
- Training of Seed Agency staff and field inspectors on field controls: DUS control, seed scheme and counterfeit seeds through in-country workshops. 5 days for 20 participants
- Training of Seed Agency staff on lab controls: for germination, diseases of national and imported seed through in-country workshops. 2 days for 10 participants
- Training of Seed Agency staff on VCU - DUS controls for registration through in-country workshops. 5 days for total 30 participants in different zones
- Training of SCVMIC breeding staff for breeding and safeguarding indigenous germplasm (including training on the use of Hortivar, FAO's database on the performances of horticultural crops) through on-going process of implementation and workgroup to summarize the findings. 4 days for 10 participants
- Training of SCVMIC production staff for seed production (multiplication to packaging) through on-going process of implementation and working group to summarize the findings, 2 days for 10 participants
- Training seed growers for seed production including the process of raw seeds through in-country workshops.5 one day workshops for 30 participants
- Training of SCVMIC marketing staff for seed marketing through on-going process of implementation and workgroup to summarize the findings. 2 days workshop for 10 people
- Final workshop will be organised to examine the opportunity of the creation of a "National Vegetable Union", between the different actors of the chain, in order to develop a friendly framework for the development of the vegetable supply chain; and including the final report of the project. one day workshop for 30 participants

5. **General operating expenses (GOE)**

- Equipment Operation and Maintenance for the period of the project;
- Communications;

6. **Project Support Costs(PSC)**

To cover FAO's administrative and operational costs related to the implementation of the project.

Section 5. OVERSIGHT, MONITORING, MANAGEMENT INFORMATION AND REPORTING

5.1 Monitoring and Knowledge Sharing

The project implementation strategy will include a component for process and impact monitoring to be carried out by the project team (international and national experts), in collaboration with the FAO Headquarters and Regional Office for Europe and Central Asia An analysis / survey during the inception phase has to be carried out to improve the knowledge of the seed market's demand to be able to measure the progress done at the end of the project. The final workshop will be the participatory forum to examining

progress and impact and for mapping out the follow-up strategy to be promoted by the government.

5.2 Communication and Visibility

The SCVMIC's website improvement will be the significant part of the communication and visibility of the fulfilment of the project.
Publication on SCVMIC's website of the different progress related to Breeding (including safeguard germplasm) – Production and Marketing.
The seed agency will be challenged to publish "on-line" the Catalogue and different information related to the Seed Law and regulations.

5.3 Reporting Schedule

The International consultants will be responsible for preparing, at the end of each mission, technical reports containing findings, conclusions and recommendations. The FAO officers will prepare comprehensive mission reports. The National Consultant, Agronomist – Seed Specialist will prepare quarterly reports.

At the end of the project, the NPC will prepare a draft terminal statement, in accordance with TCP procedures, for finalization by REU/AGPM and transmission by FAO to the Government of the Republic of Armenia.

The National Project Coordinator, jointly with the national consultant will prepare quarterly project implementation reports (QPIRs), for submission to the FAO Regional Representative for Europe and Central Asia with a copy to the Field Programme Officer managing the project.

Within one year after completion of the project, the recipient Government should submit a brief report on action taken on the main recommendations resulting from the project.

ANNEXES

Annex 1 – Budget

PROJECT BUDGET (FAO Contribution in USD)

Country: The Republic of Armenia
Project title: Development of the Vegetable Seed Breeding and Production System
Project symbol: TCP/ARM/3403

Accounts	Input Description	Sub/Child Account	Main/Parent Account
5013	**Consultants**		**107 800**
5542	Consultants – International	78 400	
5543	Consultants – National	29 400	
5020	**Overtime**		**12 000**
5652	Casual Labour – Temporary Assistance	12 000	
5021	**Travel**		**59 116**
5684	Consultants – International	41 576	
5685	Consultants – National	5 000	
5692	Travel - Technical Support Services	10 540	
5698	Travel - Non staff (e.g. counterparts)	2 000	
5023	**Training**		**32 000**
5920	Training Budget	32 000	
5024	**Expendable Equipment**		**160 000**
6000	Expendable Equipment Budget	160 000	
5025	**Non Expendable Equipment**		**15 000**
6100	Non Expendable Equipment Budget	15 000	
5027	**Technical Support Services**		**30 350**
6111	Report costs	2 400	
6120	Technical Support Services (Honorarium)	27 950	
5028	**General Operating Expenses**		**12 706**
6300	General Operating Expenses Budget	12 706	
5029	**Support Cost**		**30 028**
6130	Support Cost Budget	30 028	
	Grand Total		**459 000**

Annex 2 - Work Plan

WORK PLAN																					
OUTPUTS / ACTIVITIES	**YEAR 1**			**YEAR 2**												**YEAR 3**					
Months	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
1 - Agronomist and vegetable seed specialist - Marketing - Seed Law	1			1				1				1				1					1
2 - Agronomist and vegetable seed specialist - Breeding				2								2				2					
3 - Agronomist and vegetable seed specialist - Production				3				3							3						
4 - Agronomist and vegetable seed specialist - Lab control - registration								4				4				4					
5 - National Seed Consultant	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
Output 1: Seed law and regulations are enforced and/or amended:																					
Activity 1.1: Analyse of Seed Law and regulation to elaborate enforcement and/or amendment regarding plant breeders' right and adaption of the process of registration and certification	1																				
Activity 1.2: Analyse the legislation and regulation regarding fixing seed price				1																	
Activity 1.3: Analyse the legislation and regulation regarding the authors' profit sharing				1																	
Output 2: The Seed Agency has been trained to international rules:																					
Activity 2.1: Set-up an action plan of control of for "counterfeit" of "patented" varieties			1																		
Activity 2.2: Sensitize and adapted process of registration (catalogue)			1																		
Activity 2.3: Train Seed Agency in DUS control in the process of registration							4														
Activity 2.4: Train Seed Agency to ISTA procedures for vegetable crops.											4										
Activity 2.5: Train Seed Agency OECD seed scheme for vegetable crops.															4						
Output 3: The capacity of the SCVMIC to produce and market new varieties of high quality seeds well adapted to Armenia is improved:																					
Activity 3.1: Conduct a baseline survey of the vegetable sector and organize a stakeholder workshop to identify the major constraints to vegetable value chain and develop an action plan	1			1																	
Activity 3.2: Analyse short term limiting factors of breeding capacity and train breeder breeders on the use of new equipment; and analyse the long term breeding goal and elaborate an action plan with the support of an expert consultant.	1			1,2								1,2									
Activity 3.3: Analyse possible source for new germplasm included parents' lines to complete the portfolio of SCVMIC. Action plan is written.				1,2																	
Activity 3.4: Set-up a programme to safeguard indigenous vegetable crop varieties. Set-up a programme of description of the ecotype and possibly restore the varieties				2								2				2					
Activity 3.5: Set-up a department of seed production in SCVMIC and create an action plan. Set-up a network of growers and create a standard contract. Set-up the list of equipment needed. Train the SCVMIC production department for the production of commercial hybrid seed.Train the growers for seed multiplication.	1			1,3				1,3				1			3	1					
Activity 3.6: Analyse through a market survey the different segments of the vegetable seed market. Based on a market driven approach, create a business plan for the next 3 years including sell of R1, F1 and seedlings. Set-up a new price policy. Update the SCVMIC's Website. Set-up a network of "farmers relay". Analyse and set-up the possibility to build a retailer network. Analyse and set-up a contract of license of "patented" varieties with seed growers with royalty payment to SCVMIC. Analyse and set-up the development of seedlings activity	1			1				1				1				1					1
Activity 3.7: Set-up a workgroup to analyse the opportunity of the creation of a "National Vegetable Union", between the different actors of the chain, in order to develop a friendly framework for the development of the vegetable supply chain.																					1

Note: the numbers refer to the respective consultant

Annex 3-10 – Terms of References

Annex 3. Terms of Reference for Consultant/PSA

Name:			
Job Title:	International Consultant, Agronomist– Seed Policy Specialist		
Division/Department:	REU		
Programme/Project Number:	TCP/ARM/3403		
Location:	Three weeks in Armenia and one week in home base after missions		
Expected Start Date of Assignment:		**Duration:**	4 months in 4 missions, including international travel
Reports to:	***Name:*** ***Avetik Nersisyan***	***Title:***	REU Plant Production and Protection Officer

General Description of task(s) and objectives to be achieved

Under the general supervision of the regional representative for Europe and Central Asia, the direct supervision and technical guidance from the AGPM and FAO/REU Plant Production and Protection Officer and the operational guidance of the Field Programme Officer, REU, in close collaboration with the national project staff and the Ministry of Agriculture and other stakeholders , the International Consultant will be responsible for the following:

a) Organize a project inception workshop;
b) Update and review the project work plan, with detailed activities and related calendar;
c) Monitor the whole process and organise the on-the-job training
d) Prepare technical specifications for the procurement of equipment
e) Analyse of the legislative and regulatory framework, enforcement and/or amendment to protect breeders' right "Patent" and adapt the process of registration in the catalogue and certification for vegetable seed.
f) Analyse the legislation and regulation regarding the pricing of seeds' fixing and elaborate proposals.
g) Analyse the legislation and regulation regarding the "authors" profit sharing in order to create a stronger commitment and attract young generations and elaborate proposals.
h) Analyse the seed legislation and regulation regarding the harmonisation with international framework, make a workshop with the staff of the Ministry of Agriculture, present the results of the "Seed Policy Workshop" and discuss the need of amendments;
i) Prepare a technical report after each mission;
j) Prepare and submit end of assignment report.

Qualifications:

- Advanced University degree or equivalent in agriculture.
- Minimum 10 years of progressively responsible working experience in agriculture development related to seed multiplication and production technology, seed processing and marketing, and development of private seed industry.
- Experience in Eastern Europe is desirable.
- Fluent in English is mandatory (Russian is an asset)

key performance indicators

Expected Outputs:	Required Completion Date:
Project work plan is prepared, inception workshop is organized, Technical specifications for equipment are prepared, Seed Law and price regulations are analysed and proposals draft.	
Complete the 3 years business plan including the new price policy Complete the process of registration and control of counterfeit seed.	
Draft proposal for "Authors Profit Sharing" is issued	
Workshop with the staff of Ministry of Agriculture "Seed Law Harmonisation" & "Seed Policy"	
Mission reports are submitted	By mission

Annex 4. Terms of Reference for Consultant/PSA

Name:			
Job Title:	International Consultant Agronomist / Vegetable Breeder		
Division/Department:	REU		
Programme/Project Number:	TCP/ARM/3403		
Location:	Three weeks in Armenia		
Expected Start Date of Assignment		**Duration**	28 days in 2 missions of 2 weeks
Reports to:	***Name:*** ***Avetik Nersisyan***	***Title:***	REU Plant Production and Protection Officer

General Description of task(s) and objectives to be achieved

Under the general supervision of the regional representative for Europe and Central Asia, the direct supervision and technical guidance from the AGPM and FAO/REU Plant Production and Protection Officer and the operational guidance of the Field Programme Officer, REU, in close collaboration with the national project staff and the Ministry of Agriculture and other stakeholders , the International Consultant will be responsible for the following:

a) Analyse short term limiting factors of breeding capacity and train breeder breeders on the use of new equipment, train breeders and elaborate an action plan,
b) Check the list of equipment needed
c) Analyse the long term breeding goal and elaborate an action plan,
d) Analyse possible source for new germplasm included parents' lines to complete the portfolio of SCVMIC and elaborate an action plan.
e) Set-up a programme to safeguard indigenous vegetable crop varieties. Set-up a programme of description of the ecotype and possibly restore the varieties and elaborate an action.
f) Prepare a technical report after each mission;
g) Prepare and submit an end of assignment report.

Qualifications:

- Advanced University degree or equivalent in Plant Breeding.
- Minimum 10 years of progressively responsible working experience in agriculture development related to plant breeding seed multiplication and production technology.
- Experience in Eastern Europe is desirable.
- Fluent in English is mandatory (Russian is an asset).

key performance indicators

Expected Outputs:	Required Completion Date:
Short term breeding: Technical guidelines are prepared, workgroup with breeders, action plan is written. New source of germplasm: identification of possible source, action plan for collection. Safeguard indigenous germplasm: crops are identified, collection prepared.	
Short term breeding: debriefing in workgroup to monitor the next growing season. Follow-up of the collection of new germplasm, corrective measure if any. Long term breeding: Technical guidelines are prepared, workgroup with breeders, action plan is written. Safeguard indigenous germplasm: collection is done; action plan is prepared for restoration.	
Short term breeding: follow-up and identification of possible improvement. Long term breeding: validation of the action plan with the integration of all component (production and marketing) SCVMIC workgroup with all departments. Safeguard indigenous germplasm: part of the collection is sawn and analyse of possible action plan for safeguarding, restoration and improvement	
Mission reports are submitted	By mission

Annex 5. Terms of Reference for Consultant/PSA

Name:			
Job Title:	International Consultant Agronomist / Vegetable Seed Production and Seed Testing		
Division/Department:	REU		
Programme/Project Number:	TCP/ARM/3403		
Location:	Three weeks in Armenia		
Expected Start Date of Assignment:		**Duration:**	42 days in 2 missions of 3 weeks
Reports to:	***Name:*** ***Avetik Nersisyan***	***Title:***	REU Plant Production and Protection Officer

General Description of task(s) and objectives to be achieved

Under the general supervision of the Sub regional Coordinator for Central and Eastern Europe, the direct supervision and technical guidance from the AGPM and FAO/SEUM Plant Production and Protection Officer and the operational guidance of the Field Programme Officer, REU, in close collaboration with the national project staff and the Ministry of Agriculture and Food Industry, the International Consultant will be responsible for the following:

a) Check the list of equipment needed.
b) Set-up a department of seed production in SCVMIC and create an action plan.
c) Set-up a network of growers and create a standard contract.
d) Train the SCVMIC production department for the production of commercial seed.
e) Train the growers for seed multiplication.
a) Set-up an action plan of control of for "counterfeit" of "patented" varieties.
b) Sensitize and adapted process in VCU registration to lighten the process of registration in one year.
c) Train Seed Agency in DUS control in the process of registration in conformity with UPOV rules to prepare the UPOV membership.
d) Train Seed Agency to ISTA procedures for vegetable crops.
e) Train Seed Agency OECD seed scheme for vegetable crops seed production
f) Prepare a technical report after each mission;
g) Prepare and submit end of assignment report.

Qualifications:

- University degree or equivalent in Horticulture/Seed Technology plant .
- Minimum 10 years of progressively responsible working experience in agriculture development related to seed multiplication and production technology, seed processing and marketing, and development of private seed industry.
- Experience in Eastern Europe is desirable.
- Fluent in English is mandatory (Russian is an asset).

key performance indicators

Expected Outputs:	Required Completion Date:
The organisation of the seed department is approved by the management of SCVMIC The action plan of the implementation of the equipment is written The action plan for the establishment of growers' contract is written in connection with the market's need (marketing department). Programme for seed processing and packaging is established.	
Training staff of the seed department to use the new equipment. Programme of seed multiplication is draft	
Training of Seed Agency staff DUS / VCU / Lab controls (UPOV /ISTA / OCDE) Training of Seed Agency field inspectors Action plan for counterfeit seed, control of imported seed is drafted Workgroup on registration "Catalogue in 1 year" has draft a proposal.	
Training of Seed Agency staff DUS / VCU / Lab controls (UPOV /ISTA / OCDE) Training of Seed Agency field inspectors. Action plan for counterfeit seed, control of imported seed is approved. Amendment of regulation for registration is approved.	By mission
Training of Seed Agency staff DUS / VCU / Lab controls (UPOV /ISTA / OCDE) Action plan for counterfeit seed, control of imported seed is implemented	

Annex 6. Term of Reference for Consultant PSA

Name:	
Job Title:	International Consultant Agronomist / Vegetable Seed Marketing Specialist
Division/Department:	REU
Programme/Project Number:	TCP/ARM/3403
Location:	Three weeks in Armenia
Expected Start Date of Assignment:	**Duration:** 42 days in 3 missions of 2 weeks
Reports to: ***Name: Avetik Nersisyan***	***Title:*** REU Plant Production and Protection Officer

General Description of task(s) and objectives to be achieved

Under the general supervision of the regional representative for Europe and Central Asia, the direct supervision and technical guidance from the AGPM and FAO/REU Plant Production and Protection Officer and the operational guidance of the Field Programme Officer, REU, in close collaboration with the national project staff and the Ministry of Agriculture and other stakeholders , the International Consultant will be responsible for the following:

a) Based on a market driven approach, create a business plan for the next 3 years including sell of Reproduction 1, F1 and seedlings.
b) Set-up a new price policy with the approval of the regulatory body to sustain the activity of SCVMIC.
c) Update the SCVMIC's Website toward a more commercial development i.e. "Customers and retailers driven".
d) Set-up a network of "farmers relay" to promote the performance of the SCVMIC varieties in the market.
e) Analyse and set-up the possibility to build a retailer network for SCVMIC varieties.
f) Analyse and set-up a contract of license of "patented" varieties with seed growers with royalty payment to SCVMIC.
g) Analyse and set-up the development of seedlings activity.
h) Prepare a technical report after each mission;
i) Prepare and submit end of assignment report.

Qualifications:

- University degree or equivalent in agriculture.
- Minimum 10 years of progressively responsible working experience in agriculture development related to seed multiplication and production technology, seed processing and marketing, and development of private seed industry.
- Experience in Eastern Europe is desirable.
- Fluent in English is mandatory (Russian is an asset).

key performance indicators

Expected Outputs:	Required Completion Date:
Draft of the 3 years business plan including the new price policy including the action plan regarding connection with processors and NGO's. Draft a new design and contain for the website (benchmark with competitors) including "Communication and visibility"	September 2012
Complete the business plan. License contracts of are drafted. Validate the website developments. Network of "farmers relay" are identified and implementation is defined. Report on Analysis of a retailers' network is done	March 2013
Some license contracts of are signed. Draft the development of seedlings activity in connection with the seed production expert and production department	August 2012
Mission reports are submitted	By mission

Annex 7. Terms of Reference for Consultant/PSA

Name:	
Job Title: National Consultant, Agronomist – Seed Specialist	
Division/Department: REU	
Programme/Project Number: TCP/ARM/3403	
Location: Yerevan Armenia	
Expected Start Date of Assignment:	**Duration:** 16 Months on WAE basis
Reports to: ***Name:*** ***Avetik Nersisyan***	***Title:*** REU Plant Production and Protection Officer

General Description of task(s) and objectives to be achieved

Under the general supervision of the regional representative for Europe and Central Asia, the direct supervision and technical guidance from the AGPM and FAO/REU Plant Production and Protection Officer and the operational guidance of the Field Programme Officer, REU, in close collaboration with the national project staff and the Ministry of Agriculture, the National Project Coordinator, the National Consultant will be responsible for the following:

a) Contact national institutions and organizations in order to facilitate the smooth implementation of project activities.
b) Assist International Consultants and FAO Officers in carrying out their duties during their missions in the country.
c) Take responsibility for day to day implementation of project activities in close collaboration with NPC and LTU of the project.
d) Support international consultant in preparation of the programmes with the Scientific Centre of Vegetable Melon and Industrial Crop and the Seed Agency.
e) Participate in the preparation of training programmes and their implementation.
f) Prepare and submit to the FAO LTO Project quarterly reports describing the activities implemented, the results achieved and the problems encountered and assist in preparation of the project final report.
g) Perform other duties in the field of his/her competence if required.
h) Prepare and submit end of assignment report.

Qualifications:

- University degree in agriculture.
- Minimum 5 years of working experience in seed and planting material production and extension related activities.
- Experience in implementation of projects and trainings.
- Working knowledge in English, in Armenian (Russian is an asset)

key performance indicators

Expected Outputs:	Required Completion Date:
Project work plan is prepared, inception workshop is organised.	
Training programmes are prepared	
Quarterly report are submitted	
Work plan of the project and all the project activities are implemented in close collaboration with all the beneficiaries. International Consultants are assisted to carry out their duties during missions to the country. Workshops and trainings with different stakeholders and actors of the project is prepared and organized.	
Final report is prepared	

Annex 9. Terms of Reference of the National Project Coordinator

(Government contribution at no cost to the project)

In close collaboration with the FAO the regional representative for Europe and Central Asia / regional Europe and Central Asia, the technical and operational units concerned in FAO (AGPM, REU and national and international consultants the National Project Coordinator will coordinate and supervise the implementation of the day-to-day activities. More specifically the incumbent will:

- liaise between the relevant departments and ministries in the Government and the project staff (including the FAO consultants) to ensure the coordination and collaboration required for the implementation of the project;
- coordinate project staff to enable them to undertake the work required of the project and to ensure continuity between the work of the consultants and that of the local counterparts;
- ensure the timely provision of local inputs into the project, including infrastructure, training facilities, information, as required;
- contribute to assessing the farmers' training needs in vegetable seed production, and suggest ways to improve, as and if necessary, the staff training and transfer of technology to the farmers;
- contribute to the revision of the lists of equipment and materials required for the implementation of the activities;
- organize the implementation of, and participate in, the training programme, assist with the selection of candidates, teaching staff, curriculum development and provide support to the training team responsible of the training activities;
- assist the consultants and the FAO officer to identify future technical assistance required;
- produce quarterly technical progress reports Preparation of draft Terminal Statement.
- Qualifications:
- University degree in agriculture or related subject with at least seven-year experience seed production and/or genetic resources conservation.
- Language: Armenian and Russian.

Annex 10. FAO Technical Support Services

Vegetable Breeding and Seed Production Specialist AGPM/REU

Duration: One month in five missions

Under the overall supervision of the FAO Regional Representative for Europe and Central Asia, and the technical guidance of the Director, Plant Production and Protection Division (AGP), the technical supervision of the Team Leader for plant genetic resources and seeds, and in collaboration with the National Project Coordinator and counterparts, the backstopping officer will undertake five missions of six days each.

During the first mission, the technical officer will:

a) meet Government counterparts and discuss the implementation process of the project;
b) discuss and coordinate the different project activities;
c) provide technical briefing to the international and national consultants;
d) assist national project coordinator in preparation of the project work plan;
e) support the organization of and participate in the Inception Workshop;
f) visit the SCVMIC involved in the project and provide technical advice.

During the second mission, the technical officer will provide technical advice and be involved in capacity building activities of the project.

During the third mission, the technical officer will:

a) discuss with government counterpart and project staff and assess overall progress against the project workplan;
b) provide technical advice as required;
c) assist in organization of and make contributions to workshops.

During the fourth mission, the technical officer will:

a) evaluate the work done by the consultants;
b) formulate recommendations and provide technical advice as required on vegetable seed production;
c) review the training programme and identify eventual technical gaps;
d) participate in the implementation of the training programme.

During the fifth and final mission, the technical officer will participate in the final workshop and will provide his advice to the national counterparts for sustainable continuation of the vegetable seed production. Recommendation should also be given to the establishment of "National Vegetable Union", between the different actors of the chain, in order to develop a friendly framework for the development of the vegetable supply chain.

The LTO will review mission findings with the international consultant and counterparts and discuss the overall achievement of the project, lessons learned and develop major recommendations. The LTO will prepare technical mission reports and finalize the project terminal statement.

Desk work AGPMG: 20 days

- Review the project document
- Review international consultants applications and participate in the selection process
- Review and provide technical clearance for the consultant reports
- Review and contribute to technical guidelines

Annex 11 – List of Materials, Supplies and equipment

Provisional list of non expandable equipment			
Nr.	Non expandable equipment	Amount in DRAM	Amount in US$
1	Training material	1 500 000	3 927
2	Lab non expandable equipment	1 500 000	3 927
3	Office equipment	1 910 000	5 000
4	Miscellaneous items	2 730 000	7 147
	Total amount	**5 730 000**	**15 000**
Provisional list of expandable materials and supplies			
Nr.	Equipments	Amount in DRAM	Amount in US$
1	Sorting: dryer, cleaners, gradings	18 000 000	47 120
2	Granulation	4 900 000	12 827
3	Treatment	5 400 000	14 136
4	Packaging	6 500 000	17 016
5	Breeding equipment	5 000 000	13 089
6	Greenhouse "breeding adaptations"	9 000 000	23 560
7	Seedlings processing (Hybrid and Breeding)	9 000 000	23 560
9	Miscellaneous (diseases protection)	3 320 000	8 691
	Total amount	**61 120 000**	**160 000**
	US$ / DRAM (Dec 2011)	382	

The technical specification will be defined during the inception report.

Annex 12 - Vegetable production Arm Stat

Area under vegetable and melon crops and yield 2008-2010						
Crops	Planted Area, thousand hectares			Yield per hectare, tons		
	2008	2009	2010	2008	2009	2010
Cabbage	3 668	3 376	3 535	35.09	36.84	34.96
Cauliflower	249	306	315	24.04	28.02	31.42
Cucumber	2 339	2 549	2 241	29.09	27.88	24.66
Tomato	6 257	6 231	6 521	44.09	43.86	38.24
Beet	643	693	717	20.69	21.88	22.23
Carrot	970	913	941	27.80	25.64	21.72
Onion	2 487	2 085	1 871	24.71	24.18	20.48
Garlic	882	866	898	10.41	10.70	9.81
Green pea	76	72	68	3.74	4.65	2.40
Other vegetables	6 829	7 056	6 610	28.48	30.43	26.90
Melon crops	5 446	6 163	4 476	33.45	35.06	29.60
Total	**29 846**	**30 310**	**28 193**	**32.14**	**32.71**	**29.42**
Cultivated area and yield of vegetable crops, in marses without Melon crops						
Marzes	Area, ha			Yield, t/ha		
(districts)	2008	2009	2010	2008	2009	2010
Yerevan city	545	519	303	14.88	11.54	12.28
Aragacotn	885	802	804	28.99	31.59	27.47
Ararat	6 021	6 181	6 420	40.18	42.04	41.27
Armavir	8 453	8 502	8 154	39.78	39.14	31.52
Gegarkunik	2 080	1 658	1 670	27.17	30.95	30.88
Lori	1 386	1 384	1 297	13.11	13.30	9.73
Kotayk	1 344	1 338	1 192	22.63	20.62	17.63
Shirak	1 212	1 216	1 283	23.84	23.86	22.05
Syunik	929	953	965	19.92	18.32	15.69
Vaots dzor	456	399	432	13.53	15.68	14.93
Tavush	899	961	938	9.24	8.71	7.74
Total in Armenia:	**24 210**	**23 913**	**23 458**			

Annex 13 - FAO Stat. 2009

Rank	Commodity	Production (Int $1000)	Flag	Production (MT)	Flag
1	Cow milk, whole, fresh	175 675	*	609 000	
2	Indigenous Cattle Meat	133 879	*	49 559	Fc
3	Grapes	119 267	*	208 649	
4	Tomatoes	102 954	*	278 582	
5	Potatoes	77 985	*	593 551	
6	Vegetables fresh nes	47 447	*	251 785	
7	Apples	35 552	*	110 000	*
8	Plums and sloes	31 032	*	52 000	*
9	Peaches and nectarines	29 943	*	55 000	*
10	Hen eggs, in shell	29 029	*	35 000	*
11	Wheat	26 587	*	206 505	
12	Indigenous Sheep Meat	22 994	*	8 445	Fc
13	Cherries	19 069	*	15 000	*
14	Pears	18 806	*	46 000	*
15	Cabbages and other brassicas	16 998	*	115 888	
16	Watermelons	16 644	*	216 101	
17	Cucumbers and gherkins	16 071	*	80 944	
18	Sheep milk, whole, fresh	15 382	*	39 500	
19	Apricots	14 907	*	27 000	*
20	Indigenous Pigmeat	13 689	*	8 905	Fc
* :	Unofficial figure				
[ ]:	Official data				
Fc:	Calculated data				

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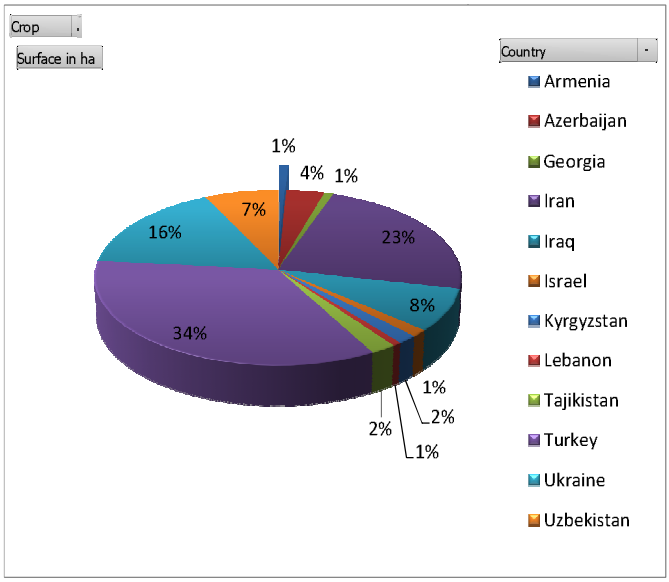
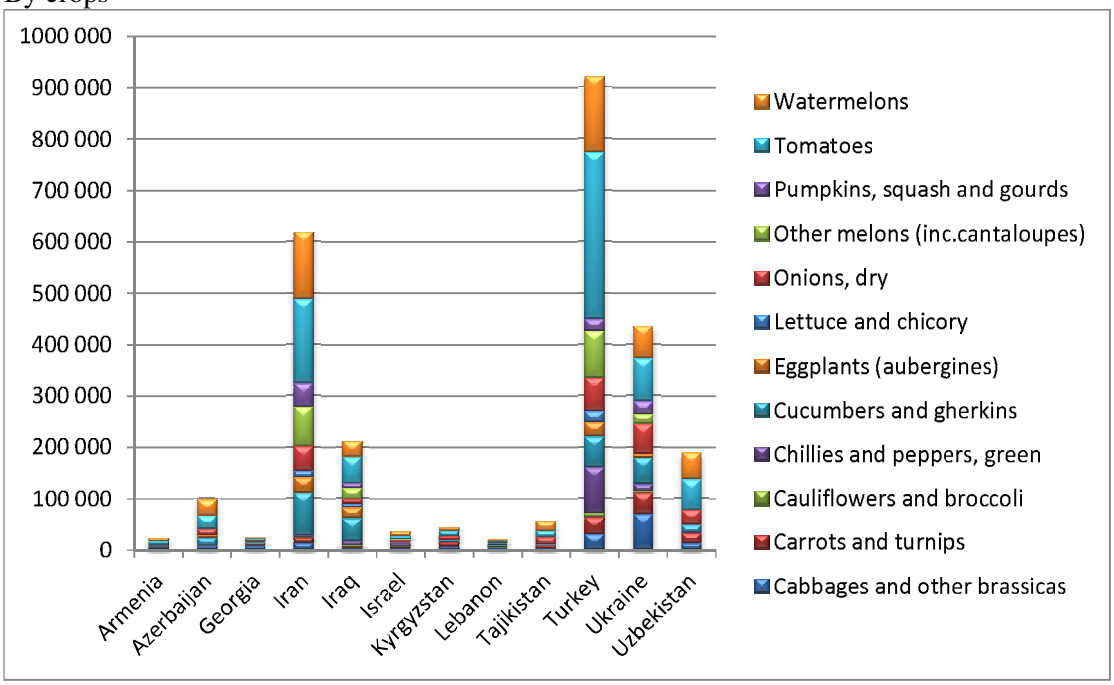
Annex 14 – Regional vegetable production

Country	Surface in ha
Armenia	21 317
Azerbaijan	96 967
Georgia	23 500
Iran	618 045
Iraq	211 338
Israel	35 140
Kyrgyzstan	42 146
Lebanon	19 102
Tajikistan	55 200
Turkey	920 664
Ukraine	435 400
Uzbekistan	188 600
Total	**2 667 419**



By crops



FAO Source

Annex 15 – List of crops

Latin name	English name	Armenian
Fine vegetable seed crops[3]		
Asparagus officinalis (L.)	Asparagus	
Brassica oleracea var. capitata	Cabbages	
Daucus carota (L.)	Carrot	
Brassica oleracea *var. botrytis*	Broccoli and Cauliflower	
Cucumis sativus	Cucumber and gherkins	
Solanum melongena	Eggplants (aubergines)	
Lactuca sativa	Lettuce	
	Melon	
Allium cepa (L.)	Onion	
Capsicum annuum	Pepper	
Cucurbita maxima Duchesne	Pumpkin	
Raphanus sativus (L.)	Radish	
Beta vulgaris **var. rubra (L.)**	Red beet	
Zea mays (L.)	Sweet corn and popcorn	
Lycopersicon esculentum	Tomato	
Brassica rapa **var. rapa (L.)Thell**	Turnip	
Citrullus lanatus (Thumb) Mansf.	Water melon	
Others vegetable seed crops		
Phaseolus vulgaris **L.**	Bean	
Allium sativum **L.**	Garlic	
Pisum sativum **L.**	Green Pea	

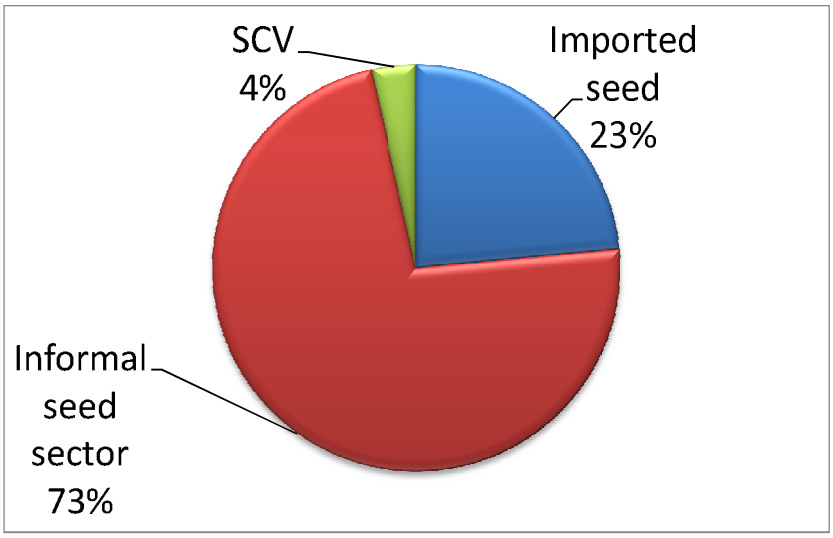
[3] Crops with a law level of seed quantity per hectare (Less than 5 kg)

Annex 16 – Assessment of the markets

Crops	Ha		Seeds in kg market needs		Informal seed sector		Commercial seed	Market value in Dram for certified
	2010	%	Min	Max	in %	kg (Max)	kg (Min)	Min
Beet	717	3%	717	1 434	50%	717	359	7 170 000
Cabbage	3 535	13%	707	1 061	50%	530	354	7 070 000
Carrot	941	3%	941	1 882	65%	1 223	329	6 587 000
Cauliflower	315	1%	95	110	50%	55	47	945 000
Cucumber	2 241	8%	282	376	20%	75	226	4 516 800
Melon crops	4 476	16%	661	3 305	50%	1 653	331	6 610 000
Onion	1 871	7%	9 355	13 097	80%	10 478	1 871	18 710 000
Other vegetables	6 610	24%	1 983	3 966	50%	1 983	992	19 830 000
Tomato	6 521	24%	6 300	7 875	50%	3 938	3 150	157 500 000
Total	**27 227**	**100%**	**21 041**	**33 106**	**62%**	**20 652**	**7 657**	**228 938 800**
SCV Market		80%		90%			**1 000**	207 166 800

Source Arm Stat – workshop contributors Dec 2011.

The data concerning the informal seed sector were consolidated from the assumption of the working group (December 7th 2011 – Working group Erevan) A market survey could verify these assumptions for more precision.



Annex 17 - LOGICAL FRAMEWORK MATRIX

Objectives	Indicators/Target	Data sources	Assumptions
Goal/Result/ Impact:			
1. The project will contribute to the sustainable development of Armenian vegetable production based on local seed production.	1. Increases in average yields for the main vegetable crops by producing new varieties of high quality seeds. 2. Number of farmers involved in vegetable seed production and vegetable growers.	1. National statistics on agriculture. 2. List of accredited vegetable seed producers managed by the Ministry of Agriculture.	1. Favorable government policy in place. 2. Existing varieties and adopted new technologies for vegetable seed production
Outcome:			
Project will provide a basis for the development of viable and sustainable certified seed production, based on local germplasm for the vegetable sector	Quantity of certified seeds produced at the national level. The new varieties of high quality vegetable seeds produced.	1. Official data of the seed Agency. The Ministry of Agriculture reports 2. FAO final report	1. The mentioned institutions are interested in their capacities' improvement. 2. National Seed Association enthusiastic in vegetable seed market chain development.
Outputs:			
1. Seed law and regulations are analyzed and/or amended	A national seed policy reviewed and enforced by the government.	Ministry of Agriculture(MoA)	National seed stakeholders will agree to the seed law enforcement under the leadership of MoA
2. The capacity of seed agency to implement international rules for vegetable seed production developed	Improved capacities of the seed Agency	Government and FAO Reports	Favorable conditions and readiness of the Agency to improve the infrastructure
3. The capacity of the SCVMIC to produce and market new varieties of high quality seeds well adapted to Armenian conditions	Improved technical capacities of the SCVMIC. New varieties of high quality vegetable seeds produced	Government and FAO Reports	The staff of SCVMIC is interested in the improvement of their capacities

Annex 18 - TCP General Provisions

1. The achievement of the objectives set by the project shall be the joint responsibility of the government and FAO.

2. As part of its contribution to the project, the government shall agree to make available the requisite number of qualified national personnel and the buildings, training facilities, equipment, transport and other local services necessary for the implementation of the project.

3. The government shall assign authority for the project within the country to a government agency, which shall constitute the focal point for cooperation with FAO in the execution of the project, and which shall exercise the government's responsibility in this regard.

4. Project equipment, materials and supplies provided out of Technical Cooperation Programme funds shall normally become the property of the government immediately upon their arrival in the country, unless otherwise specified in the agreement. The government shall ensure that such equipment, materials and supplies are at all times available for use of the project and that adequate provision is made for their safe custody, maintenance and insurance. Vehicles remain the property of FAO, unless otherwise specified in the agreement.

5. Subject to any security provisions in force, the government shall furnish to FAO and to its personnel on the project, if any, such relevant reports, tapes, records and other data as may be required for the execution of the project.

6. The selection of FAO project personnel, of other persons performing services on behalf of FAO in connection with the project, and of trainees, shall be undertaken by FAO, after consultation with the government. In the interest of rapid project implementation, the government shall undertake to expedite to the maximum degree possible its procedures for the clearance of FAO personnel and other persons performing services on behalf of FAO and to dispense with, wherever possible, clearance for short-term FAO personnel.

7. The government shall apply to FAO, its property, funds and assets, and to its staff, the provisions of the Convention on the Privileges and Immunities of the Specialized Agencies. Except as otherwise agreed by the government and FAO in the Project Document, the government shall grant the same privileges and immunities contained in the Convention to all other persons performing services on behalf of FAO in connection with the execution of the project.

8. With a view to the rapid and efficient execution of the project, the government shall grant to FAO, its staff, and to all other persons performing services on behalf of FAO, the necessary facilities including:

   i) the prompt issuance, free of charge, of any visas or permits required;

ii) any permits necessary for the importation and, where appropriate, the subsequent exportation, of equipment, materials and supplies required for use in connection with the project and exemption from the payment of all customs duties or other levies or charges relating to such importation or exportation;

iii) exemption from the payment of any sales or other tax on local purchases of equipment, materials and supplies for use in connection with the project;

iv) payment of transport costs within the country, including handling, storage, insurance and all other related costs, with respect to equipment, materials or supplies for use in connection with the project;

v) the most favourable legal rate of exchange;

vi) assistance to FAO staff, to the extent possible, in obtaining suitable accommodation;

vii) any permits necessary for the importation of property belonging to and intended for the personal use of FAO staff or of other persons performing services on behalf of FAO, and for the subsequent exportation of such property;

viii) prompt customs clearance of the equipment, materials, supplies and property referred to in subparagraphs (ii) and (vii) above.

9. The Government shall appoint a National Project Coordinator (NPC), as envisaged in the Project Document, to carry out the functions and activities specified in the agreement. In some cases, it may be necessary for FAO to request, in writing, the NPC to incur specific commitments or obligations or to make specific payments on behalf of FAO. In such cases, the project may advance to the NPC project monies, up to the amounts allowed by and in accordance with current FAO rules and regulations. In this event the Government agrees to indemnify FAO and to make good to it, any losses that may arise from any irregularity in the maintenance of the advanced FAO's monies on the part of the NPC.

10. The government shall deal with any claim which may be brought by third parties against FAO or its staff, or against any person performing services on behalf of FAO, and shall hold them harmless in respect of any claim or liability arising in connection with the project, unless the government and FAO should agree that the claim or liability arises from gross negligence or wilful misconduct on the part of the individuals mentioned above.

11. The persons performing services on behalf of FAO, referred to in paragraphs 6, 7, 8 and 10, shall include any organization, firm or other entity, which FAO may designate to take part in the execution of the project.