1. Basic information

1.1. CRIS Number: 2004/006-270.06.01
    Twinning EE04-IB-AG-01

1.2. Title: Upgrading of Functional Capability on Testing of Harmful Organisms in Estonia

1.3. Sector: Agriculture

1.4. Location: Estonia

2. Objectives:

2.1. Overall objective:
    Integrated Community phyto-sanitary system ensured by the upgrading of functional capability on testing of harmful organisms in Estonia.

2.2. Project purpose:
    The capacity of ARC raised to test and diagnose plants and plant products in order to ensure official measures to protect Member States against introduction and spread of harmful organisms in the Community in compliance with EU requirements (directives 2002/89/EC, 2000/29/EC, 93/85/EC, 69/464/EC, 69/465/EC, 98/57/EC).

2.3. Justification
    Commission Comprehensive Monitoring Report on Estonia’s Preparations for Membership, November 2003 Chapter 7: Agriculture:
    “In the field of phyto-sanitary legislation (harmful organisms, quality of seeds and propagating material, and plant protection products), transposition has been largely achieved but amendments are still required. Legislation in the areas of harmful organisms and quality of seeds and propagating material largely remains to be implemented. In particular, the process of selecting and upgrading border inspection posts that will operate after accession has to be completed. The plant passport system has been introduced at a national level for some commodities. The main plant protection products directives have been transposed but, for the most part, not yet implemented. However, the monitoring programme for residues is in place.”

    Monitoring Report for the Commission Review – Estonia from June, 2003. Chapter 7: /…/ Attention must be paid to setting up the instruments in phytosanitary legislation /…/

    Certainly these 2 important statements will enhance attention to the need for capable control system with high effective laboratory service.

    Additionally, there are 2 noticeable International Missions reporting the demands for the Estonian plant health control and phytosanitary services:
DG (SANCO)/8638/2002 Final Report of a Mission carried out in Estonia from 10.06.2002 to 14.06.2002 in order to assess the plant health control system for harmful organisms and the marketing and use of plant protection products


The DG (SANCO) Mission stated:

- **Plant Health Laboratory specialists should be encouraged to also become experts in quarantine**

  
  As well as having laboratory specialists highly qualified and proficient in their specific working areas, it is essential these same specialists have every opportunity to also develop a specialization in quarantine matters...

- **The Plant Health Laboratory should seek accreditation at the earliest opportunity**

  
  The Plant Health Laboratory, once created and working, should promptly move toward seeking international accreditation to ensure diagnosis and assessments undertaken by the laboratory have credibility. Within Europe, attempts should be made to organize and become part of ring test procedures in order to improve standards within the laboratory, gain experience and achieve recognition...

FAO Commission concluded that the main weaknesses based on PCE (Phytosanitary Capacity Evaluation) to be addressed include:

- **Need to further develop the laboratory services and their insertion in the plant health system.**

  The potential capacity for pest diagnostic could be greatly incremented. The continuous training of the laboratory staff must be considered a priority. Permanent connections with other laboratories and participation in programs verifying the level of confidence of results is of primary important.

The strategies and efforts of ARC for the implementation and strengthening of administrative capacity of the Estonian plant health system are refereed in NPAA 2002-2003:

- Procurement of laboratory analyses
- Upgrading of the plant health laboratory of ARC (procurement of additional equipment). Construction of phytotron for biological testing and greenhouse for analyzing potato viruses
- ARC – development of quality manual for accreditation of the lab
- ARC – advanced training of laboratory staff

The listed positions are directly linked, balanced and essential for the implementation of the acquis.
3. Description

3.1 Background and justification

Obligations under the acquis

The Republic of Estonia having the status of EU member state since 01 May 2004 is a signatory of the International Plant Protection Convention (IPPC) and is subject to the obligations of the International Standards for Phytosanitary Measures (ISPMs).

The central directive covering the EU Plant Health legislation is Council Directive 2000/29/EC. This directive deals with the protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community.

The Directive 2000/29/EC says that the quarantine testing shall be executed at a site provided with appropriate facilities sufficient to contain harmful organisms.

Related to the Directive 2000/29/EC the control measures of EC plant health legislation to be implemented are:

- Council Directive 2002/89/EC amending Directive 2000/29/EC on protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community

The official list of Estonian harmful organisms is published in RoG 300 (Government Regulation No 300 – 13 September 2000 “List of harmful organisms (RT 12000, 74, 465) (specifying pests which import is banned, pests which import with plants, plant products or other objects is banned and pests concerning which plants, plant products or other objects are subjected to mandatory checks). The list is in principal identical with EU Directive 2000/29/EC.

Control measures which are appropriate to the harmful organisms that occur on plants, plant products and other objects are defined in the Government Decree No 26 (17th Jan. 2001).

The harmful organisms regulated (and consequently, addressed to be analyzed by ARC) are:

- Potato cyst nematodes, Globodera rostochiensis and Globodera pallida (nematological testing)
- Potato brown rot, Ralstonia solanacearum (bacteriological testing)
- Potato ring rot, Clavibacter michiganensis subsp. Sepedonicus (bacteriological testing)
- Potato wart disease, Synchytrium endobioticum (mycological testing)
- Fire blight, Erwinia amylovora (bacteriological testing)
- Strawberry red stele root rot, Phytophthora fragariae (mycological testing)
- Potato spindle tuber viroid – PSTV and tomato spotted wilt virus TSWV (virological testing)
• Harmful insects and mites from greenhouse and outdoor plants (entomological testing).

Obviously, all 5 diagnostic sectors in Plant Health Laboratory of ARC (bacteriology, virology, nematology, entomology, mycology) are involved in tests.

E.g. Council Directive 93/85/EEC, Annex I describing the method for the detection and diagnosis of the ring rot bacterium \textit{Clavibacter michiganensis} (Smith) Davis et al in batches of potato tubers requirement is: \ldots the eggplant test is required for all samples considered as potentially contaminated; eggplants should be grown in a greenhouse with the following environmental conditions…\ldots/.

Council Directive 98/57/EC on the control of brown rot bacterium \textit{Ralstonia solanacearum} (Smith) Yabuuchi et al, Annex II declares \ldots Incubate for up (for pathogenicity test) to two weeks at 22 °C – 28 °C and high relative humidity with daily watering. Observe for wilting and/or epinasty, chlorosis, stunting; grow the test plants further (for bio-assay test) for up to four weeks at 22 °C – 28 °C and high relative humidity…\ldots/.

The EU CABRI demonstration project (ERBBIO4-CT96-0231) provides guidelines on the procedures for preliminary quality control for plant cell viruses (PCV) with comprehensive list of greenhouse and PCV references. According to PVC/1998/3.03 \ldots/ for in situ maintenance of viruses in living plants, a good plant management consisting of thorough examination of the plant growth, plant nutrition and plant protection, has to be followed. Due to the usually long growth period the phytosanitary status of the plants needs to be examined in the greenhouse \ldots/.

ARC cannot follow the recommendations at this stage. Working with harmful organisms require certain facilities, safeguards and procedures for work with high risk plant materials, pests and pathogens associated with the import of plant material and cultures of pathogens. EC Directive 95/44 establishes the conditions. More detailed instructions for the facilities and working procedures are given in \textit{Kahn, R.P. and Mathur, S.B. Containment Facilities and Safeguards for Exotic Plant Pathogens and Pests}. \textit{APS Press. The American Phytopathological Society, St. Paul, Minnesota, USA.}

An obligatory need for work with high risk group plants and plant material is to have quarantine area or greenhouse. Some characteristics of the quarantine greenhouse are: isolation from other facilities, environmental conditions in the compartments are computer-controlled, disinfection or disinfestations possible without disturbing trials in other compartments, entering air is filtered through insect filters, potentially contaminated material is transported to an incinerator, waste water treatment, compartments with forced air cooling, regulation of air moisture, double-doors entries.

Currently, ARC is absolutely lacking an efficiently operating greenhouse with (i) size of 150 m$^2$ in minimum; (ii) central heating system, (iii) PC operated microclimate regulation and irrigation & fertilization system to be in a position to fully implement the above requirements. Also, the PHL does not have a quality system in place and it is not accredited. There is a need therefore, to build up a proper quality assurance (QA) system that should guarantee the quality of the diagnostics performed.

Moreover, Estonian Plant Protection Act, passed on March 15, 2000 and entered into force on April, 2000 referees:
§90 Control samples and analysis thereof

(2) Analyses shall be carried out in the laboratories, which are accredited according to the international requirements /…/.

According to current international requirements the PHL should work in compliance with the principles of ISO Standard 17025 as formulated in the report of EC Food and Veterinary Office inspection mission (DG(SANCO) 8638/2002) to Estonia:

/…/ the process of upgrading of the ARC laboratories has to be completed; extra training courses should be considered for staff/…/.

Institutional framework -

In 1998 a new structure for agricultural inspections and control measures was established. Under the authority of Ministry of Agriculture, two parallel organizations were founded, the Plant Production Inspectorate (PPI) and the Agricultural Research Centre (ARC). The PPI is categorized as governmental organization, while ARC is a state organization. Both organizations have own director general, appointed by Ministry of Agriculture. Both have administrative units.

PPI is responsible for enforcement of State regulations concerning the inspections and supervisions of plant health, certification and control of seeds and propagation material, plant variety protection, feeding stuffs, fertilizers, plant protection products and organic farming, quality requirements of fruits and vegetables.

PPI is divided into 15 departments, each for specified tasks. Of these following, the Plant Health Department (PHD) is the main structural unit of PPI relevant in sense of plant health.

The main duty of PHD is to plan and organize the plant health supervision, monitor harmful organisms (HO), make risk analyses and develop measures to prevent or limit the spreading of HO’s. The plan is presented by PPI to be discussed with ARC and included in the annual agreement between PPI and ARC. PHD is also responsible for organizing field inspections, sampling and issuing certificates and official documents needed in marketing of certified propagating material.

ARC has been tasked for:

o performing of laboratory analyses and field trials required for the state surveillance
o monitoring of agricultural environmental effects
o monitoring of food safety and other types of monitoring requested

ARC has 6 laboratories for carrying out the various laboratory tests and analyses on plant origin products. The plant health laboratory (PHL) – the only structural unit of ARC linked to the Estonian Plant Health System - is responsible for the laboratory identification of pests and plant diseases.

The samples taken by PPI inspectors are sent to PHL with information needed at the laboratory, but without any further details of the source of sampling, place of production, name of producer or company involved. When samples are received they are allocated code number. The results are
transferred electronically to the database of PPI via intranet. The computerized information retrieval system is in stage of practical testing since 01 May 2003.

The overall structural units of Ministry of Agriculture, PPI and ARC are shown in Annexes 4, 5 and 6.

**State of PHL**

PHL staff is composed by:

- Deputy Head of the laboratory – agronomist, graduated from Agricultural Institute in St-Petersburg
- Chief specialists (7) – 4 biologists, 1 agronomists, 1 food technologist graduated from Technical University and 1 agronomist graduated from Technological College
- Specialist (1) – graduated from Technological College and continues studies at Agricultural University
- Technician (1)

Table 1 shows the number of samples, type of test and results processed in 2000, 2001 and 2002 by PHL.

<table>
<thead>
<tr>
<th>TEST</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entomology</td>
<td>155</td>
<td>207</td>
<td>335</td>
<td>In 2002: <em>Liriomyza bryoniae</em>-17 posit-results; <em>Liriomyza huidobrensis</em> -1 Frankliniella occ.-3; <em>Rhizoglyhus echinopus</em>-5; <em>Tarsonemus fragarie</em>-11.</td>
</tr>
<tr>
<td>Nematology</td>
<td>1659</td>
<td>1476</td>
<td>2516</td>
<td>In 2000: PCN-59 positive results</td>
</tr>
<tr>
<td>PCN</td>
<td>1456</td>
<td>1202</td>
<td>1806</td>
<td>In 2001: PCN-60 positive results</td>
</tr>
<tr>
<td>Other</td>
<td>195</td>
<td>274</td>
<td>710</td>
<td>In 2002: PCN-26 positive results</td>
</tr>
<tr>
<td>Bacteriology</td>
<td>382</td>
<td>1012</td>
<td>1276</td>
<td>In 2000 all samples were negative In 2002: 53 samples was <em>C.m.s</em> posit.</td>
</tr>
<tr>
<td><em>C.m.s and R.s</em></td>
<td>122</td>
<td>670</td>
<td>670</td>
<td></td>
</tr>
<tr>
<td>Erwinia amylovora</td>
<td>260</td>
<td>342</td>
<td>331</td>
<td>In 2002: viruses X-5%, Y-73%, A-28%, S-6%, M-22% and PLRV-7% were positive of analyzed samples</td>
</tr>
<tr>
<td>Virology</td>
<td>36</td>
<td>36</td>
<td>211</td>
<td></td>
</tr>
</tbody>
</table>

Laboratory staff has been trained in modern identification methods in the following courses:

- 1 person, special course on diagnosis of plant pathogenic fungi, nematodes, mites and insects of quarantine importance (1997, Danish Plant Directorate, Copenhagen)
- 1 person, special course on diagnosis of plant pathogenic virus and bacteria of quarantine importance (1997, Danish Plant Directorate, Copenhagen)
- 3 persons, Phare training course (1999, Wündsdorf&Frankfurt-Oder, Germany)
- 2 persons, training on application of IFA and ELISA methods for the detection of harmful bacteria of potato (2000, Riga, Latvia).
- 7 persons, EU Twinning course (2001, Rostock, Germany)
- 4 persons, introduction to identification of harmful nematodes (2002, Finland)
- 3 persons, training on potato mass viral tests (2002, Gültzow, Germany)
- 3 persons, training course in NAK and NAK Tuinbow laboratories. Dutch general inspection service for agricultural seed and seed potatoes (2003, Emmeloord & Roelosfarendsvens, Holland)
- 2 persons, training course within the Danish cooperation project “EU Regulations for Indexing Nuclear Stock Potato Plants for Quarantine Pathogens in Estonia, Latvia and Lithuania (2003, the Danish Institute of Agricultural Sciences, Flakkebjerg, Denmark)
- 1 person, individual training on identification of harmful greenhouse insects and mite. (2003 December, Central Science Laboratory, York, UK)

Identification of gaps

1. Institution Building

Regardless of the well trained staff, PHL is not officially accredited. Neither is there Good Laboratory Practice-manual in use. The results of the laboratory analyses or pest identification have never been challenged by other countries, importers and companies.

PHL does not have regular contacts with experts in other countries. Recently, the first specialty contacts were established with the Danish Institute of Agricultural Sciences to be acquired with modern techniques of identification of common potato viruses and PSTV. Neither PHL has had contacts with EPPO’s expert groups or panels developing new identification methods. Contacts with the national universities and regional research institutes are very weak due to their missing knowledge on Quality Management in phytosanitary. It is urgently needed to build up permanent contacts and steady network for collaboration with plant health laboratories in EU countries.

Permanent connections with other laboratories and participation in programs verifying the level of confidence of results is of primary importance. The continuous training of the laboratory staff must be considered a priority. Modern diagnostic techniques requires qualified experts and laboratory assistant, who shall have continuous contact with other laboratories and possibilities to attend high level training in special items.

Therefore, in order to fulfill the obligatory demands based on EU directive 2000/29/EC:

- Requirements for monitoring to ensure safety of processes
- Requirements for surveys to detect organisms
- Diagnosis according to adopted quality procedures and international standards
- Communication and notification EU/EPPO capabilities
- Reporting and evaluation procedures,

regular relationships with professional organizations in Community are highly needed with contribution to IB via implementation of quality assurance principles and compulsory accreditation of the major testing methods. This is to ensure the ring test procedures.
Proposed project
The following tasks supervised by RTA should be helpful for solving the identified weaknesses:

- analyzing the overall situation in the field of quarantine testing
- making proposals for updating the laboratory procedures
- analyzing and evaluating of the national surveillance programs
- development of training plan for the ARC staff
- preparation of indicative measures (content) for the quality assurance manual
- developing the quality assurance principles for quarantine testing in ARC
- assessment of partnership for the ring test procedures
- preparation of manual for monitoring and evaluation of implementation of Community quarantine test legislation

The additional training needs emerge because of continuous development of different methods in pest diagnostics which requires the research scientists to be steadily informed of new methods and to have the knowledge of using the newest equipment to follow the detection procedures.

2. Infrastructure and equipment

PHL has been rebuilt by the Estonian government and has been very well equipped by a Phare project in 2001 and 2002 to conduct analysis in the areas of entomology, mycology, micro- and molecular biology, electrophoresis and nematology. PHL has new Leitz high quality microscope for nematode identification, ELISA and PCR equipments, a Dutch MEKU-centrifuge for separating nematode cysts from soil, several new laminar-cupboards, IF-microscope and darkroom for IF-analyses, new centrifuges and other equipments necessary for identification of plants and pest diseases. By FAO supporting funds, 2 new stereo microscopes, 1 IEF Cell and 1 ELISA plates washing machine were purchased to PHL.

For carrying out the bio-tests and growing samples of certified seed potatoes one small room (15 m²) and bigger renovated room (90 m²) are being currently used. There is neither automatic control for temperature and humidity nor air circulation system. The rooms do not allow carrying out the bio-tests for quarantine bacteria of potato. Therefore /…/ the survey activity on ware potatoes is not adequate, especially for a country where ring rot occurs /…/ as stated by DG (SANCO)/8638/2002 mission.

Estonian-German Twinning Project No. ES98/IB/AG/01-3 proposed /…/ that several phytotron areas should be set up, each having a climate which can be controlled separately and demarcated quarantine areas (minimum of four: 2 bacteriology, 1 virology, 1 nematology/mycology) /…/.

Besides the bacteriological needs PHL lacks of functionally operating greenhouse capacities for the tests of viruses and virus-like organisms. Commission Directive 97/46/EC of 25 July 1997 amending Directive 95/44/EC establishing the conditions under which certain harmful organisms may be introduced prescribes the rules of biological testing which ARC cannot currently follow.

There is already one greenhouse (more precise word is phytotron) in Estonia built up from a former central heating spare rooms (2) by a rather primitive and simple technical solution having no control and regulation for temperature, humidity, irrigation and fertilization. The PHL carrying out services to the national PPI is currently suffering from the need of additional space and missing of local heating, watering, shading, automatic transport systems and computer
climate control. The existing premise satisfies only the basic demands for pre-growing of potatoes in common virus testing, thus no harmful organisms can be tested in above mentioned conditions.

Proceeding from the above, a high functional efficiently operating greenhouse should have (i) a size of 150 m² in minimum with 4 autonomous sections; (ii) central heating system; (iii) PC operated microclimate regulation and irrigation; (iv) PC operated fertilization system.

TF Feasibility Study on Functional Capability for Testing of Harmful Organisms in Estonia (PPF Phase 2) was carried out in the period of February 23rd – 1st March 2004 by Dutch experts Hans van Riel and Allard Andela. The needs for training, equipment, facilities and project organization for the upgrading of the functional capability on testing of harmful organisms in Estonia were analyzed. This included an overview with relation to a more integrated phytosanitary system.

Based on the findings and requirements of the ToR the performed SWOT analysis resulted in fundamental conclusions and descriptions of the requested needs for the training, laboratory equipment, quarantine greenhouse and additional literature (Chapters 4, 5, 6, 7 respectively). Extra chapters are dealing with the Requirements not mentioned in the ToR (Chapter 8); Institutional development of ARC (Chapter 9); Suggested planning of the implementation period (Chapter 10).

**SWOT analysis**

<table>
<thead>
<tr>
<th>Strong points</th>
<th>Weak points</th>
</tr>
</thead>
<tbody>
<tr>
<td>New building with ample space</td>
<td>No safety measures at entrance of PHL</td>
</tr>
<tr>
<td>Equipment kept clean and in good working conditions</td>
<td>No cooled storage available</td>
</tr>
<tr>
<td></td>
<td>No quarantine greenhouse available</td>
</tr>
<tr>
<td></td>
<td>Some equipment not available</td>
</tr>
<tr>
<td>Communicative staff capable of expanding capacities and capabilities</td>
<td>No access to international scientific journals</td>
</tr>
<tr>
<td></td>
<td>Some handbooks not available</td>
</tr>
<tr>
<td></td>
<td>Understaffing</td>
</tr>
<tr>
<td></td>
<td>Work restricted to identifications only.</td>
</tr>
<tr>
<td></td>
<td>Poor opportunity for self-study</td>
</tr>
<tr>
<td>Staff suited for its diagnostic task</td>
<td>Some essential skills has to be improved</td>
</tr>
<tr>
<td></td>
<td>Poor cooperation within the PHS</td>
</tr>
<tr>
<td>Willing to introduce a QA system</td>
<td>Understaffing will hamper the introduction of QA.</td>
</tr>
<tr>
<td></td>
<td>Estonian Accreditation Centre not familiar with the plant health subject.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to international information</td>
<td>Lack of scientific literature, especially scientific journals and no funds available for subscriptions.</td>
</tr>
<tr>
<td>International networking</td>
<td>Narrow task description hampers information exchange</td>
</tr>
<tr>
<td>EU financed programmes</td>
<td>Low efficiency as result of understaffing of PHL</td>
</tr>
<tr>
<td>Upgrading of working protocols</td>
<td>Low efficiency as result of lack of organisational integration between PHS institutes.</td>
</tr>
<tr>
<td></td>
<td>Understaffing of PHL</td>
</tr>
</tbody>
</table>
Main conclusions:

- The services requested by the ToR could be approached in a very positive manner and the consultant has listed the needed requirements, including specifications for Technical Assistance, training, equipment and facilities.
- It is suggested to extend the planning period from 1.5 to 2 years.
- There is a clear risk that without additional human resources measures, staffing problems will occur, narrow organization of the PHS and lack of especially scientific information could hamper the efficiency of the project.

This project will assist in filling the gaps identified in this feasibility study.

3.2 Linked activities

- Estonian-German-Finnish Twinning Project ES/98/IB/AG/01/3 “Development of Estonian Phytosanitary Control Service: registration of producers, plant passports, border control” (2000-2001). Training of staff PHD, training of staff PHL, inspectors training, study trip; 7 persons from PHL were trained on modern diagnostic practicing.

- TAIEX Phytosanitary Advisory visit on Plant Health, Seeds, Varieties and Plant Protection Products, July 2000. The conclusions of this mission were a.o. that the relationship between the PPI and ARC should be reviewed in the interest of achieving of a balanced, reliable and integrated plant health service, and that the PHD and Border Inspection Service should amalgate their resources in the interest of efficiency; ARC has strengthened its strivings for the professional trainings in EU plant health laboratories. 2 applications have been accepted.

- DG (SANCO) mission 8638/2002 June 2002 aimed to assess the plant health control systems for harmful organisms and the marketing and use of plant protection products. The mission experts concluded that the transposition of the plant health acquis is carried out in an acceptable manner and that the basic mechanisms to work according to the phytosanitary directives are in place; although improvements and adaptations are still required (ring rot survey, relationship PPI-ARC, additional training in identification of diseases); A new strategy for the improvement of collaboration with PPI is in development stage.

- Phare project “Development of Estonian Phytosanitary Control Services” ES9803/01/02: supply of equipment for phytosanitary controls (to PHL of ARC), completed in 2002. Purchasing laboratory equipment.

FAO project TCP/EST/0165; February 2003. From this project the conclusions were a.o. that there is a need for a nationally integrated surveillance program, the need to improve the national plant health management system, a need to further develop the laboratory services and their insertion in the plant health system, and the need to review the inspection procedures and skills. Purchasing laboratory equipment.

Training of laboratory staff. Running, 2 persons have been trained in the Danish Institute of Agricultural Sciences.

3.3 Results

The purpose of the project is the implementation of the quality assurance principles and the upgrading of functional capability on testing of harmful organisms in Estonia to guarantee the integration of the Community plant health system.

The project results are designed to collectively contribute to this purpose and the projected results are as follows:

1. Contract 1 - Twinning

3.3.1.1 Functional capability of PHL for testing and diagnosis of harmful organisms and plant diseases improved.
3.3.1.2 All staff provided with a compilation of the basic documents (directives, standards, manuals etc) relevant to diagnostic obligations and related procedures.
3.3.1.3 The ARC staff is qualified (12) and possesses diagnostic skills and knowledge on quarantine plant organisms and induced diseases to ensure reliable analyses in compliance with EU legislation.
3.3.1.4 Quality assurance principles for appropriate analyses (for 5 items) are implemented.
3.3.1.5 Steady links with national universities developed (2).

2. Contract 2 - Supply

3.3.2. A high functional and effectively operating greenhouse for quarantine plant testing is established. Estonia is continuously capable to identify and control the status of the harmful organisms.

3. Contract 3 – Supply of additional laboratory equipment

3.3.3. ARC has all necessary laboratory equipment to perform its duty on testing of harmful organisms in Estonia.

3.4 Activities

3.4.1 Contract 1 – Twinning (24 consecutive months); TF € 690 000; Estonian co-financing € 170 000)

Training on improvement of specific diagnostic skills; Implementation of quality assurance principles. The twinning is required for a period of 24 months due to the reason that the expertise and monitoring from the twinning experts is needed while equipment is being installed. The best outcome of the project can be expected only if the two components are closely interconnected.

3.4.1.1. Resident Twinning Adviser (RTA) for 24 working-months over 24 consecutive months (TF € 360 000)

Input to results 3.3.1.1 and 3.3.1.2.
Profile of the expert: The expert is required to have 5-10 years of general experience in EU plant health legislation from a member state and overall quality management skills. Fluent English and
good computer literacy required. Furthermore, strong communication skills are highly important, as the RTA should be able to build contacts with all relevant Estonian parties and make a contribution to transfer of knowledge as well as awareness rising. Finally, the RTA should have experience in project management.

Tasks of RTA:

- overall project coordination
- analysis of EU legislation in respect of Estonian plant health situation in order to define the necessary analytical capacity
- analyzing the overall situation in the field of quarantine testing
- Analysis of institutional arrangements within ARC and division of tasks (separation between inspection, sample taking, control, diffusion of information, etc.) and recommendations for improvement
- Compilation of all relevant documents (directives, standards, manuals, etc.) in cooperation with STEs and diffusion to the staff
- making proposals for updating the laboratory procedures
- analyzing and evaluating the national surveillance programs
- development of training plan and planning of study tours for the ARC staff
- assessment of partnership for the ring test procedures
- preparation of manual for monitoring and evaluation of implementation of Community quarantine test legislation

RTA will supervise the short term twinning experts with contribution to outcome on 5 relevant diagnostic fields.

3.4.1.2. RTA assistant (24 working months over 24 consecutive months, TF € 36 000)

Profile:
- Strong organizational skills
- Computer skills
- experience in Phare/Twinning project (management) would be an advantage
- good knowledge of English
- good knowledge of Estonian
- good computer proficiency

Tasks:
- assisting of RTA
- arranging of training events
- organizing of translation

3.4.1.3. Short term expert 1 (STE 1) on bacteriological testing and molecular testing (2 working month over 2 consecutive months, TF € 34 000)

Profile:
- 10 years professional experience on bacteriological analyses
- good knowledge in English

Tasks:
- preparation of training
• training on bacteriological testing and face-to-face consultation on relevant analyses

3.4.1.4. Short term expert 2 (STE 2) on virological testing (1 working month over 1 consecutive months, TF € 17 000)
Input to result 3.3.1.3.
Profile:
• 10 years professional experience on virological analyses
• good knowledge in English
Tasks:
• preparation of training
• training on virological testing and face-to-face consultation on relevant analyses

3.4.1.5. Short term expert 3 (STE 3) on nematological testing (1 working month over 1 consecutive month, TF € 17 000)
Input to result 3.3.1.3.
Profile:
• 10 years professional experience on nematological analyses
• good knowledge in English
Tasks:
• preparation of training
• training on nematological testing and face-to-face consultation on relevant analyses

3.4.1.6. Short term expert 4 (STE 4) on entomological testing (1 working month over 1 consecutive month, TF € 17 000)
Input to result 3.3.1.3.
Profile:
• 10 years professional experience on entomological analyses
• good knowledge in English
Tasks:
• preparation of training
• training on entomological testing and face-to-face consultation on relevant analyses

3.4.1.7. Short term expert 5 (STE 5) on mycological testing (1 working month over 1 consecutive month, TF € 17 000)
Input to result 3.3.1.3.
Profile:
• 10 years professional training on mycological analyses
• good knowledge in English
Tasks:
• preparation of training
• training on mycological testing and face-to-face consultation on relevant analyses (1 trainee)

3.4.1.8. Short term expert 6 (STE 6) on quality assurance principles (4 working months over 4 consecutive months, TF € 68 000)
Input to result 3.3.1.4.
Profile:
• 5 years professional experience on quality management
- good knowledge in quality assurance principles for plant health laboratories
- good knowledge in English

**Tasks:**
- preparation of indicative measures (content) for the quality assurance manual
- developing the quality assurance principles for quarantine testing in ARC
- training on quality assurance principles for quarantine testing (2 trainees)
- assessment of partnership for the ring test procedures

3.4.1.9. MS Project Leader (3 days every 3 months over 24 consecutive months, TF € 20 000)
Input to results 3.3.1.1 and 3.3.1.5.

**Profile:**
- 15 years working experience in quality management for biological testing
- working experience in EU structures
- fluent English
- excellent inter-cultural communication skills

**Tasks:**
- assists the RTA with the project management
- monitoring and guidance of the whole project
- provision of legal and technical advice and analysis
- overviews the development of all key project outputs

3.4.1.10 Study visits (Estonian co-financing € 50 000)
The training should be realized on concept of target oriented individual studies (TOIS) to enable particular harmful organism based training and face-to-face consultations with highly experienced experts. The theoretical training should be complemented with extensive laboratory exercises.

- Representatives from institutions responsible for administration of program (5 persons): 2 x 5 days study tour for 5 persons at least in 2 EU Member States where implemented quality system for plant health laboratories are implemented. Study tours are needed for better understanding of existing quality system developed for plant health diagnostic areas. **Total: € 10 000.**
- Experts from PHL responsible for plant testing analyses (9 persons): 14 days training in a Member States’ laboratory for 5 each diagnostic field: 2 bacteriologists x 14 days; 1 virologist x 14 days; 2 (1+1extra) entomologists x 14 days; 2 nematologists x 14 days; 1 mycologist x 14 days; 1 PCR specialist x 14 days. **Total: € 40 000** (€ 25 000 for study course + € 15 000 travel cost + accommodation).

3.4.1.11 Procurement of necessary publications (handbooks, manuals, standards etc) TF € 15 000; Estonian co-financing € 120 000

- € 7 000 will be used for the purchasing of professional literature (books, manuals, CD etc).
- An additional starting fund for subscription to scientific plant health literature should be reserved (TF € 8 000).
- For the creation of PHL scientific library € 50 000 will be financed by the Estonian co-financing.
• € 70 000 from the Estonian co-financing is foreseen to cover the expenses for experimental research and trials in the laboratory and greenhouse in the implementation period.

170 000 €, including travel expenses will be covered from Estonian parallel co-financing.

3.4.1.11 Preparation of the Twinning Covenant (TF € 15 000)
RTA will be responsible for the preparation of a twinning covenant.

3.4.1.12 Audit (TF € 5000)

3.4.1.13 Contingencies (TF € 15 000)

3.4.2 Component 2 – Supply/ works/services (TF - € 350 000; Estonian co-financing € 120 000)
Input to result 3.3.2.

Purchasing a high functional and effectively operating greenhouse for quarantine plant testing. Implementation arrangements (nature and number of contracts) will be specified based on an additional preparatory study.

The location of the greenhouse: Teaduse 4/6
75 501 Saku
Harjumaa
Estonia

Proposed area (Owned by ARC) ca 150 m² net for six autonomous compartments, all of which are suited for quarantine operations and ca 50 m² for working space, small office, boiler room etc. The indicated budget reservation of € 470 000 is confirmed by two Dutch commercial producers to be sufficient.

The greenhouse will include the following elements:
• Greenhouse designed for year-round use
• Isolated from other facilities, connected by a secure hallway or by a passageway with covering
• Environmental conditions in the individual compartments are computer-controlled
• Individually controlled environment 15-30°C and relative humidity 60-90%.
• When a trial is completed, the compartment can be disinfected or disinfested without disturbing trials in other compartments
• Double door main entry with air-tight doors
• Double-door entries for the compartments with wash basins and elbow operated taps
• Tables/benches in each compartment
• Place to keep (potentially) contaminated waste material to be transported to an incinerator.
• Containment is attained by HEPA filters and negative pressure
• Designed to facilitate surface disinfection
• PC-operated trickle irrigation and fertilizing to reduce the need to enter the compartments and to avoid contamination by splashing water
• UV-germicidal lights in the locks and the adjacent areas??
• A entrance room containing workbenches, water and electricity
• Small office with telephone and fax
• Boiler room
• PC-controlled day-length lighting
• Waste water storage and treatment
• Locked doors to prevent unintentionally entering areas
• The facility should be planned so that additions to existing buildings can be constructed without expensive alterations or unsuitable terrain
• Ability to upgrade equipment without expensive alterations.
• Head house could be a stone building
• Double-paned insulated glass fitted in an aluminium framework (double-paned glass is preferred in case a panel cracks or breaks.
• Internal shading system
• Internal piping, etc through the corridor to prevent contact between compartments
• Ground cover nearest to the complex should be covered with an impervious ground cover to prevent the growth of plants.
• Emergency exit at the end of the corridor

The indicative budget:
• technical designing                                                      26 500 €
• ground preparation + zero cycle                                          45 000 € (works)
• construction elements + settings                                          5 000 € (supply + works)
• microclimate device                                                      92 000 € (supply + installation)
• automatic climate/irrigation monitoring and control                     132 000 € (supply + installation)
• automatic fertilization control                                         64 000 € (supply + installation)
• nutrition medium in conveyer                                             13 500 € (supply + installation)
• Specialized PC software                                                  22 000 € (supply)

TOTAL                                                                                470 000 €

The TF contribution will amount to a maximum of 350 000 EUR. The final greenhouse will include all elements listed above. Any additional costs will be covered by national cofinancing. Should any of the elements listed not be included in the final greenhouse, the transition facility contribution will be reduced accordingly. The detailed technical specification is under the preparation and changes in indicative budget should be foreseen.

As ARC is establishing a greenhouse for quarantine plant testing analyses, visits to a relevant EU testing institution (laboratories, stations) with operating greenhouses was needed. The needed study visits to the Netherlands took place from Feb 2-7 2004 in order to specify the technical demands on high risk quarantine greenhouses. The visits resulted in accumulation of veracity that the purchased greenhouse should correspond to the strict EU technical demands (PC operated, microclimate regulation, irrigation & fertilization system, sufficient capacity). The detailed technical specification and the related ToR on quarantine greenhouse will be prepared and outsourced to PPMTF before the twinning.
3.4.3. Contract 3 – Supply of additional laboratory equipments (TF € 67 000; Estonian co-financing € 22 400)

Input to result 3.3.3.

A need for Contract 3 is directly and strictly identified by the Feasibility study. According to the Feasibility Study ARC lacks the following equipments that will be procured in the frame of this project:

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
<th>Indicative Price estimate (€)</th>
</tr>
</thead>
</table>
| Dish washer | **Professional** laboratory dish washer  
• with racks for glassware, including test tubes.  
• adjustable temperature  
• (external) adjustable dosage possibility for detergent  
• several programs (examples):  
  • intensive, universal, standard, mini wash, disinfection, rinsing, drying  
  • additional requirements:  
    • rinsing with acid solution  
    • pre wash  
    • rinsing with alkaline solution  
    • rinsing with purified water  
    • rinsing with neutralizing liquid | 6,000 |
| Elutriator for the extraction of free living nematodes from soil | Oostenbrink type, complete set, including elutriator support, piping, taps and valves.  
• appropriate thermostat (range 5 – 25°C included) to mix cold and warm tap water for convenience of users)  
• construction drawings for basin and sink | 7,000 |
| Elutriator for extraction of potato cyst from soil | Schuiling type, complete set. | 20,000 |
| Equipment for the extraction of active nematodes from plant material | Funnel-spray method/Oostenbrink type complete set, including sieves and funnels  
• appropriate thermostat (range 5-25°C included) to mix cold and hot tap water for apparatus | 2,600 |
| Nematode filters for elutriator | 10,000 cotton discs (same as for manual milk filtration) | 250 |
| Nematode filters for elutriator | 10,000 non woven discs (same as for manual milk filtration) | 350 |
| Research (interference) microscope | **highest professional standard**  
• Objectives ca. 5x,10x, 20x, 40x dry and 100x oil immersion to achieve magnifications from 50 to 1000 times | 19,000 |
<table>
<thead>
<tr>
<th><strong>Item</strong></th>
<th><strong>Specifications</strong></th>
<th><strong>Price</strong></th>
</tr>
</thead>
</table>
| **Research dissecting microscope** | • with binocular adjustable ergonomic tube (ca. 6 - 25°)  
• ergonomic adjustable tube part (ca. 6 - 11 cm) for long persons  
• stage carrier with ceramic surface  
• objectives and condenser of highest numeric aperture  
• eyepieces: 10x/23  
• condenser: achromatic/aplanatic corrected and suitable for transmitted light, phase contrast, dark field and DIC  
• reflector turret with 6 positions  
• objectives according to DIC system  
• mechanical stage with specimen holder with long drive (ca. 160 mm) resulting in a short distance between knobs for focusing and for specimen holder  
• provided with camera tube  
• halogen lamp housing with 100W lamp for transmitted light | **18,200** |
| **Micro biological safety cabinet** | • highest professional standard  
• eyepieces ca. 10x/23  
• total magnification ca. 80 in ca. 9 steps  
• prepared for camera tube  
• light source for transmitted light: 150 W (cold light)  
• swanneck lightguide, two branches with 150 W light source (cold light) | **13,000** |
| ** Flake ice machine**            | • automatic flake ice machine (storage capacity ca. 25 kgs, max capacity ca. 75 kg of flake ice in 24 hrs.)  
• air cooled | **3,000** |

**TOTAL: € 89 400**

Technical specifications and tender dossiers for the greenhouse and contract 3 will be prepared by May 2004. Assistance under the Phare 2002 PPTMF project is available to this purpose.
3.5. Lessons learned.

On general management, the Interim Evaluation Report No IE.EE.AGR.02.043 prepared by EMS, Estonia stated the following recommendations:

Chapter 4 Recommendation 4.1.7 In relation to the overall management of Phare assistance in the agriculture sector, project activities should be implemented in a logical sequence and designed to optimize the benefits of the activities.

To that respect, the project activities are planned directly according to the results of the independent feasibility study (planned in the end of March), which will ensure the relevance and efficiency of the project.

Project audit will be completed at the end of the project to evaluate the project results.

All Phare activities in the Ministry of Agriculture should be in accordance with long-term priorities of Development.

The Ministry of Agriculture should introduce closer and more formal monitoring of all projects and alert the Ministry of Finance and the EC Delegation of any inconsistencies in their implementation. Immediate action should be taken, if necessary, to re-allocate funds within the project budget and within the Program.

It is important to avoid delays in the project and to have effective communication with all relevant parties. Delays may occur due to the lack of human or financial resources, lack of dedication or essential misunderstandings of the project activities. Communication problems can be avoided by effective and timely consultation with all parties involved.

Therefore 2 additional persons were hired in MoA to monitor the activities of Phare projects and provide technical assistance for the project management. They will also be engaged in this project. The main responsible contact person is nominated as project manager, whose responsibility is to ensure the smooth development of the activities. Margus Friedenthal is also responsible for the general development to reach the overall objectives and therefore in the position to manage all different resources foreseen. A Steering committee (see section 6) will be formed at the start of the project activities and quarterly reports presented to ensure the identification of the problems at the early stage enabling to find solutions timely.

4. Institutional Framework

*Department of Agriculture and the Phytosanitary Bureau.* In Estonia, the Ministry of Agriculture (MoA) bears responsibility for the drafting and implementation of all the relevant legislation in the area of plant health. In 1998, the duties in the plant health field for agricultural inspections and control measures were delegated to a Department of Agriculture (DA) which was reformed in January 2002 by the establishment of Phytosanitary Bureau (PB) under the DA. The tasks of the Bureau are the following:

- transposition of relevant EU legislation
- policy preparation within the respective working fields
• co-ordination of activities within the respective working fields. Co-ordination of the work done by ARC is one of the tasks of PB (see also Annex 4)

*Plant Production Inspectorate.* The PPI is a government organization under the authority of the Ministry of Agriculture, responsible for official inspection and applying enforcement powers of the state. The PPI has 8 different departments as is shown in Annex 5. For the project the Plant Health Department (PHD) is most relevant

The tasks of the PHD include the planning and organisation of state supervision on plant health, to maintain the register of plant health, organise and issue plant passports and phytosanitary documents, to make risk analysis on harmful organisms, to co-operate with corresponding international institutions in EU and member states as well as WTO, FAO and EPPO and to plan, inspect and improve the work of the phytosanitary inspection in co-operation with the ID.

*Control Centre for Plant Production (ARC).* On request of the Plant Health Department of the PPI, the Plant Health Laboratory (PHL) of the ARC carries out diagnostic services on quarantine and quality diseases. The PHL is one of the six laboratories of the ARC. The ARC is a state agency under the Ministry of Agriculture charged with the tasks to perform the analyses and field trials required for state surveillance and the organization of research related with good agricultural practices, implementation of the agricultural environmental monitoring program, soil monitoring, food safety monitoring and other types of monitoring required.

Next to the laboratories, the ARC has six seed testing centres and several monitoring and supporting departments (see also Annex 6). In the case of the analytical work provided by PHL that is required by PPI, there is a yearly planning and the budget is negotiated between ARC and PPI, detailing the amount of analyses, budget and other aspects concerning the next year’s work. This results in a contract between ARC and PPI. Since 2004 PPI has a budget to hire specific diagnostic services from ARC.

Apart from hiring the services from ARC, the PPI has the opportunity to contract services out to third parties abroad. Because this is usually very expensive, it is only done occasionally for second opinions and for diagnostic services that the PHL cannot perform.

Upgrading of functional capability on testing of harmful organisms carried out by ARC will considerably contribute to the tightening of links with PPI and thereby via Institutional Building on national level to implement the protective measures against the introduction into the Community organisms harmful to plants or plant products and against their spread within the Community.

5. **Detailed Budget (€)**

<table>
<thead>
<tr>
<th>Contract 1- Twinning</th>
<th>Transition</th>
<th>Facility Support</th>
<th>National Cofinancing*</th>
<th>IFI*</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Investment</td>
<td>Institution Building</td>
<td>Total (1+IB)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTA</td>
<td>636 000</td>
<td>636 000</td>
<td>170 000</td>
<td>806 000</td>
<td></td>
</tr>
<tr>
<td>RTA assistant</td>
<td>36 000</td>
<td>36 000</td>
<td></td>
<td>.36 000</td>
<td></td>
</tr>
</tbody>
</table>

20
| STE 1 (bacteriological and molecular testing) | 34 000 | 34 000 | 34 000 |
| STE 2 (virological testing) | 17 000 | 17 000 | 17 000 |
| STE 3 (nematological testing) | 17 000 | 17 000 | 17 000 |
| STE 4 (entomological testing) | 17 000 | 17 000 | 17 000 |
| STE 5 (mycological testing) | 17 000 | 17 000 | 17 000 |
| STE 6 (quality assurance principles) | 68 000 | 68 000 | 68 000 |
| MS Project Leader | 20 000 | 20 000 | 20 000 |
| Study visits | | 500 000 | 185 000 |
| Training scientific documentation | 15 000 | 15 000 | 120 000 | 135 000 |
| Twinning covenant | 15 000 | 15 000 | 15 000 |
| Audit | 5 000 | 5 000 | 5 000 |
| Contingencies | 15 000 | 15 000 | 15 000 |
| Contract 2- Supply | 350 000 | 350 000 | 120 000 | 470 000 |
| Contract 3- Supply of equipment | 67 000 | 67 000 | 22 400 | 89 400 |
| TOTAL | 417 000 | 636 000 | 1 053 000 | 312 400 | 1 365 400 |

| National co-financing | 2004 | 2005 | 2006 | Total |
| State budget | 312 400 | 312 400 |
| Total national co-financing | 312 400 | 312 400 |

The amounts of co-financing indicated in the table correspond to cash co-financing. Joint co-financing will be used for the investment components (contracts 2 and 3). In addition, in kind contributions from the Estonian administration for a good implementation of the twinning may be detailed in the twinning covenant.
National joint co-financing is used for establishing the greenhouse. For the training component the travel expenses of the trainees will be covered from national parallel co-financing.

The project beneficiaries will secure:

- The availability of sufficient manpower and administrative inputs at beneficiary level so as to ensure the successful execution of the project implementation activities as well as the project monitoring activities;
- Adequate working space for the EU experts (RTA, STA) carrying out the different activities under the project;
- Support to work of project experts otherwise (such as networking, organizing arrangements etc);
- Organization and coverage of the costs for transportation when requested by the project experts;
- Appropriate space for workshops, trainings, meetings and seminars organized in the framework of this project;
- Capacity to translate relevant documentation (mainly English into Estonian for the benefit of Estonian parties);
- Manpower for interpretation when necessary and requested by the project experts.

The co-financing expenses will be monitored by the beneficiary and the NAO. For the earmarked co-finance, a clear and verifiable set of costs will be provided (ex ante confirmation by the MoF of exact budget lines and re-confirmation before each contract within either of the two components) and ex post each project and at an aggregate level for each budget line. Flow and stock data on co-finance will be submitted quarterly for steering committees and to the CFCU and on a half-yearly bases to the Sector Monitoring Working Group.

The beneficiary, together with the NAO, commits to sound financial management and control.

6. Implementation Arrangements

6.1 Implementing Agency

The CFCU of the Ministry of Finance is the implementing agency responsible for tendering, contracting and payments. Responsibility for technical preparation, implementation and control will remain with the Ministry of Agriculture.

**PAO:**
Mr. Renaldo Mändmets  
Deputy Secretary General  
Ministry of Finance  
Suur-Ameerika 1, Tallinn  
Ph + 372 6113 545  
renaldo.mandmets@fin.ee

**PO:**
Mr. Olavi Petron  
Deputy Head of the Department  
of Public and Foreign Affairs  
Ministry of Agriculture  
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Project leader:
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Director
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Project manager:
Dr. Margus Friedenthal
Deputy Director of ARC
Teaduse 4/6
Saku 75501
Harju maakond
Ph +372 6729 172
margus.friedenthal@tmkk.ee

The MoA will be responsible for overall co-ordination of the project. Project implementation will take place in ARC. The MoA will (i) promote the cooperation between the institutions involved; (ii) contribute to the intensive study and implementation of relevant to the project directives, laws, acts in Estonia; (iii) support the initiative of ARC for providing of international cooperation to be integrated in Community network.

A Steering Committee will be established consisting of representatives of the MoA, Ministry of Finance, ARC and PPI, representative from the European Commission as appropriate. Main function of the Steering Committee is to ensure the surveillance of the project.

6.2 Twinning:

Resident Twinning Adviser (RTA)
Input: 24 months

The RTA will be located in Saku in the ARC, as the actual work will be done there. The RTA will have an assistant to help with co-ordination of the project (and translation from English to Estonian, if necessary).

Contact person for the RTA:

Illar Lemetti
Director
Control Center of Plant Production
Teaduse 4/6
Saku 75501
Harju maakond
Ph+372 6729 110
illar.lemetti@tmkk.ee
6.3 Non-standard aspects

No non-standard aspects foreseen.

6.4 Contracts

The total number of contracts is 3:

<table>
<thead>
<tr>
<th>No</th>
<th>Contracts</th>
<th>TF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Contract 1 - Twinning (TF 636 000 € + EE 170 000 €)</td>
<td>636 000</td>
</tr>
<tr>
<td>2</td>
<td>Contract 2 - Supply (TF 350 000 € + EE 120 000 €)</td>
<td>350 000</td>
</tr>
<tr>
<td>3</td>
<td>Contract 3 – Supply of equipment (TF 67 000 € + EE 22 400 €)</td>
<td>67 000</td>
</tr>
</tbody>
</table>

**TOTAL TF SUPPORT** 1 053 000 €

7. Implementation Schedule

7.1 Start of tendering/call for proposals – September 2004

7.2 Start of project activities – January 2005

7.3 Project Completion – December 2006

8. Sustainability

The project will be sustainable. Estonia as a Member State has undertaken to adopt the EU Common Agricultural Policy without reservation.

The government of Estonia will make available sufficient national resources in order to ensure the sustainability of the project’s results. The maintenance of the greenhouse operating system will be financed through ARC national budget.

Long-term sustainability of the project will be guaranteed by the financial and administrative capacity of the Ministry of Agriculture who bears responsibility for the drafting and implementation of all the relevant activities in the area of plant health. Phytosanitary Bureau of the Ministry of Agriculture has been set up to focus specifically on phytosanitary fields, such as plant health.

All formulated activities are in support of activities to be implemented by the respective beneficiaries. The institution building nature of this project requires that the counterpart – Ministry of Agriculture in co-operation with the respective beneficiaries, assume full responsibility for the implementation of the activities to be supported by the project.
The training materials produced for this project will be preserved by the beneficiary to be used later on if necessary.

9. Conditionality and sequencing

The project is conditional upon the following:

Information will be provided to the Commission on how the staff shortage identified in the feasibility study is addressed and that staff has been increased to an adequate level.

Sequencing:
- Preparation of detailed project documentation by the ARC: Technical specifications and tender dossiers for the procurements under contracts 2 and 3 are prepared by May 2004. The Phare 2002 PPTMF project is available.
- The training must be carried out in parallel to the twinning.

ANNEXES TO PROJECT FICHE

1. Logical framework matrix
2. Detailed implementation chart
3. Contracting and disbursement schedule by quarter for full duration of program
4. Structural scheme of MoA
5. Structural scheme of PPI
6. Structural scheme of ARC
7. ToR for the feasibility study
LOGFRAME PLANNING MATRIX FOR

Project title: Upgrading of Functional Capability on Testing of Harmful Organisms in Estonia

Programme name and number:

<table>
<thead>
<tr>
<th>Overall objective</th>
<th>Objectively verifiable indicators</th>
<th>Sources of Verification</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Community phytosanitary system ensured by the upgrading of functional capability on testing of harmful organisms in Estonia.</td>
<td>Compliance of the plant health laboratory of ARC with relevant EU regulations (directives) by the end of the project</td>
<td>1. Annual Report by ARC 2. National (Ministry of Agriculture) and international (EU) evaluation</td>
<td>Good co-operation with the Ministry of Agriculture, devotion of the laboratory staff to the final goal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project purpose</th>
<th>Objectively verifiable indicators</th>
<th>Sources of Verification</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>The capacity of ARC raised to test and diagnose plants and plant products in order to ensure official measures to protect Member States against introduction and spread of harmful organisms in the Community in compliance with EU requirements (directives 2002/89/EC, 2000/29/EC, 93/85/EC,69/464/EC,69/465/EC,98/57/EC)</td>
<td>Control methods on tests and diagnosis of quarantine plant organisms are implemented in accordance with EU directives by June 2006.</td>
<td>1. Annual Report by ARC 2. Project reports</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Results</th>
<th>Objectively verifiable indicators</th>
<th>Sources of Verification</th>
<th>Assumptions</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Programme name and number:</th>
<th>Contracting period expires:</th>
<th>15/12/2006</th>
<th>Disbursement period expires:</th>
<th>15/12/2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total budget: € 1 365 400</td>
<td>TF budget: € 1 053 000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Contract 1 – Twinning**

1. Functional capability of PHL for testing and diagnosis of harmful organisms and plant diseases improved.
2. All staff provided with a compilation of the basic documents (directives, standards, manuals etc) relevant to diagnostic obligations and related procedures.
3. The ARC staff is qualified (12) and possesses diagnostic skills and knowledge on quarantine plant organisms and induced diseases to ensure reliable analyses in compliance with EU legislation.
4. Quality assurance principles for appropriate analyses (for 5 items) are implemented.
5. Steady links with national universities developed (2).

**Contract 2 – Supply**

A high functional and effectively operating greenhouse for quarantine plant testing is established. Estonia is continuously capable to identify and control the status of the harmful organisms.

**Contract 3 – Supply for equipment**

ARC has all necessary laboratory equipment to perform its duty on testing of harmful organisms in Estonia.

By the end of the project:
- Trained laboratory staff (10)
- Trained quality management staff (2)
- Quality assurance for 5 items developed
- Communication and cooperation improvements are measurable
- Project-based links with Universities (2) for carrying out of BSc/MSc theses developed
- Greenhouse constructed, established and facilitated (equipped)
- Surveillance programs improved and extended by the end of the project (6 programs)
- Increased efficiency of testing and diagnosis
- Methods of advanced methodology on quarantine testing implemented (5)
- Technical and functional demands for plant health control analysis on the level required by EU

1. Project reports
2. Statements and reports of the laboratory staff
3. Drawings & photos
4. Greenhouse integrated with the plant health laboratory of ARC

Good co-operation with the Ministry of Agriculture, devotion of the laboratory staff to the final goal
<table>
<thead>
<tr>
<th>Activities</th>
<th>Means</th>
<th>Cost (€)</th>
<th>Assumptions</th>
</tr>
</thead>
</table>

1. Contract 1 – Twinning

Training on improvement of specific diagnostic skills; Implementation of quality assurance principles.

1.1 Resident Twinning Adviser (RTA).

The following tasks supervised by RTA should be solved:

- Overall project coordination
- Analysis of EU legislation in respect of Estonian plant health situation in order to define the necessary analytical capacity
- Analyzing the overall situation in the field of quarantine testing
- Analysis of institutional arrangements within ARC and division of tasks (separation between inspection, sample taking, control, diffusion of information, etc.) and recommendations for improvement
- Compilation of all relevant documents (directives, standards, manuals, etc.) in co-operation with STEs and diffusion to the staff
- Making proposals for updating the laboratory procedures
- Analyzing and evaluating of the national surveillance programs
- Development of training plan and planning of study tours for the ARC staff
- Assessment of partnership for the ring test procedures
- Preparation of manual for monitoring and evaluation of implementation of Community quarantine test legislation

1.2 RTA assistant:

- Assisting of RTA
- Arranging of training events
- Organizing of translation

1.3 MS Project Leader:

- Assists the RTA with the project

<table>
<thead>
<tr>
<th>TF</th>
<th>Estonia</th>
</tr>
</thead>
<tbody>
<tr>
<td>690 000</td>
<td>170 000</td>
</tr>
</tbody>
</table>

Sufficient funds are allocated from national budget for implementing the activities. Appropriate experts are contracted.
- monitoring and guidance of the whole project
- provision of legal and technical advice and analysis
- overviews the development of all key project outputs

1.4 STE on bacteriological and molecular testing:
- preparation of training
- training on bacteriological testing and face-to-face consultation on relevant analyses (3 trainees)

<table>
<thead>
<tr>
<th>STE 1 on bacteriological and molecular testing for 2 months</th>
<th>34 000</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 000</td>
<td></td>
</tr>
</tbody>
</table>
1.5 STE on virological testing:
- preparation of training
- training on virological testing and face-to-face consultation on relevant analyses (2 trainees)

1.6 STE on nematological testing:
- preparation of training
- training on nematological testing and face-to-face consultation on relevant analyses

1.7 STE on entomological testing:
- preparation of training
- training on entomological testing and face-to-face consultation on relevant analyses

1.8 STE on mycological testing:
- preparation of training
- training on mycological testing and face-to-face consultation on relevant analyses

1.9 STE on quality assurance principles:
- preparation of indicative measures (content) for the quality assurance manual
- developing the quality assurance principles for quarantine testing in ARC
- assessment of partnership for the ring test procedures

Training
Preparation of twinning covenant

Audit
Contingencies

2. Contract 2 – Supply
Purchasing a high functional and effectively operating greenhouse for

| STE 2 on virological testing for 2 months | 17 000 |
| STE 3 on nematological testing for 2 months | 17 000 |
| STE 4 on entomological testing for 2 months | 17 000 |
| STE 5 on mycological testing for 2 months | 68 000 |
| STE 6 on quality assurance principles for 4 months | 15 000 170 000 |

Study tours and relevant materials
RTA is responsible for preparation of twinning covenant

Supply contract

| 350 000 120 000 |
quarantine plant testing.

3. Contract 3- Supply of equipment
   Purchasing additional laboratory equipment for the greenhouse

<table>
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<tr>
<th></th>
<th>Supply contract</th>
<th>67 000</th>
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**Preconditions:** Sustainability in terms of budgetary financing and staffing
## TIME IMPLEMENTATION CHART

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<th>2005</th>
<th>2006</th>
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### CUMULATIVE CONTRACTING SCHEDULE (by quarters)  
**ANNEX 3a**

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<tr>
<th>Year</th>
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<th>Contract 2</th>
<th>Contract 3</th>
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### CUMULATIVE DISBURSEMENT SCHEDULE (by quarters)  
**ANNEX 3b**

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STRUCTURAL SCHEME OF MINISTRY OF AGRICULTURE
STRUCTURAL SCHEME OF PPI
STRUCTURAL SCHEME OF ARC

Administration

- Laboratory of Agrochemistry
  - Laboratory of Residues and Contaminants
  - Laboratory of Microbiology
  - Seed Testing Laboratory
  - Plant Health Laboratory
    - entomology (1)
    - nematology (3)
    - virology (2)
    - bacteriology (2)
    - mycology (1)
  - Cereals and Plant Production Laboratory

- Department of Information and Extension
- Department of Certification and Conformity Assessment
- Department of Agri-Ecology
- Department of Agricultural Monitoring
- Department of Accounting
- General Department

Viljandi Testing Center
  - Olustvere Testing Station
  - Saku Testing Station
  - Võru Testing Station

Rõhu Testing Station

Kuusiku Testing Center
ANNEX 7

FEASIBILITY STUDY

The Feasibility Study report was submitted to Ministry of Agriculture in March 2004.

FS in proper way with profundity described and elaborated the findings and SWOT analysis for upgrading the functional capability on testing of harmful organisms in Estonia. In close cooperation with the management of the ARC and staff of the laboratory the working procedures, equipments, facilities and needs were studied and discussed in relation to the international requirements.

Training needs on quarantine testing and implementation of quality system should be considered as a highest priority to guarantee the compliance with EU requirements. The training should also include surveying, monitoring, filing systems, QA aspects, collection of essential small material and literature. Especially the writing and adjusting of working procedures should be considered a bottleneck, because the required access to the information provided by the international scientific is inadequate and limited time of laboratory staff available. Some essential equipment is not available. Two non-isolated phytotrons without any safety measure are available, a quarantine greenhouse is lacking. ARC needs assistance in the development of an active attitude towards an integrated plant health system. Depending on the number of expected samples and the strategic importance of certain skills, ARC needs to recruit additional staff. During the implementation of the training and assistance program different measures can be applied.

Several strong points are mentioned, but there exists a high risk that without additional measures to prevent from understaffing and a relative low level of integration within the PHS that the full benefits and impact of the proposed programme and purchases will be hampered.