

## **Improvement of Sustainable Food Production**

### **Call For Proposals**

**STDF Targeted Calls**

**“TC/3/ARP/2010/ISFP”**

## **1. Preamble:**

Today's global population is about 6.5 billion and this number is expected to reach 8.5 billion by the year 2025. This situation simply means that our recent food crop production must be increased by 30%-40%. In Egypt, like any other developing country in the arid and semi arid regions of the world, the problem is more acute due to the dramatic and continued increase in population, scarcity of fresh water and current food shortage dilemma. The problem is well-known, well-documented and necessitates taking a decisive step towards increasing food production using the available national resources, research capabilities and research results. The desired increment should be achieved with reduced levels of agrochemicals, which are harmful for both health and environment and affect the exportation of Egyptian agricultural products. Although no dramatic increase in crop production is expected, as was the case in the beginning of the green revolution in the early sixties, still there is room to increase food production in Egypt, through the deployment of modern biotechnology to develop new food and feed crops in new lands; the effective and better utilization of available natural genetic and water resources through the development of low water demand crops and the introduction of new technologies; and finally bridging yield gaps between the actual and potential production of strategic crops. These strategies can be implemented in a reasonable timeframe through integrated programs, which build on existing results and research capabilities at national research institutions and universities.

## **2. Call Reference No.: TC/3/ARP/2010/ISFP**

## **3. Call Name: Improvement of Sustainable Food Production**

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#### **4. Call Description:**

This call is based on the working document on agricultural research of the Higher Council for Science and Technology and the foresight document on research in Egypt in 2030 developed by the Information and Decision Support Center (IDSC), Egyptian Cabinet.

The main goal of the call is to employ available Egyptian capabilities, natural resources and research facilities to tackle the problem of food shortage and to enhance the revenue from food and non-food agricultural products. TC/3/ARP/2010/ISFP is the first STDF targeted call (TC) in the field of agricultural research. The call comprises three main sub-thematic areas, namely the improvement of the productivity of cereal and low water demand crops, the improvement of milk, red meat and fish production and narrowing the yield gaps between the actual and potential production of strategic food crops. This competitive call encourages integrated proposals with tangible outcomes and measurable impacts on sustainable food production in Egypt.

#### **5. Desired Outcomes:**

- 1- Tangible improvement of food crop productivity through expansion of cultivated areas; development of new breeds more tolerant to abiotic stresses and with low water demand; and effective and better utilization of available water resources.
- 2-Improving the profitability of farmers and of associated agricultural businesses.
- 3- Economically feasible and applicable national know-how for fish production under fresh and marine water conditions.
- 4- Maximizing the milk and meat production from native animals (Egyptian buffaloes, camel and small ruminant).
- 5- Developing the research capabilities of Egypt in the call subject area.

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## **6. Call subjects/topics:**

### **1: TC/3/ARP/2010/ISFP-1**

#### ***Improvement of Abiotic Stress Tolerance***

Abiotic stresses have been recognized as the most important targets of crop improvement programs, and biotechnology has been identified as a powerful tool to achieve significant drought tolerance by the United Nation's Food and Agriculture Organization. In Egypt, salinity, drought and high temperature are major abiotic stresses which strongly reduce crop productivity. The combination of inappropriate irrigation practices and high evapotranspiration rates are largely responsible for extending soil/water salinity. To fight hunger and malnutrition, new food crops, with improved nutritional quality, lower water demand and higher tolerance to salt stress, drought and high temperature, must be developed to replace the existing water consuming and salt sensitive ones. In addition to the improvement of traditional strategic cereals, others such as barley, sorghum and nontraditional food and feed crops must be evaluated, improved and introduced, as potential cereal crops to face the problem of food shortage and expected climatic changes.

Due to the fact that Egypt is also suffering from great shortage in plant oils needed for nutritional consumption (the gap is estimated to about 90% of our needs), the current call also includes oil crops. The suggested research approaches to target the main goals of this call include mining and evaluation of germplasm and nontraditional cereal using physiological, biochemical and molecular tools, breeding and molecular breeding, gene transfer and selection and induced mutations, i.e. any scientific approaches that prove to be effective and can successfully solve the problem are welcomed.

1.1: TC/3/ARP/2010/ISFP-1-1: Strategic Cereal Food Crops

1.2: TC/3/ARP/2010/ISFP-1-2: New Nontraditional Food and Feed Crops

1.3: TC/3/ARP/2010/ISFP-1-3: Oil Crops

1.4: TC/3/ARP/2010/ISFP-1-4: Low Water Demand Crops (Date Palm, Fig and Olive)

## **2: TC/3/ARP/2010/ISFP-2**

### ***Improvement of Animal Production***

Although animal production (milk and red meat) in Egypt is highly dependent on cattle, buffaloes, small ruminant (sheep and goats) and camels, which are the most suitable animals for the dried and semi dried areas of our region, must also be considered. In 2007, animal production in Egypt represented about 24.4% of the agricultural gross domestic product. Milk productivity of buffaloes increased from about 1.15 ton/head/season to 1.4 ton/head/season, as a result of liberalizing animals from field work. Fortunately, there is still large room to improve this milk and meat productivity through R & D.

2.1: TC/3/ARP/2010/ISFP-2-1

Economic production of small ruminant and camels in newly reclaimed land under harsh conditions

2.2: TC/3/ARP/2010/ISFP-2-2

Egyptian buffaloes genome

2.3: TC/3/ARP/2010/ISFP-2-3

Integrated organic farms for meat and milk production in new lands

2.4: TC/3/ARP/2010/ISFP-2-4

Conservation of local farm animal genetic resources

### **3: TC/3/ARP/2010/ISFP-3**

#### ***Fishery and Aquaculture Production***

Fish production is considered the cheapest source of animal protein. In spite of the fact that Egypt has several fish resources and a water area of nearly 14 million feddans, yet the local fish production is not enough to cover domestic consumption. Egypt imported about 215 thousand tons of fish in 2007, which represents 18% of total consumption. Also, a remarkable increase in aquaculture production was reported as a result of increasing the number of fish farms and the development of rearing and nutrition technologies.

##### **3.1: TC/3/ARP/2010/ISFP-3.1**

Enhancing fish farming in saline and fresh water, lakes and sea shores

##### **3.2: TC/3/ARP/2010/ISFP-3.2**

Biotechnological tools for the improvement of fish production

##### **3.3: TC/3/ARP/2010/ISFP-3.3**

Integrated farms for fish production

##### **3.4: TC/3/ARP/2010/ISFP-3.4**

Husbandry of fish fingerlings & hatching marine fish

#### **4: TC/3/ARP/2010/ISFP-4**

### ***Bridging Yield Gaps between the Actual and Potential Production of Strategic Food Crops***

The application of knowledge generated through research during the last two decades has resulted in increased productivity in various strategic crops. In spite of this dramatic increment in farmer's fields, there is still a gap between crops productivity in Egypt, worldwide productivity and crop productivity in demonstration fields under Egyptian conditions. Therefore, the main objective of this research topic is to reduce the gap and reach equality in strategic food crop productivity in framers' fields as well as demonstration fields through efficient and applicable technology transfer and application of research results.

#### **4.1: TC/3/ARP/2010/ISFP-4.1**

Develop optimal cultural practices for the developed cultivars in different geographical zones.

#### **4.2: TC/3/ARP/2010/ISFP-4.2**

Increase the net return per land and water unit through implementing the highest rate of intensification.

#### **4.3: TC/3/ARP/2010/ISFP-4.3**

Transferring the developed technologies to the framers' field.

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**5: TC/3/ARP/2010/ISFP-5**

***Efficient and Better Utilization of Water Resources***

Due to the limited water resources, any expected increase in cultivated land and consequently agricultural production in Egypt is attributed to the improved efficiency of water use for agricultural purposes. Therefore, effective and better utilization of available natural water resources is a must.

**5.1: TC/3/ARP/2010/ISFP-5.1**

Development of high water holding capacity nanoparticles from local materials and wastes for agricultural purposes.

**5.2: TC/3/ARP/2010/ISFP-5.2**

New technologies for improving water use efficiency.

**5.3: TC/3/ARP/2010/ISFP-5.3**

Development of irrigation systems and water management.

**7. Eligible applicants:**

Any Egyptian citizen who is affiliated to an Egyptian institution may apply as a principal investigator (PI). For a non-Egyptian resident who is affiliated to an Egyptian institution, he/she may apply as a PI but the deputy-PI or co-PI must be an Egyptian citizen. Overall, at least 65% of the research team members must have Egyptian nationality.

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## **8. General terms and conditions: (for detailed information about the application procedures, see annexes A-C)**

- All research projects shall be evaluated on a competitive basis.
- All proposals must include in addition to the scope, the benefits and costing of the proposed work.
- The cost structure should be suitable to the proposed scope. No preset limit is defined in this type of national targeted projects.
- General guidelines for preparing the proposals are available at the STDF website: [www.stdf.org.eg](http://www.stdf.org.eg)
- Teams of researchers, of academia and industry or of industrial partners are encouraged. The benefit of partnerships should be highlighted in the proposal.

## **9. Submission process:**

All applications must be uploaded on the STDF website ([www.stdf.org.eg](http://www.stdf.org.eg)) to which registration is required. The submission will be a two stage process, as follows:

The first stage: A preproposal is submitted (as detailed afterwards in annex A).

The second stage: The applicant principal investigators, whose preproposals were selected in the first stage, will be asked to present their full proposals (as detailed afterwards in annex B). A refresh course on the proposal application process [tips on the smart design, the LFM form and the GANTT chart] will optionally be given to those who passed the first stage shortly after announcement of the preproposal results.

## **10. Evaluation process:**

The evaluation process will be executed by independent experts and the STDF will assure that the process is transparent, impartial and researcher-supportive. Also, after full proposal submission, the STDF officers may make field visits to assess the facility preparedness for the proposed research.

**11. Biosafety, Ethics and IPR considerations:** please see Annex C.

**12. Negotiation and contract signing:**

Negotiation and grant contract agreement will come into force shortly after the announcement of the second stage results. The intellectual property rights (IPR) will be a core part of the process and will be followed according to the STDF IPR rules (as detailed in the STDF website).

**13. Important dates:**

- Deadline date for preproposal submission: 31/03/2010
- Date of announcement of the accepted preproposals: 15/05/2010
- Date of the refresh course on the full proposal application process: 10/06/2010
- Deadline date for full proposal submission: 15/08/2010
- Date of announcement of the accepted full proposals: 30/10/2010
- Date for grant contract agreement: 30/11/2010

## **Annex A**

### **Components of the Preproposal (First stage submission)**

The preproposal must include:

a] A cover page containing the following items:

- Title of the project
- The name, title, affiliation and contact information of the PI applicant
- Call subject category
- Grant duration
- Total budget

b] The preproposal text comprising:

- Statement of the proposed research [half page maximum]
- Objective(s), research approach and expected outputs [two pages maximum]
- Description of the project management and the available facilities [1 page maximum]
- Budget breakdown and justification [one page maximum]
- Five references of most significant literature

The preproposal should be written in a 12-point Arial font format, one and half-line spacing and 1-inch page margins from the 4 sides. The preproposal must be submitted as a pdf file.

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## **Annex B**

### **Full proposal application form (second stage)**

The full proposal must include:

a] A cover page containing the following items:

- Title of the project [English and Arabic]
- The name, title, affiliation and contact information of the PI applicant
- Call subject category
- Grant duration
- Total budget

b] Table of contents

c] The proposal text comprising:

- Abstracts (English and Arabic, 250 words maximum, each)
- Introduction
- Background
- Wider Objectives
- Statement of proposed research
- Methods and procedures
- Preliminary data or pilot research done by the applicant research team (2 pages maximum)
- Description of the project management [both institutional and for the research team] and the available facilities (2 pages maximum)
- Expected outputs (one page maximum)
- A short list of five internationally recognized scientists in the field of research

- References (50 maximum)
- Annexes:
  - Annex 1: budget format
  - Annex 2: curriculum vitae of PI, deputy PI and research team members (A maximum of 4 additional CVs only); each CV form should not exceed 4 pages.
  - Annex 3: Logical framework matrix (LFM)
  - Annex 4: Gantt chart
  - Annex 5: Filled annex C for biosafety, ethics and IPR considerations
  - Appendices (any other documents)

The proposal should be written in a 12-point Arial font format, one and half-line spacing and 1-inch page margins from the 4 sides. The proposal must be submitted as a pdf file.

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## **Annex C**

### ***Biosafety, Ethics and IPR Considerations Form***

#### **1. Biosafety**

**The preproposal should provide answers to the following points:**

- a) Does your project have any biosafety considerations? (Yes/No)
- b) If yes; has a biosafety permission been obtained to conduct this project?
- c) If the biosafety permission has not been obtained yet, please state reasons:
- d) Please provide more information about your institutional facilities for the evaluation of GMOs.
- f) If your project has any bioethical considerations, you will be asked for the approval of your institutional or national bioethics committee in the second phase.

#### **2. Ethics**

The applicant must be aware that:

- \* The project submitted to STDF shouldn't be submitted or funded by other national or international organizations.
- \* All STDF staff (Project Officers, STDF committees and panels) are not allowed to be a part (directly or indirectly) in any project funded or administrated by STDF. For more information contact STDF.
- \* STDF reviewers aren't allowed to evaluate any preproposal, full proposal or report for a team they are working with, or for a PI with whom they had joint publications, or for a PI for whom they supervised the M.Sc. or Ph.D. thesis, or if the PI is one of his/her relatives or working under his/her direct supervision. If any of the above cases are applicable to any reviewer, he/she must decline to review. If the applicant received any sign from the reviewers indicating that he/she is the reviewer of his project, he/she must directly contact the Executive Director of STDF.

#### **3. IPR**

The applicant and implementing institution should read the STDF-IPR rules carefully ([www.stdf.org.eg](http://www.stdf.org.eg)). It's well known and understood that submission of a preproposal including Annex C (signed by PI & approved by Institution) means that the applicant and his institution accept all conditions of STDF including IPR policy, ethics and confidentiality. Annex C must be signed, approved, scanned and uploaded online, as part of the preproposal.