

GENERATION

*Cultivating Plant Diversity
For the Resource-Poor*

A CGIAR Challenge Programme

Call for Proposals

April 2004

The GENERATION Challenge Programme
Cultivating Plant Diversity for the Resource-Poor

**Competitive Grants Programme:
Call for Proposals**

Submissions

By mail:
Generation Challenge Programme
c/o CIMMYT
Apartado # 370
PO Box 60326
Houston, TX 77205 USA

By email: GCP-proposals@cgiar.org

I. OVERVIEW

Programme Purpose

The Generation Challenge Programme for *Cultivating Plant Diversity for the Resource-Poor*, hereafter referred to as the CP, will use plant genetic resources to improve livelihoods and increase food security in developing countries. It will do so by enhancing the use of genetic resources in particular in breeding programmes through innovative initiatives to generate, manage, and apply genomic information derived from comparative studies. It will enhance the public domain as the best means to ensure fair access and benefit sharing for resource-poor farmers. More information on the Challenge Programme can be found at www.generationcp.org.

The activities of the CP are organized around five Subprogrammes:

Director – R. S. Zeigler

Subprogramme 1 – Genetic diversity of global genetic resources (leader: J. C. Glaszmann)

Subprogramme 2 – Comparative genomics for gene discovery (leader: H. Leung)

Subprogramme 3 – Trait capture for crop improvement (leader: J. Crouch)

Subprogramme 4 – Genetic resource, genomic and crop information systems (leader: T. van Hintum)

Subprogramme 5 – Capacity building (coordinator: C. de Vicente)

Programme Governance

The CP is established as a Consortium of eight CGIAR centers (CIAT, CIMMYT, CIP, ICARDA, ICRISAT, IITA, IPGRI, and IRRI), and seven advanced research institutions (the Agropolis (France), Chinese Academy of Agricultural Sciences, Cornell University (USA), EMBRAPA (Brazil), John Innes Centre (UK), the National Institute for Agrobiological Sciences (Japan), and Wageningen University & Research (Netherlands)). Each Consortium Member is represented on the Programme Steering Committee (PSC), which also includes a representative

from the Global Forum for Agricultural Research and an observer from the Executive Committee of the CGIAR. The PSC is chaired by Mr. I. Serageldin, Director of the Library of Alexandria. The PSC is advised on scientific matters by a Scientific Advisory Panel. The Scientific Advisory Panel will be composed of internationally recognized accomplished scientists in the areas of genetic resources, molecular biology, functional genomics, crop improvement, bioinformatics, and capacity building for development. A Stakeholders Committee, consisting of outside observers from developed and developing countries, also contributes to the oversight of the CP. Challenge Programme activities are managed by a management team consisting of the Programme Director (R. Zeigler) and the five other Subprogramme Leaders.

Scope and Purpose of the Competitive Grants Programme

The Competitive Grants Programme will address thematic areas (see below) in each of the first four Subprogrammes. The grants programme seeks to attract the world's best scientific minds to the CP and to broaden partnerships to efficiently and effectively utilize genetic resources in the improvement of staple crops in the developing world. The PSC has determined that approximately half of the resources available to the CP in 2005 (or at least US\$4 million) will be disbursed by this mechanism.

Call for Proposals

The Challenge Programme considers the development of drought tolerant varieties as its most important long term goal; however, proposals that address other important traits (e.g. biotic and abiotic stresses and quality traits with high potential for payoffs) and/or that develop generic tools of broad applicability across the Programme will also be considered. We encourage submissions that integrate genomics with modeling whole plant physiology and/or biology associated with drought tolerance QTL. The CP also wishes to validate and refine large-scale, low cost technologies for germplasm genotyping, allele mining, and molecular breeding. Capacity building activities should be built into all Subprogramme activities. Cross-cutting capacity building initiatives will be commissioned outside of the competitive grants process.

This call for proposals invites proposals in the following thematic areas for each Subprogramme. These themes reflect the status and technical scope of current CP objectives in each area:

SP1 – Genetic diversity of global genetic resources

This Subprogramme aims to assess the genetic diversity in germplasm collections and to identify superior alleles at loci of interest by comparing trait variation and molecular polymorphisms. It is expected that a range of approaches will be appropriate, including neutral markers, known sequences, SNPs, and candidate gene analysis. Proposals should consider development of tools and methodologies for exploratory research as well as high throughput implementation of:

- Characterization of germplasm collections using random markers (see year 1 work plan, <http://www.generationcp.org/sp1clusters.htm>, for those crops for which characterization is already underway);
- Approaches for in depth sub-sampling of characterized collections;
- High throughput, genome-wide scanning methodologies;
- Optimization of SNP discovery and survey methodologies;
- Development of appropriate and extendable phenotyping protocols and establishment of phenotyping centers of excellence.

SP2 – Comparative genomics for gene discovery

This Subprogramme aims to identify genes and gene combinations that are responsible for stress tolerance in one or more crop species. Proposed projects should maximize the use of genomic and genetic resources available in the research community to identify and validate gene function important for stress tolerance. Innovative comparative genomic approaches that leverage genetic information from multiple plant species are encouraged. Emphasis will be on linking molecular variation at candidate gene loci with phenotypes at the biochemical and whole plant levels that will eventually lead to identification of functional nucleotide polymorphisms to be used effectively in breeding programmes. The Challenge Programme considers drought tolerance as an important test case; however, as mentioned above, proposals that address other biotic and abiotic stresses or quality traits with high potential for payoffs will also be considered.

SP3 – Trait capture for crop improvement

The goal of this Subprogramme is to validate gene-based marker systems and to develop appropriate technologies for their rapid and cost effective utilization by national breeding programmes across the developing world. In this context, we primarily seek proposals that include proof-of-concept introgression, pyramiding, and evaluation of QTLs for drought tolerance. As mentioned above, proposals that address other abiotic and biotic stress traits and quality traits of economic and/or social priority will also be considered. These projects must address genotype-by-environment interaction of target traits, effect of introgression on economic yield, and cost-benefit analysis of the proposed application of molecular breeding. Projects that include modeling whole plant physiology/biology associated with drought tolerance QTL and integrate various disciplinary approaches (breeding, physiology, molecular genetics) are especially welcome.

The CP also seeks proposals that facilitate the generation and uptake of molecular breeding products and strategies by national breeding programmes through shuttle genotyping in regional hubs. These projects must address product delivery pathways, impact assessment, and value chain issues. Finally, we wish to fund the development of low tech, high throughput technologies for rapid low cost implementation of MAS and MAB by breeding programmes in developing countries.

SP4 – Genetic resource, genomic, and crop information systems

This Subprogramme is the informatics, analytical, and communications platform upon which the other Subprogrammes depend. We seek proposals that include the development of analytical tools for allele discovery, QTL analysis, association genetics, and/or other approaches that may be required for the success of the other Subprogrammes. Proposals for means to link databases developed across Sub-programmes, crops, projects etc. are encouraged. Thus, we invite submissions for the development/validation/refinement of analytical tools for sequence-based chip systems for simultaneous screening of hundreds of markers across thousands of genotypes for germplasm characterization, allele mining, and marker-assisted selection and breeding.

Specific areas of interest include:

- Development and refinement of controlled vocabularies and ontologies relevant to CP activities;
- Design and deployment of high level interoperability between relevant data resources;
- Methodology and implementation of data quality assurance standards and procedures;
- Analysis and visualization tools to support CP activities including diversity analysis, analysis of expression data, mapping and other integration of phenotype and molecular data;
- Development of informatics applications to support allele mining and molecular breeding

Eligibility

- Proposals must clearly address research themes outlined above, and should clearly indicate which Subprogramme(s) is (are) being targeted. Do not indicate more than two Subprogrammes.
- Lead Principal Investigators (PI) for competitive grants must come from one of the consortium members. The Consortium Member hosting the PI will submit the proposal.
- Co-PIs may come from any consortium member (see <http://www.generationcp.org/consortium%20members.htm> for a list of consortium members), and non-consortium institutions such as non-profit research institutions, developing country research and/or education institution, or private sector for-profit organizations. Partners from outside the Consortium and from developing countries are strongly encouraged.
- Advanced institutions and private sector partners are expected to demonstrate contribution of significant resources to the proposed activities.
- At least one partner on each project must be from a research and/or educational institution from a developing country (see Appendix 1 for a list of developing countries).
- No Consortium Member will submit (i.e. have one of its staff as PI on) more than two pre-proposals for any Subprogramme in any single call for proposals. A Consortium member may also submit one start-up proposal (see below).
- A Consortium Member may submit a maximum of five pre-proposals and one start-up proposal.
- Individuals may not be PIs on more than two submissions, and may not be Co-PIs on more than four.
- With respect to future competitions, individuals may not be PI on more than two concurrently funded competitive grants projects and may not be Co-PIs on more than four.

Selection Criteria

The evaluation criteria and weighting of different components to be applied in evaluating proposals for competitive grants are:

- Feasibility (potential to achieve proposed objectives and outcomes) 30%
- Creation of *novel* outputs to the identified themes 20%
- Capacity building of developing country national programme scientists 15%
- Contribution to comparative biology for solving complex production problems 15%
- Scientific merit and originality 10%
- Strength of, and rationale for, proposed partnerships 10%

These criteria reflect the overall objectives of the CP but may be adjusted in light of its progress and as new opportunities arise.

Intellectual Property

Competitive grants will only be made to scientific teams working in institutes which explicitly accept the IP policy of the CP. These are set forth in the CP Consortium Agreement. This will be made available at the time full proposals are invited.

Scientific Oversight and Evaluation of Proposals

The PSC will be advised by an independent Scientific Advisory Panel. One member of this Panel will serve as chair of the competitive grants review panel. This review panel will further be composed of ad hoc reviewers widely recognized as experts in the fields addressed in this CP. The review panel will evaluate pre-proposals, recommend the development of full proposals, evaluate and rank those full proposals, and recommend projects for funding to the Management Committee. The Management Committee will review these recommendations and forward these to the PSC with its comments and recommendations. In the event that proposals ranked in the highest categories exceed the available funds, the Management Committee will recommend funding priorities to the PSC. The PSC is responsible for the final determination of awards.

The Management Committee will monitor programmatic focus, scientific quality, progress on technology generation, and technology transfer for all competitive grant projects, and will recommend those for continuance to their full term.

Size of Awards

Two categories of grants will be awarded: a) Start-up grants for 1-2 years for up to \$100,000 total; and b) Standard grants of up to \$300,000/year for up to 3 years. The balance among the two types of grants will be determined by funding availability, relative balance of submissions, and priorities within the Subprogrammes.

Grant Awards Process

The selection of awards will be a two-step process. The first step will be submission of pre-proposals (see instructions in section II). Pre-proposals must be directed to themes under one of the four Subprogrammes specified above. The pre-proposals will be evaluated by the review panel which will recommend those to be advanced for full proposal development. The second step will be submission of full proposals (section III). PIs of pre-proposals selected to develop full proposals will be notified by the CP Director. Review panel comments will be provided to all PIs. The number of pre-proposals selected for full proposal development will be such that the anticipated award rate will exceed 50%. However, the award rate will ultimately be determined by the final amount of funding available to the programme. Full proposals will be reviewed by the same panel.

Time Frame

Pre-proposals must be submitted by May 15 and will be screened in June. PIs of projects for full proposal development will be notified by July 1. Full proposals will be submitted by September 1. Awards will be made in November for work to start in January of 2005. Calls for proposals may occur under individual Subprogrammes at other times of the year if special funding opportunities arise. **NOTE: Proposals received after the deadline will not be considered.**

Continuity of Funding

Projects may be funded for up to three years. Funding for this programme will be established annually by the CGIAR and so cannot be assured for more than one fiscal year. *Therefore, although grants may be awarded for multiple years, funding can only be assured on an annual basis.*

Continued funding will be contingent on sufficient funds being made available from the CGIAR and on satisfactory progress.

II. PREPARATION AND SUBMISSION OF PRE-PROPOSALS:

Format:

Paper size: 8 ½ x 11 inch or A4; 12 pt font size; 1 inch (2.54 cm) margins.

Cover Page:

Title
Targeted Subprogramme(s)
Lead PI and Collaborating Scientists (co-PIs)
Participating Institutions
Submission Date

Executive Summary (limit of 300 words)

Summary of Objectives, Activities, and Expected Outputs (limit 3 pages)

Letters of Intent from partners indicating their willingness to participate in the proposal

One-page c.v. for each PI and co-PI

Indicative Budget (Broken down by Institution):

Salaries (show appropriate benefits as a separate line)
Supplies and Services
Travel
Training (tuition, living expenses, etc.)

Equipment
Indirect Costs (limited to 18%)
In-Kind Contribution

Pre-proposal Submission Instructions

Pre-proposals should be submitted to the Challenge Programme Director by mail (Apartado # 370, PO Box 60326, Houston TX 77205 USA) or as an e-mail attachment (GCP-proposals@cgiar.org) according to the time frame outlined in section I.

III. PREPARATION AND SUBMISSION OF FULL PROPOSALS

PIs for pre-proposals selected to advance to full proposal development will be notified according to the time frame outlined in section I.

Format: Paper size: 8 ½ x 11 inch or A4; 12 pt font size; 1 inch (2.54 cm) margins.

Proposal Contents:

Cover Page

Table of Contents

Executive Summary (300 word maximum) suitable for a non-scientific audience

Scientific Summary (300 word maximum)

Project Description (10 pages): Objectives and Intended Specific Outcomes

Introduction and Rationale

Approach and Methods

Partners

Management Plan

Critical Assumptions and Contingency plans

Timeline and Milestones

Budget (broken down as in pre-proposal)

Global Budget (annual and summary)

Budget by Partner (annual and summary)

Budget Notes and Justification

Appendices

Description of Partners (demonstrating their capacity to undertake to the project and a rationale for the proposed partnership)

CVs of PI, co-PIs and Collaborating Scientists (maximum two pages each including references for five most recent relevant publications)

Letters of Intent from Partner Institutions specifying resource, in-kind etc. commitments, if appropriate

Intellectual Property Statements from each partner

Full Proposal Submission Instructions

Full proposals should be submitted to the Challenge Programme Director by mail (Apartado # 370, PO Box 60326, Houston TX 77205 USA) or as an e-mail attachment (GCP-proposals@cgiar.org) according to the time frame outlined in section I.

APPENDIX 1

Developing Countries (as defined by the World Bank

<http://www.worldbank.org/data/countryclass/countryclass.html>)

Afghanistan	Dominican Republic	Lithuania	Saudi Arabia
Albania	Ecuador	Macedonia, FYR	Senegal
Algeria	Egypt, Arab Rep.	Madagascar	Serbia and Montenegro
American Samoa	El Salvador	Malawi	Seychelles
Angola	Equatorial Guinea	Malaysia	Sierra Leone
Argentina	Eritrea	Maldives	Slovak Republic
Armenia	Estonia	Mali	Solomon Islands
Azerbaijan	Ethiopia	Marshall Islands	Somalia
Bangladesh	Fiji	Mauritania	South Africa
Belarus	Gabon	Mauritius	Sri Lanka
Belize	Gambia, The	Mayotte	St. Kitts and Nevis
Benin	Georgia	Mexico	St. Lucia
Bhutan	Ghana	Micronesia, Fed. Sts.	St. Vincent and the Grenadines
Bolivia	Grenada	Moldova	Sudan
Bosnia and Herzegovina	Guatemala	Mongolia	Suriname
Botswana	Guinea	Morocco	Swaziland
Brazil	Guinea-Bissau	Mozambique	Syrian Arab Republic
Bulgaria	Guyana	Myanmar	Tajikistan
Burkina Faso	Haiti	Namibia	Tanzania
Burundi	Honduras	Nepal	Thailand
Cambodia	Hungary	Nicaragua	Timor-Leste
Cameroon	India	Niger	Togo
Cape Verde	Indonesia	Nigeria	Tonga
Central African Republic	Iran, Islamic Rep.	Northern Mariana Islands	Trinidad and Tobago
Chad	Iraq	Oman	Tunisia
Chile	Jamaica	Pakistan	Turkey
China	Jordan	Palau	Turkmenistan
Colombia	Kazakhstan	Panama	Uganda
Comoros	Kenya	Papua New Guinea	Ukraine
Congo, Dem. Rep	Kiribati	Paraguay	Uruguay
Congo, Rep.	Korea, Dem Rep.	Peru	Uzbekistan
Costa Rica	Kyrgyz Republic	Philippines	Vanuatu
Cote d'Ivoire	Lao PDR	Poland	Venezuela, RB
Croatia	Latvia	Romania	Vietnam
Cuba	Lebanon	Russian Federation	West Bank and Gaza
Czech Republic	Lesotho	Rwanda	Yemen, Rep.
Djibouti	Liberia	Samoa	Zambia
Dominica	Libya	Sao Tome and Principe	Zimbabwe