



A CGIAR Challenge Programme

3rd call for Proposals

15 January 2008

The CGIAR Generation Challenge Programme
Cultivating plant diversity for the resource-poor

Competitive Grants Programme:
Call for Concept Notes

Submission deadline: Concept notes must be submitted electronically no later than **15 March 2008** at <http://www.ohmedia.ca/clients/gcproposals/>

I. OVERVIEW

GCP's mission and purpose

The Generation Challenge Programme (GCP) is at the heart of a research and capacity-building network that uses plant genetic diversity, advanced genomic science and comparative biology to develop tools and technologies that help plant breeders in the developing world produce better crop varieties for resource-poor farmers living in drought-prone environments.

Modern plant breeding programmes need novel genetic variation and effective breeding tools and strategies to meet growing global demand for food. GCP addresses these needs by linking molecular characterisation studies on crop genetic diversity to gene discovery and allele mining strategies—with drought tolerance as our trait of focus—to develop more efficient breeding tools and approaches.

The GCP Management Team has refined GCP's objectives and operations, resulting in a Strategic Framework. This process involved the compilation of 'reference studies' to identify the impact targets—farming systems, crops, and traits—of the Programme. One such study identified GCP target farming systems taking into account the coincidence of highest poverty and the highest probability of crop failure due to water-stressed conditions, as well as the crops associated with those systems. To ensure envisioned project outputs will have positive impacts on breeding in GCP target environments, we strongly encourage applicants to refer to [GCP Strategic Framework 2007](#).

All of GCP's outputs are for the public domain, ensuring fair access for researchers and benefit-sharing for resource-poor farmers. More information on GCP can be found at [our website](#), where you will also find the [Project Development Guide \(PDG\)](#), a tool primarily for researchers as an aid in project design, management and monitoring. The PDG is highly recommended by GCP management. By using the PDG and its checklists in developing your proposal, you ensure that it fully complies with GCP requirements.

GCP activities are organised around [five Subprogrammes](#):

- Subprogramme 1 – Genetic diversity of global genetic resources (leader: J-C Glaszmann)
- Subprogramme 2 – Comparative genomics for gene discovery (leader: R K Varshney)
- Subprogramme 3 – Trait capture for crop improvement (leader: P Monneveux)
- Subprogramme 4 – Bioinformatics and crop information systems (leader: T van Hintum)
- Subprogramme 5 – Capacity-building and enabling delivery (leader: C de Vicente)

Scope and purpose of current call

Continuing with the tried and tested rationale of our 2nd 'oriented' call opened in early 2006, this 3rd call encompasses four thematic research areas. Drought tolerance is the common target trait to be considered in the proposals across all the research themes.

As in previous years, the grant programme seeks to attract the world's best scientific teams and strives to broaden partnerships to efficiently and effectively utilise genetic resources and modern technologies to improve staple crops in the developing world. As you will see from the themes below, some areas open the door for strong comparative genomics while others lean towards deeper genetic research for a specific crop.

Call for proposals

The four thematic areas proposed in this 3rd call are as follows:

Theme 1: Tapping crop diversity to identify genetic factors for drought tolerance

Exploring germplasm diversity is a major basis for improving crops by identifying traits contributing to plant performance and incorporating them into breeding.

Molecular investigations have proven efficient for describing germplasm structure.

The present challenge is ensuring such exploration also enables high-resolution genetic analysis to isolate genome regions and genes influencing plant adaptation and performance.

Various population genetics approaches have recently been developed in order to exploit the new massive characterisation power applied to monitoring diversity along the genome. This is being successfully applied on natural populations in order to detect traces of natural selection. In comparison, crop germplasm has largely been shaped by domestication, cultivation and breeding, rather than by evolutionary processes under natural selection. Methodological refinements are needed to apply genome analysis to crop germplasm in order to highlight factors for adaptation and agronomic performance.

We invite proposals with theoretical and practical components built on case studies exploring diverse crop species. Approaches such as LD mapping based on whole-genome profiling, association analysis based on candidate gene re-sequencing and detection of selection patterns will be considered. Case studies should be oriented to drought tolerance.

Theme 2: Comparative genome analyses and new approaches to QTL and/or gene/allele discovery for drought tolerance

Ability to define the narrow genetic regions (QTLs) and genes with significant effects on drought tolerance has multiple benefits for breeding programmes. It enables precise transfer of genomic regions, genes or gene complexes into multiple genetic backgrounds. It also leads to a deeper understanding of the complex GxE interactions that have thus far rendered drought tolerance a difficult trait to work with.

Despite the inherent complexity, there is evidence that genes and QTLs with sufficiently large effects can be detected under agronomically relevant environments. This presents an exciting opportunity to use genomics approaches for genetic dissection and molecular cloning of genes or gene clusters conferring tolerance to water stress.

We invite proposals that will use appropriate segregating genetic materials for tolerance to water stress to identify QTLs or specific genes—or gene combinations—responsible for the tolerance phenotypes. The multigenic nature of the trait may call for appropriate use of available ‘omics’ together with high-resolution genome mapping technologies to gather converging evidence. Use of field-proven genetic materials in gene expression studies would be a plus, as it would ensure agronomic relevance of the genes identified.

Theme 3: Traits to improve drought tolerance

In order to identify drought-tolerant genotypes in segregating populations and large germplasm collections, it is necessary to have innovative and efficient screening tools (for field and/or controlled environments) and the associated protocols.

GCP is interested in evaluating the accuracy of new traits, or refining the use of existing traits associated with yield, under different drought scenarios or crop mega-environments. Particular attention should be paid to: i) the expected impact of the target trait(s) on plant performance under water-limiting and non-limiting conditions; ii) the throughput of screening protocols and cost per sample; and, iii) the contribution of the proposed research to improve the understanding of the metabolic and genetic bases of target trait(s).

Possible traits to be targeted in the proposals encompass plant morphology and/or the differential regulation of physiological and metabolic pathways, including resource partitioning. Priority will be given, however, to traits that have hitherto received relatively less attention (e.g., root morphology), and that now take advantage of new technologies. An accurate characterisation of the drought stress (intensity, timing, etc) faced by—or imposed on—the crop will be required. Relevant molecular marker work and/or comparative genomic components are also desirable, but not essential, for the proposals of this particular research theme.

Theme 4: Innovative breeding strategies for drought tolerance improvement

The landscape for plant breeders has changed considerably over the last decade. Genomic resources—including molecular maps, markers and candidate genes—have become increasingly available; the knowledge about plant and crop physiology has increased; the structure of gene pools has been largely resolved; and finally, the availability of computing capacity has increased exponentially. As a result, breeding strategies can be revised and new methods can be developed and implemented.

Current molecular breeding practices generally only make use of a limited part of the available information and resources. Potential improvements reside in particular in

the integration of crop physiology models, the development of multi-parental populations, the optimisation of QTL validation and manipulation, and further development of molecular breeding strategies. Methods have to be developed that integrate the increased resources and new knowledge into optimised breeding strategies that will allow the plant breeder to breed varieties in a shorter time and/or at lower costs.

Proposals should aim at developing new approaches for breeding GCP crops under drought-prone environments using new methods and technologies developed by GCP and other organisations. They can include theory development, studies comparing alternative strategies and tool (software) development, and should demonstrate—using case studies—that those approaches result in breeding methods that increase the speed and/or decrease the costs compared to existing molecular breeding schemes.

Eligibility

One major strength of GCP's research is the potential for innovative partnerships.

Eligibility criteria for this call are listed below.

- Although overlap across thematic areas is anticipated for some of the proposals, each proposal must however clearly address **one** of the research thematic areas outlined above.
- Principal Investigators (PIs) may come from any [GCP Consortium member institute](#), as well as from non-Consortium institutions such as non-profit research institutions, developing country agriculture research programmes, and/or educational institutions. The institution hosting the PI will submit the proposal, via the Grants Officer, equivalent or designate, and serve as the lead institution.
- Partners may be from any Consortium member or non-Consortium institutions such as non-profit research institutions, developing country research programmes and/or educational institutions, or private sector for-profit organisations. Partnerships outside the Consortium—especially with developing countries—are strongly encouraged.
- At least one partner in the proposed project must be a GCP Consortium member.
- **Institutions are limited to a maximum of 3 (three) Concept Notes as lead institution across all four research themes in this call.**
- Any one individual researcher may not serve as PI for more than one Concept Note submitted.
- The budget proposed in the Concept Notes must be within the maximum budget indicated in the call (see 'Grant amount' below).
- All partners must adhere to GCP policies on intellectual property and data availability (see 'Intellectual property' below).

Grant Awards Process

Selection will be a two-step process.

1. The first step will be submission of Concept Notes (see guidelines below). Each Concept Note must be on one of the four thematic areas above. The Concept Notes will be evaluated by an independent review panel, composed of recognised experts in the

relevant research fields and product delivery. The panel will recommend Concept Notes to advance to Full Proposals.

2. The second step will be submission of Full Proposals. Proposed PIs of the selected Concept Notes will be notified by the GCP Director, and provided with guidelines for the Full Proposal.

Notes:

1. Because a large number of Concept Notes is expected, at the end of the Concept Note round, only scores for the different selection criteria will be provided, and not detailed reviews.
2. Full Proposals will be subjected to panel review. For all Full Proposals, both written reviews and scores will be provided.

Selection Criteria for the Concept Notes

Evaluation criteria and weighting of proposals will be as follows:

- Scientific relevance for the selected thematic area 20%
- Scientific excellence and originality 20%
- Feasibility (potential to achieve objectives and deliver outputs) 25%
- Expertise in the field¹⁾ 20%
- Strength and composition of partnerships²⁾ 15%

Notes:

- ¹⁾ Expertise in the field will be evaluated mainly based on CVs and list of publications submitted with the Concept Note.
- ²⁾ For all research themes—but in particular for Themes 1–3—active participation of national programme scientists will be a major plus, especially national scientists working in GCP target environments.

Scientific oversight of proposals

The process for evaluating and selecting Concept Notes and Full Proposals will be as follows:

- Concept notes will be evaluated based on the criteria listed above and ranked by the reviewers, who will select the best 6 (six) Concept Notes for each thematic area to advance to a Full Proposal. If less than 12 (twelve) Concept Notes are received for a given thematic area, and based on proposal quality, the reviewers may select fewer than 6 (six) to advance to Full Proposal.
- A maximum of 24 Full Proposals will be considered and Full Proposals will be first ranked within thematic areas. The top-ranked proposals for each thematic area will then be considered jointly by the review panel at a face-to-face meeting where final ranking will be conducted, taking into account the balance between thematic areas and proposal quality. The GCP Management Team (Subprogramme Leaders and Director) will then review the recommendations, revise budget allocations and request budget adjustments if necessary. The GCP Director will consequently submit the final list of proposals¹⁾ recommended for funding to the GCP Programme Steering Committee for approval.

Note:

- ¹⁾ The projection is that approximately 30 to 50% of the Full Proposals will be selected based on the quality of the proposals, and degree of compliance with eligibility criteria.

Intellectual property

Competitive grants will only be awarded to scientific teams in institutes which explicitly accept and comply with GCP's IP policy. The policy is articulated in the Generation Challenge Programme [Consortium Agreement](#).

Capacity-building and the GCP Delivery Strategy

GCP defines capacity-building at two levels—for research and for delivery.

Where relevant and appropriate, capacity-building for research should be included in the proposal.

Capacity-building for delivery is vital for ensuring the dissemination and use of GCP research products. The GCP [Delivery Strategy](#) elaborates the GCP position that to ensure impact, it is essential to undertake targeted training and capacity-building for project partners and intended users in how to access, use and apply the research products (markers, methodologies, tools, techniques, etc.). This delivery-oriented capacity-building will be the core of the project Delivery Plans, which will be required from all successful applicants for competitive grants. The Delivery Plan will define the research products in detail, the users of those products, any user training needed to enable use of the products and corresponding timeline for training.

Please note that:

- at the Full Proposal stage, PIs will be required to submit inputs for the project [Delivery Plan](#); and,
- after the Full Proposal stage, PIs of selected proposals will be asked to develop the complete project Delivery Plan before the project commences.

Grant amount

In total, approximately USD 3 million will be disbursed annually for this 3rd round of competitive grants based on the following:

- Indicative annual budget per project: USD 300,000
- Maximum budget that may be requested per project per year: up to USD 400,000 (with strong justification).

Continuity of funding

Projects may be funded for up to three years, but funding for the second and third year will be contingent on satisfactory progress and continued GCP funding. Therefore, although grants may be awarded for multiple years, **funding can only be assured on an annual fiscal-year basis.**

Timeframe

Concept notes must be submitted electronically by 15 March 2008 to <http://www.ohmedia.ca/clients/gcpproposals/>. Projects selected for Full Proposal development will be so notified at the latest by 30 April 2008, and Full Proposals must be submitted by 20 June 2008. Awards will be announced at the latest on 31 July 2008 and projects should start on 1 October 2008.

NOTE: Concept Notes and Full Proposals received after the deadline WILL NOT BE CONSIDERED.

Acknowledgment

We will acknowledge receipt of the submission to: i) the PI, and ii) the institution's Grants Officer, equivalent, or designate submitting the proposal. Please note we will not open any attachments before the deadline for submission. After this deadline, we will verify CNs meet the criteria for eligibility listed in the call. Then we will communicate to all PIs and Grants Officers who submitted the CNs on whether their CN is now under review, or is not eligible, and why.

NOTE: If you do not receive an acknowledgment of your submission within 3 (three) working days, please urgently contact Griselda Marquez (g.marquez@cgiar.org). We do not assume responsibility for submissions not received due to technical problems with transmission.

II. PREPARATION AND SUBMISSION OF CONCEPT NOTES:

Recommended tool: Project Development Guide

Whether you're a new or current GCP researcher, GCP management highly recommends that you use GCP's [Project Development Guide](#) (PDG) when preparing your proposal.

The PDG is a brand-new web-based tool designed primarily for project PIs as an interactive aid for both designing and implementing GCP projects. By using the PDG, you greatly enhance the chances of your proposal getting funded. This is because the PDG ensures your proposal has all the necessary components required by GCP, and—with its prompts and checklists—maximises attaining project goals on time and within budget.

We realise that not all researchers have the necessary support for good proposal writing. In this regard, by providing support in developing concepts and/or proposals, the PDG is one means of ensuring *every* researcher has an equal chance to qualify for GCP project funding.

Format:

Paper size: Letter (8 1/2 x 11 inches) or A4; font: Times New Roman; point size: 12 pt; margins: 1 inch (2.54 cm).

Cover Page:

- Project title
- Main targeted thematic area (select only one)
- Lead PI, Partners (co-PIs) and corresponding institutions
- Full contact details for the PI (email, address, telephone and fax)
- Date submitted

Scientific content (Maximum 4 pages):

Rationale (max ½ page)

Objectives and Intended Specific Outcomes (max ½ page)

Summary of Activities (max 3 pages)

Budget (see template below):

Indicative Budget (Broken down by Institution and Year):

Salaries (show appropriate benefits as a separate line)

Supplies and Services

Travel

Training (tuition, living expenses, etc.)

Equipment (strong justification in the budget notes)

Indirect Costs (limited to a maximum of 20%)

Appendix:

Appendix A (Quantifiable outputs and potential users per objective)

Partners:

One-page CV for each PI and co-PI (with relevant references related to the topic)

Full contact details for each partner (email, address, telephone and fax).

NB: IMPORTANT NOTES FOR SUBMISSION:

- 1. Submissions are to be made by the lead Institution's Grants Officer, equivalent, or designate.**
- 2. The number of submissions a single institute can make is limited to an absolute maximum of 3 (three) proposals.**
- 3. Concept Notes that do not have Appendix A properly filled WILL NOT BE CONSIDERED.**

Appendix A. Activities, quantifiable outputs, and key products **EXAMPLE**

Please use the example below as a guide to fill in this table.

Project Title: Marker Development and Marker Assisted Selection for Drought Tolerance and Striga Resistance in Cowpea	
Principal Investigator/Institute: Satoru Muranaka/International Institute of Tropical Agriculture (IITA)	
Objective 1: Marker assisted selection for Striga resistance in cowpea	
Activities	Quantifiable Outputs
1. Develop molecular markers linked to race specific Striga resistance genes	1. One SCAR marker developed for resistance to Striga races SG1 and SG3 2. One marker mapped for Striga race SG5
2. Screen cowpea genotypes in Striga “hotspots” in West Africa	3. 47 cowpea cultivars evaluated
3. Test markers and develop of MAS protocols	4. One Striga resistance marker validated for resistance to Striga races SG1 and SG3 5. Five populations developed and evaluated for races SG1, SG2 & SG4z
Objective 2:	
Activities	Quantifiable Outputs
1.	6. 7.
2.	8. 9. 10
3.	11. 12.
Objective 3:	
Activities	Quantifiable Outputs
1.	13. 14.
2.	15. 16. 17.
3.	18. 19.

Key products to be developed by the project (those that you consider as having the greatest potential impact. Please limit to 5:

1. SCAR markers for Striga resistance races SG1 and SG3
- 2.
- 3.
- 4.
- 5.

Budget template

LEAD INSTITUTION	Year 1	Year 2	Year 3	Total
Personnel costs				
Supplies and services				
Field				
Lab				
Travel				
Training, meeting, and workshop				
Subtotal				
Indirect costs (up to 20%)				
Lead Institution Total				
COLLABORATING INSTITUTION 1	Year 1	Year 2	Year 3	Total
Personnel costs				
Supplies and services				
Field				
Lab				
Travel				
Training, meeting, and workshop				
Subtotal				
Indirect costs (up to 20%)				
Partner 1 Total				
COLLABORATING INSTITUTION 2	Year 1	Year 2	Year 3	Total
Personnel costs				
Supplies and services				
Field				
Lab				
Travel				
Training, meeting, and workshop				
Subtotal				
Indirect costs (up to 20%)				
Partner 2 Total				
GRAND TOTAL				