



## Soil and Rhizosphere Interactions for Sustainable Agri-ecosystems (GFS-SARISA)

This is a joint call for proposals, developed through the *Global Food Security (GFS)* programme and with relevance to the aims of the *Living With Environmental Change (LWEC)* Partnership. It is funded by BBSRC and NERC and administered by BBSRC on behalf of both funders.

**Intention to submit deadline: 4<sup>th</sup> September 2013, 4pm**

**Full call application deadline: 12<sup>th</sup> November 2013, 4pm**

### Summary

The aim of the GFS call for proposals '*Soil and Rhizosphere Interactions for Sustainable Agri-ecosystems*' (GFS-SARISA) is to foster integrated, multidisciplinary approaches for investigating soil and rhizosphere interactions (including plants, microbes/fauna, soil and nutrients/water) to better understand and predict how agricultural ecosystems ('agri-ecosystems') respond to changes in management and/or environment. This is required to establish the potential for agricultural innovations (e.g. crop varieties with altered root characteristics, or new management practices) to contribute towards future strategies for improving the sustainability and productivity of agriculture, and improve resilience to environmental change.

This call forms part of a wider collaborative soil security initiative, developed under the umbrella of GFS and funded by BBSRC, NERC and Defra. This BBSRC-led programme will focus on the laboratory to field/landscape scale; while a NERC-led programme will focus on the landscape to earth-system scale. Defra will aim to build on the BBSRC and NERC programmes through linked activities to translate emerging findings for policy and practical soil management applications. This integration will ensure that the relevant science disciplines are brought together to address the strategic research challenges identified by the partners, and to ensure that the knowledge gained ultimately informs policy and practice.

Up to £4.5M is available to support projects, subject to the quality of proposals received.

## Background

This call responds to a recognised need for an improved understanding of agricultural soil and rhizosphere interactions (particularly between plants/microbes/soil) to underpin the development of 'agri-ecosystems' approaches, which are needed to further our knowledge of the inter-relationships between the different components of agricultural landscapes. This, in turn, will be an essential enabler of a step-change in our ability to tackle key challenges for sustainable food production, in the context of the Global Food Security programme priorities.

The call has been informed by a wide range of related research community discussion events relating to agricultural soils, emissions mitigation and sustainability, in particular a BBSRC:NERC-led community workshop *Biological strategies for enhanced carbon storage in agricultural soils* (Wellcome Collection, London; May 27 2011). This event examined the capacity of new biological research to improve the carbon-sink capacity of agricultural soils, and the associated research needs.

Working with a wide range of partners in the Global Food Security programme, we have identified the following **key research drivers and opportunities** which underpin this call:

- We need to better understand and predict the potential for agricultural innovations (e.g. new crop varieties or soil management practices) to influence plant-microbe-soil interactions in agricultural ecosystems ('agri-ecosystems') towards more favourable outcomes for sustainable agricultural production;
- There is a need for underpinning research focus on below-ground (plant-microbe-soil) interactions, as a foundation to the development of UK agri-ecosystems research capacity;
- There is a need to identify and develop shared research targets across a broad spectrum of biological and environmental sciences, and of research scales, from lab-based studies (e.g. molecular genetics and imaging approaches) to field- and landscape-scale analyses. Research must underpin 'real world' outcomes under 'real world' stresses. These challenges span the scientific remit of BBSRC and NERC and require the alignment of research interests;

- New technologies and approaches are available that are increasing the tractability of below-ground analyses of soil and root systems;
- Multidisciplinary approaches will be required to tackle the challenges effectively. Innovative research consortia are needed to foster the development of UK capacity in agri-ecosystems research that is set in a context of the wider environment (upstream environmental constraints and downstream environmental impacts);
- A 'virtuous cycle' of co-benefits may be obtainable;
- There is significant potential for research outcomes to deliver impact by informing key policy makers and underpinning innovation in agricultural industries;
- The potential impacts derivable from such research include:
  - direct mitigation of agricultural greenhouse gas production through enhanced soil carbon sequestration;
  - reduced/more efficient use of fertilisers, pesticides and water (and mitigation of associated energy/carbon costs);
  - improved soil structure and biodiversity;
  - improved water retention and run-off quality;
  - increased crop productivity, including mitigation of yield losses due to pests and disease and other environmental pressures;
  - increased resilience of agriculture to environmental change - particularly environmental extremes;
  - the development of evidence-based tools to inform decision makers about future land use prioritisation and tradeoffs.

This call also contributes to a wider drive by BBSRC and NERC to better align strategic interests and foster appropriate multidisciplinary research capabilities around the grand challenges of food security and environmental change.

### Scope

- Proposals must be multidisciplinary, and should seek to tackle aspects of the **key research drivers and opportunities** described above
- Proposals are particularly encouraged that link the development of agricultural innovations (e.g. crop varieties with manipulated root systems, new approaches to soil or nutrient management) with agri-ecosystems approaches to analyse the potential benefits

- Proposals that draw on the combined expertise of bioscientists and environmental scientists are particularly encouraged, as are those that link scales of research (laboratory/field/landscape)
- Approaches that seek to extract new value from existing datasets and expertise are considered within scope
- Participation of industry partners is welcomed
- The BBSRC data sharing policy applies to this call (see related links). Additional data sharing requirements may apply at time of award; further information will be made available to successful applicants.

Up to £4.5M (£4M BBSRC, £0.5M NERC) is available to support projects, subject to the quality of proposals received. Funds can be requested for up to five years. We aim to support a small number of multidisciplinary partnerships, involving a range of bioscience and environmental science expertise.

### Exclusions

The following areas are excluded from this call:

- Applications that are not directly or substantively within the scope of the call
- Applications that are not within the BBSRC:NERC scientific remit
- Applications where the majority of the research does not have a bioscience focus
- Applications which do not have relevance to the Global Food Security Programme Strategy (see related links);
- Applications which do not deploy multidisciplinary approaches

**Full applications outside the scope of the call will be rejected.** Therefore we strongly advise applicants to contact us to discuss potential project concepts (see contacts below) well before submitting proposals.

### Eligibility

- This opportunity is open to individuals and organisations normally eligible to apply for BBSRC or NERC research grant managed-mode funding, i.e. applicants based in UK Higher Education Institutions (HEIs), RCUK Research Institutes, and Independent Research Organisations (IROs) recognised by RCUK. Please refer to the RCUK website for more information (<http://www.rcuk.ac.uk/research/Pages/Eligibilityforrcs.aspx>)

- Full details of eligibility conditions can be found in section 3 of the BBSRC Research Grants Guide and section C of the NERC Grants Handbook (see related links)
- Eligibility to apply to the GFS-SARISA initiative does not confer eligibility to apply for other BBSRC schemes, which will have specific eligibility criteria
- Applications including principal or co-investigators who are not eligible to apply for funding, and/or from ineligible organisations will be rejected.
- Applicants who are unsure about their eligibility status are advised to contact us prior to submitting proposals.

Grants will be awarded on the basis of full economic cost as described on the BBSRC website. BBSRC will fund 80% of the value contained within the application. PhD students will not be funded as part of this call.

Special schemes such as the New Investigator Scheme, Industrial Partnership Awards and Industrial LINK will not apply to this call.

Changes in how equipment is requested on Research Council grants came into effect in May 2011 in response to the Wakeham Review. Applicants requesting items of equipment costing over £10k will be required to follow the guidelines as set out on the BBSRC website. <http://www.bbsrc.ac.uk/funding/apply/research-equipment-guidance.aspx>

### How to Apply

There is a 2-stage application process:

- The first stage is through the submission of an 'Intention to Submit' form by 4<sup>th</sup> September 2013, 4 pm.
- Full applications must be submitted using the Joint Electronic Submission (Je-S) system by 12<sup>th</sup> November 2013, 4 pm

**Full applications will only be accepted from applicants who have submitted an intention to submit form.**

### **Intentions to Submit - Deadline 4<sup>th</sup> September 2013, 4pm**

The Intention to Submit form (and associated guidance) can be downloaded from the related links section, and must be submitted as an email attachment in Word format to [SARISA@bbsrc.ac.uk](mailto:SARISA@bbsrc.ac.uk) by 4<sup>th</sup> September 2013, 4pm.

One Intention to Submit form is required for each proposed project; this should be submitted by the Principal Investigator. Projects that will be submitted as joint applications at the full proposal stage need only submit one Intention to Submit (from the lead organisation), covering the whole project.

The Intention to Submit form will be used for the following purposes:

- To provide information about project numbers and the response to the call
- To perform preliminary eligibility checks of applicants and institutions
- To perform a preliminary assessment of the project's fit to the scope of the call

Receipt of the completed form will be acknowledged and, where appropriate, the office will provide feedback to potential applicants on the issues above by 20<sup>th</sup> September 2013.

### **Full Proposals – Deadline 12<sup>th</sup> November 2013, 4pm**

Full proposals must be submitted using the Joint Electronic Submission system (Je-S) system. The call will be available on the Je-S system from 23<sup>rd</sup> September 2013.

Applicants are advised to read the BBSRC Grants Guide and the Je-S handbook before completing the application (see associated links).

Applicants should select:

- Council: BBSRC
- Document Type: Standard Proposal
- Scheme: Managed Mode
- Call/Type/Mode: GFS-SARISA

Standard guidelines for BBSRC research grant applications apply, as described in the BBSRC Grants Guide; applicants should note that specific page limits for attachments as described below are permitted for this call.

Proposals must be written in English using Arial, Helvetica or Verdana typefaces (or an equivalent). A strict minimum font size of 11 must be used for the entire Case for Support, Justification of Resources and CVs (excluding text on diagrams and the use of mathematical symbols). A minimum of single line spacing and standard character spacing must be used. Margins must not be less than 2 cm.

Your full application should include:

- Track Record and Case for Support (maximum 12 sides of A4). It is suggested that 1-2 pages are used for the track record with the remaining pages being used for the scientific case.
- The Case for Support should include information on:
  - A description of the scientific problem and its wider scientific context
  - Fit to the scope of the call
  - A strategy for ensuring a multidisciplinary approach
  - The management of the project
- Data management plan (maximum 1 side of A4). This should be submitted as a standalone document (not embedded in the Track Record and Case for Support).
- Pathways to Impact (maximum 1 side of A4)
- Justification of resources requested (maximum 4 sides of A4)
- Diagrammatic Work Plan (maximum 1 side of A4)
- CVs (maximum 2 sides of A4 per named applicant/named researcher)
- Letters of Support (please ensure that all letters of support are on headed paper and that they are signed and dated. Only Letters of Support which are directly relevant to this proposal should be submitted)

Please note that the page limit for the combined track record and case for support is 12 pages (rather than the standard 8). This is to allow applicants to provide a detailed description of how effective multidisciplinary working will be achieved, and how the project will be managed.

### **Assessment process (full proposals only)**

- The call will be administered by BBSRC on behalf of the funders. Appropriate peer review expertise will be sought from across the bioscience and environmental science areas
- The panel will evaluate applications against the scope (above) and criteria for assessment (below) and provide the funders with a recommended rank-ordered list of proposals
- Applicants should ensure that sufficient details of their expertise and track record, proposed project, approaches and methods are provided within the case for support to enable the application to be assessed by scientists with relevant, but not necessarily specialist, expertise
- Applicants will receive post-panel feedback on unsuccessful applications. Details of how to request this will be provided in due course, and once the panel decisions have been made
- Successful applicants may be required to report to BBSRC on an interim basis

## **Assessment criteria**

Applications will be assessed using the scope (see above) and additional criteria below:

- Scientific excellence
- Industrial and stakeholder relevance
- Economic and social impact
- Timeliness and promise
- Value for money
- Staff training potential of the project (where resources are requested for postdoctoral or other research staff).

Applicants are asked to give particular consideration to the mechanisms by which effective multidisciplinary working will be achieved.

## **Funding Period and Budget**

Up to £4.5M is available for this call. Whilst no upper cost limit per project is stipulated, BBSRC expects to fund a small number of projects under this call. Projects should be up to a maximum duration of five years. Guidance on eligible costs is available in the BBSRC Grants Guide. All resources requested must be fully justified.

## **Additional Collaborators**

Collaborating partners from industry and/or partners from other countries are strongly encouraged, where relevant to the research. The extent and reasons for any collaboration must be fully described in the case for support.

Guidance on collaborative research grants is available in the BBSRC Grants Guide. Applicants and collaborators/project partners must be aware that any costs incurred, (direct or otherwise) by collaborators or project partners in connection with the collaborations cannot be met by funding from this initiative.

## **Contacts**

Scientific and eligibility enquiries: SARISA@bbsrc.ac.uk

For system queries please email: JeSHelp@rcuk.ac.uk