



GUIDANCE FOR APPLICANTS

Pulses and Oilseeds Research Initiative: call for collaborative research projects

Closing date: 24 October 2017, 16:00 BST/15:00 GMT



SUMMARY

Department of Biotechnology, Government of India and BBSRC, UK wish to encourage multi-institutional collaborative applications between UK and Indian researchers to undertake high quality three-year projects aimed at increasing the productivity, resilience, sustainability and quality of pulses or oilseeds grown for food or feed in India. The call aims to use genomic approaches to accelerate varietal improvement by understanding and exploiting traits to enhance yield potential, increase tolerance to climatic stresses or poor-quality soils, or counter pests or diseases. The funders will support the development and exploitation of new genomic and associated bioinformatic resources, but existing resources should also be used where relevant, particularly for comparative studies.

INTRODUCTION

Department of Biotechnology (DBT) and BBSRC announce a call for research into pulses and oilseeds, supported by the Government of India and the Newton-Bhabha Fund.

Pulses and oilseeds are important crops in India and the UK. Pulses are relatively under-used crops in the UK, but are a major source of dietary protein in India. Oilseeds are grown in India and the UK, and are valuable as a source of oil for a variety of uses, as well as being useful as a source of animal feed. This call seeks collaborative projects to develop and exploit genomic and bioinformatic resources to aid the development of improved varieties of these crops for India. Institutions with diverse expertise should work together on a common objective to develop improved varieties of a target crop. These projects will strengthen scientific collaboration between the UK and India and bring together research communities with a wide range of expertise to work on common goals relevant to Indian agriculture.

Information in this document complements the [BBSRC Grants Guide](#) which should be read alongside it.

Applications are invited for multi-institutional collaborative research projects involving scientists in the UK and India, of up to **three years** in duration. Individual researchers may be involved in multiple proposals.

Up to **£3.5M** is available from BBSRC to support the UK components of this research and this is matched by DBT's support for the Indian components. It is expected that projects funded through this initiative will bring together multiple UK and Indian research groups. Industrial partners can be involved in the research as project partners but are not eligible to receive funding from BBSRC.

SCIENTIFIC SCOPE

Pulses and oilseeds are important crops in India and the UK, and this call seeks collaborative applications to develop and use genomic and bioinformatic resources to aid the development of improved varieties.

The funders aim to support innovative basic, strategic or applied research that will enable the production of these crops to be enhanced by addressing issues such as ability to withstand extremes of environmental conditions, resilience to pests or diseases, or stability of yield.

Pulses and oilseeds are important crops in India, but production of both falls short of demand and substantial quantities are imported each year. The availability of additional land to grow these crops in India is limited, so increased production will need to come from increasing yield and reducing losses.

Pulses

Pulses are important but often overlooked crops. They are a significant source of protein for large parts of the world's population, as well as being a source of other nutrients, and having other health benefits. They are also capable of fixing atmospheric nitrogen, thus reducing the need for expensive nitrogenous fertilisers and improving the nitrogen content of soils where intercropping is practised.

India is the world's largest producer of pulses, but still needs to import considerable amounts of these crops every year. Pulse production per hectare in India is considerably lower than that achieved in other parts of the world, yet pulses form a significant part of the diet of large numbers of people in India, providing them with their major source of protein. Pulses and pulse crop residues are also major sources of high quality livestock feed in India.

Pulse crops in India are generally grown by resource-poor farmers in poor fertility soils which are not irrigated adequately. Losses due to abiotic stresses such as drought and heat can result in up to 50% reduction in seed yield from the crops. High levels of salinity and alkalinity in some soils exacerbate this problem.

In addition, pulse crops are highly susceptible to pests and diseases. Pod borers such as *Helicoverpa armigera* affect many types of pulse crops and can cause crop losses of more than 20%. Fungal diseases are also a serious problem. Treatment with pesticides and fungicides can be prohibitively expensive, and resistance to these chemicals is an emerging problem.

The genetic yield potential of Indian pulses is not fully exploited. Genome sequences are available for chickpea, pigeon pea and soya bean, but genomic resources for other pulse crops are less well-developed and would benefit from further research. Genotyping of other pulse crops would aid identification of genes and markers which could be used in the development of improved varieties. Accompanying bioinformatic resources are also required.

The crops covered by this call include all edible pulse crops grown in India, but with a focus on those which have received little financial investment in the past. Genome sequences are available for soya bean, chickpea and pigeon pea, so development of genetic and genomic resources for other pulses would enable researchers and plant breeders to develop higher-yielding varieties better able to withstand environmental stresses, pests and diseases, as well as varieties with improved nutritional properties, e.g. increased protein content.

Oilseeds

Oils derived from plants are important in India, primarily for use in food, but also as fuel, and raw material in manufacturing. The main oilseeds grown in India are groundnut (*Arachis hypogaea* L.), sesame (*Sesamum indicum*), rapeseed/mustard (*Brassica juncea*), linseed (*Linum usitatissimum*) and castor seed (*Ricinus communis*). However, India is a net importer of oilseeds and needs research to improve the yields of its crops in order to reduce its reliance on imports. The main oilseed crop grown in the UK is oilseed rape (*Brassica napus*).

Most of the oilseeds grown in India are largely used to produce edible or cooking oils, and can be a major source of calories in some diets. Some oils are produced for industrial application. The seedcake is generally a valuable co-product, being used as feed for cattle and other livestock.

Production of oilseeds in India does not meet demand and seeds need to be imported. As with pulses, additional land for cultivation in India is not available, and yields of these crops from existing land need to be increased. This can be through resistance to the major diseases of oilseeds (such as downy mildew, powdery mildew, *Alternaria*, *Sclerotinia* and Phytophthoras), and pests such as caterpillars, beetles, aphids (and associated viral diseases), leaf hoppers and leaf miners.

In addition to biotic stresses, abiotic factors can also cause problems. Oilseeds grown in India are largely rain-irrigated and drought can be a limiting factor in their growth. Heat stress also limits the yields of these crops.

The majority of genomic research so far has focussed on oilseed rape and rapeseed/mustard, and genome sequences and other resources are available for these *Brassica* crops. Genomic resources for other Indian oilseed crops have received less funding and are not as well-developed. Further development of existing *Brassica* resources as well as resources for other oilseeds would underpin research to identify and map genes conferring resistance to biotic or abiotic stresses, as well as genes associated with improved seed properties.

COLLABORATIVE RESEARCH PROJECTS

DBT and BBSRC seek to bring research groups in the India and UK together to build on their combined strengths and work on projects aimed at increasing productivity of these crops in India.

Projects should build new links or strengthen existing links between India and the UK, and demonstrate how research in the two countries would be integrated. The output from the project should be the delivery of exciting new research capable of leading to increased pulse

or oilseed production in India, and decreased reliance on imports of these crops from other countries. In addition, research collaborations between the two countries should be strengthened as a result of the projects.

Please note that the funding agencies will not be able to assist in identifying collaborators for this call.

NEWTON FUND AND ODA COMPLIANCE

This call forms part of BBSRC's Newton Fund activities and therefore requires projects to address Overseas Development Assistance (ODA) objectives alongside their scientific aims.

The Newton Fund was set up by the UK Government in 2014 to build research and innovation partnerships with 16 partner countries to support their economic development and welfare, and to develop their research and innovation capacity for long-term sustainable growth. The total budgeted UK investment for the Newton Fund is £735M from 2014 to 2021, and partner countries provide matched resources within the Fund.

The Fund forms part of the UK's ODA commitment which is monitored by the Organisation for Economic Cooperation and Development (OECD). ODA funded activity focuses on outcomes that promote the long-term sustainable growth of countries on the OECD Development Assistance Committee list. Newton Fund countries represent a sub-set of this list.

More information about the Newton Fund can be found [here](#).

RCUK guidance on ODA compliance can be found [here](#).

HOW TO APPLY

Eligibility

UK Participants

Standard BBSRC managed mode eligibility conditions apply to this call. All UK applicants must be eligible to receive research funding from BBSRC as Principal/Co-Investigator; see the [BBSRC Grants Guide](#).

Indian Participants

Applicants should ensure that Indian participants fulfil the eligibility requirements for DBT funding. For this call, DBT will fund eligible researchers in Indian universities and eligible autonomous institutions, institutes of the Indian Council of Agricultural Research, and the CGIAR's International Crops Research Institute for the Semi-Arid Tropics. Indian applicants should confirm their eligibility to apply with Dr Sanjay Kalia at DBT.

For further details contact:

India (DBT): Dr Sanjay Kalia (sanjay.kalia@nic.in)

Principal Investigators are responsible for ensuring that they, and any Co-Investigators included on the application, are eligible. **Applications involving any ineligible applicants (UK or India) will result in the whole application being rejected.**

The following BBSRC schemes will **not** apply to this call: New Investigator; Industrial Partnership Awards and Industrial LINK. BBSRC will not fund studentships as part of this call.

Application process

The lead UK Principal Investigator should submit a single joint application to BBSRC on behalf of all participants using the Je-S system.

Applications may involve researchers from multiple eligible UK institutions, but should be submitted as a single Je-S application submitted by the organisation of the lead UK Principal Investigator. If successful, the lead organisation would be the recipient of the UK component of the award, and would be responsible for managing and distributing funds to other participating UK institutions in accordance with the terms and conditions of the award. Funding for the Indian component of the collaboration will be paid by DBT to the Indian partner institution(s).

How to submit your application

1. Log in to your Je-S account.
2. From the left hand menu, select **Documents**.
3. Under functions on the Main Menu, select **Create New Document**.
4. In the Add New Document screen:
 - a. Select Council: **BBSRC**
 - b. Select document type: **Standard Proposal**
 - c. Select scheme: **Newton Fund**
 - d. Select Call / Type Mode: **Newton Fund Pulses and Oilseeds Research Initiative**
 - e. Select: **Create Document**

The Je-S form should be completed in the standard way using the guidance and help text available in the Je-S system. All aspects of the proposal submitted to BBSRC via Je-S should be jointly developed by, and submitted on behalf of, the entire international consortium. Please also note the following guidance which is specific to this call:

5. The start date of the grant should be **01 July 2018**.
6. The **Other Support** section is required for this application. If there is no other support, please tick the box indicating “not relevant to the application”.
7. **Proposal classifications** are non-mandatory fields and should be completed as follows:
 - a. **Research Area** – Please choose at least one from the list available
 - b. **Qualifiers** – Please leave this section blank.
 - c. **Free-text Keywords** – Please identify at least five (and a maximum of eight) keywords relevant to the project.

The deadline for applications is 24 October 2017, 16:00 BST/15:00 GMT.

Resources

A single Je-S application (proforma) should be submitted per project using Full Economic Costing (fEC) for UK institutions. Only costs for the UK component of the application should be submitted in the Resources section of the Je-S application.

Costs requested from DBT by the Indian applicants should be detailed on the DBT cost proforma (the 'Non UK Component' attachment), and the rationale for them described in the Justification of Resources document.

Please take particular care to request sufficient funds to enable the partnering aspects of the project such as travel and subsistence, in addition to salary and consumables. It is important to agree with all partners how eligible costs for accommodation, in-country travel and subsistence will be covered and by which funding agency, when visiting or hosting overseas partners. This should be explained clearly in the 'Justification of Resources' section of the application and any queries should be directed to the relevant funding agency.

Documents required

Applicants will need to ensure that they have uploaded all the mandatory documents required by the Je-S system before they submit their application through Je-S. It will not be possible to submit an application through Je-S without attaching these documents.

Applications to this call are required to jointly prepare and submit a number of additional documents as "attachments", before submitting the Je-S application. Support for completing Je-S attachments is available in the [Je-S Handbook](#).

1. **Social Survey:** This section is non-mandatory. Please leave this section blank.
2. **Other DA Costs for Research Facilities/Existing Equipment:** Please ensure you specify clearly in the description field if you are requesting the use of any of the following BBSRC facilities:
 - ARCHER
 - National Wind Tunnel Facility
 - Research Data Facility (RDF)
 - The Earlham Institute

If this is the case, a Technical Assessment Form of attachment type "Facility Form" must also be uploaded with your application.

The BBSRC Je-S application must include the documents specified in the table below:

No.	Document Type	Description
1	Cover Letter (up to two pages A4)	The covering letter should be a maximum of two pages of A4 and should identify any declarations of interest.
2	Applicant List (follow template, available in downloads section of call webpage)	Complete the Applicant List template, providing details of the entire project team (Principal and Co-investigators) in both the UK and India. This should be uploaded as an attachment type "Other Attachment".

3	Case for Support (up to ten pages A4)	<p>Applicants wishing to apply to this call must provide a single joint Case for Support, making the detailed scientific case for the proposed research covering the entire project including research to be done in the UK and India. Applicants should complete this with the call assessment criteria in mind, and are encouraged to provide information on the following:</p> <ul style="list-style-type: none"> (a) Research track record of the applicants and specific expertise (and access to any specific infrastructure and equipment required to undertake the project) available for the research at the named organisations. (b) Strength of the UK/India scientific collaboration and how it will bring the relevant UK and Indian research communities together (c) Details of the proposed research and activities to be conducted within the project, including the proposed programme of work, individual measurable objectives against which you would wish the work to be assessed, the proposed methodology and expected outputs, and the scientific excellence and novelty of the proposal. (d) The potential for improving pulse or oilseed crop productivity in India. <p>The Case for Support must be written in English and prepared using:</p> <ul style="list-style-type: none"> • Ariel font or sans serif equivalent with a minimum of font size 11 (excluding text in diagrams and work plans); • a minimum of single-line spacing and standard character spacing; • margins must not be less than 2cm
4	Partnership and Project Management Statement (up to one page A4)	<p>Attach a statement explaining:</p> <ul style="list-style-type: none"> a) The nature of the collaboration, including whether it is a new or existing collaboration, the complementarity of the partners and how this proposal builds on previous joint work, where applicable. b) How the partnership represents a true collaboration between the transnational research teams, and the added value of this collaboration. c) A description of how the proposed project will be managed across the international project team, including communication strategies, project leadership and decision-making <p>The Partnership and Project Management Statement should be uploaded as an attachment type “Other Attachment.”</p>
5	Justification of Resources (JoR) (up to four pages A4)	<p>The Justification of Resources should provide a breakdown and full written justification of the costs covering the entire project, including both the UK and India.</p>
6	ODA Statement (up to one page A4)	<p>Attach a statement explaining how your proposed research is compliant with ODA guidelines. This should be uploaded as an</p>

		attachment type “Other Attachment”. Guidance on ODA compliance can be found here .
7	Pathways to Impact Statement (up to two pages A4)	Provide a Pathways to Impact statement, referring to the Je-S help for guidance. Please note that the impact of your research may be achieved after the lifetime of your grant, and you should include details of the potential mechanisms to achieve it.
8	Data Management Plan (up to one page A4)	Provide a Data Management Plan, referring to the Je-S help for guidance.
9	CVs for Applicants (up to two pages A4 per applicant)	Provide a single combined PDF document containing a CV for each applicant involved in the project, (UK and Indian applicants), referring to the Je-S help for guidance. Individual CVs must be no longer than two pages of A4.
10	Letter of Support (single combined document)	Provide a single combined PDF document, containing an official letter of support from the Head of Department/Institute Director for each Research Organisation involved in the project (both UK and Indian institutions). This should include a Letter of Support from the lead UK institution. The letter should confirm the organisation’s commitment to the proposed project and highlight any additional support that will be made available.
11	Facility Form (Complete form)	If relevant, use this section to provide a Technical Assessment Form if your project requests access to any of the BBSRC facilities listed above, referring to the Je-S help for guidance.
12	Workplan (up to one page A4)	Provide a diagrammatic workplan, referring to the Je-S help for guidance.
13	Non-UK Components (follow template)	DBT cost proforma – please use the template provided to submit details of the Indian project costs.

Summary of ‘Other attachments’	Applicant list Partnership and project management statement ODA Statement
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ASSESSMENT

Each application will be sent to reviewers nominated by BBSRC and DBT. The responses received from reviewers will be sent to the UK lead Principal Investigator of the project to coordinate a response from all of the applicants addressing any questions or criticisms in the reviews. Applications, reviews and applicants’ responses will be assessed by a single panel of experts nominated by BBSRC and DBT, and their recommendations will be used by BBSRC and DBT to guide their selection of the projects to be funded.

Assessment criteria

ODA compliance will be determined on receipt of the application; non-compliance will result in the application being rejected. If you are unsure about whether your project is likely to be ODA compliant, please contact BBSRC (newton.seedcrops@bbsrc.ac.uk) in advance of submitting your application.

The assessment criteria for eligible applications will be:

- Scientific excellence: novelty, importance, feasibility and timeliness of the proposed research;
- Expertise and track record of research teams;
- Significance and impact of the research on pulse/oilseed crop production in India
- Research collaboration: including strength and clarity of collaboration, and added value of the collaboration;
- Quality of the project structure proposed (including governance, arrangements for data management and sharing and management of intellectual property);
- Quality and suitability of the research environments and of the facilities available;
- Value for money.

Additional considerations

Collaboration agreement

As the research projects will be carried out by multiple research organisations and project partners in India and the UK, the basis of collaboration between the organisations and project partners, including ownership of intellectual property (IP) generated during the project and rights to exploitation, and IP management, is expected to be set out in a formal collaboration agreement between the research organisations involved. It is the responsibility of the research organisations to put such an agreement in place before the research begins. The terms of collaboration must not conflict with the funding agencies' terms and conditions or national laws, nor compromise the ODA compliance of the proposed research by inappropriately restricting use of its outputs by potential beneficiaries.

Arrangements for collaboration and/or exploitation must not prevent the future progression of academic research and the dissemination of research results in accordance with academic custom and practice and the requirements of the funding bodies. A temporary delay in publication is acceptable in order to allow commercial and collaborative arrangements to be established.

Key aspects of the Collaboration Agreement, for example management of IP, should be detailed in the 'Partnership and Project Management Statement' document. If the project is subsequently funded, the full Collaboration Agreement must be available on request to BBSRC and DBT in due course.

Intellectual property

Ownership of intellectual property (IP) generated during the project and rights to exploitation, as well as any costs regarding management of IP, are expected to be agreed between the collaborating research organisations before the research begins. Details of this agreement should be included in the collaboration agreement (as above). Agreements must not conflict with the funding agencies' terms and conditions or national laws. Any agreements in place between a research organisation and their respective funding organisation must be adhered

to, including the sharing of IP costs or benefits. Any IP sharing agreements in place between a research organisation and their national funding body would be expected to apply only to the IP share of that research organisation. For BBSRC, research organisations should adhere to BBSRC Knowledge Exchange and Commercialisation Policy¹.

Transfer of biological materials

Collection and exchange of materials may occur between collaborating institutions, as necessary, in compliance with relevant Indian and UK legislation. Applicants should familiarise themselves with regulations surrounding the transfer of materials between countries when writing their applications and should ensure that they obtain appropriate guidance on how to go about this before submitting the application, in order to reduce delays once the grant has started. In any case, a material transfer agreement should be put in place prior to any transfer.

Data management

Applicants to this call should give full consideration to the practical requirements for data sharing both within the research teams and to the wider community and describe in the appropriate sections of the application how this will be conducted. Applicants should ensure that they have requested appropriate resources for data management and data sharing.

Use of animals

Experiments using animals funded by BBSRC must comply with the Animals (Scientific Procedures) Act 1986, amended 2012 and any further embodiments. Institutions and grant holders are responsible for ensuring that all appropriate personal and project licences required under the Act have been granted by the Home Office, and that appropriate Animal Welfare and Ethical Review Body approval has been given. All BBSRC awards are made on the absolute condition that no work that is controlled by the Act will begin until the necessary licences have been obtained. Welfare standards in any overseas animal facilities used must be consistent with those required under UK legislation.

Applicants must ensure that all of the proposed research, both in the UK and any partner country, will comply with the principles of BBSRC's guidance on "[Responsibility in the use of animals in bioscience research](#)" and with the Animal Use requirements in Section 4 of the [BBSRC Grants Guide](#). In particular, UK Institutions should be aware of the following aspect of the guidance relating to research or collaboration outside the UK:

'When collaborating with other laboratories, or where animal facilities are provided by third parties, researchers and the local ethics committee in the UK should satisfy themselves that welfare standards consistent with the principles of UK legislation (e.g. the Animals (Scientific Procedures) Act 1986), and set out in this guidance, are applied and maintained. Where there are significant deviations, prior approval from the funding body should be sought and agreed.'

TIMETABLE

Call Opens	19 July 2017
Call Closes	24 October 2017

¹ <http://www.bbsrc.ac.uk/about/policies-standards/knowledge-exchange-commercialisation/>

Joint Panel to agree outcome	February/March 2018
Projects to commence	1 July 2018

CONTACTS AND HELP

For BBSRC enquiries: newton.seedcrops@bbsrc.ac.uk

For DBT enquiries: Dr Sanjay Kalia (sanjay.kalia@nic.in)