UK Plant & Crop Phenotyping Infrastructure

UKRI Infrastructure Fund Scoping Activity

*“Integrating state-of-the-art national facilities in plant and crop phenotyping and connecting the UK community to address global food security.”*

# Application proforma

# Section A:

## Overview

1. The UK Plant & Crop Phenotyping Infrastructure (working title of “UKPCPI”) was submitted to the 2021 [UKRI Infrastructure Fund](https://www.ukri.org/what-we-offer/creating-world-class-research-and-innovation-infrastructure/funded-infrastructure-projects/) as a preliminary activity for which [BBSRC was awarded £2.4M](https://www.ukri.org/what-we-offer/creating-world-class-research-and-innovation-infrastructure/funded-infrastructure-projects/) to conduct a scoping activity ahead of preparations for a future, full scale national plant and crop phenotyping infrastructure.
2. This opportunity invites colleagues from across the UK plant and crop phenotyping community to submit a collaborative, community consortium application to deliver the UKPCPI scoping pilot.
3. The UKPCPI opportunity is open to all UK-based institutions who meet the eligibility requirements which can be found on our [website](https://www.ukri.org/councils/bbsrc/guidance-for-applicants/check-if-youre-eligible-for-funding/).
4. The lead applicant should be eligible to receive UKRI funding and be associated with an eligible institution. Applicants may apply on behalf of a group of facilities as a distributed network.
5. We encourage applicants to consider, as a community, how best to ensure the optimal delivery of this scoping activity community resource. UKPCPI should deliver against three objectives:
	1. Assess the feasibility of a mechanism for national plant and crop phenotyping facility access
	2. Pilot proof-of-concept digital infrastructure
	3. Prepare for a UK EMPHASIS node as identified in the ‘UK’s research and innovation infrastructure: opportunities to grow our capability report
6. Additional goals of the UKPCPI pilot include:
	1. Demonstrate an increase in novel, multidisciplinary approaches to phenotyping and associated advanced technology development
	2. Increased community engagement with industry

Further details on UKPCPI aims and objectives can be found in [Annex 1](#_Annex_1:_UKPCPI).

1. One application will be selected to deliver the UKPCPI scoping activity.

## What we are looking for

1. BBSRC are looking for a community consortium to deliver the UKPCPI scoping activity. Amongst the consortium you must show evidence of:
	1. The capacity to deliver and/coordinate excellent research, and where possible, experience directly relevant to this opportunity (for example, a track record in managing facilities or national networks is strongly encouraged).
	2. A leadership role in international research programmes focused on plant and crop phenotyping infrastructure and large-scale community experiments.
	3. Experience of implementation of digital infrastructure (or information systems).
	4. In-depth knowledge and understanding of challenges facing modern plant and crop phenotyping and complementary network or infrastructure activities, both nationally and internationally.
	5. Critical mass of UK plant and crop phenotyping community support.

## How we will assess your application

1. Applications will be assessed by an international, multidisciplinary panel of experts covering scientific, technical, managerial, and user aspects of infrastructure provision and management. External reviews will not be sought.
2. While no financial contribution from host institutions is mandatory, statements of support are essential, in particular, those that provide assurances of continued commitment to plant and crop phenotyping, and UKPCPI aims and objectives.

### Assessment Criteria

1. The following assessment criteria (not listed in order of priority) will also apply.

#### Scientific and technical excellence

1. Applications will be assessed based on scientific and technical excellence, ability to offer access and support to external users, and added value offered to user research.

#### Capability to deliver

1. Amongst the consortium you must show evidence of:
	1. the capacity to deliver and/coordinate excellent research, and where possible, experience directly relevant to this opportunity. For example, a track record in managing facilities or national networks is strongly encouraged
	2. a leadership role in international research programmes focused on plant and crop phenotyping infrastructure and large-scale community experiments
	3. experience of implementation of digital infrastructure (or information systems)
	4. in-depth knowledge and understanding of challenges facing modern plant and crop phenotyping and complementary network or infrastructure activities, both nationally and internationally
2. Where applicants do not have prior experience of the above, they should be able to clearly demonstrate the expertise they bring to the project.

#### Long-term institutional commitment to plant and crop phenotyping

1. A long-term sustainable approach will form a critical aspect of the successful proposal; thus, applicants should make clear how the host institution has prioritised plant and crop phenotyping. Contributions from the host institution or institutions (or other external sources) are welcome but not mandatory.
2. Applicants should also detail how UKPCPI will contribute to promoting environmental suitability with specific reference the priority areas and objectives set out in the [UKRI Environmental Sustainability Strategy](https://www.ukri.org/wp-content/uploads/2020/10/UKRI-050920-SustainabilityStrategy.pdf).

#### Provision for development

1. Provision for community member development, training, and sustainability, specifically the professional development of research technical professionals and early career researchers will be part of the assessment by the panel and will inform the assessment.

#### Ethical and societal issues

1. Consideration will also be given to any ethical and societal issues that may be raised by the proposal.

## Pre-submission checklist

|  |  |  |
| --- | --- | --- |
| **Attachment ID.** | **Attachment description** | **Included?** |
| AT\_01\_cover(mandatory) | Application cover letter |[ ]
| AT\_02\_SGP(mandatory) | Small Grants Proforma |[ ]
| AT\_03\_UKPCPI\_proforma(mandatory) | Case for support Justification of resourcesData management planTable of milestones and deliverables | [ ] [ ] [ ] [ ]  |
| AT\_04\_workplan(mandatory) | diagrammatic work plan |[ ]
| AT\_05\_CVs(mandatory) | List of delivery partner CVs ([resume for researchers’ format](https://www.ukri.org/news/ukri-launches-new-resume-for-research-and-innovation/) is recommended) |[ ]
| AT\_06\_LoS\_communtiy (mandatory) | Letters of support from non-applicant community members and institutions |[ ]
| AT\_07\_LoS\_hosts(mandatory) | Letters of support from host institution(s)  |[ ]
| AT\_08\_quotations(mandatory) | Equipment quotations |[ ]
| AT\_09\_businesscase | Business case not required – please provide a blank document |[ ]

Multiple letters of support per category should be included as a single PDF.

For AT\_06 please include no more than 10 letters of support.

For AT\_07 please ensure the letter of support is signed by the legal representative of the applying institution(s) and stamped accordingly.

Each collaborator noted in the Small Grants Proforma should provide an AT\_07. Please Ensure all supporting projects, publications, outputs, and activities directly reference the host institution(s) wherever possible.

# Section B: Case for support

Applicants should refer to the UKPCPI opportunity guidance before completing the UKPCPI case for support. The case for support should be at maximum of 5000 words. Applicants will need to address the following points:

* The aims and objectives of the pilot and how it will be delivered (including feasibility)
* Potential to deliver
* Institutional environment and host institution(s) support
* Training provision (or plans for) including support for research technical professionals and early career researchers
* Benefit to the wider community
* Anticipated outputs and UKPCPI future planning
* Key risks and dependencies

|  |
| --- |
| Type text here |

Total case for support word count: X words

# Section C: Justification of resources

Applicants provide details and justifications for all costs included in “Summary of Resources Required for Project” table within the Small Grants Proforma. The justification of resources should be no more than 1000 words.

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| --- |
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Total justification of resources word count: X words

# Section D: Data management plan

Applicants should explain how data from the UKPCPI scoping pilot will be captured, managed, and made available. The data management plan should be no more than 500 words.

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| --- |
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Total data management plan word count: X words

# Section E: Deliverables and milestones

Applicants should complete the below tables detailing UKPCPI scoping activity deliverables and milestones which the project progress will be measured against.

## Deliverables

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Deliverable | Deliverable name | WP  | Lead RO(short) | Dissemination level | Delivery date |
| D 1.0 | Name | 1 | RO | Confidential/Public  | Month 24 |

## Milestone

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Milestone | Milestone name | WP | Delivery date | Output |
| M 1.0 | Name | 1 | Month 24 | Minutes of meeting/Survey/ Report |

# Annex 1: UKPCPI detailed aims and objectives

### Assess infrastructure access scheme and infrastructure development

Management of access will be critical for UKPCPI. The scoping activity must build upon work already completed by BBSRC to understand what facilities are required nationally and demonstrate the ability to attract and manage researcher access to the experimental pipeline. The nature of plant and crop phenotyping means experimental cycles have varied timeframes (e.g., short-term controlled environment vs. multiple growing periods in field) which need careful consideration to ensure effective deployment of resources. The scoping activity will develop and assess a national capability access scheme using the successful EPPN Transnational Access Scheme as a model. A successful scoping activity will demonstrate that the scheme is capable of managing access to the facility and managing researchers within the experimental pipeline and recommend whether the mechanism is fit-for-purpose for implementation at the national level in a full infrastructure proposal.

### Pilot digital agriculture

Imaging and genomics are significant drivers of the ‘data deluge’ in biology, and plant phenomics produces large volumes of both. To be successful, UKPCPI needs a free-flowing data cycle, able to integrate and analyse these data, using compute-heavy advanced statistical techniques notably AI. A Digital Infrastructure to allow ingest, sharing and analysis will be a keystone of the infrastructure, and a key lever to support the culture change needed to realize the National Infrastructure in full. The scoping activity will develop a data access/integration mechanism and test data management mechanisms.

### Preparation for UK EMPHASIS node

The development of a UK node of EMPHASIS is a priority activity for BBSRC. This requires:

1. A clear understanding of the UK’s unique offer to EMPHASIS
2. Understanding what capabilities are required as part of the EMPHASIS project as a whole
3. How that will effectively integrate into both the full UK Plant and Crop Phenotyping Infrastructure, and the wider EMPHASIS project.

This requires careful design and dialogue with the community, drawing on experience of operating the scoping activity, and understanding how a component of the UKPCPI will also serve as a node of EMPHASIS. UKPCPI will collate and represent the UK’s scientific interests alongside BBSRC as part of the EMPHASIS Interim General Assembly. The scoping activity will identify the key capabilities required to both uniquely contribute to EMPHASIS and also integrate into the wider UKPCPI. Development of the node will be a key component of the full infrastructure.

### Supplementary goals

Additional goals of the UKPCPI scoping activity are:

* Demonstrate an increase in novel, multidisciplinary approaches to phenotyping and associated advanced technology development by broadening the efforts of the UKRI funded Technology Touching Life project [PhenomUK](https://www.phenomuk.net/about/)
* Increased community outreach with industry to exploit the potential to make a substantial contribution to the bioeconomy, through the development, commercialization, and industrial uptake of new products and processes