



## **Pre-breeding strategies for obtaining new resilient and added value berries**

*Guide for Applicants*



### Disclaimer

The BreedingValue project, co-funded from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101000747, foresees as an eligible activity the provision of financial support to third parties in form of Open Calls, as a means to achieve its own objectives.

Please note that the information provided in this document is not legally binding. The BreedingValue consortium reserves the right to update, amend or change information in this document at any time without prior notice.

The BreedingValue consortium constitutes of the following partners:

Party no.	Party organisation name	Acronym	Country
1	Università Politecnica delle Marche (Coordinating Institution)	UPM	Italy
2	Institut National de Recherche pour l'Agriculture, l'Alimentation et l'Environnement	INRAE	France
3	Universidad de Málaga	UMA	Spain
4	Natural Resources Institute Finland	LUKE	Finland
5	Forschungszentrum Jülich GmbH	FZJ	Germany
6	Instituto de Investigación y Formación Agraria y Pesquera	IFAPA	Spain
7	James Hutton Institute	JHI	UK
8	Norwegian Institute of Bioeconomy Research	NIBIO	Norway
9	University of Çukurova	UCUK	Turkey
10	Julius Kühn-Institut Bundesforschungsinstitut für Kulturpflanzen	JKI	Germany
11	CNR Institute for BioEconomy	CNR-IBE	Italy
12	INVENIO	INVENIO	France
13	NIAB - East malling Research	NIAB-EMR	UK
14	Centre de Coopération Internationale en Recherche Agronomique pour le Développement	CIRAD	France
15	Fresa Nuevos Materiales	FNM	Spain
16	Yaltir Agricultural Products Inc.	YL	Turkey
17	Hansabred GmbH & Co. KG	HANSABRED	Germany
18	Sant'Orsola	S'O	Italy
19	CIV Italian Consortium of nurseries	CIV	Italy
20	European Research and Project Office GmbH	EURICE	Germany

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**Contact**

List of acronyms/abbreviations:

AUDPC	"Area Under The Disease-Progress Curve": approach to measure quantitative disease resistance
CET	Central European Time
DNA	Deoxyribonucleic acid
EC	European Commission
EU	European Union
GA	Grant Agreement
GDPR	General Data Protection Regulation
GenRes	Genetic Resources
GWAS	Genome wide association studies
H2020	Horizon 2020: Framework Programme for Research and Innovation by the European Commission
MAS	Marker-Assisted Selection
SME	Small and medium-sized enterprise
sMTA	Standard Material Transfer Agreement

## Introduction

This document provides information about the application, evaluation, and implementation process of the Open Calls in the BreedingValue project.

The involvement and interaction with the breeding community is fundamental for success of the BreedingValue project. Therefore, the BreedingValue launches four Open Calls to foster SME participation by involving further breeders.

- The Open Call#1, Open Call #2 and Open Call#3 are finalized to transfer new genotyping tools (sMTA, MAS, GWAS and genomic selection) to breeders
- Open Call#4 is to train experts to sensorial quality assessment, quality control tools and consumer sciences studies.

A total of 14 sub-projects will be funded and are expected to provide added value for both the external partners and the BreedingValue consortium. Following the idea of co-creation, the Calls will be the opportunity to test, further optimize and validate the tools developed within the BreedingValue project.

## Background

Berry production is widely established throughout Europe. Especially strawberry as the most important crop, but also raspberry and blueberry now play a significant role in European agriculture: strawberry (*Fragaria*) with a harvest area of 105,798 ha and total production of 1,275,946 tonnes compared to raspberry (*Rubus*) with 41,436 ha and 219,112 tonnes and blueberry (*Vaccinium* spp.) with 15,395 ha and 95,674 tonnes. These berries offer valuable prospects for the development and economy of rural areas in the EU due to their high-value, both in the fresh market segment and the processing industry. Considering the standard gross margins, they are far superior to crops such as wheat or corn and in response to an increasing market demand, cultivation has expanded continuously, mostly due to the recognition by the consumer of the higher sensorial and nutritional quality. Being the richest fruit in antioxidants, vitamins, minerals and fibre, they play a vital part of a healthy diet and are included in current dietary recommendations on the intake of fruits and vegetables. Growing these berries requires highly specialised knowledge and is, using the current cultivation systems, highly resource intensive. Current berry cultivars have a limited environmental tolerance which is determined by the plant's germplasm and reduces resilience to different environmental factors. At the same time, the quality of the fruits determines the success in the market by meeting consumers' expectations. Failure to produce high quality berries carries the risk of reduced profitability and sustainability for individual farmers but also the market as a whole due to high wastage. This is where BreedingValue intends to leave a mark.

## The BreedingValue Project

The project aims at bringing together public and private actors, internationally renowned scientists, GenRes managers and SMEs, with substantial experience in managing and characterising berry GenRes as well as berry consumers across Europe for the use and development of germplasm and new genetic and phenotyping tools. This will allow for studying the current biodiversity of these crops by applying advanced genotyping and phenotyping tools, and identifying new pre-breeding materials to be used for the creation of new resilient cultivars with high quality fruit. In addition, BreedingValue intends to expand communication in the GenRes-breeding-consumer chain, both nationally and EU-wide, for the present and future benefit of berry breeders, nurseries, growers and consumers.

Central to the success of BreedingValue is the establishment of a large network of experts in conservation, genetics, genomics, breeding, biotechnology, biochemistry, phytopathology, bioinformatics, statistics and the production of berries. This unprecedented multidisciplinary structure will help to attain and develop new insights, information and concepts benefitting the berry GenRes community and reinforcing the connection between EU producers and consumers.

BreedingValue will greatly impact the competitiveness of the European berry production system. This is done, not only, through consolidating the capacities of public and private European institutions for the

evaluation and use of genetic resources to develop new cultivars in compliance with the new vision of the European Green Deal, but also through increasing the quality of the fruits in response to the specific requests of the European consumers. To this end, the project consortium will develop innovative tools and materials for new resilient berry cultivars suitable for the sustainable cultivation needed for the future and by applying a first comparative study about consumer preferences of berries throughout Europe. This will put forth necessary insights to show the potential for the development of resilient cultivars with high fruit quality and consumer acceptance.

## Objectives

The BreedingValue project pursues the following key objectives:

- ✓ Designing innovative breeding strategies providing berry producers with commercial cultivars ensuring resilience, without a fruit quality penalty, across a broad range of geographic conditions.
- ✓ Exploring berry germplasm with a particular focus on contemporary challenges in breeding, in order to assure genetic diversity and berry industry success across Europe.
- ✓ Improving characterisation and selection efficiency among berry germplasm by providing new modern genotyping and phenotyping tools for identifying, sharing and disseminating results on factors controlling resilience, stress tolerance, yield stability and fruit quality.
- ✓ Specifying and communicating sensorial quality factors and consumer quality preferences for different berry species in different parts of Europe.
- ✓ Identifying and introducing superior germplasm for public and private European berry breeding programmes, as a valuable source to develop cultivars ensuring high-quality yield by sustainable production methods under different climatic environments.
- ✓ Developing concepts and user-friendly tools for documentation, communication and visualisation of berry germplasm at European level and even beyond, which will reduce conservation risks and improve the utilisation of berry GenRes in breeding programmes.
- ✓ Consolidating networking on berry GenRes - breeding interface in Europe and provide participation, training and outreach to GenRes conservers, breeders, nurseries, growers, consumers and citizens.
- ✓ Improving the capacity of the EU berry industry in order to maintain high competitiveness at national and international level.

## Open Calls in BreedingValue

New breeding tools and materials developed in the BreedingValue project will be transferred to further breeding and pre-breeding organisations through the launch of Open Calls. Through this funding instrument, the BreedingValue consortium fosters SME participation.

A total of 14 sub-projects, selected through four distinctive Open Calls, will be funded through the BreedingValue project. A budget of 235,200€ is allocated for these Open Calls.

Topic	Publication	Deadline	Number of Projects	Budget per Project	Total Amount
Open Call#1 <b>Marker-Assisted Selection (MAS) in strawberry</b>	Planned for 30 September 2021	Planned for 31 December 2021	3 projects	20,000 €	60,000€
Open Call#2 <b>Genomic selection for strawberry (F. <sup>x</sup>ananassa)</b>	31 March 2021	30 June 2021	2 projects	20,000€	40,000€

Open Call#3 <b>Marker-Assisted Selection (MAS) and Genome wide association studies (GWAS) in Raspberry</b>	31 March 2021	30 June 2021	2 projects	20,000€	40,000€
Open Call#4 <b>Development of methodological tool kits for sensorial quality assessment of berry genetic resources</b>	Planned for 31 July 2021	Planned for 31 October 2021	7 projects	95,200€	13,600€

The funding for the Open Calls sub-projects is provided by the BreedingValue project funded by the European Commission under Grant Agreement Number 101000747.

## Open Call#2: Genomic selection for strawberry (*F. xananassa*)

Genomic selection is used to select breeding material for further hybridization and/or for entering advanced cultivar trials based on their genomic breeding values rather than on phenotypic values. This approach shows better performance than traditional methods such as phenotype-based selection, pedigree-based selection, and marker assisted selection, particularly for polygenically inherited traits.

The objective of the BreedingValue Open Call #2 is to employ state-of-the-art methodology on breeders' material and implement genomic selection to the breeders. This can help the breeders to do selection in early stages of their breeding program, accelerating the generation cycles by identifying superior parents, and increasing likelihood of identifying good candidates for advanced trialing.

In the Open Call#2, we will fund **2 projects à 20,000€**.

### Deadline

The deadline for submissions for Open Call#2 is 30<sup>th</sup> June 2021 at 17:00 CET. Applications after the deadline will not be considered for evaluation.

### Applicants to be addressed

The Open Call#2 addresses applied strawberry breeders with phenotype data available (or with ability to obtain such within the call's time frame) for a high number of cultivars and/or breeding lines of strawberry (*F. xananassa*). The breeder must also be able to provide extracted DNA and have an interest to develop and apply genomic selection on own breeding material.

In detail, applicants for the Open Call#2 have to fulfil the following call-specific criteria:

- ✓ Operate an advanced running strawberry breeding program.
- ✓ Be able to extract high-quality DNA from 768 lines of strawberry (*F. xananassa*) (it is possible to sub-contract this task). This implies: 1) Sampling, labelling, and immediate flash-freezing of juvenile leaves in 96-well plates (DNeasy 96 Plant Kit, QIAGEN). 2) Storage of leaf samples (at least -20°C) until DNA extraction in-house or shipment to extraction sub-contractor in frozen condition. 3) Extract/provide DNA of a quality grade required by the genotyping assay. 4) Shipment of DNA in frozen condition to genotyping facility.
- ✓ Be able to provide phenotype data on the 768 lines: The phenotyping to be performed shall include the susceptibility to powdery mildew. The phenotype retrieval should ideally be taken from a replicated field trial. If, however, an un-replicated trial is used, a set of control lines should be planted in every 10<sup>th</sup> plot. Spatial information (row and column numbers) must be presented in order to correct for spatial variability through the field. The pesticide treatment must be relaxed after field establishment to allow for powdery mildew to establish. The scoring of powdery mildew susceptibility

must be done using Simpson's 1 to 5 ordinal scale. This scoring must be done at least five times between planting and first harvest in order to calculate area under the disease progress curve (AUDPC). Additional phenotype data, e.g., date of flowering, etc., can be supplied and is regarded positively.

- ✓ Ensure consistency of the phenotypic data provided. This implies that the phenotypic scores are taken by the same person over time and that this person is trained.

In addition to the call-specific requirements mentioned above, breeders have to fulfil the eligibility criteria mentioned in the respective section.

#### *Benefits for applicant*

Selected applicants for the Open Call#2 will benefit from:

- ✓ Learning the methodology for genomic selection through direct support and seminars
- ✓ Obtaining prediction models that are developed on, and amenable to, your own breeding material

#### *Funding scheme*

The Open Call#2 in BreedingValue applies a lump sum funding scheme. Payments will be made after the successful submission of reports.

- ✓ **Milestone 1:** Completion of contracts and introductions to researchers. Initial traits of interest and phenotypic data collection are recorded (*December 2021*).
- ✓ **Milestone 2:** Suitable leaf samples (and if possible/agreed upon pedigree information) have been collected (*July 2022*).

The **first payment** will be made after an **interim report** confirming the milestone achievement has been submitted and approved (*July 2022, 50% of total funding*).

- ✓ **Milestone 3:** Suitable phenotypic data has been received for the selected material (*November 2022*).
- ✓ **Milestone 4:** Supply of supplementary phenotypic data from the second year (*July 2023*).
- ✓ **Milestone 5:** Completion of training (*Fall 2024*).

The **final payment** will be made after a **final report** has been submitted and approved (*Fall 2024, 50% of total funding*).

Please note that in case ethical issues were identified in the application phase, additional deliverables for monitoring of these issues will be added as contractual requirements during the Sub-Grant-Agreement negotiation.

#### *Application, evaluation and sub-project preparation timeline*



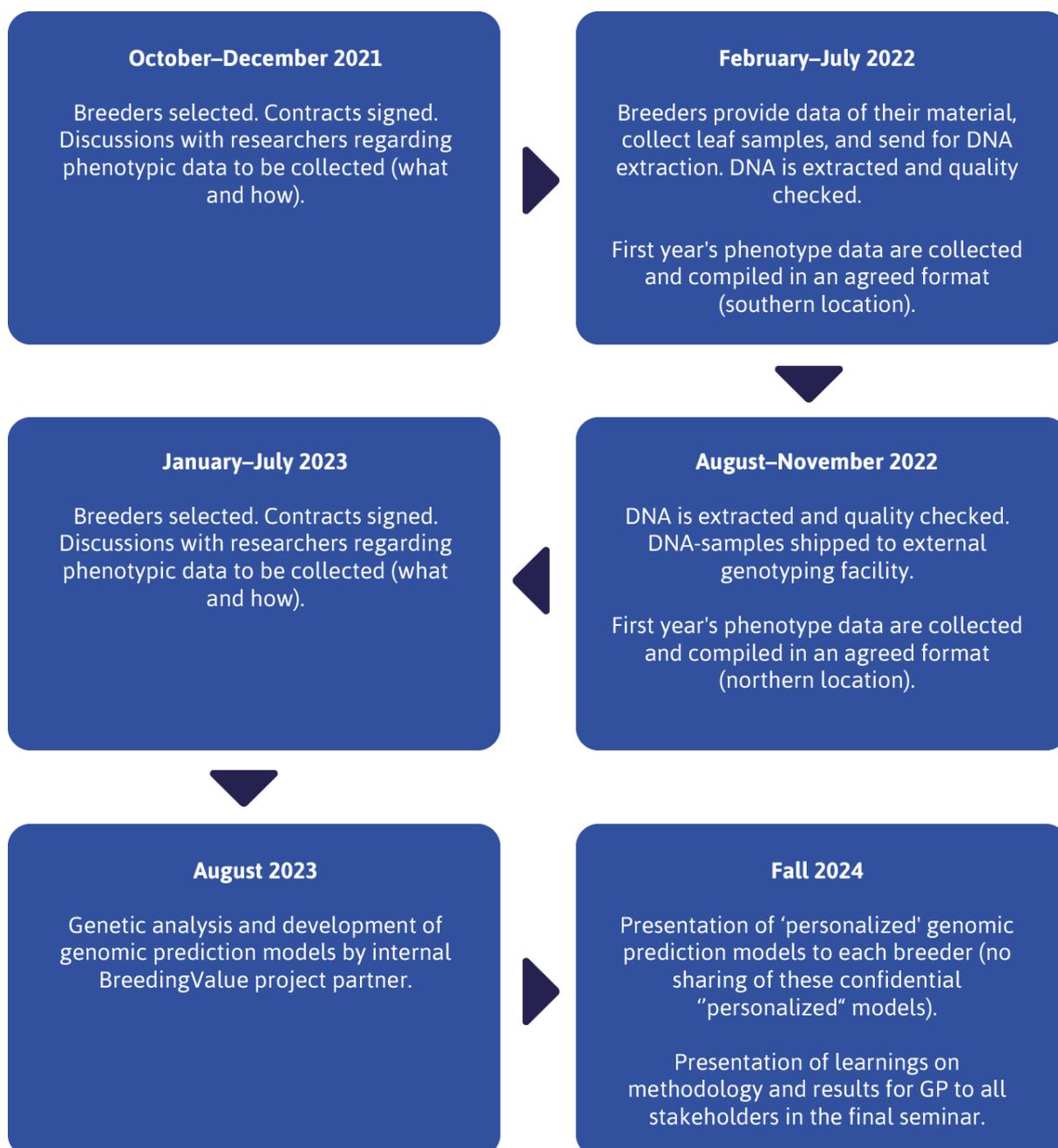
#### *Timeline of project implementation*

The Open Call project will run will run for 4 years, from 2021 to 2024.

In order to ensure the successful implementation of the selected projects, the selected applicants will be closely supervised and monitored. For each project, there will be bi-monthly calls between the selected applicant and a BreedingValue partner in charge of the respective targeted call. Additionally,

the applicant has to meet the contractual obligations such as reaching pre-defined milestones, submitting deliverables and/ or reports in order to receive the payments as defined in the Sub-Grant Agreement.

The detailed timeline is described below.



## Open Call#3: Marker-Assisted Selection (MAS) and Genome wide association studies (GWAS) in Raspberry

Marker assisted selection is a method used to select desirable individuals in a breeding programme based on DNA molecular marker patterns in addition to their trait values. This can serve as a valuable tool to assist breeders to select more efficiently. In this BreedingValue project, we will identify molecular markers which can be useful to breeders across all raspberry breeding programmes for traits such as fruit size, softening, timings of fruit development stages, cane diseases or fungal diseases such as yellow rust.

The objective of the Open Call#3 is to offer breeders an opportunity to screen and select their genotypes of interest against a suite of markers, which can help breeders to better select parental material depending on the trait of interest. Genome wide association studies (GWAS) delves further into the genetic variants within screened markers across different individuals to determine if any of these variants are associated with a particular trait or disease such as yellow rust susceptibility.

In this Open Call, we will fund **2 projects à 20,000€**.

### *Deadline*

The deadline for submissions for Open Call#3 is 30<sup>th</sup> June 2021 at 17:00 CET. Applications after the deadline will not be considered for evaluation.

### *Applicants to be addressed*

The Open Call#3 addresses breeders with robust phenotypic information (or with the ability to obtain such within the call's time frame) on a diverse range of around 450 raspberry material. The breeders must also be able to provide extracted DNA or leaf material for genotyping and have little or no experience with MAS and GWAS with an interest in developing this approach further.

In detail, applicants for the Open Call#3 have to fulfil the following call-specific criteria:

- ✓ Operate an established raspberry breeding program with selections of five years or older.
- ✓ Be able to collect suitable leaf samples from 450 lines and store at -20°C prior to sending to a genotyping platform that can extract high quality DNA. (Advice will be given to selection of appropriate leaf material and where to send samples for extraction if required). This is likely to involve: 1) Collection, accurate labelling, and immediate flash-freezing in liquid nitrogen of juvenile leaves as instructed by genotyping facility. 2) Storage of leaf samples (at least -20°C following flash freezing) until DNA extraction in-house or shipment to extraction sub-contractor in frozen condition as close to collection as possible. 3) Extract/provide DNA of a high-quality grade required by the genotyping assay. 4) Shipment of DNA in frozen condition to genotyping facility.
- ✓ Be able to perform phenotyping on the 450 genotypes selected; the phenotyping to be performed will include the date of flowering, the quality of the fruit (visual aspect e.g., size, softening, total soluble solids), the susceptibility to diseases of interest such as yellow rust and any available environmental data (temperature, humidity etc.), subject to agreed priorities. The phenotype retrieval should ideally be taken from a replicated field trial. If, however, an un-replicated trial is used, a set of control lines should be planted in every 10th plot. Spatial information (row and column numbers) must be presented to correct for spatial variability through the field.
- ✓ Produce appropriate excel files for selected raspberry lines complete with the phenotypic data collected.
- ✓ Ensure consistency of the phenotypic data provided and detail how the data was collected.
- ✓ Willing to undertake training for MAS and GWAS

In addition to the call-specific requirements mentioned above, breeders have to fulfil the eligibility criteria mentioned in the respective section.

### Benefits for applicant

Selected applicants for the Open Call#3 will benefit from:

- ✓ Support (including seminars) on MAS and GWAS and their application in breeding.
- ✓ Support in setting up and conducting MAS and GWAS across diverse germplasm, genetic information on marker results, such as yellow rust susceptibility, to better inform breeders with their parental choices.

### Funding scheme

The Open Call#3 in BreedingValue applies a lump sum funding scheme. Payments will be made after the successful submission of reports.

- ✓ **Milestone 1:** Completion of contracts and introductions to researchers. Initial traits of interest and phenotypic data collection are recorded (*December 2021*).
- ✓ **Milestone 2:** Suitable leaf samples (and if possible/agreed upon pedigree information) have been collected (*May 2022*).

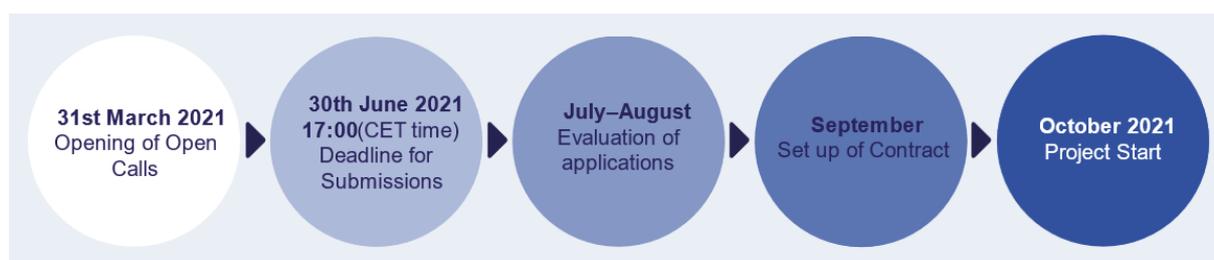
The **first payment** will be made after an **interim report** confirming the milestone achievement has been submitted and approved (*May 2022, 50% of total funding*).

- ✓ **Milestone 3:** Receipt of the phenotypic data for the 450 selections (*November 2022*).
- ✓ **Milestone 4:** Supply of supplementary phenotypic data from year 2 for the 450 selections (*November 2023*).
- ✓ **Milestone 5:** Completion of training (*Fall 2024*).

The **final payment** will be made after a **final report** has been submitted and approved (*Fall 2024, 50% of total funding*).

Please note that in case ethical issues were identified in the application phase, additional deliverables for monitoring of these issues will be added as contractual requirements during the Sub-Grant-Agreement negotiation.

### Application, evaluation and sub-project preparation timeline

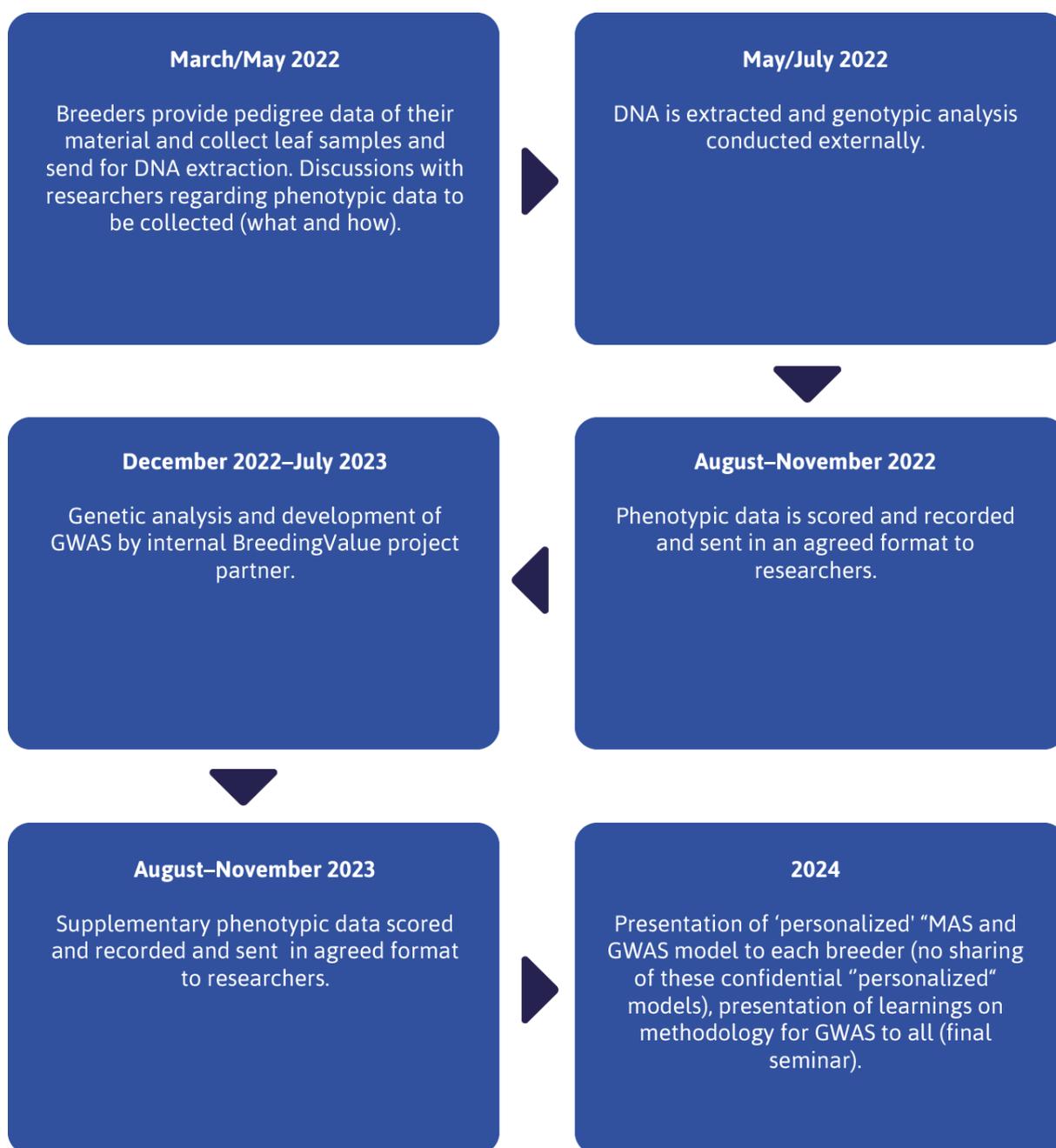


### Timeline of project implementation

The Open Call project will run for 4 years, from 2021 to 2024.

In order to ensure the successful implementation of the selected projects, the selected applicants will be closely supervised and monitored. For each project, there will be bi-monthly calls between the selected applicant and a BreedingValue partner in charge of the respective targeted call. Additionally, the applicant has to meet the contractual obligations such as reaching pre-defined milestones, submitting deliverables and/ or reports in order to receive the payments as defined in the Sub-Grant Agreement.

The detailed timeline is described below.



## Application

This section explains in detail how to apply for the Open Calls in BreedingValue.

Please note that all applications are treated in confidence. The respective evaluators of the Open Calls have to declare confidentiality and absence of conflict of interest.

## Publication of Calls

The Open Calls will be published on the following websites:

- ✓ BreedingValue website: <https://breedingvalue.eu/opencalls>
- ✓ EC Participant Portal: <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/competitive-calls>

On the BreedingValue website for the Open Calls, the following documents are provided:

- ✓ Guide for Applicants (this document)

- ✓ Call Fiche (where the respective Open Calls are described in detail)
- ✓ Proposal Template (to be filled out and to be submitted by the applicant)
- ✓ Evaluation Template (the template used to evaluate the proposal)
- ✓ SME status confirmation (document confirming the SME status according to the definition by the European Commission)
- ✓ Declaration of Honour
- ✓ Data Protection Statement (consent to process personal data)

## Submission of Applications

Applications have to be submitted by e-mail under the following address: [opencalls@breedingvalue.eu](mailto:opencalls@breedingvalue.eu)

Applications received via other channels will not be considered for evaluation.

Only applications made before the deadline of the respective Open Calls will be accepted and evaluated. We strongly advise applicants not to wait until the last minute for submission, since applications which arrive after the official deadline will not be considered for evaluation. This also includes delays in communications, e.g., mailing programs.

In case an applicant makes multiple submissions to the same call, only the latest submission will be evaluated. This implies that only one proposal per applicant can be selected for funding in each Open Call. If the latest submission is ineligible, the previously made submission will be evaluated.

## Documents for application

Only complete applications will be considered for evaluation. Please make sure to fill out all the documents listed below. All required documents can be downloaded at the Open Call website.

- ✓ **Proposal Template**
- ✓ **Data Protection Statement**
- ✓ **Declaration of Honour**
- ✓ **SME status confirmation**

In addition to the documents listed above, applicants may attach additional documents in support of their application. However, no more than 3 additional documents per application may be submitted. Please also note that the respective evaluators do not need to consider these additional documents for their evaluation.

In total, the **application should not exceed 10 MB**.

## Proposal template

The set-up of the Open Call proposal template ensures that important aspects of the applicant's planned work can be measured with respect to the pre-defined evaluation criteria. Only proposals that successfully address the aspects mentioned below will be selected for funding. Proposals using other templates cannot be considered for evaluation.

The proposal template consists of the following sections:

- **Part A**
  - Description of the applicant: Administrative information about the applicant
  - Project summary: Short summary about the proposed project
- **Part B – to be scientifically evaluated**
  - Section 1: Material and Genetic Resources to be used and their role in the project
  - Section 2: Expected impact and implementation activities
  - Section 3. Excellence of the organization and of the team
  - Section 4: Justification of costs and resources
- **Part C**
  - Ethics checklist

### *Cost categories*

In part B, section 4 of the proposal template, a **justification of costs and resources** has to be provided. The cost categories given in the template comprise the following costs:

#### **Personnel costs**

This cost category includes costs for personnel for implementing the entire project. The expected total personnel costs for executing the project should be declared in this cost category.

#### **Travel costs**

Travel costs for ensuring the implementation of the project, e.g., for attending workshops or meetings with BreedingValue project partners/consortium.

#### **Equipment costs**

This cost category includes the purchase or depreciation costs of equipment, infrastructure or other recorded asset, renting or leasing costs.

#### **Other goods and services**

This cost category includes consumables and supplies, dissemination (e.g., costs for open access), protection of results, certificates on financial statements, methodology, translations and publications).

#### **Internally invoiced goods/services**

This cost category includes goods or services which are provided by the applicant directly for the project and which the applicant values on the basis of its usual cost accounting practices.

#### **Indirect Costs**

Overhead costs: Expenses which cannot be directly attributed to the project, but which incur in a direct relation to direct costs, e.g., maintenance, water, gas, etc. These costs can be up to 25% of the direct costs. Please note that subcontracting is not included in the indirect costs.

#### **Subcontracting**

This cost category includes the cost for subcontracting. A 'subcontract' means the purchase of goods, works or services for project implementation. If necessary, to implement the project, the applicant may award subcontracts covering the implementation of certain project tasks. This means that the subcontractor charges a price, which usually includes a profit.

Please note that in case the applicant wants to subcontract certain tasks, a justification needs to be provided.

For subcontracting, certain aspects have to be considered:

- Subcontractor works without the direct supervision of the applicant and is not hierarchically subordinate to the applicant.
- The subcontractor is paid by the applicant in exchange for its work.
- Responsibility towards the BreedingValue consortium for the subcontracted work lies fully with the applicant.
- The applicant remains responsible for all its rights and obligations under the sub-Grant Agreement, including the tasks carried out by a subcontractor.
- The subcontractor has no rights or obligations towards the Commission/Agency or the other beneficiaries (it has no contractual relation with them).
- The applicant must base their subcontracts either on the best value for money (considering the quality of the service proposed, i.e. the **best price-quality ratio**) or on the lowest price ([Article 10 — Purchase of Goods, Works and Services: Annotated Model Grant Agreement of the European Commission](#)).
- The applicant must ensure that the subcontractors comply with certain obligations defined by the European Commission (Avoiding conflicts of interest, maintaining confidentiality, Promoting the action and give visibility to the EU funding, Liability for damages).

Please note that subcontracting with partners from the BreedingValue consortium and subcontracting to affiliates is not allowed. Subcontracting coordination tasks is also not allowed.

### *Eligibility of costs*

In order for costs to be eligible for funding within the Open Calls in BreedingValue, they must fulfil the following conditions:

- they must be actually incurred by the applicant;
- they must be incurred in the duration of the project implementation, with the exception of costs relating to the submission of the final report;
- they must be indicated in the proposal template under the section 'justification of costs and resources';
- they must be incurred in connection with the project and necessary for its implementation;
- they must be identifiable and verifiable, in particular recorded in the applicant's accounts;
- in accordance with the accounting standards applicable in the country where the applicant is established and with the applicant's usual cost accounting practices;
- they must comply with the applicable national law on taxes, labour and social security, and
- they must be reasonable, justified and must comply with the principle of sound financial management, in particular regarding economy and efficiency.

## Formatting

Applications have to be submitted either as a Word- or PDF-file. The original formatting of the proposal template (margins, font, size) has to be adhered to and the given number of pages for each section in the proposal may not be exceeded. Any information exceeding the page limit will not be considered for evaluation.

## Language

The application has to be in the English language, as the working language of the project is English. Applications in other languages will not be considered. This also implies that all submissions to be made during the project implementation phase (e.g., deliverables, milestones and reports) have to be submitted in English.

## Eligibility Criteria

Applications to the BreedingValue Open Calls have to fulfil the following eligibility criteria listed below.

- ✓ Applicants have to be an [SME according to the definition of the European Commission](#);
- ✓ Applicants have to be legally registered in [member states of the European Union or in Horizon 2020 associated countries](#);
- ✓ The application has to be submitted before the deadline of the respective Open Call;
- ✓ The application has to be in the English language;
- ✓ The application has to be complete (including all required signatures);
- ✓ The application has to address one of the four topics of the Open Calls within BreedingValue;
- ✓ Absence of conflict of interest: Applicants for the Open Calls in BreedingValue may not have an actual and/or potential conflict of interest during the application process and project implementation (see Declaration of Honour). Accordingly, members currently involved in the BreedingValue project as beneficiaries, subcontracts, linked (third) parties and advisors are not eligible to apply. Should any conflict of interest arise, this will be assessed on a case-by-case basis.

## Open Call topics

The application has to be clearly addressing one of the four Open Call topics within the BreedingValue project

1. Open Call#1: **Marker-Assisted Selection (MAS) in strawberry**

2. Open Call#2: **Genomic selection for strawberry (*F. ananassa*)**
3. Open Call#3: **Marker-Assisted Selection (MAS) and Genome wide association studies (GWAS) in Raspberry**
4. Open Call#4: **Development of methodological tool kits for sensorial quality assessment of berry genetic resources**

## SME status

The Open Calls in BreedingValue are targeted at SMEs according to the definition in the SME user guide and the Recommendation 2003/361/EC21 by the European Commission.

In brief, these criteria are:

- i. **Independent enterprise**, i.e.,
  - a. it has no participation in other enterprises and no enterprise has a participation in it
  - b. or it has a holding of less than 25 % of the capital or voting rights (whichever is higher) in one or more other enterprises; and/or any external parties have a stake of no more than 25 % of the capital or voting rights (whichever is higher) in the enterprise;
  - c. or it is not linked to another enterprise through a natural person in the sense of Article 3.3 of the [SME user guide](#)
- ii. **Employ fewer than 250 persons**
- iii. **Annual turnover of equal to or less than EUR 50 million or an annual balance sheet total of equal to or less than EUR 43 million**

Please note that an SME selected for the Open Calls in BreedingValue will remain eligible for project implementation even if it does not fulfil the above-mentioned SME status criteria ii.) and iii.) throughout the whole project duration. The decisive factor for eligibility is the status at submission.

Please also note that only applications with a signed SME Status Confirmation and Declaration of Honour are eligible.

## Eligible countries

Applications coming from countries which are considered as eligible for funding in Horizon 2020 are also considered as eligible for the Open Calls in the BreedingValue project.

- The **Member States of the European Union**, including their outermost regions;
- The **associated countries**.

Please note that UK-based legal entities are fully eligible to participate and receive funding from the Open Calls within the BreedingValue project, as if the UK remained a member state.

## Call-specific requirements

Please note that each Open Call has additional, call-specific requirements that need to be fulfilled by the applicant to qualify for funding. These call-specific requirements are listed on the website of the respective Open Call, in this guide under the section 'Open Calls in BreedingValue' as well as in the respective Open Call fiches.

## Evaluation Process

### Stages

The evaluation process consists of three stages. The evaluation process will start immediately after the closure of the respective Open Call:

#### *1st stage*

The **first stage** is to assess whether the applications meet the formal eligibility criteria and the call-specific requirements. The formal check includes a check of the completeness and the formal correctness of the application as well as a check of the established eligibility criteria. The check of the

call-specific requirements is to assess whether the applicant is able to implement the required project activities of the respective Open Call. This check will be done by the BreedingValue consortium partner in charge of the respective Open Call.

### 2nd stage

Applications that successfully pass the initial check-up (stage 1) are then evaluated and rated according to the technical/scientific criteria of the application (**stage 2**). The scientific evaluation is done by assigned Evaluation Board members from the BreedingValue consortium. The Evaluation Board members were selected based on their expertise in the scientific area of the respective Open Call. Each criterion to be evaluated is defined by the score (0-5).

The scientific/technical evaluation criteria correspond to the sections to be filled out in the proposal template and include:

- **Material and Genetic Resources to be used and their role in the project:**  
*Adherence of material/GenRes proposed by the applicant to the specific objectives of BreedingValue (for instance Pedigree-connection of the breeder's materials to European GenRes collections or other relevant pre-breeding materials).*
- **Expected impact and implementation activities:**  
*Expected impact related to the scope and strategic objectives of the Open Calls and of the BreedingValue project. Are the project goals and planned achievements in line with the overall objectives of BreedingValue? Is it likely that the project will deliver added value to BreedingValue? Quality and effectiveness to implement the project and reach the defined objectives and milestones.*
- **Excellence of the organization and of the team**  
*Expertise and resources to carry out the work: Is the organization and the applicant's team capable of executing the project and delivering its outputs (in required time, quality and with estimated budget)?*
- **Gender balance**  
*If the quota of women in the project team is higher than 50%, the applicant receives one extra point.*

In case proposals obtain the same score, the selection will be based on the geographical distribution of the projects in order to cover different countries/ climatic zones.

### Scoring

Scores must be in the range 0-5. Half marks may be given. Applications are evaluated as they were submitted, rather than on their potential if certain changes were to be made. When an evaluator identifies significant shortcomings, this will be reflected by awarding a lower score for the criterion concerned.

The threshold for the individual criteria is 3. The overall threshold, applying to the sum of the three individual scores, is 9. Applications which fall behind this threshold are automatically rejected.

Points	Rating	Explanation
0	Failure	The proposal fails to address the criterion or cannot be assessed due to missing or incomplete information.
1	Poor	The criterion is inadequately addressed, or there are serious inherent weaknesses.
2	Fair	The proposal broadly addresses the criterion, but there are significant weaknesses.

<b>3</b>	Good	The proposal addresses the criterion well, but a number of shortcomings are present.
<b>4</b>	Very Good	The proposal addresses the criterion very well, but a small number of shortcomings are present.
<b>5</b>	Excellent	The proposal successfully addresses all relevant aspects of the criterion. Any shortcomings are minor.

### *3<sup>rd</sup> stage*

All applications that successfully passed the 1<sup>st</sup> and 2<sup>nd</sup> evaluation stages are discussed in a **consensus group (3<sup>rd</sup> stage)**. The consensus group is composed of all evaluators of the respective Open Call.

The consensus group meets virtually or via phone to discuss the applications, to find consensus and agree on the final comments and scores of the proposal. In case questions arise from the application, the consensus group will reach out to the respective applicant for clarification. The consensus group also ensures that all applications are evaluated in line with established criteria (excellence, transparency, fairness and impartiality, confidentiality, efficiency and speed). The discussion of the consensus group discussion will result in a clearly-written Evaluation Summary Report including justifications of scores of each application. The consensus group will also prepare a short list with ranked proposals, indicating proposals which will be retained for funding in the respective topic.

### *Feedback to applicants*

After the evaluation of the applications, the applicants will be contacted by a partner from the BreedingValue consortium and will be informed about the evaluation results. Each applicant will receive a summary of the evaluation result of their application addressing the respective award criteria.

Additionally, shortly after the evaluation, a public summary report of the evaluation results will be made available on the project website, including the following information: number of proposals received, number of eligible proposals, number of proposals above threshold, number of selected proposals, list of selected proposals including organization, country and funding award.

### *Ethical issues*

The BreedingValue consortium will ensure that the projects selected through the Open Calls comply with the ethical standards and guidelines of Horizon 2020 guidelines.

Therefore, the Open Calls will be implemented based on the principle of the Horizon 2020 Ethics Appraisal Procedure ([https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/ethics\\_en.htm](https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/ethics_en.htm)).

The proposal template includes a section for ethics self-assessment, to assess whether the application raises any ethical issues. Should at least one question be answered with 'yes' in the ethics self-assessment, a complete ethics screening of the application will be carried out through the respective Evaluation Board members assigned to the Open Call. This screening will primarily assess the ethical aspects of the materials that will be provided (e.g., leaves and extracted DNA) and the recruitment of participants for the sensory testing. In case of questions concerning the information provided by the applicant in the ethics self-assessment, the BreedingValue consortium reserves itself the right to contact the applicant for clarification.

In a next step, the respective Evaluation Board members assigned to the Open Call will indicate specific actions to be undertaken to ensure ethics compliance. This will include contractual requirements such as the insertion of specific ethics deliverables (e.g., submission ethics approval package incl. ethics approvals, informed consent forms and information sheets) during the Sub-Grant-Agreement negotiation, if necessary. Additionally, a close monitoring of the ethical issues during the complete

project lifetime will be established. Should the ethical issues addressed in the proposal exceed the expertise of the designated evaluator, an external ethics expert will be appointed to ensure that all selected projects are implemented in line with fundamental ethics principles.

Please note that applications that do not properly address ethical issues or inadequately deal with privacy aspects are not eligible for funding. Further information on ethical issues is provided by the European Commission under this link:

[http://ec.europa.eu/research/participants/portal/doc/call/h2020/h2020-msca-itn2015/1620147-h2020\\_-\\_guidance\\_ethics\\_self\\_assess\\_en.pdf](http://ec.europa.eu/research/participants/portal/doc/call/h2020/h2020-msca-itn2015/1620147-h2020_-_guidance_ethics_self_assess_en.pdf).

## Selection

The highest ranked application will be selected for funding. However, the BreedingValue consortium reserves the right to objecting a specific applicant, for example due to commercial competition. In this case the choice selection is passed on to the next-ranked application.

In case applications obtain the same score, the selection will be based on the geographical distribution of the projects in order to cover different countries/ climatic zones.

In case that even the highest scoring application is of inadequate quality, the BreedingValue consortium will make no selection. This conclusion is obligatory if all the applications fall below the threshold scores applied at the evaluation.

### *Redress procedure*

The Open Calls in BreedingValue do not foresee a formal redress procedure. We count on your co-operation and acceptance of the evaluation result.

## Contract preparation

### Sub-Grant-Agreement

Once the successful applicants have been selected, a Sub-Grant-Agreement between the coordinating institution of the BreedingValue project (UPM) and the successful applicant will be negotiated. The legal basis for this agreement will be Article 15 of the BreedingValue Grant Agreement (No. 101000747).

The Sub-Grant-Agreement will address the milestones, deliverables and reports which will have to be submitted by the applicants. It will also determine obligations for operational and financial responsibility, obligations which are defined in the BreedingValue Grant Agreement (No. 101000747) under [Art 35 \(Conflict of interest\)](#), [Art 36 \(Confidentiality\)](#), [Art 38 \(Visibility of EU funding\)](#) and [Art 46 \(Liability for damages\)](#) as well as a clause on the right of the access and the audit by the EC, OLAF and Court of Auditors

### *Intellectual Property Rights*

The Sub-Grant Agreement will introduce provisions regarding Intellectual Property Rights (IPR) in the project. Results and IPR produced during project implementation are owned by the respective party which generates it. In case of joint ownership of results and IPR, specific provisions will be assessed and negotiated on a case-by-case basis in the Sub-Grant Agreement.

Please note that there are no IPR obligations towards the European Commission.

## Project implementation

In order to ensure the successful implementation of the selected projects, the selected applicants will be closely supervised and monitored. For each project, there will be bi-monthly calls between the selected applicant and a BreedingValue partner in charge of the respective Open Call. Additionally, the applicant has to meet the contractual obligations such as reaching pre-defined milestones, submitting deliverables and/or reports in order to receive the payments as defined in the Guide for Applicants and

Sub-Grant Agreement. The submitted documents, i.e., milestones, deliverables and reports, will be reviewed by the evaluators of the respective Open Call. Only documents which are of sufficient quality will be accepted. The threshold is three points.

## Payments

The Open Calls in BreedingValue apply a lump sum funding scheme. Payments will be made according to the terms in the sub-Grant Agreement between the coordinating institution of the BreedingValue consortium (P1 - UPM) and the successful applicant.

For Open Call#2 and #3, a payment of 50% of the total funding amount is made after the successful submission and approval of an interim and final report.

## Data protection regarding processing and evaluating applications

In order to process and evaluate the applications, the following partners of the Horizon 2020 project BreedingValue (GA No.101000747) will need to process personal data

- P-1 UNIVERSITA POLITECNICA DELLE MARCHE (UPM), Italy
- P-8 NORSK INSTITUTT FOR BIOKONOMI (NIBIO), Norway
- P-2 INSTITUT NATIONAL DE RECHERCHE POUR L'AGRICULTURE, L'ALIMENTATION ET L'ENVIRONNEMENT (INRAE), France
- P-4 LUONNONVARAKESKUS (LUKE), Finland
- P-3 UNIVERSIDAD DE MALAGA (UMA), Spain
- P-11 CONSIGLIO NAZIONALE DELLE RICERCHE (CNR-IBE), Italy
- P-7 THE JAMES HUTTON INSTITUTE (JHI), United Kingdom
- P-19 C.I.V. - CONSORZIO ITALIANO VIVAISTI - SOCIETA' CONSORTILE A R.L. (CIV), Italy
- P-15 FRESAS NUEVOS MATERIALES SA (FNM), Spain
- P-18 Sant'Orsola societa cooperativa agricola (S'O), Italy
- P-16 YALTIR TARIM URUNLERI SANAYI VE TICARET ANONIM SIRKETI (YL), Turkey
- P-12 INVENIO (INVENIO), France
- P-13 NIAB EMR (NIAB EMR), United Kingdom
- P-20 EURICE EUROPEAN RESEARCH AND PROJECT OFFICE GMBH (EURICE), Germany

In this context, P-20 EURICE is responsible for the formal evaluation process while the other partners mentioned above are part of the Evaluation Board.

The personal data will be processed according to the contractual obligations stated in articles 39 and 15 in the Grant Agreement.

Each partner involved will process the relevant personal data in compliance with applicable EU and national legislation on data protection (including authorisations or notification requirements).

Relevant personal data are:

- Surname
- Name
- Institution
- Academic degree
- Title
- Gender
- Position
- E-Mail-address
- Phone number.

Additionally, the BreedingValue consortium will keep internal records on the evaluation as audit trail in case of e.g., contestations by applicants, audits, or checks by the European Commission. These records comprise:

- A listing of applications received, identifying the proposing organisations involved (name and address);
- All received applications;
- All communications with applicants before call closure and during evaluation;
- The names and affiliations of the experts involved in the evaluation;
- For each application a copy of the filled forms used in the evaluation.

Please note, the bank account details will only be requested if the application is successful.

## Data protection and confidentiality

During implementation of the action and for five years after the end of the BreedingValue project the parties must keep confidential any data, documents or other material (in any form) that is identified as confidential at the time it is disclosed ('confidential information').

If a selected applicant requests, the BreedingValue consortium and the European Commission (as the responsible funding authority) may agree to keep such information confidential for an additional period beyond the initial four years. This will be explicitly stated at the sub-contract.

If information has been identified as confidential during the sub-grant execution or only orally, it will be considered to be confidential only if this is accepted by the coordinator and confirmed in writing within 15 days of the oral disclosure. Unless otherwise agreed between the parties, they may use confidential information only to implement the Agreement.

The selected applicant may disclose confidential information to the members of the BreedingValue consortium. The members of the consortium hereby undertook in addition and without prejudice to any commitment of non-disclosure under the Grant Agreement, for a period of four years after the end of the BreedingValue project not to disclose confidential information.

## Data processing

The personal data collected from the applicants in the targeted calls within BreedingValue will be processed in accordance with the GDPR and national and international laws. All personal data will be:

- a) processed lawfully, fairly and in a transparent manner in relation to the data subject ('lawfulness, fairness and transparency');
- b) collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes ('purpose limitation');
- c) adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed ('data minimization');
- d) accurate and, where necessary, kept up to date; every reasonable step must be taken to ensure that inaccurate personal data, having regard to the purposes for which they are processed, are erased or rectified without delay ('accuracy');
- e) kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the personal data are processed ('storage limitation');
- f) processed in a manner that ensures appropriate security of the personal data, including protection against unauthorized or unlawful processing and against accidental loss, destruction, or damage, using appropriate technical or organizational measures ('integrity and confidentiality').

## Contact

Information about Open Calls in the BreedingValue project: <https://breedingvalue.eu/opencalls>

Information about BreedingValue: <https://breedingvalue.eu/>

E-Mail address for submission of applications: [opencalls@breedingvalue.eu](mailto:opencalls@breedingvalue.eu)

Helpdesk for inquiries and questions: [info@breedingvalue.eu](mailto:info@breedingvalue.eu)