

ICQC,R & ICGD Newsletter

November 2022

Germplasm Available at ICQC,R

The International Cocoa Quarantine Centre at the University of Reading (ICQC,R) currently holds over 320 cocoa clones that are available for distribution, including:

- A broad diversity of wild germplasm (typically utilised in breeding programmes)
- Landraces, such as the Trinidad ICS clones
- Clones derived from breeding programmes (for example, the SHRS series)
- Clones recommended for cultivation in particular regions (including CCN 51 and PBC 123)

The full list of clones available can be found at:
www.icgd.reading.ac.uk/icqc/list.php

All new clones received at ICQC,R undergo extensive testing for viruses and other diseases over a two-year period before being made available.

To Receive Material from ICQC,R

Germplasm from ICQC,R is usually provided as budwood, although we can also provide flowers buds for use in somatic embryogenesis, small quantities of seed and leaves (used for genetic studies, for example). Material is supplied free of charge. Recipients are asked to sign a Standard Material Transfer Agreement for Plant Genetic Resources, which ensures that material remains in the public domain.

Please provide as much advanced warning of your requirements as possible and send us an import permit (via e-mail attachment) at least two weeks before the date of shipment. This should state that you wish to import cocoa as budwood and any treatment of the budwood required (such as pesticide and/or fungicide treatment, if applicable). Material is provided with a phytosanitary certificate issued by the UK Animal and Plant Health Authority.

Safe Movement Guidelines

The fourth update of the CacaoNet Technical Guidelines for the Safe Movement of Cacao Germplasm has recently been published. The guidelines include general advice on germplasm movement and up-to-date information on the distribution of important pests and diseases. There are

also descriptions of a range of pests and diseases of phytosanitary concern, each section authored by internationally recognised experts. The new guidelines also include a section on recently described mild-strain viruses of cocoa, as well as additional information on specific important insect pests.

The guidelines can be downloaded in English, French and Spanish from:

www.icgd.reading.ac.uk/icqc/documents.php

The International Cocoa Germplasm Database (ICGD)

With information on around twelve thousand cocoa clones, including yield components, quality attributes and disease reactions, ICGD aims to support the continuing conservation and breeding efforts required to maintain sustainable cocoa production in the face of increasing pressures from pests and diseases, current low yields, and the uncertainties posed by global climate change.

ICGD is available free of charge, just visit:
www.icgd.reading.ac.uk

The Data in ICGD

All information in ICGD is referenced to its original source and has been obtained from a wide range of publications, proceedings and reports, as well as directly from individuals from research institutions and genebanks.

ICGD currently includes:

- Over 31,500 cocoa clone names, including synonyms
- Agronomic traits (including quality, yield and disease reactions)
- Morphological data
- Origins (>4500) and locations (>11,000) of material
- Over 2000 photographs and drawings
- Genetic fingerprints for 2770 clones
- Fully referenced

New Features of ICGD

The website has been redesigned to allow improved access via mobile devices, with more dynamic search options (based on available data) and better integration with the International Cocoa Quarantine

Centre at Reading (ICQC,R) to allow quick access to up to date information on the clones available for distribution.

Clone lists generated by any search (including group names, such as 'ICS') can be submitted to further searches (for example, do find locations holding the clones).

New Information in ICGD

Search options have been expanded to incorporate new data, including recommended planting material for different regions (as defined by national cocoa organisations), details on available genomic data, and climate change-related physiological traits. Improved access to genetic fingerprints helps breeders and researchers confirm the identity of the plants they are using.

Recent updates include phenological and morphological data of over 1,900 accessions held in the ICG,T gratefully received from Frances Bekele and Gillian Bidaisee from the University of the West Indies (UWI) Cocoa Research Centre (CRC), Trinidad and Tobago.

Publication

Gutiérrez, Osman A., Kathleen Martinez, Dapeng Zhang, Donald S. Livingstone, Christopher James Turnbull, and Juan Carlos Motamayor. (2021) 'Selecting SNP Markers Reflecting Population Origin for Cacao (*Theobroma Cacao* L.) Germplasm Identification.' Beverage Plant Research 1 (1): 1–9. <https://doi.org/10.48130/BPR-2021-0015>

The Cocoa Programme at the University of Reading

The diverse array of cocoa research being carried out at Reading was highlighted in a webinar earlier this year (21st June).

COCOA@READING WEBINAR

Session 1: The impact of climate change on cocoa production.

Session 2 Parts I & II: Present and future management of cocoa cultivation (included presentations on both ICQC,R and ICGD).

A Global Review to Cocoa Farming Systems

A group from the University of Reading (Andrew Daymond, Diana Giraldo Mendez and Paul Hadley) and Philippe Bastide (independent cacao consultant) recently compiled a review of the published literature on the characteristics of cocoa farms in 28 countries. Expert consultants provided further analysis of the

cocoa farming systems within five key producing countries.

The purpose of this review is to facilitate a better understanding of routes to more sustainable and high-yielding cocoa farming systems that will improve the income of farmers whilst meeting all the quality and food safety requirements of the cocoa market.

This comprehensive review has been summarised in 'A Global Guide to Cocoa Farming Systems', available in English, French and Spanish.

Visit Our Website!

The webinar videos ('Webinar 2022') and downloads of the Global Cocoa Farming Systems documents (under 'Our Cocoa Projects') can be found at:

<https://research.reading.ac.uk/cocoa/>

Get in Touch

Enquires or further information on ICQC,R and how to receive germplasm should be directed to:

Andrew Daymond
a.j.daymond@reading.ac.uk

Please let us know if there is any clone that you would like to us to bring in to quarantine and we will endeavour to do so.

Enquiries regarding ICGD should be directed to:

Chris Turnbull
c.j.turnbull@reading.ac.uk

Your input is greatly appreciated!

Please get in contact if you have any new data available to include in ICGD. All data is fully referenced to its original source and can incorporate links, such as a DOI to a paper or a project webpage.

We also appreciate any feedback you may have, so whether you have suggestions for areas of future development or have noticed an error in the data, please get in touch.

Acknowledgements

Thank you to all the cocoa researchers and breeders who have provided information and feedback to the ICGD project.

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