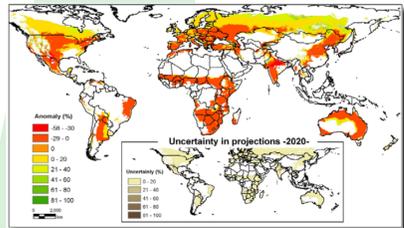




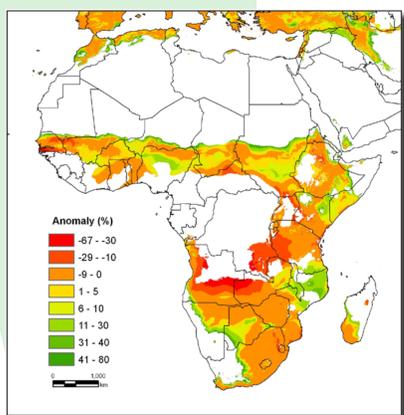
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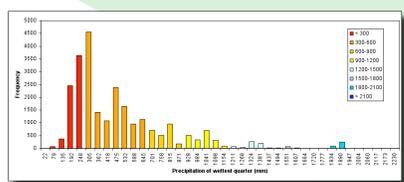
GBIF: mobilising information for adapting agriculture to climate change



Change in suitability for cultivating common bean across the world, from present to 2020, showing a global loss in suitability, especially in Africa.



In green, areas that would benefit from development of a new bean variety with 100mm greater drought tolerance. Many areas in Malawi, Mozambique and in the Sahelian belt will benefit from such a trait.



Frequency of germplasm accessions collected in regions of varying precipitation levels in the 3 month growing season for common bean. The collections in red potentially have traits related to drought tolerance which may be used in breeding programs.

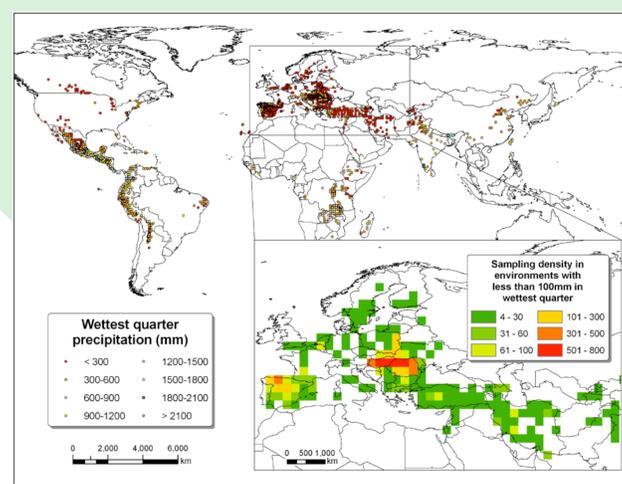
Recent analyses of the impacts of climate change on appropriate habitats for common bean (*Phaseolus vulgaris*) show that many areas of the world lose climatic suitability.

There are 268,000 *ex situ* accessions of common bean held in genebank collections around the world. Each of these accessions may have useful traits for adapting new varieties to future changes in climate.

Already, information about a third of these accessions is available through GBIF, the Global Biodiversity Information Facility. Data mining such global information resources provides a unique opportunity to identify germplasm with potential useful traits such as for drought tolerance.

For example, through the GBIF Data Portal, it is possible to identify germplasm held in genebanks which were originally collected in locations of less than 300 mm rainfall during the 3-month growing season. Most of these 3,608 accessions originate from Central Europe, but also from the Sahelian belt and dry regions of the southern Andes. These are the sorts of candidate accessions needed in a breeding program for drought tolerance.

The global GBIF infrastructure therefore permits the identification or pre-screening of valuable biodiversity resources as well as enables more advanced bioinformatics analyses. Such a global information resource is therefore a critical tool for enhancing the efficiency and effectiveness of breeding programs to adapt to climate change.



Dot map of germplasm collections available through GBIF. Those in red represent collections made in sites with less rainfall in the 3-month growing season, many of which are found in Central Europe.



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About GBIF

GBIF makes digital biodiversity data openly and freely available on the Internet for everyone, and endorses both open source software and open data access.

<http://www.gbif.org>

GBIF provides scientific biodiversity data for decision-making, research endeavours and public use.

<http://data.gbif.org>

GBIF is a network of data publishers who retain ownership and control of the data they share. Linked datasets provide a more robust representation of biodiversity than any single dataset.

GBIF provides access to primary biodiversity data held in institutions in developed and developing countries.

Data shared through GBIF are repatriated data.

GBIF is a dynamic, growing partnership of countries, organisations, institutions and individuals working together to mobilise scientific biodiversity data.

GBIF invites you to download species occurrence data freely and openly from <http://data.gbif.org>

GBIF invites you to join the GBIF network and share your biodiversity data, as well as participate in developing new tools and services.

