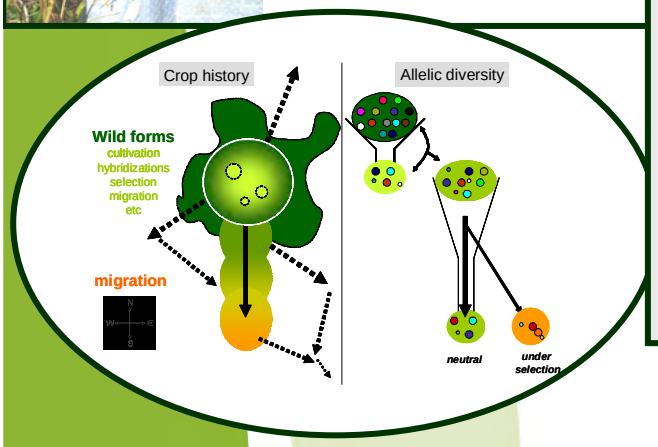
Agropolis Resource Center for Crop Conservation, Adaptation and Diversity

a new open multi-function platform devoted to plant agrobiodiversity

The ARCAD project aims at setting up a new open multi-function (**conservation, research & training**) platform devoted to the assessment and better use of **plant agrobiodiversity in Mediterranean and tropical regions**

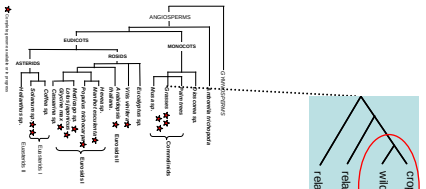


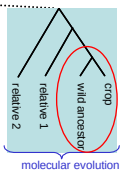
•**ARCAD's primary scientific work** focuses on the relationship between **crop biodiversity, crop domestication** and **adaptation to agricultural environments**

•By studying the **history and patterns of crop domestication and adaptation**, it will show how genes, genomes and populations of cultivated plants haven been shaped by centuries of farming as well as environmental and societal changes.

Comparative population genomics in wild and crop plants

A genome- and phylogenetic-wide approach





Identify genomic selective patterns within and across species

•High throughput bulk cDNA sequencing of a wide range of crops and wild relatives

•Bioinformatics analysis

>>mechanisms governing genome evolution

>>influence of life history traits

>>detection of selection footprints

Crop adaptation to climate change

Genetic and evolutionary processes involved in phenological responses

Spatial contrasts : comparison of populations collected along climatic gradients

- *Medicago truncatula* : Latitudinal variation, Mediterranean basin
- rice : altitudinal variation, Madagascar
- pearl millet and sorghum : latitudinal gradient, West Africa

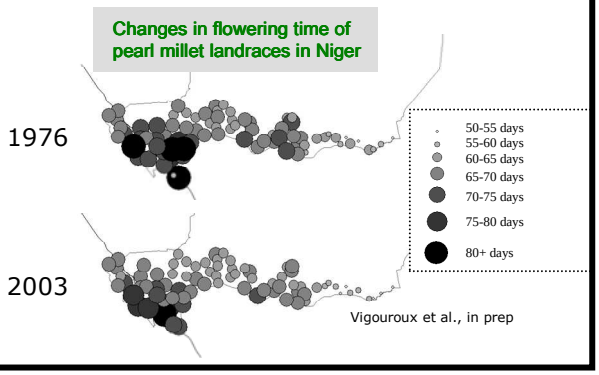
Temporal contrasts : comparison of current populations/varieties with accessions collected 20-30 years ago in the same sites

- *Medicago truncatula,* pearl millet,rice

>>methodological tools to detect selection footprints along environmental gradients and over time

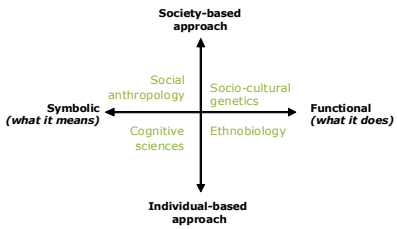
>>genetic architecture of flowering time response to climate variation

>>ecogeographical distribution of flowering-time alleles



Cereals in Africa

From advanced to underutilized crops



'advanced' species
rice, sorghum, pearl millet, wheat, maize, ...

•domestication history
•local social dynamics
•linguistic representations
•local gene flows
•population genomics

'underutilized' species
fonio, finger millet, tef, ...

•sampling strategy
•inventories, surveys
•characterisation
•history

•These three main research components are supported by projects in **bioinformatics** and **association genetics**.

•**Biological resources conservation** activities are supported by projects on **DNA bank** development and **cryopreservation**.

•The training platform will offer **training courses** in cryopreservation, bioinformatics, multidisciplinary analysis of crop diversity.

arcad is a flagship project of agropolis fondation

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