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Liberté Égalité Fraternité

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Development of phenomic selection multifunctional purposes associated to biomass and the valorisation of ecosystem services in Miscanthus sinensis

Miscanthus sinensis is one of the two parents of the interspecific *Miscanthus x giganteus* clone that is widely cultivated worldwide. It is a crop of growing interest in the past few years for its low input requirement and its multifunctional uses. Initially considered as an horticultural crop, it is now grown for biomass production to convert in litter, combustion and biomaterials production. With the increased urge to mitigate the climate change, miscanthus is a key crop to decarbonate French agriculture considering all its ecosystem services.

Ecosystem services definition: All crop traits that have positive impacts on the crop environment while producing biomass. These services can be categorized into four main types: provisioning, regulating, cultural, and supporting services.









- Bi<u>omass</u>
- Rhizomes





- Climate regulation
- Water, soil, air purification
- Pollination
- Pest and disease controls





Cultural services

- Aesthetic values
- Cultural heritage
- Educational value

establishment years





Harmless to

environment

No chemical inputs

Non invasiveness

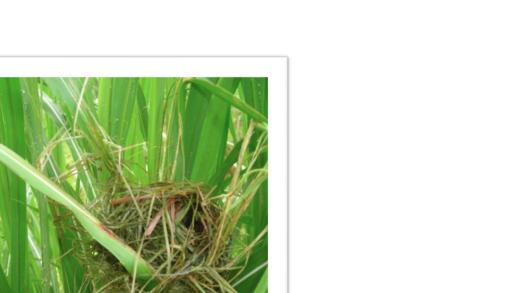
No irrigation

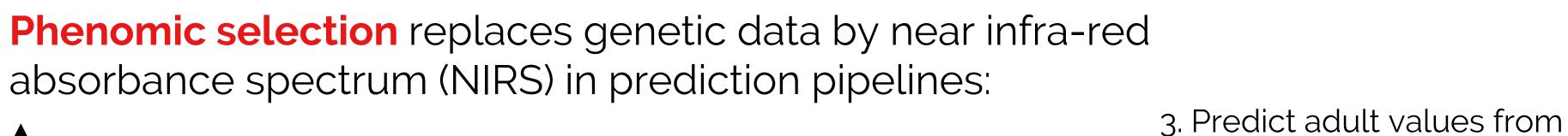
Supporting services

Soil carbon storage

Nitrogen recycling

Habitat provision





1. Define traits to quantify ecosystem services

2. Estimate kinship matrix from spectra

4. Imagine breeding scheme for a clonal, perennial and annually

harvested crop

Wavelength



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Absol

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