

Diversifying with *Vigna* spp. Which species? Which trait/combination of traits ?



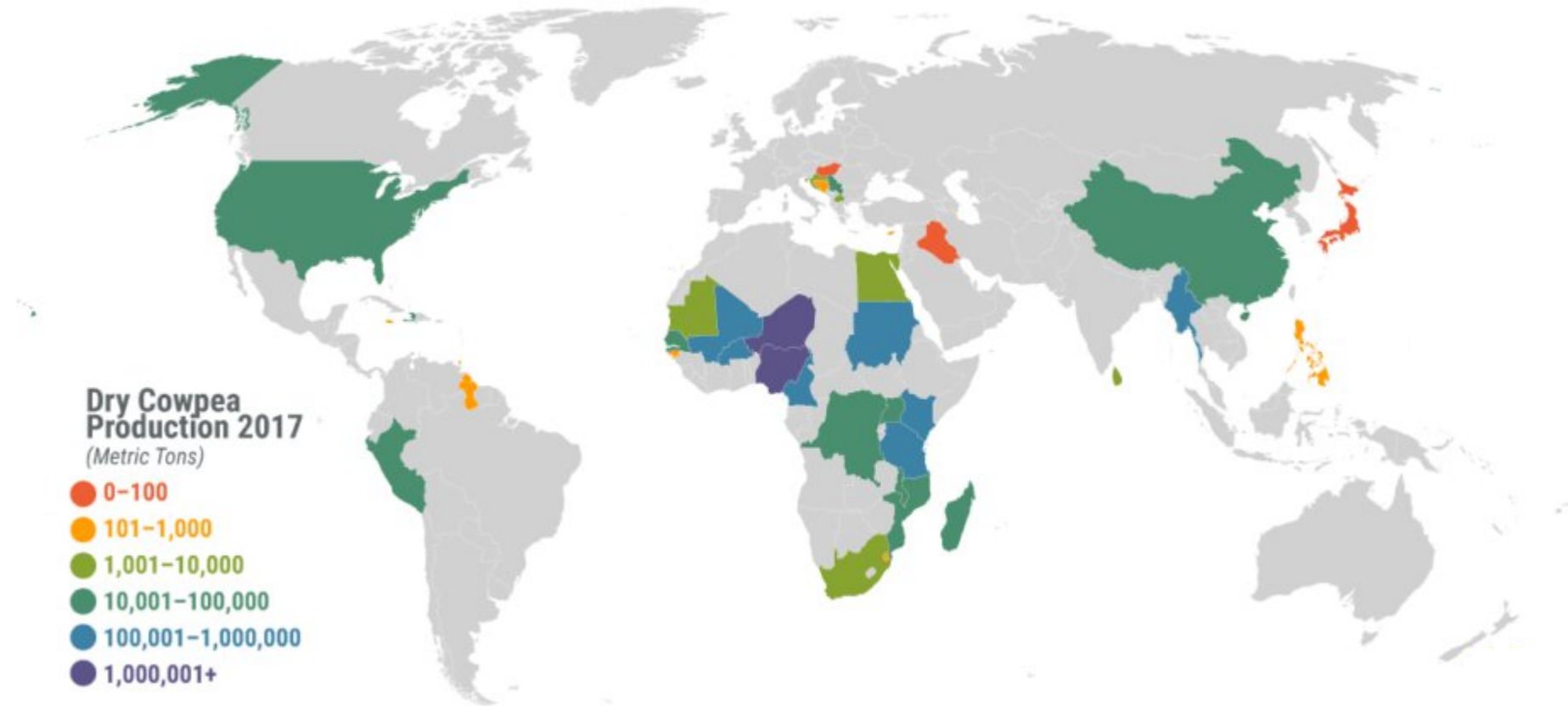
Marwa El Graoui, H el ene Marrou, Moez Amri et Michel Edmond Ghanem

Cropping systems diversification



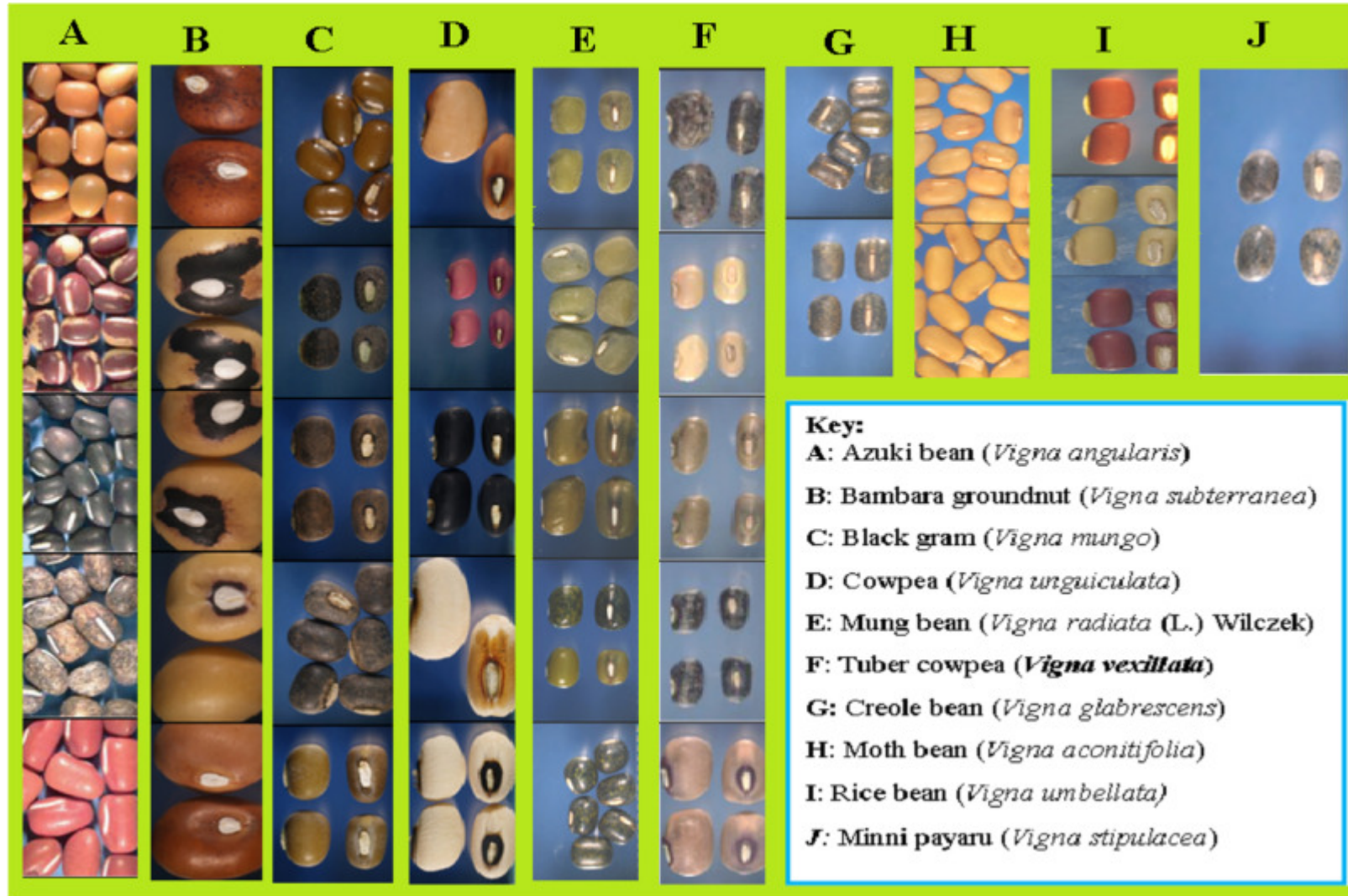
- Diversification is key to increase the efficiency of cropping systems and resilience of farming systems in the face of climatic and economic challenges.
- Diversification with appropriate crops or intercrops require to deliver farmers with references and tools to select species and varieties adapted to their constraints and objectives.

Importance of Cowpea (*V. unguiculata* (L.) Walp.)



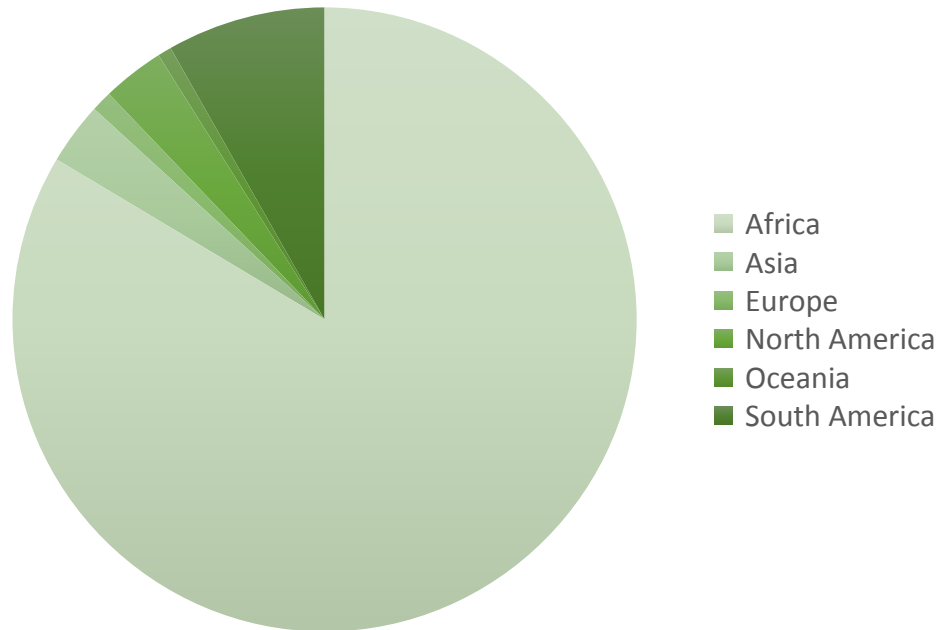
Data from the Food and Agriculture Organization of the United Nations

A walk on the wild side



Plant material

36 *Vigna* species: 9 cultivated, 27 wild



- V. aconitifolia*
- V. angularis*
- V. mungo*
- V. radiata*
- V. subterranea*
- V. trilobata*
- V. umbellata*
- V. unguiculata*
- V. vexillata*
- V. adenantha*
- V. ambacensis*
- V. baoulensis*
- V. candida*
- V. comosa*
- V. davyi*
- V. friesiorum*
- V. frutescens*
- V. gentryi*
- V. gracilis*
- V. hosei*
- V. kirkii*
- V. lasiocarpa*
- V. linearis*
- V. lobatifolia*
- V. longifolia*
- V. luteola*
- V. marina*
- V. membranacea*
- V. multinervis*
- V. nigritia*
- V. oblongifolia*
- V. peduncularis*
- V. racemosa*
- V. reticulata*
- V. venulosa*
- V. wittei*

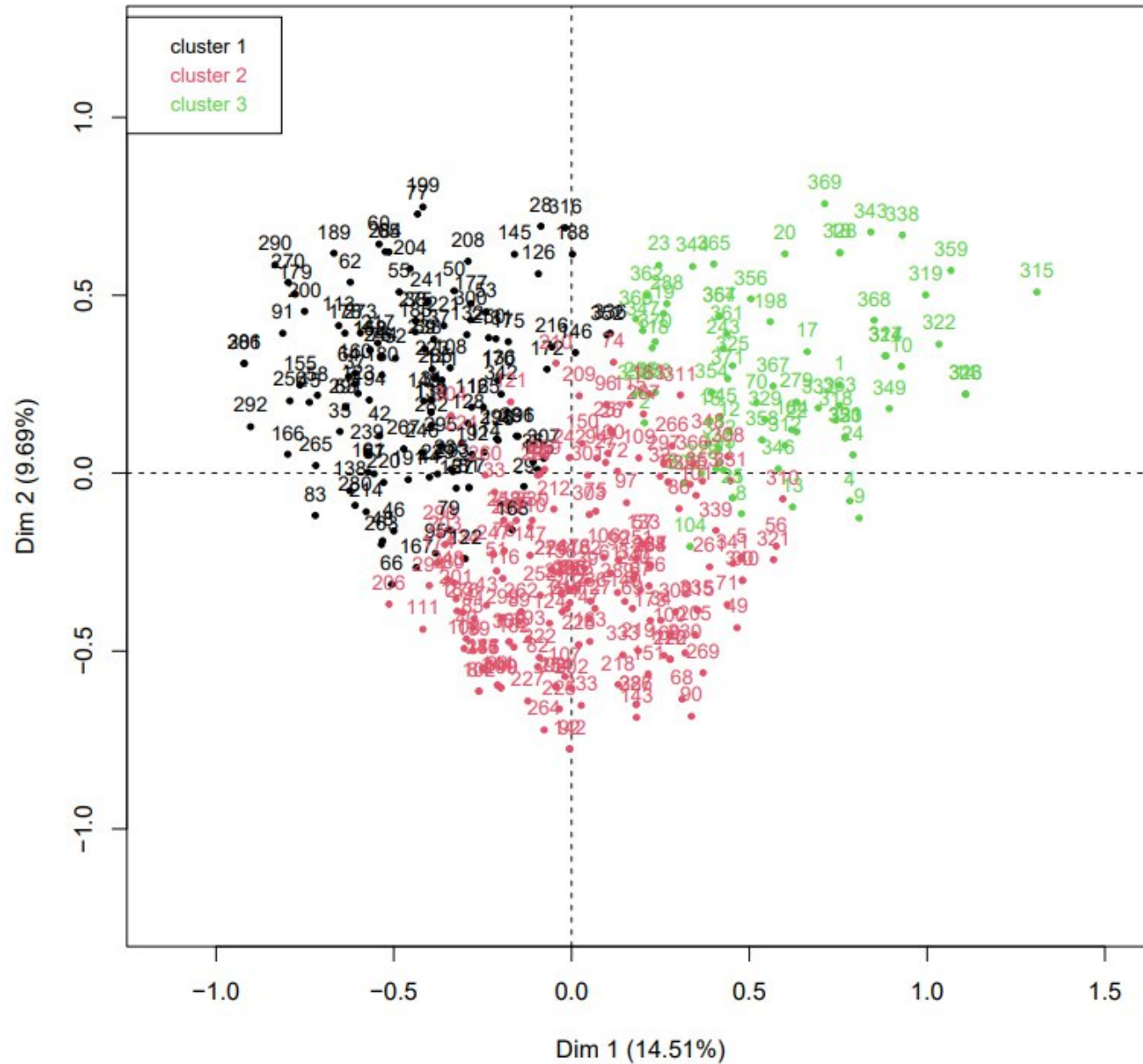
Field trial 2021

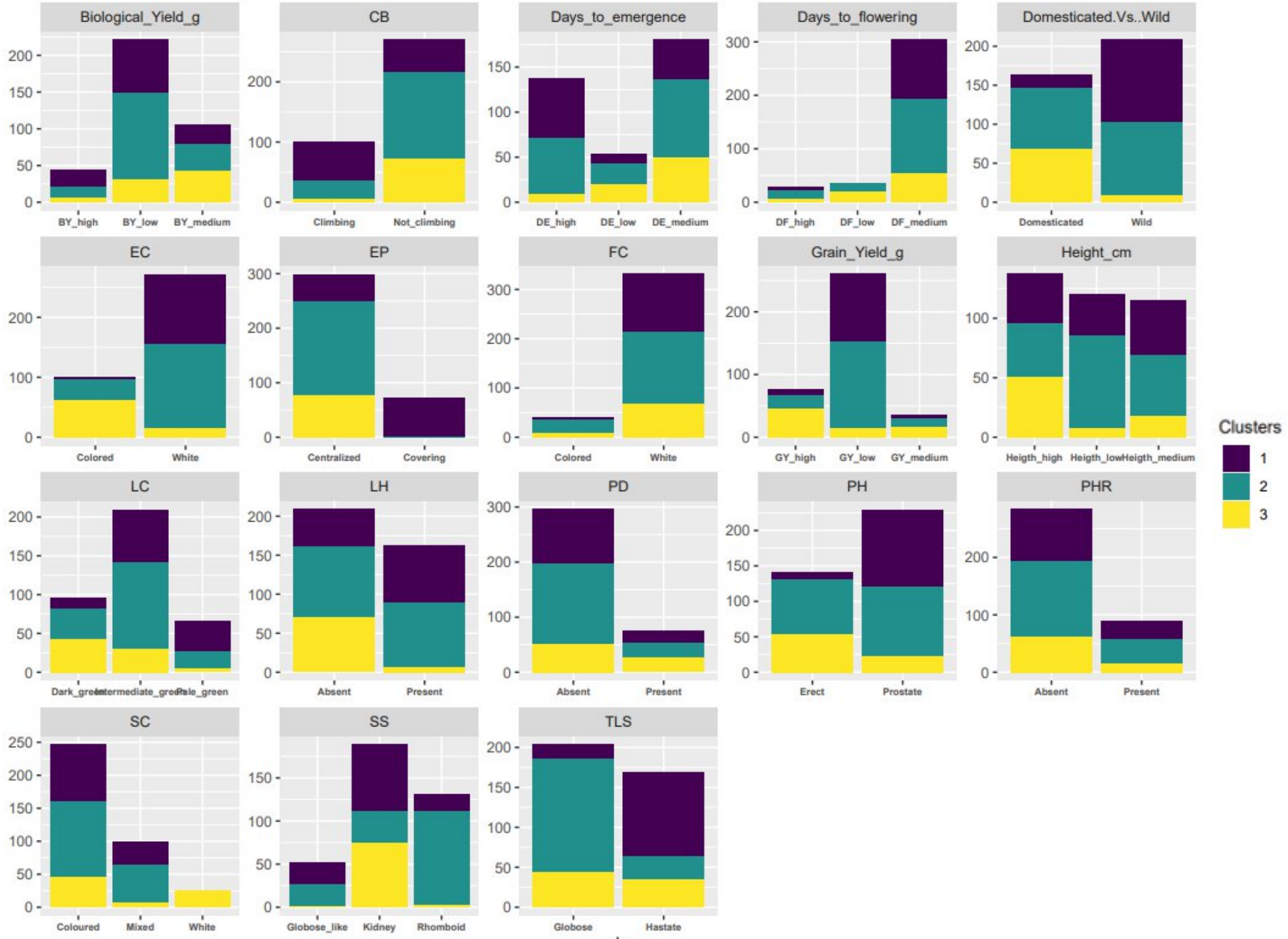
Seed increase and germplasm characterization

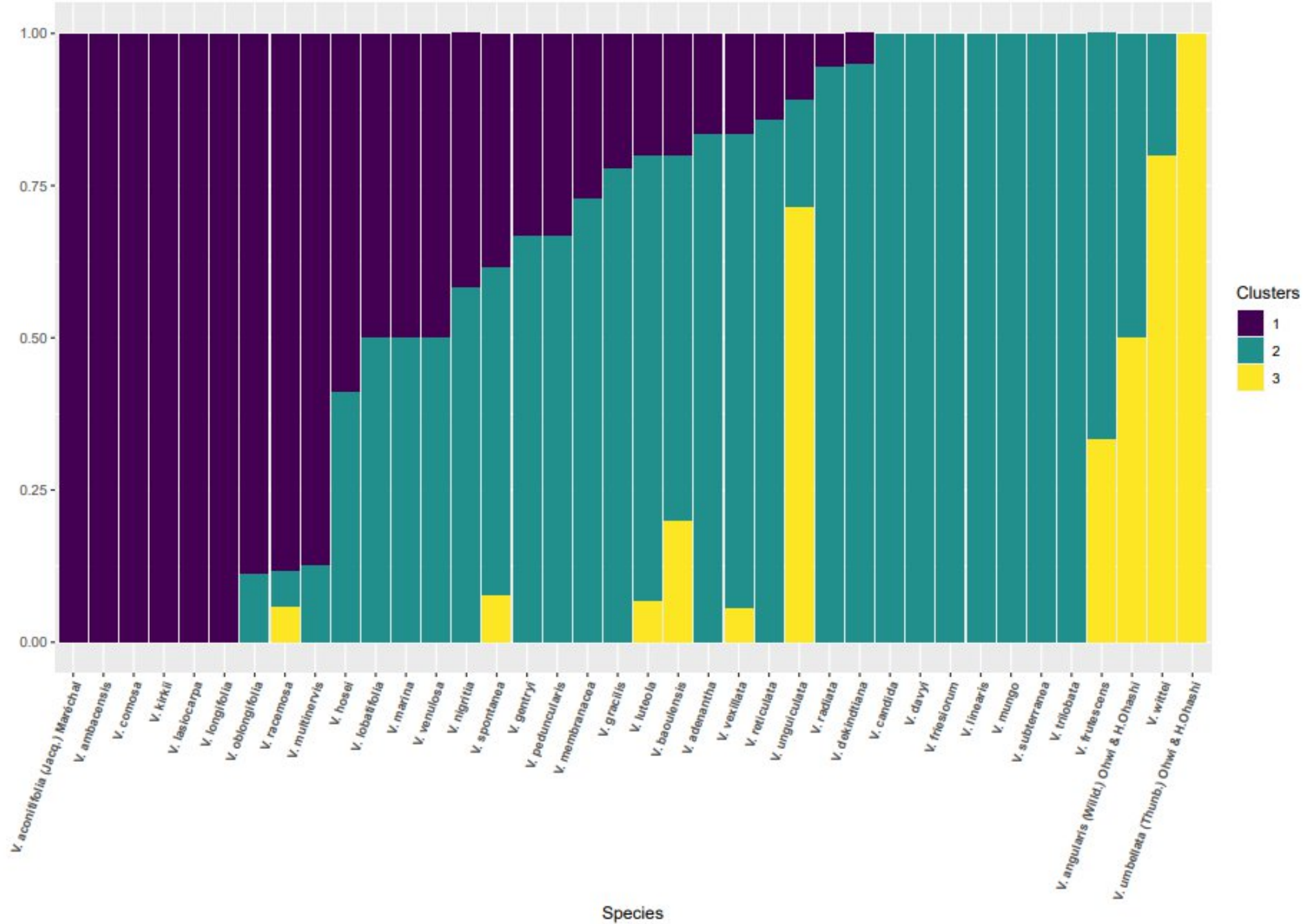


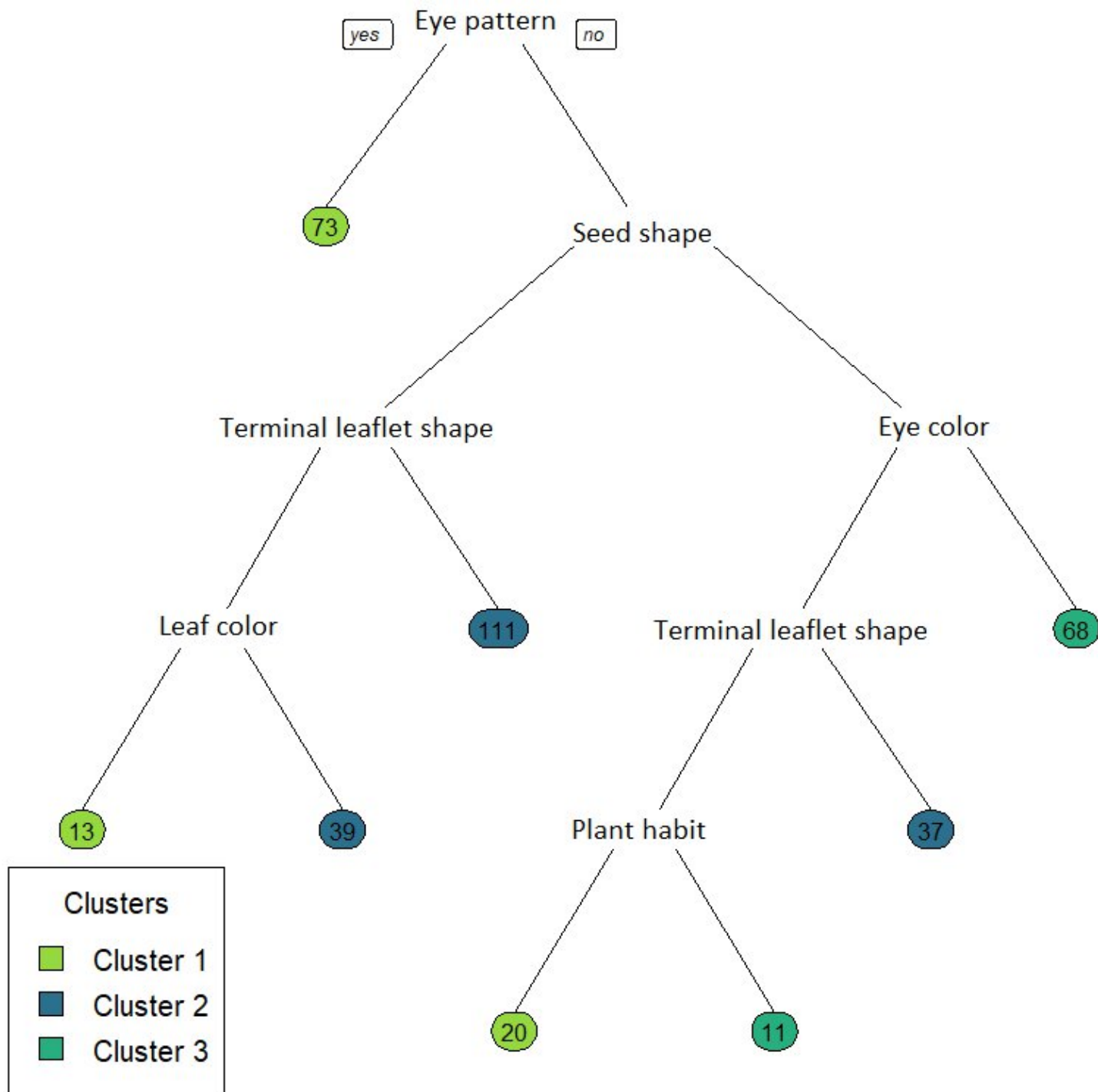
- Sown at INRA's experimental station in Tessaout, Morocco
- 12/04/2021
- Flood irrigation
- 380 accessions
- Phenological, morphological and quantitative traits

Multivariate correspondance analysis





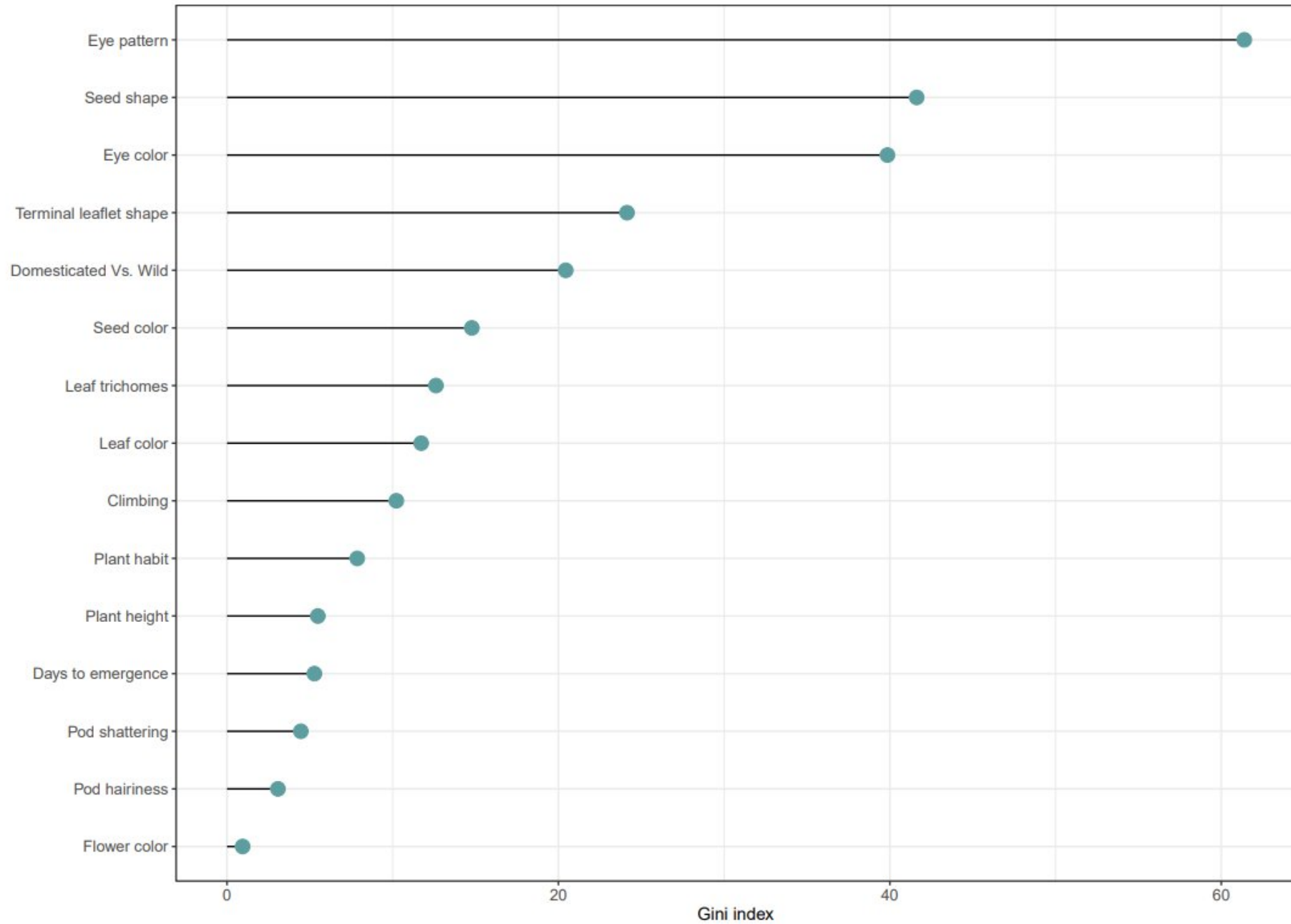




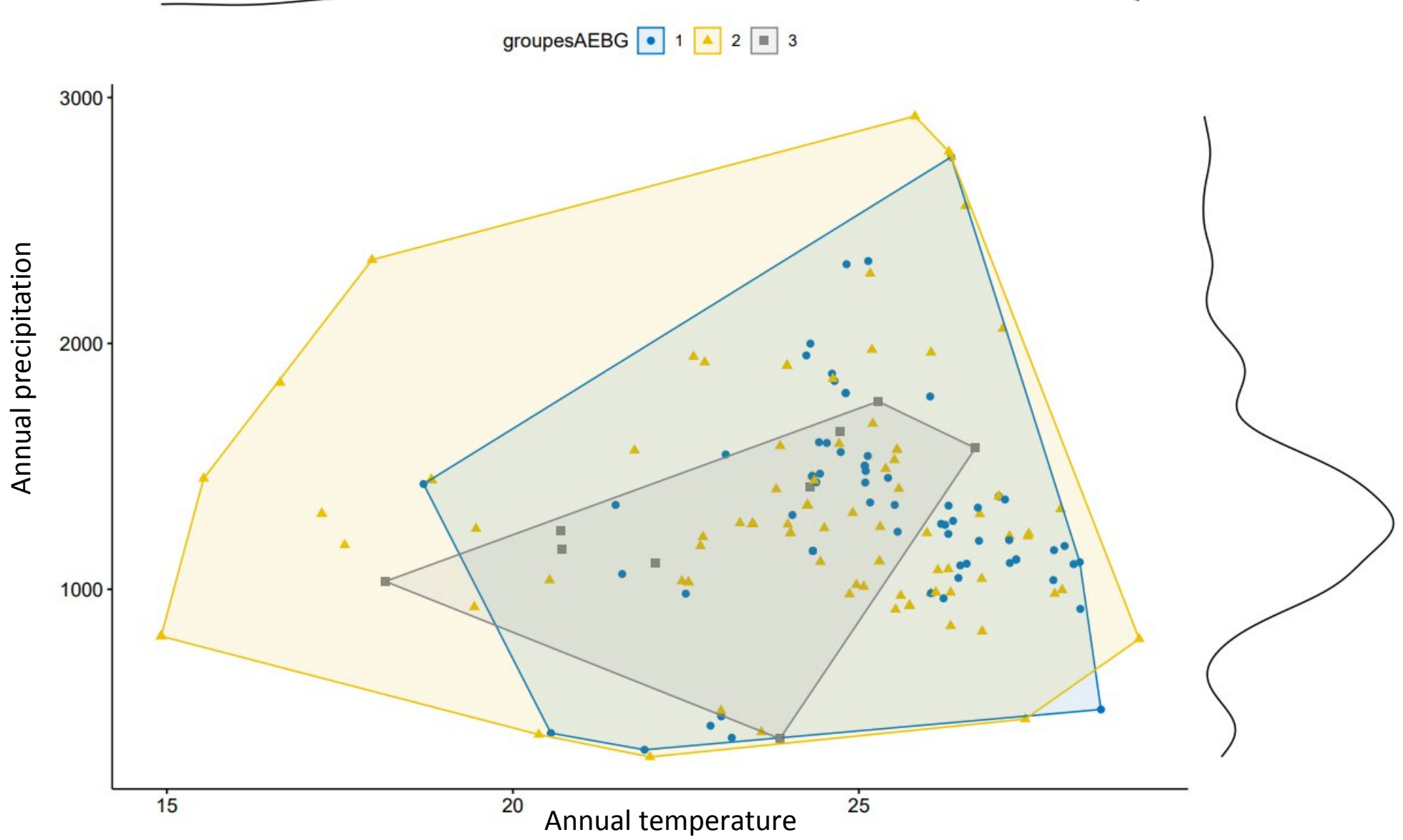
Classification and regression tree (CART)

Regression for prediction of membership to one of the three clusters.

Variable importance in the CART analysis

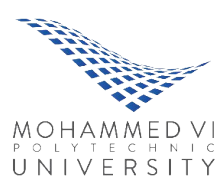


Origin of wild species and climate, where to?



What's next?

- Functional trait patterns can support species selection among *Vigna* diversity for identified production objectives/targeted ecosystem services.
- Co-occurring, functionally distinct species can increase resource-use and overall productivity by niche complementarity.
- Farmers' perception and scaling-up assessments are two aspects further down the road that would close the process of integration of these genotypes in agri-food value chains.



Thank you

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