

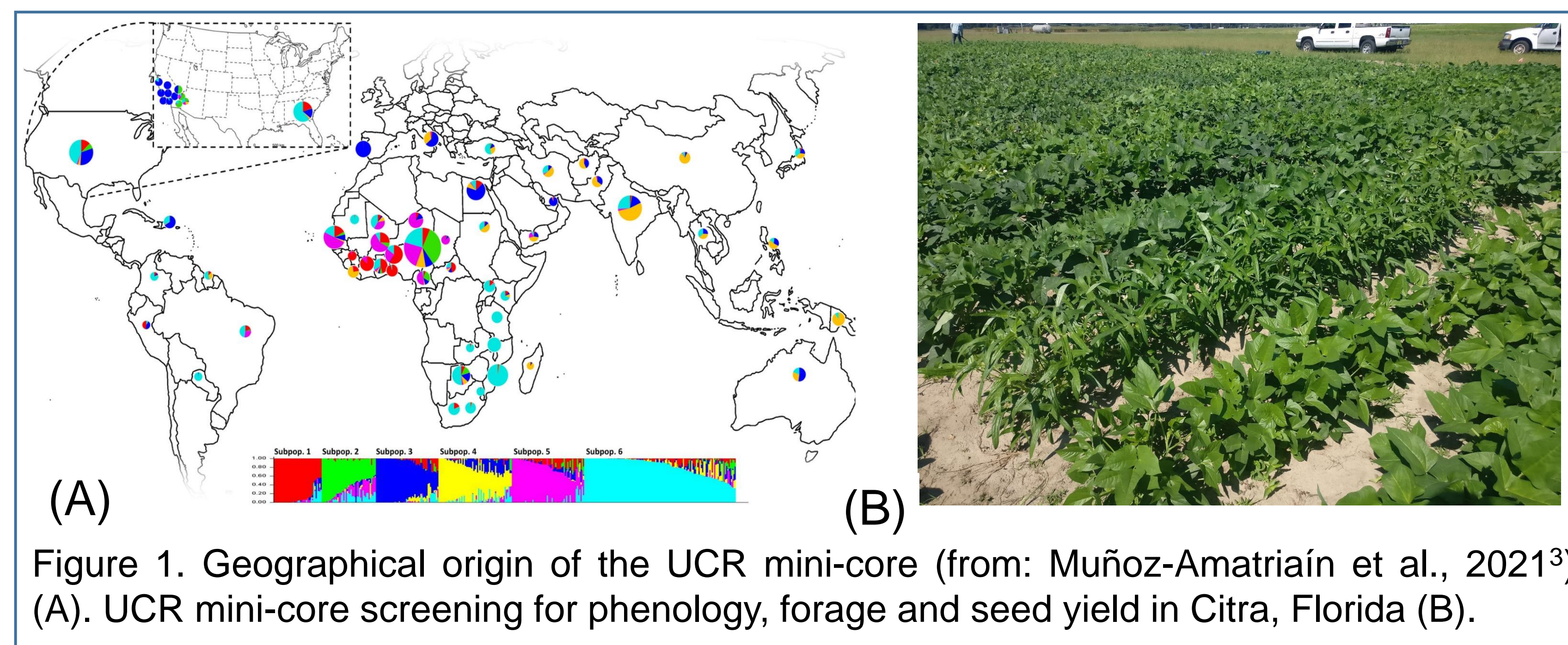
Breeding Multi-purpose Cowpea for Forage, Ornamental, and Grain

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Abstract

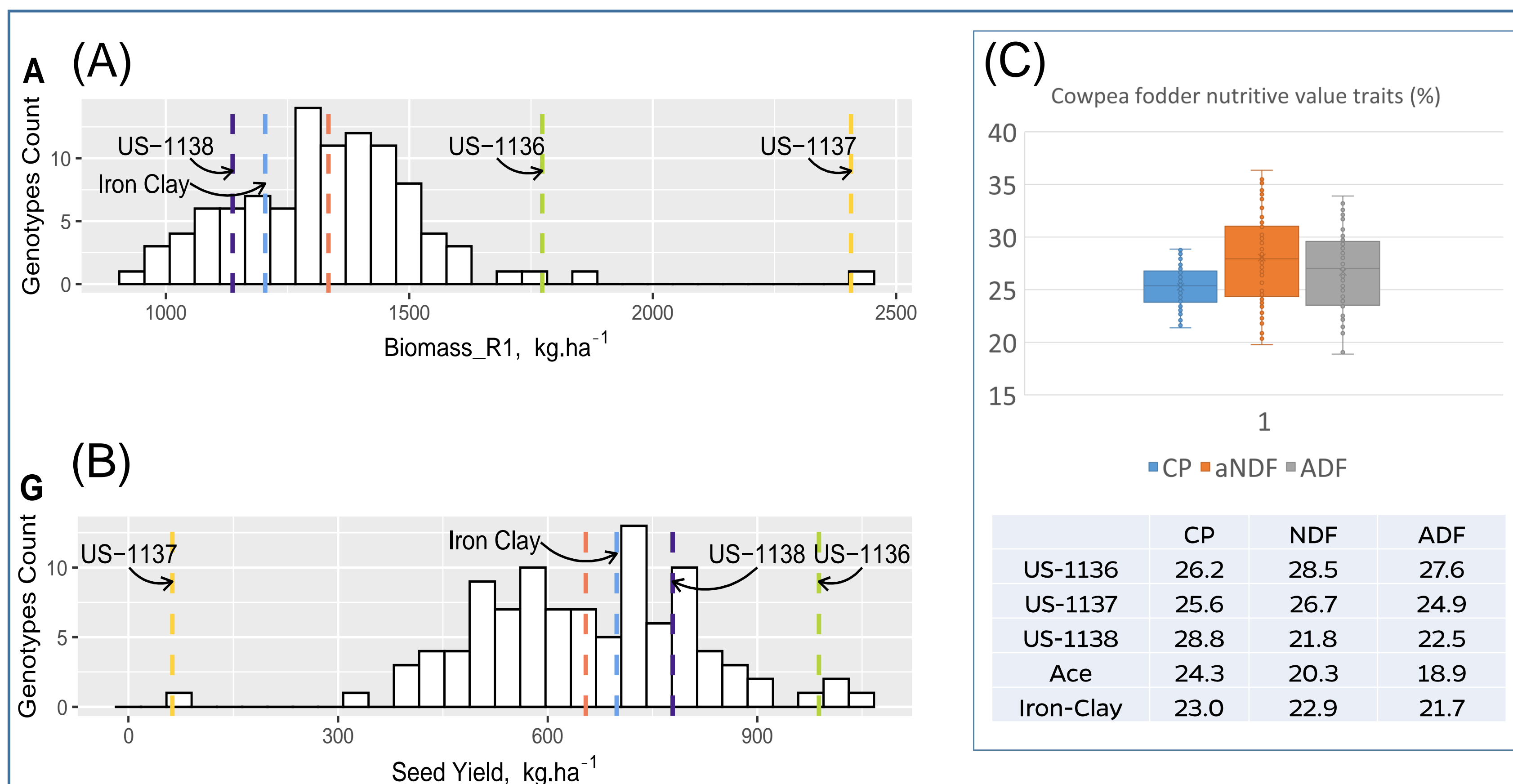
Cowpea (*Vigna unguiculata* [L.] Walp.) is a resilient crop critical for the nutrition and income of millions of families in the tropical and subtropical regions. It has a rich history in the southeastern U.S., where it has been grown for centuries. The Forage Breeding and Genetics Lab at the University of Florida began efforts to screen the UC-Riverside cowpea mini-core collection in multiple field and greenhouse trials in Florida for agronomic and physiological traits, for root-knot nematode tolerance, and for their ornamental value. Furthermore, genome wide association studies have been conducted to reveal potential candidate genes for traits of interest, such as flowering time, pod maturity, and traits related with pod and seed production. The ornamental value of the crop is also being studied to promote its use in home-gardening and community gardens.



New traits for cowpea as edible-ornamental



Figure 3. The Forage Breeding and Genetics Lab conducts field trials to identify new traits in the UCR mini-core collection to improve the crop's value as an edible ornamental (flowering, foliage, pods, grain), pollinator, and grain quality.



Key findings and future work

- Cowpea pre-breeding efforts began at the University of Florida in 2018 that resulted in the selection of accessions for nematode resistance¹, grain and fodder yield², phenology³.
- The UCR mini-core cowpea collection holds large phenotypic diversity in this germplasm to warrant breeding efforts for multiple systems.
- Grain, forage, and ornamental types were identified and selected for further breeding.
- Accessions in the showed UCR mini-core cowpea collection shown greater phenotypic diversity than current cowpea cultivars.
- FFAR funded project will focus on heat tolerance in cowpea. Project in collaboration with Maria Muñoz-Amatriaín (CSU), Peter Morrell (UMN), Boukar Ousmane (IITA), Keneth Boote (UF), and Tim Close (UC-Riverside).

References

1. Dareus, R., et al. 2021. Resistance to *Meloidogyne enterolobii* and *Meloidogyne incognita* in Cultivated and Wild Cowpea. *HortScience*, 1(aop), pp.1-9.
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3. Paudel, D. et al. 2021. Genome-wide association study reveals candidate genes for flowering time in cowpea (*Vigna unguiculata* [L.] Walp). *Frontiers Genetics*.