



# GRAIN LEGUME LANDRACES - AUA

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*ForEVA – Fostering the need of implementation of the  
ECPGR's European Evaluation Network (EVA) on  
Grain legumes*

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# Laboratory of Plant Breeding and Biometry



- Development and exploitation of conventional and molecular breeding methodology.
- Biotechnological approaches in plant breeding, including *in vitro* culture techniques and genetic engineering.
- Application of experimental design methodology in agricultural research.
- **Management of Plant Genetic Resources, including collection, characterization, and evaluation of the genetic materials using conventional and molecular methods.**



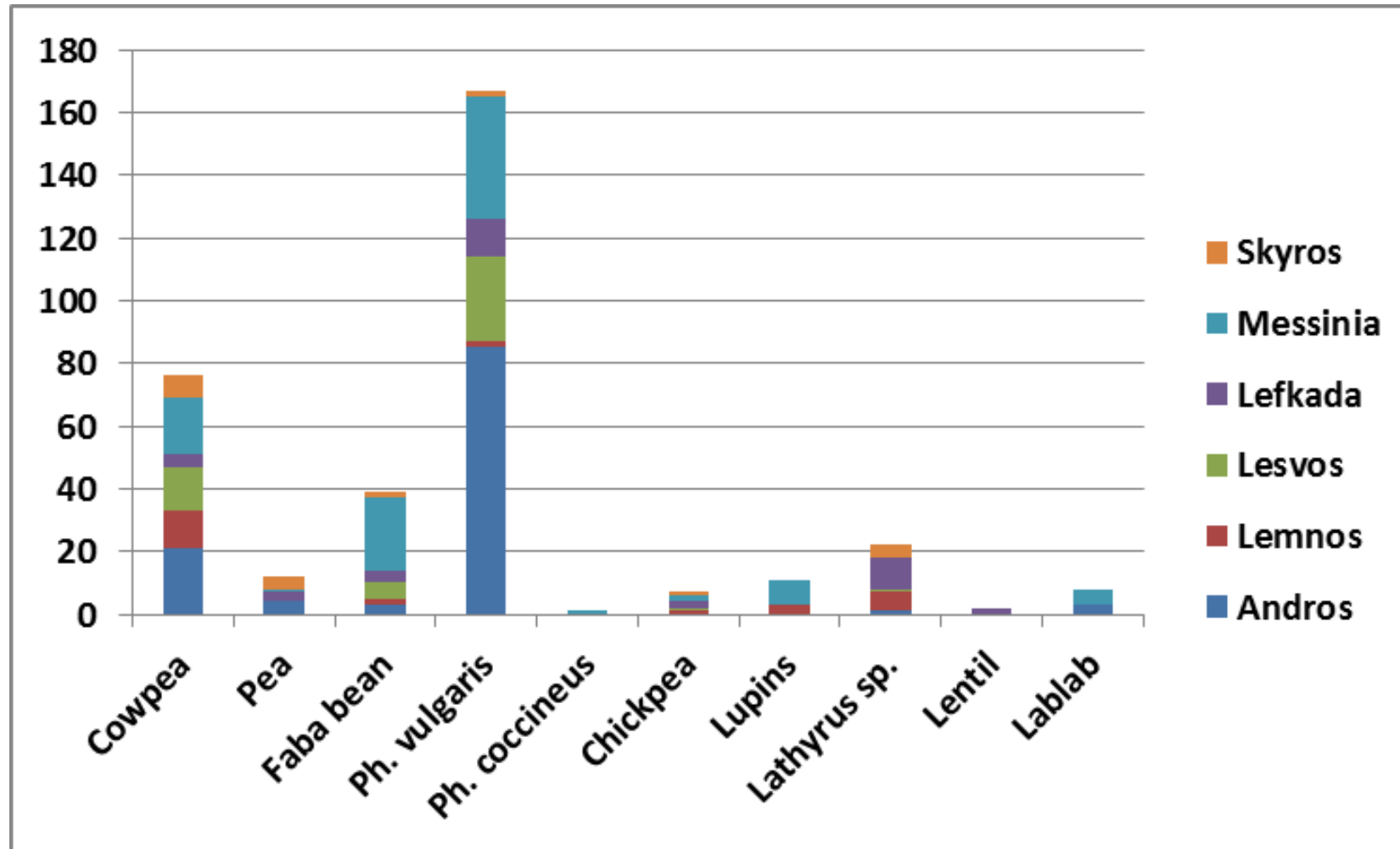
# Laboratory of Plant Breeding and Biometry (Collecting grain legume landraces)



# Collected Crop Landraces Samples (by AUA)



# Collected Pulses Landraces Accessions (by AUA)



# Characterizing Cowpea Landraces



# Characterizing Pea Landraces from Andros and Amorgos Islands



# Characterizing Pea and Cyprus Vetch Landraces from Skyros Island





# Helping communities to register their landraces

- Based on the obtained characterization data
  - One cowpea landrace “**Aspromitiko Atsikis Lemnos**” has been registered in the National Register of Crop Varieties
  - One pea landrace “**Kourakatsi**” from Skyros island
  - The applications for the registration of one *Lathyrus ochrus* landrace “**Afkos Lemnos**” and one *Lathyrus sativus* landrace “**Lafyr Lemnos**” have been submitted

# Overview of most important projects on legumes



## ■ EUROLEGUME



Enhancing of legumes growing in Europe through sustainable cropping for protein supply for food and feed

FP7 Research Project N° 61378

- Enhancing of legumes growing in Europe through sustainable cropping for protein supply for food and feed (Grant agreement ID: 613781)
- Cowpea, faba bean, pea **characterization** and **evaluation** of accessions (including local populations)
- Different management practices, Nutritional value assessments, symbiosis of different *rhizobium* strains



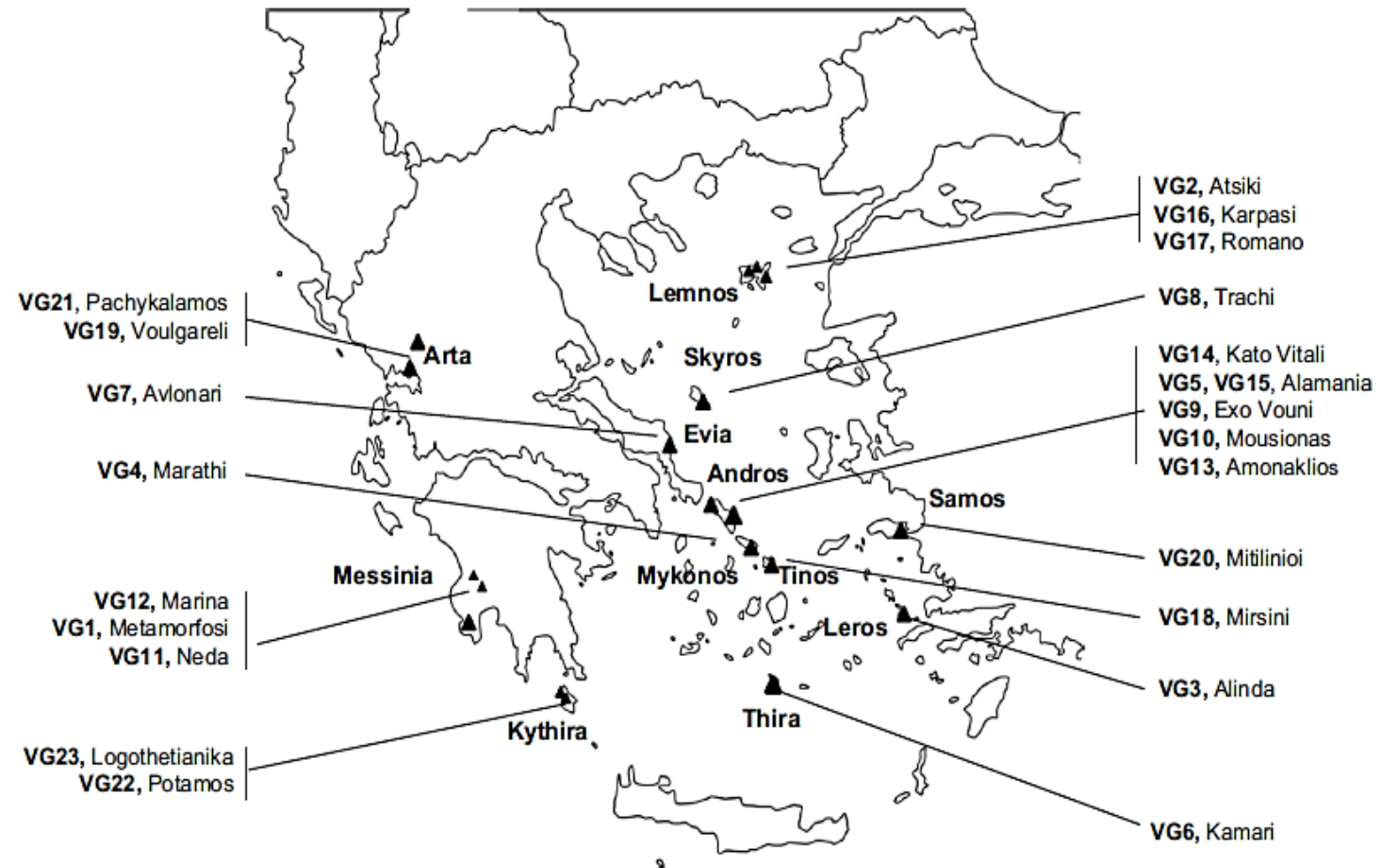
# Greek Cowpea Collection Diversity



**23 cowpea  
landraces**

**32  
descriptors  
for cowpea  
(IBPGR,  
1983)**

**48 plants  
per  
accession**



(Lazaridi et al., 2017)



# Greek Cowpea Phenotypic Diversity

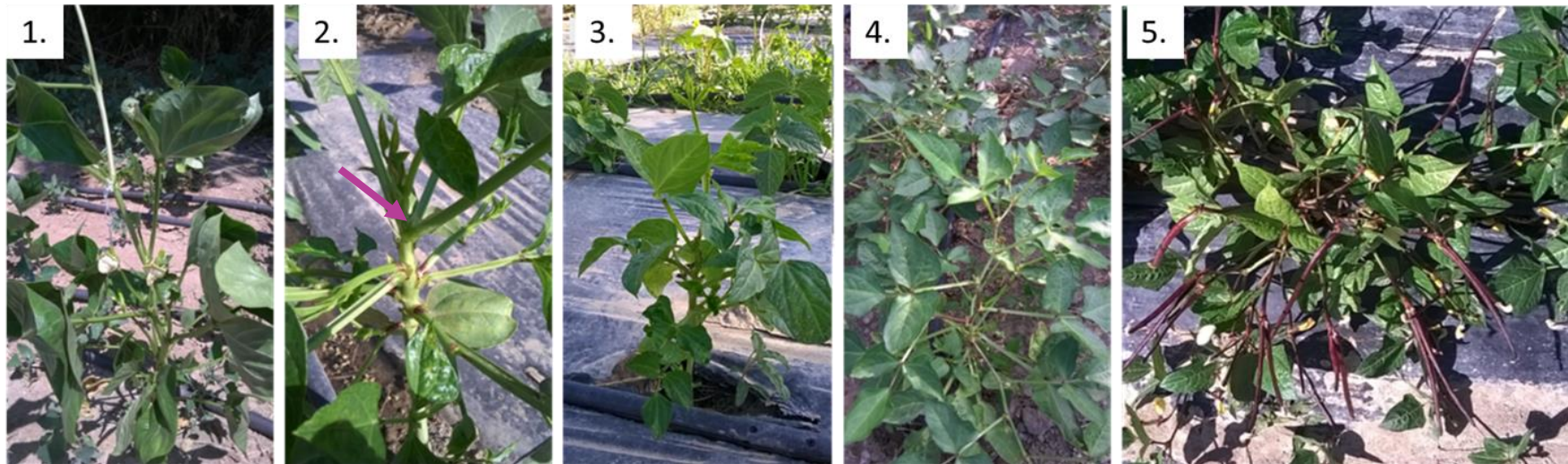
**Leaf color**



**Flower color**



**Branches pigmentation**



(Lazaridi, 2023)

# Overview of most important projects on legumes



## ■ LIBBIO



- *Lupinus mutabilis* for Increased Biomass from marginal lands and value for BIOrefineries (Grant agreement ID: 720726).
- A European research project on Andes Lupin (*Lupinus mutabilis*, tarwi) cropping in marginal lands for enhanced bio economy.
- Introduction of Andean lupin as a winter crop in Mediterranean conditions.
- **Morphological characterization** and **evaluation** of accessions. Comparison with native lupin species accessions.



# Morphological characterization of lupin accessions



# Overview of most important projects on legumes



- Legumes4proteins




- Co-financed by the European Regional Development Fund of the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation.
- Varieties and breeding material of **fava bean**, **pea**, **vetch**, and **lupin** were **evaluated** in relation to the **environment** and the **management system** of their cultivation.

(Contribution of Dr. Eleni Tani)



ECP/GR

# Overview of most important projects on legumes

- Benefit med 
- Prima funded project - Boosting technologies of orphan legumes towards resilient farming systems in the Greater Mediterranean Region: from bench to open field
- Orphan legumes (*Lathyrus*, *Trigonella*) accessions are evaluated
- Promotion of local socio-economic development in North-Africa and Mediterranean area



# Our legume collection

- AUA collection is constantly updated
- Main legume species: Cowpea, faba bean, pea, lupin, bitter vetch, lathyrus species (*L. sativus*, *L. ochrus*, *L. clymenum*), common beans
- Data are available in published theses and articles
- There is availability for seed sharing based on SMTA of some cowpea, lathyrus and faba bean accessions

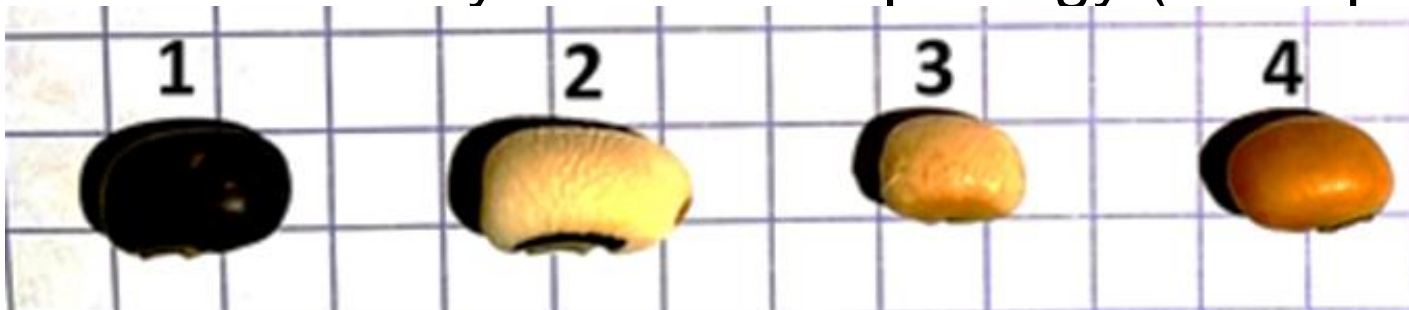
# Interesting traits

- Cowpea:

**VG2:** Cream/White seed, Early flowering, Pollinator friendly, Absence of pigmentation, White flower color, Easily boiled, High uniformity



**VG18:** Variability in seed morphology (4 morphotypes)



(Lazaridi et al., 2017)  
(Lazaridi et al., 2023)  
(Lazaridi, 2023)

# Interesting traits

- Cowpea:

**VG20** (Mitilinioi, Samos): Late flowering, higher seed protein content (28,37%)



**VG23:** High variability in pigmentation in different plant parts (e.g. stem and pods)

(Lazaridi et al., 2017)

(Lazaridi, 2023)

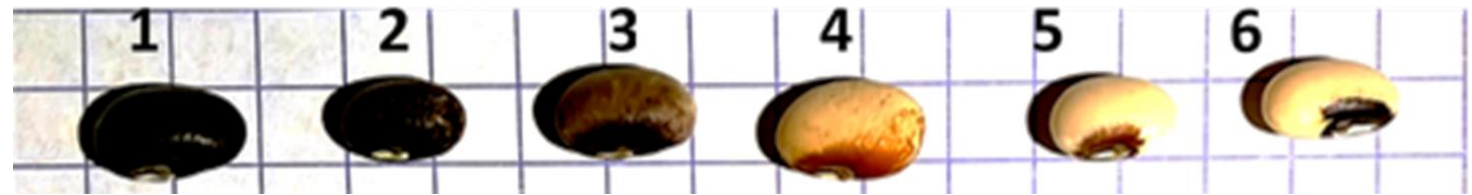
(Lazaridi and Bebeli, 2023)



# Interesting traits

- Cowpea:

**VG13** (Amonaklios, Andros): High variability in seed and flowers and plants morphology (6 seed morphotypes)



(Lazaridi et al., 2017)

# Interesting traits

- Cowpea:

**VG4:** Cream seed with brown eye, large seeds, short – light green fresh pods, growing in Mykonos without irrigation (rainfed)



(Lazaridi et al., 2017)

# Expectations from EVA legumes

- Expectations: Further evaluation, identifying specific traits, cooperation with farmers and PPB
- Constraints: Exchange of genetic material, multiplication of the seeds
- Interest to be involved in evaluation of limited number of accessions
- Experience of cooperation with farmers

# Acknowledgements

- All farmers and the communities for their invaluable help
- All organizations that funded our work
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Thank You !

