

# EUROPEPLAND

*mid-term online meeting*

*May 14, 2025*

EUROPEPLAND– Implementing a trans-EUROpean PEPper  
LANDrace collection for resilient agriculture



## EUROPEPLAND

ECPGR Homepage / ECPGR Working Groups / ECPGR Solanaceae Working Group



### Implementing a trans-EUROpean PEPper LANDrace collection for resilient agriculture

Activity Coordinator: Pasquale Tripodi

ECPGR SOLANACEAE WORKING GROUP

Solanaceae

The EUROPEPLAND Activity, submitted by the Solanaceae Working Group for funding under the First Call of the Phase XI ECPGR Activity Grant Scheme, was selected by the Executive Committee and approved in March 2024.

-  Activity proposal (895,8 KB)

### Implementation



#### April 2025

In this period, activities have focused on the establishment of the core collection. To date, over 430 landrace accessions have been provided by participating genebanks and research institutions. The collection represents the diversity of 12 European countries across the Mediterranean basin and the Balkans, from both coastal and inland regions. Furthermore, it encloses a wide range of variation in terms of fruit shape and size, colour and pungency degree. DNA isolation has already started, with the aim of performing SNP genotyping to infer genetic diversity and define population structure. These data will be linked to other European projects and will be implemented with phenotypic information.

## Time scale of activities

[illegible]

## Current status – DNA isolation



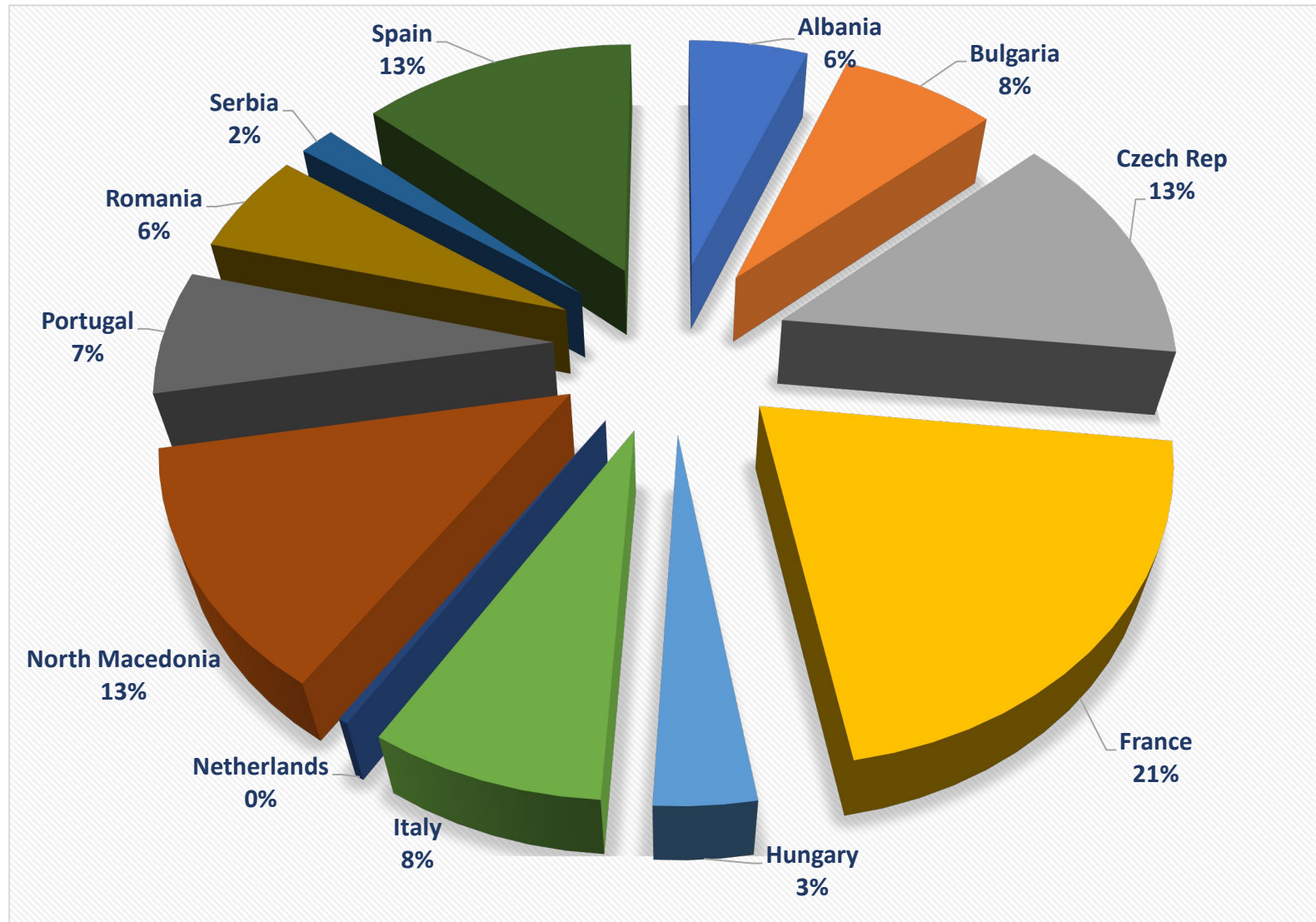
| Partner ID No.     | Name and Surname                | Institute                                                                                                              | Country         | Material provided    | High quality DNA | %      |
|--------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------|------------------|--------|
| 1                  | Pasquale Tripodi                | Research Centre for Vegetable and Ornamental Crops (CREA OF)                                                           | Italy           | 71 (TBD)             | 0                | 0%     |
| 3                  | Laura Toppino                   | Research Centre for Genomics and Bioinformatics (CREA-GB)                                                              |                 |                      |                  |        |
| 5                  | Helena Stavelikova              | Crop Research Institute, Genetic Resources for Vegetables, Medicinal and Special Plants (CRI)                          | Czech Republic  | 38                   | 38               | 100%   |
| 6                  | Ulrike Lohwasser                | Leibniz Institute of Plant Genetics and Crop Plant Research (IPK)                                                      | Germany         | 23                   | 23               | 100%   |
| 7                  | Adrian Rodriguez Burruezo       | Instituto de Conservación y Mejora de la Agrodiversidad Valenciana (COMAV) - Universitat Politècnica de València (UPV) | Spain           | 30                   | 26               | 87%    |
| 8                  | Veselina Banova Masheva         | Institute of Plant Genetic Resources – Sadovo (IPGR)                                                                   | Bulgaria        | 20                   | 17               | 85%    |
| 9                  | Sonja Ivanovska                 | International Cooperation<br>Institute of Agriculture-Skopje<br>Bul Aleksandar Makedonsk                               | North Macedonia | 38 <i>via</i> CGN    | 38               | 100%   |
| 10                 | Willem van Dooijeweert          | Centre for Genetic Resources the Netherlands (CGN)                                                                     | Netherlands     | 29                   | 29               | 100%   |
| 11                 | Dario Danojević                 | Institute of Field and Vegetable Crops (IFVCNS)                                                                        | Serbia          | 13                   | 5                | 40%    |
| 12                 | Rosella Giunta                  | CNR-Institute of Biosciences and Bioresources (IBBR) – Headquarter Bari                                                | Italy           | 69                   | 20               | 29%    |
| 13                 | Manon Bouet/ Veronique Lefebvre | Institut national de recherche pour l'agriculture, l'alimentation et l'environnement (INRAE)                           | France          | 61                   | 60               | 98.50% |
| 14                 | Petre Marian Brezeanu           | Research and Development Station for Vegetables Bacau (SCDL)                                                           | Romania         | 17                   | 17               | 100%   |
| 15                 | Filomena Rocha                  | Banco Português de Germoplasma Vegetal (INIAV)                                                                         | Portugal        | 20                   | 18               | 90%    |
| <b>Self funded</b> |                                 |                                                                                                                        |                 |                      |                  |        |
| 2                  | Karuine Sarikyan                | Scientific Center of Vegetable and Industrial Crops (SCVIC)                                                            | Armenia         | 19 seeds not arrived | 0                | 0%     |

448

291

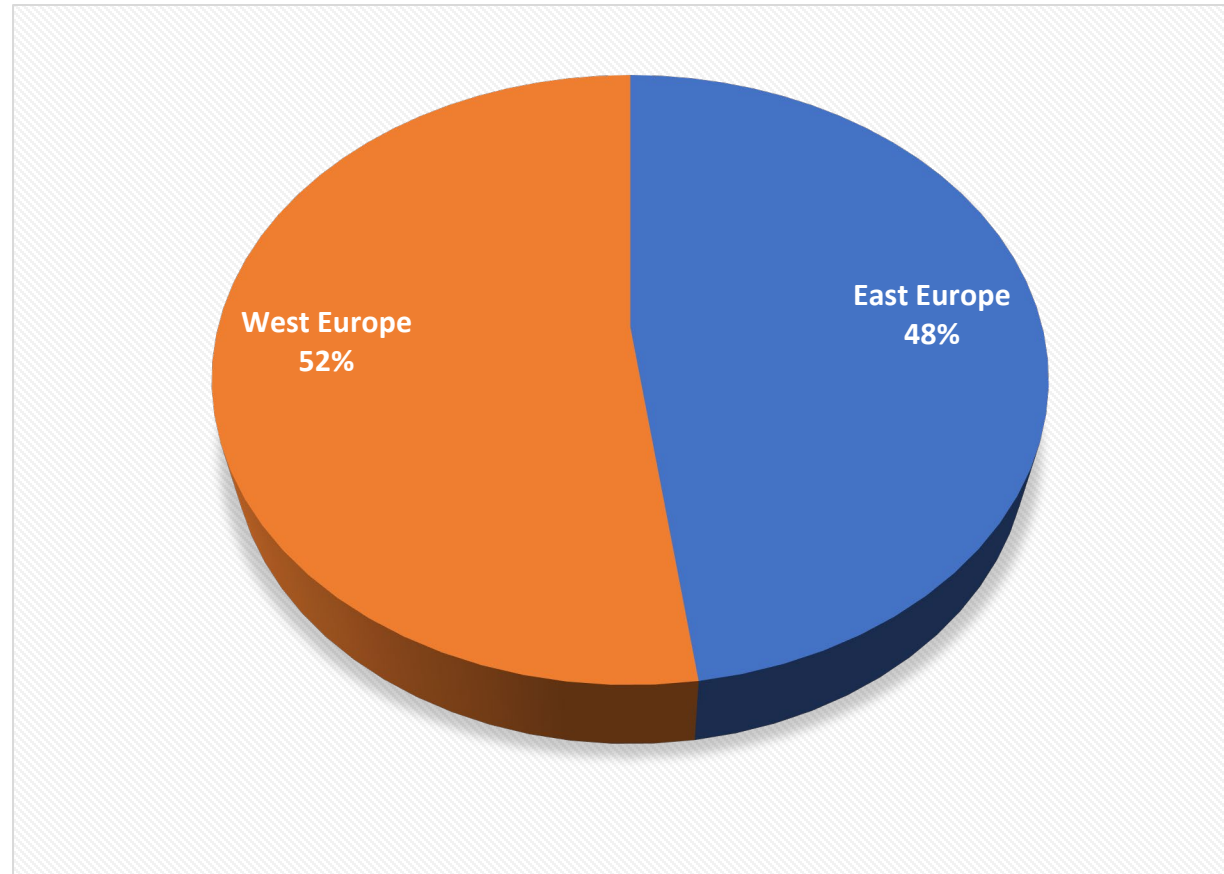
65%

## Details: 291 HQ DNA





## Details: 291 HQ DNA



# Task 1 – Core collection development (M1-M6)

1. All *Capsicum annuum*
2. All landraces from Europe mainland  
300 (Traditional cultivar/landrace)

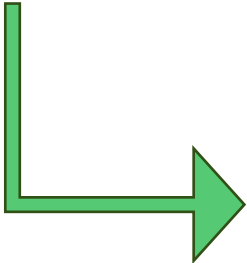
mandatory

| Accession Name     | Accession N° | Country | Location<br>(Region or coordinates) | Shape     | Color at Maturity | Pungency |
|--------------------|--------------|---------|-------------------------------------|-----------|-------------------|----------|
| Papacella          | 21-PT-41     | Italy   | Campania region                     | Round     | Red               | Sweet    |
| Sigaretta          | 21-PT-163    | Italy   | Calabria region                     | elongated | Red               | Pungent  |
| Peperone di Senise | 22-PT-101    | Italy   | 40°08'N 16°17'E                     | conical   | Red               | Sweet    |

| Biological status (if in EURISCO) | DOI |
|-----------------------------------|-----|
|                                   |     |
|                                   |     |
|                                   |     |



More details in the phenotyping section



- Define the collection
- Include broad diversity in terms of provenance and main traits

| Partner ID No. | Name and Surname                | Institute                                                                                                              | Mandatory data                      |
|----------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| 1              | Pasquale Tripodi                | Research Centre for Vegetable and Ornamental Crops (CREA OF)                                                           | Provided                            |
| 3              | Laura Toppino                   | Research Centre for Genomics and Bioinformatics (CREA-GB)                                                              |                                     |
| 5              | Helena Stavelikova              | Crop Research Institute, Genetic Resources for Vegetables, Medicinal and Special Plants (CRI)                          | Provided                            |
| 6              | Ulrike Lohwasser                | Leibniz Institute of Plant Genetics and Crop Plant Research (IPK)                                                      | From the genebank website?          |
| 7              | Adrian Rodriguez Burruezo       | Instituto de Conservación y Mejora de la Agrodiversidad Valenciana (COMAV) - Universitat Politècnica de València (UPV) | Provided                            |
| 8              | Veselina Banova Masheva         | Institute of Plant Genetic Resources – Sadovo (IPGR)                                                                   | Provided                            |
| 9              | Sonja Ivanovska                 | International Cooperation<br>Institute of Agriculture-Skopje<br>Bul Aleksandar Makedonsk                               | From the CGN genebank site?         |
| 10             | Willem van Dooijeweert          | Centre for Genetic Resources the Netherlands (CGN)                                                                     | Available from the genebank website |
| 11             | Dario Danojević                 | Institute of Field and Vegetable Crops (IFVCNS)                                                                        | Provided                            |
| 12             | Rosella Giunta                  | CNR-Institute of Biosciences and Bioresources (IBBR) – Headquarter Bari                                                | Provided                            |
| 13             | Manon Bouet/ Veronique Lefebvre | Institut national de recherche pour l’agriculture, l’alimentation et l’environnement (INRAE)                           | Provided                            |
| 14             | Petre Marian Brezeanu           | Research and Development Station for Vegetables Bacau (SCDL)                                                           | Provided                            |
| 15             | Filomena Rocha                  | Banco Português de Germoplasma Vegetal (INIAV)                                                                         | Provided                            |
| 2              | Karuine Sarikyan                | Scientific Center of Vegetable and Industrial Crops (SCVIC)                                                            | Provided                            |



## Task 2 – Phenotyping and genotyping (M6-M18)

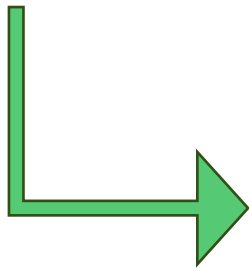
| Accession Name     | Accession N° | Shape     | Color at Maturity | Color at Immature stage | Fruit size   | Pungency |
|--------------------|--------------|-----------|-------------------|-------------------------|--------------|----------|
| Papacella          | 21-PT-41     | Round     | Red               | Medium Green            | Large        | Sweet    |
| Sigaretta          | 21-PT-163    | elongated | Red               | Medium Green            | Small        | Pungent  |
| Peperone di Senise | 22-PT-101    | conical   | Red               | Light green             | Intermediate | Sweet    |

1 Oblate  
 2 Circular  
 3 Cordate/heart-shape  
 4 Blocky  
 5 Rectangular  
 6 Trapezoidal  
 7 Conical  
 8 Elongated  
 9 Hornshaped

1 White  
 2 Lemon-yellow  
 3 Pale orange-yellow  
 4 Orange-yellow  
 5 Pale orange  
 6 Orange  
 7 Light red  
 8 Red  
 9 Dark red  
 10 Purple  
 11 Brown  
 12 Black

*Before ripening*  
 1 White  
 2 Cream  
 3 Light Green  
 4 Medium Green  
 5 Dark Green  
 6 Purple  
 7. Other (e.g. orange)

1 Large > 100 g  
 2 Intermediate 20g – 100g  
 3 Small < 20 g



- To perform on the EUROPEPLAND collection

## Task 2 – Phenotyping and genotyping (M6-M18)

7. External immature fruit color (1. white/ 2. cream/ 3. light green/ 4. medium green/ 5. dark green/ 6. purple).



1



2



3



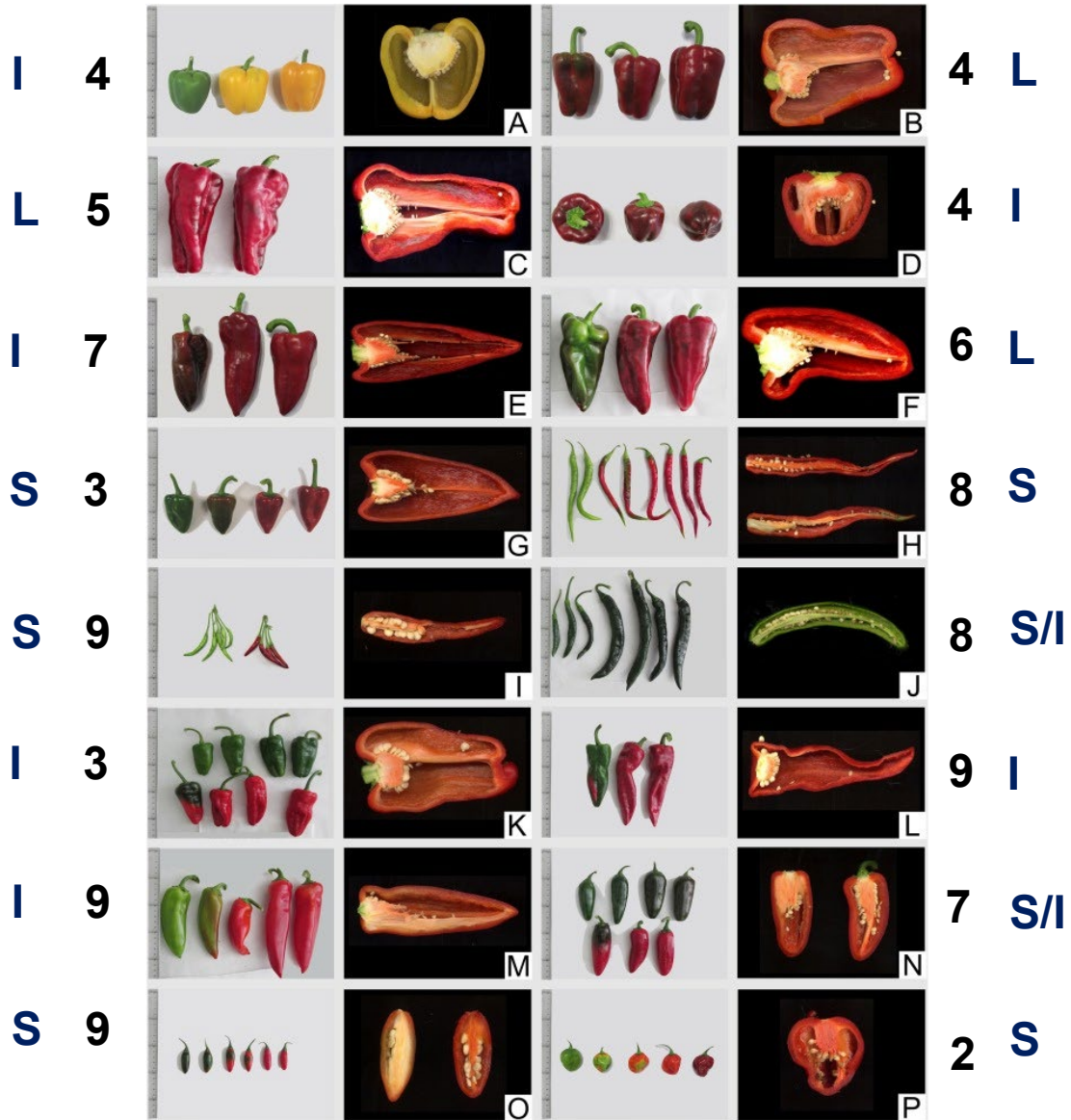
4



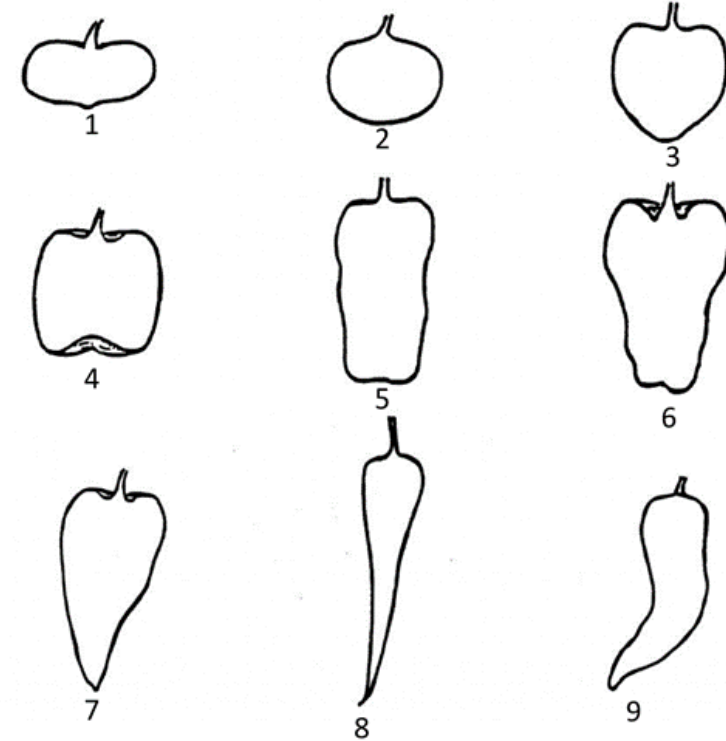
5



6



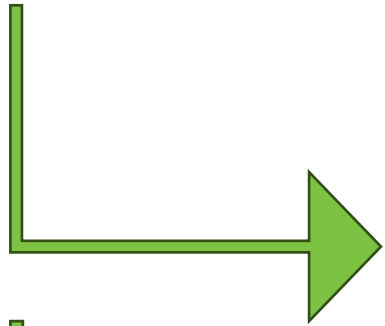
3. heart-shape  
9. Fruit predominant shape (1. oblate/ 2. circular/ 3. cordate/ 4. blocky/ 5. rectangular/ 6. trapezoidal/ 7. conical/ 8. elongated/ 9. hornshaped).



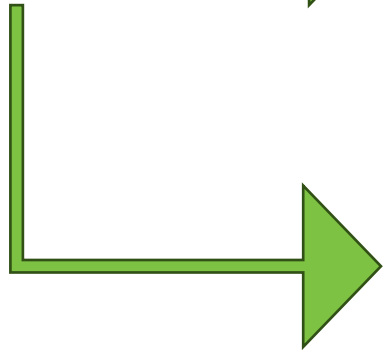
**L = Large**  
**I = Intermediate**  
**S = Small**

## Phenotyping partners CREA-IT and CNR-IBBR

- CREA-IT -> biochemical profile in selected accessions
- CNR-IBBR -> salt stress tolerance test in selected accessions



Independent experiments



- Joint experiment, setting up a stress tolerance trial, phenotype control and stressed for the variable level of bioactive compounds
- Leaf stage??

*Thanks for the  
attention*

