



**EVA**  
European Evaluation Network



# CREA BERGAMO MAIZE COLLECTION: ITALIAN RESOURCES FOR MALANIRS

**Carlotta Balconi**

CREA - Centro di Ricerca

Cerealicoltura e Colture Industriali

Research Centre for Cereal and Industrial Crops

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*EVA Maize – Malanirs Kickoff*

*26-27 February, 2025*

*Bergamo, Italy*





**CREA** - The Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria, is a National Research Organization of the MASAF (Ministero dell'Agricoltura, della Sovranità alimentare e delle Foreste) with scientific competence within agriculture, agroindustry, economics, food, fishery and forestry.

**CREA** is the leading Italian research organization dedicated to agri-food supply chains **through 12 Research Centres**

Research Centre for Agriculture and Environment

Research Centre for Food and Nutrition

Research Centre for Cereal and Industrial Crops

Research Centre for Plant Protection and Certification

Research Centre for Forestry and Wood

Research Centre for Genomics and Bioinformatics

Research Centre for Engineering and and Agro-Food Processing

Research Centre for Olive, Fruit and Citrus Crops

Research Centre for Vegetable and Ornamental Crops

Research Centre for Agricultural Policies and Bioeconomy

Research Centre for Viticulture and Enology

Research Centre for Animal Production and Aquaculture



# Short presentation of CREA – Cereal and Industrial Crops

**CREA Bergamo** has expertise in genetics, agronomy, physiology, chemistry, biochemistry, Near Infrared Spectroscopy, pathology, and preservation, characterization, management of maize biodiversity.

<https://www.crea.gov.it/web/cerealicoltura-e-culture-industriali>



## Centro di Ricerca Cerealicoltura e Colture Industriali Research Centre for Cereal and Industrial Crops

CREA CI PARTNERSHIP: ONE INSTITUTION MULTIPLE EXPERTISE AND FACILITIES WIDELY DISTRIBUTED IN THE NATIONAL TERRITORY

**CREA-CI** Research  
Centre for Cereal and  
Industrial Crops

- **Bergamo - LOMBARDIA**
- **Vercelli - PIEMONTE**
- **Bologna - EMILIA ROMAGNA**
- **Rovigo - VENETO**
- **Foggia - PUGLIA**
- **Caserta - CAMPANIA**
- **Acireale - SICILIA**

### • Bergamo

CREA-CI Bergamo  
Maize (breeding and  
resistance to biotic stress)



**CREA-CI Rovigo**  
Canapa – Girasole  
Ricino



**CREA-CI Bologna**  
Potato, Brassicaceae,  
Biofumigation

**CREA-CI Vercelli**  
Rice e Bread  
Wheat

### • Foggia

CREA-CI Foggia  
Wheat (Breeding and  
biotic stress)



**CREA-CI Caserta**  
Economic impact  
on Agro-Industry



**CREA-CI Acireale**  
Durum Wheat,  
lupino

Short presentation of CREA – Cereal and Industrial Crops - Bergamo



CREA - Centro di Ricerca Cerealicoltura e Colture Industriali, Bergamo (ITALY)

HISTORY: 1920-2025



MISSION



MAIZE BREEDING

GENETIC

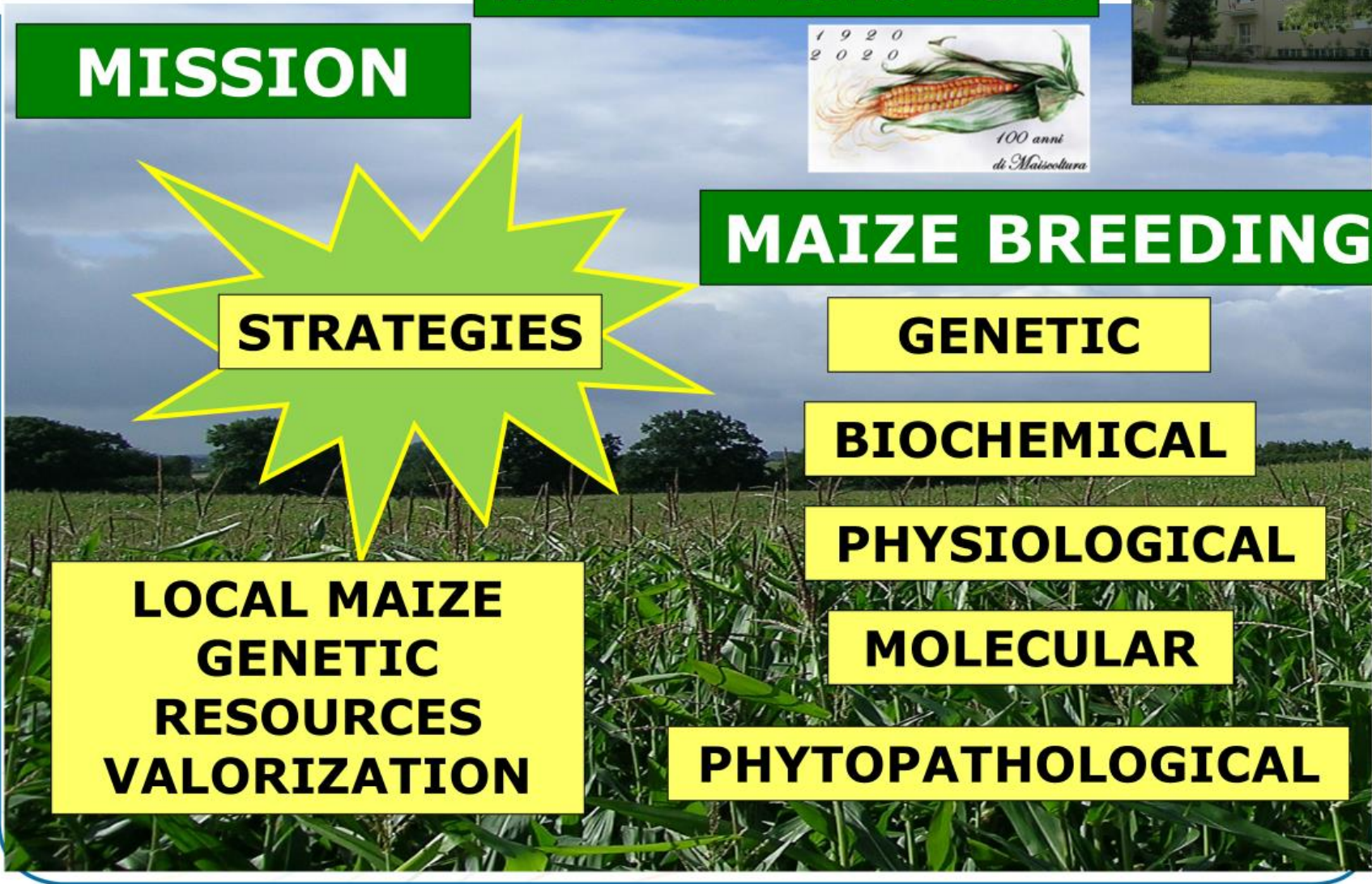
BIOCHEMICAL

PHYSIOLOGICAL

MOLECULAR

PHYTOPATHOLOGICAL

LOCAL MAIZE GENETIC RESOURCES VALORIZATION





# Short presentation of CREA – Cereal and Industrial Crops - Bergamo



## Maize Genebank Multiplication FIELD NURSERY

MAIZE GENE BANK FIELDS MULTIPLICATION (yearly turned)

CREA - Bergamo Experimental Farm «La Salvagna» (45°68'N; 9°64'E) (total 22 ha -fields)

CREA Sede di Bergamo Labs, Greenhouse, Offices



CREA - Bergamo Maize Genebank



CREA - Bergamo Weather Station



# CREA's maize collection

**CREA Bergamo's Genebank** contributes to MALANIRs panel with a large and diverse maize germplasm collection, local maize varieties (landraces shared by SMTA) to be evaluated by NIR Spectroscopy



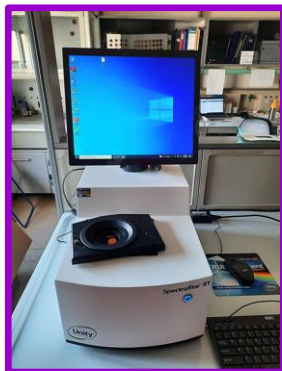
**Maize *ex situ* collection the largest in ITALY**



- ❖ **1.314 Landraces (720 Italian)**
- ❖ **2.981 Inbred lines (600 Italian)** derived from breeding programs



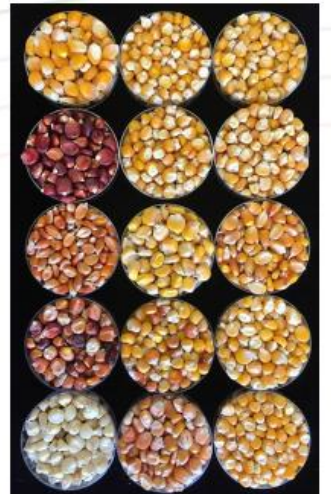
Rita Redaelli



# BERGAMO MAIZE GENE BANK

— Carlotta Balconi and Alessio Torri —

**Over 5000 accessions** are preserved in cold storage rooms at 7°C



Periodically regenerated in the **FIELD** by **nursery (controlled pollination)**



# CREA's maize collection



## MAIZE GENEBANK

Italian  
Landraces  
collected  
starting by  
1950  
at Bergamo  
Research  
Section



**EVA**  
European Evaluation Network



**CREA –  
Research Centre  
Cereal and  
Industrial Crops -  
Bergamo  
Recent  
Genebank  
Programs and  
Projects**



# Maize Genetic Resources Program RGV-FAO

....in progress for over 20 years....



MINISTERO DELL'AGRICOLTURA  
DELLA SOVRANITÀ ALIMENTARE  
E DELLE FORESTE



Activity 1 – Multiplication Italian maize collection  
Azienda «La Salvagna» CREA – Bergamo

Attività 2 – Characterization through specific  
descriptors - National Biodiversity Plan



VA1306



VA1304



VA1269



VA33



**Link: Registri Varietà Vegetali (sian.it)**

**<https://www.sian.it/mivmPubb/listeVarieta.do>**





# CREA – Research Centre Cereal and Industrial Crops - Bergamo Recent Genebank Programs and Projects



Progetto di ricerca n. Capofila del partner:

**PI - Carlotta Balconi**

## National Research Projects (2020-25) Maize Genebank Bergamo

**F.S.M.T. – (2022-2025)**  
Frutti e semi della Madre Terra  
Bando PSR Regione Liguria



Programma di Sviluppo Rurale 2014-2020 della Regione Liguria

in attuazione M 10.2

"sostegno per la conservazione, l'uso e lo sviluppo sostenibile delle risorse genetiche in agricoltura"

intervento 10.2.A

"Interventi per la conservazione e l'uso sostenibile delle risorse genetiche vegetali in agricoltura"

**C. Balconi**  
**A. Torri**

Recupero e caratterizzazione  
di varietà tradizionali di mais (*Zea mays* L.)  
originarie della regione Lazio  
(MAREVAL)



Varietà locali di mais: caratterizzazione per la  
reintroduzione nel territorio lombardo  
(VALOMAYS)

**PI - Rita Redaelli**



Programma di Sviluppo Rurale 2014 - 2020

Fondo Europeo Agricolo per lo Sviluppo Rurale:  
l'Europa investe nelle zone rurali

Pubblicazione realizzata con il cofinanziamento del FEASR  
Responsabile dell'informazione: CREA Centro di ricerca  
Cerealicoltura e Culture Industriali  
Autorità di gestione del Programma: Regione Lombardia





**CREA –  
Research Centre  
Cereal and  
Industrial Crops -  
Bergamo**  
Recent  
Genebank  
Programs and  
Projects



**BOLIVIA**  
**P.S.G.O. Km 0 Bolivia**

**EUROPA**  
**ECGPR – MAIZE – WG**  
**EVA – Network**

**International Research Projects**  
**(2020-25)**  
**Maize Genebank Bergamo**

**MALANIRS**  
**(2024-2027)**



ECPGR Activity Grant Scheme  
Proposal Form

First Call – Phase XI (2024–2028)

Activity Proposal

Activity	
Full title	MAize Landraces traits phenomic prediction using Near InfraRed Spectra.
Acronym (or short title)	MALANIRS



2022 Joint FACCE-JPI SusCrop Call  
on Agrobiodiversity



**MineLandDiv**  
Mining allelic diversity of maize landraces  
for tolerance to abiotic and biotic stresses

**2022 Joint Call**  
**MineLandDiv (2023-2026)**



**PRIMA DROMAMED (2021-2024)**





# CREA's maize collection for MALANIRs



INRAE request 27/29 November 2024 - MineLandDiv - MALANIRs

Object: Shipment of CREA Italian maize accession for MineLandDiv - MALANIRs

Dear Dr. Laura Nunes and Dr. Stéphane Nicolas,

as follow up of E.mail exchanges on 29/11/2024, please find enclosed the following Italian maize accessions from CREA Genebank, organized in two packages:

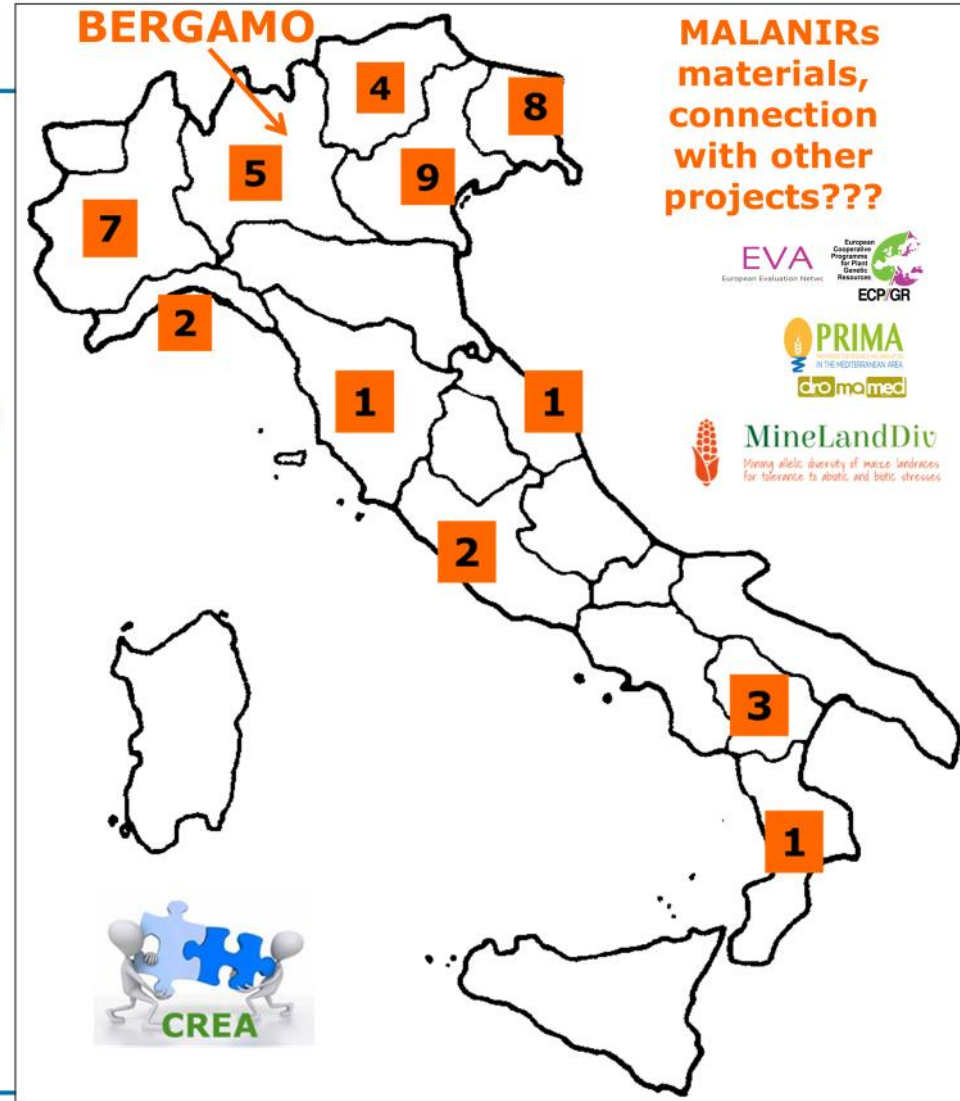
MineLandDiv CREA Landraces as detailed for each accession in the Attached list.

Species	No. of accessions	No. kernels/accession
<i>Zea mays</i> L.	tot. 43	25 or 50 kernels/genotyping
<i>Zea mays</i> L.	tot. 41	200 kernels/NIRs



## MAIZE GENE BANK Choice of 43 Italian Landraces provided to INRAE for MALANIRs (December, 2024)

Expression of Interest  
to participate in an ECPGR Activity







**MALANIRs materials, connection with other projects???**

**Choice of 43 Italian Landraces provided to INRAE for MALANIRs (December, 2024)**



INRAE request to CREA for MALANIRs				EVA European Evaluation Network	cro ma med	MineLandDiv Mining allelic diversity of maize landraces for tolerance to abiotic and biotic stresses
N.	Provenience Country/Institution	CREA Accession Genebank ID	CREA Accession Number	EVA	DROMAMED	MineLandDiv
1	ITALY - CREA	ITA0370005	VA5	X	X	
2	ITALY - CREA	ITA0370009	VA9		X	
3	ITALY - CREA	ITA0370019	VA19		X	
4	ITALY - CREA	ITA0370021	VA21		X	X
5	ITALY - CREA	ITA0370024	VA24		X	
6	ITALY - CREA	ITA0370025	VA25		X	X
7	ITALY - CREA	ITA0370026	VA26	X	X	X
8	ITALY - CREA	ITA0370035	VA35			X
9	ITALY - CREA	ITA0370050	VA50		X	
10	ITALY - CREA	ITA0370055	VA55	X		
11	ITALY - CREA	ITA0370058	VA58	X	X	
12	ITALY - CREA	ITA0370071	VA71	X		
13	ITALY - CREA	ITA0370088	VA88	X	X	
14	ITALY - CREA	ITA0370092	VA92		X	X
15	ITALY - CREA	ITA0370100	VA100	X		X
16	ITALY - CREA	ITA0370116	VA116		X	
17	ITALY - CREA	ITA0370118	VA118		X	
18	ITALY - CREA	ITA0370121	VA121		X	X
19	ITALY - CREA	ITA0370122	VA122		X	
20	ITALY - CREA	ITA0370124	VA124		X	X
21	ITALY - CREA	ITA0370128	VA128			X
22	ITALY - CREA	ITA0370143	VA143	X	X	
23	ITALY - CREA	ITA0370150	VA150		X	X
24	ITALY - CREA	ITA0370152	VA152	X	X	X
25	ITALY - CREA	ITA0370154	VA154	X	X	
26	ITALY - CREA	ITA0370163	VA163		X	
27	ITALY - CREA	ITA0370166	VA166		X	
28	ITALY - CREA	ITA0370168	VA168		X	X
29	ITALY - CREA	ITA0370171	VA171	X	X	
30	ITALY - CREA	ITA0370172	VA172		X	
31	ITALY - CREA	ITA0370173	VA173		X	
32	ITALY - CREA	ITA0370177	VA177		X	
33	ITALY - CREA	ITA0370185	VA185	X	X	
34	ITALY - CREA	ITA0370194	VA194		X	
35	ITALY - CREA	ITA0370195	VA195	X	X	X
36	ITALY - CREA	ITA0370298	VA298		X	
37	ITALY - CREA	ITA0370336	VA336	X		
38	ITALY - CREA	ITA0370488	VA373			X
39	ITALY - CREA	ITA0370375	VA375		X	
40	ITALY - CREA	ITA0370466	VA466	X	X	
41	ITALY - CREA	ITA0370488	VA475		X	
42	ITALY - CREA	ITA0370477	VA477	X	X	
43	ITALY - CREA	ITA0370488	VA488	X	X	

# CREA's maize collection for MALANIRs

# Expectations from EVA Maize/Malanirs

<b>DAY 27 FEBRUARY 2025</b>		
<b>8:30 – 10:30</b>	<b>MALANIRS intro and Collections</b>	<b>CHAIR: V. ANDJELKOVIC</b>
<b>8:30 – 8:45</b>	Introduction to MALANIRS	<i>S. Nicolas</i>



Expression of Interest to participate in an ECPGR Activity

First Call – Phase XI



consists of the following specific actions:

- to provide seeds of 50 Italian traditional maize landraces preserved at CREA Bergamo Genebank to be genotyped
- to characterize by NIRs seeds harvested from MineLandDiv/EVA trials (50 genotypes) and grain of 50 landraces maintained in CREA Bergamo genebank
- to participate to the meetings and discussion about the proposed activity





**Partner - CREA - Centro di Ricerca  
Cerealicoltura e Colture Industriali,  
Bergamo (ITALY)**



**Rita  
Redaelli**



**Alessio  
Torri**



**Antonino d'Ambrosio  
Research grant**



**MineLandDiv**

Mining allelic diversity of maize landraces  
for tolerance to abiotic and biotic stresses



**Carlotta  
Balconi**



**➤ THANK YOU!!!!**