




EVA
European Evaluation Network

 Schweizerische Eidgenossenschaft
Confédération suisse
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SWISS MAIZE COLLECTION

Beate Schierscher
Agroscope

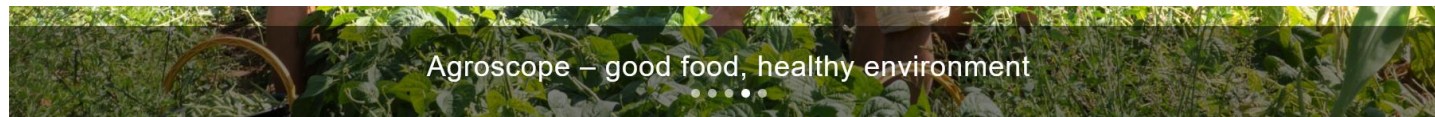
EVA Maize – Malanirs Kickoff

26-27 February, 2025

Bergamo, Italy



Short presentation of Agroscope



Agroscope – good food, healthy environment

RESEARCHING TOGETHER
FOR THE FUTURE

1115
Employees

947
Full-time posts

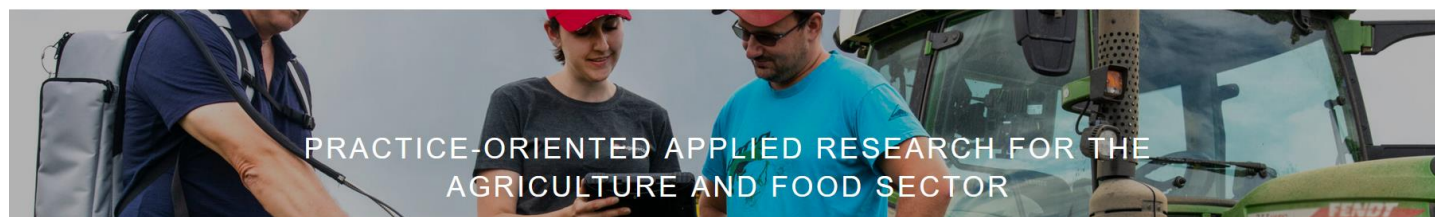
48
% women

33
Trainees

37
Interns

62
PhD candidates

43
Postdocs



PRACTICE-ORIENTED APPLIED RESEARCH FOR THE
AGRICULTURE AND FOOD SECTOR

Short presentation of Agroscope: locations



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Short presentation of Agroscope: research objectives

Agroscope is characterised by its combination of **research, policy advice, enforcement, knowledge exchange and technology transfer**, as well as by its coupling of application-oriented basic research and practical relevance.

Agroscope deals with issues in the following spheres:

- Plant Breeding, Plant Production, Plant Protection and Plant Products;
- Livestock, Feed and Products of Animal Origin;
- Food and Nutrition;
- Cropping Systems, Protection of Natural Resources, Agricultural Economics and Agricultural Engineering.



Swiss maize collection

Historical background :

- 1571 first mention of maize in the Rhine-Valley
- 1941-1942: 106 accessions were collected and intergrated into the Genebank
- 1960: 43 accessions from the Graubünden and Wallis
- 2000 – 2019: 76 accessions from the Wallis, Tessin, Rhinvalley and Linth
- **Today** : 209 local varieties were conserved in the Swiss Genebank and 223 inbred lines

→ All accessions available with a SMTA



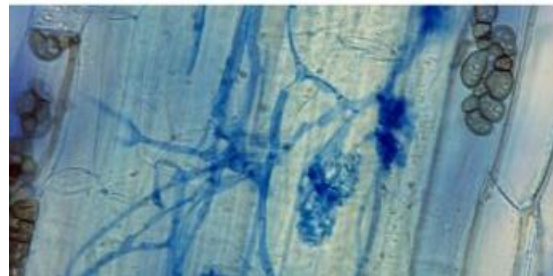
*Stammkolbe Gr 7.2
From Sagogn 1942,
Photo 10.03.1943*



Projects on Swiss Maize collection

- New research project going on, titled "Breeding for beneficial microbial associations"
- They are interested in comparing the microbial association between ancient maize varieties and new varieties used by farmers.

Marcel van der Heijden's group in Reckenholz, 'Plant-Soil Interactions' Research Group




Projects on Swiss Maize collection

Several doctoral thesis



8 landraces

Early growth and yield performance of Swiss maize landraces (Zea mays L.) in contrasting environments



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Abstract (PDF, 162.6Kb)
Fulltext (PDF, 5.381Mb)

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Contributors
Examiner: Liedgens, Markus Michael
Examiner: Stamp, Peter

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ETH Zurich

Subject
MAIS (PFLANZENBAU); JUNGPFANZENWACHSTUM UND -ENTWICKLUNG (KULTURPFLANZENWACHSTUM); ERTRAGSPHYSIOLOGIE (KULTURPFLANZEN); LANDSORTEN + SELTENE SORTEN (KULTURPFLANZEN); ZEA (BOTANIK); RESISTENZ UND VITALITÄT VON KULTURPFLANZEN (PHYTOMEDIZIN); ÄUSSERE FAKTOREN UND STRESS (BOTANIK); KONKURRENZ (PFLANZENÖKOLOGIE); MISCHKULTUREN + BEGLEITKULTUREN + ZWEITKULTUREN (LANDWIRTSCHAFTLICHE KULTURVERFAHREN); MAIZE (CROP PRODUCTION); YOUNG PLANT GROWTH (CROP GROWTH); CROP YIELD PHYSIOLOGY (CROP PLANTS); LOCAL VARIETIES + RARE VARIETIES (CULTIVATED PLANTS); ZEA (BOTANY); RESISTANCE AND VITALITY OF CULTIVATED PLANTS (PLANT PATHOLOGY); EXTERNAL FACTORS AND STRESS (BOTANY); COMPETITION (PLANT ECOLOGY); MIXED CROPPING + INTERCROPPING + MULTIPLE CROPPING (AGRICULTURAL CULTIVATION SYSTEMS)

Organisational unit
03265 - Stamp, Peter

Notes
Diss., Eidgenössische Technische Hochschule ETH Zürich, Nr. 19474, 2011.

More
[Show all metadata](#)

Author
Schneider, David Nathanael

Date
2011

Type
Doctoral Thesis


ETH Bibliography
yes

Open access

sub-sample of 60 accessions

Early vigour of Swiss maize landraces (Zea mays L.) in cool environments

by Roland Peter



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Abstract (PDF, 427.8Kb)
Fulltext (PDF, 6.151Mb)

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Examiner: Liedgens, Markus Michael
Examiner: Stamp, Peter

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Organisational unit
03265 - Stamp, Peter

Notes
Diss., Eidgenössische Technische Hochschule ETH Zürich, Nr. 17398, 2007.

More
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Author
Peter, Roland

Date
2007

Type
Doctoral Thesis

ETH Bibliography
yes

Closed access

Projects on Swiss Maize collection

Several doctoral thesis



defined set of Swiss maize landraces (core collection), containing 35 of a total of 168 maize landraces (accessions) (35 SSR Marker).

The Swiss core set of maize landraces and its genetic and phenotypic diversity



Closed access

Author
Freitag, Nidas Marcus

Date
2011

Type
Doctoral Thesis

ETH Bibliography
yes

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Contributors
Examiner: Reif, Jochen C.
Examiner: Stamp, Peter

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Organisational unit
03265 - Stamp, Peter

Notes
Diss., Eidgenössische Technische Hochschule ETH Zürich, Nr. 19477, 2011.

More
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Genetic diversity and relationships of Swiss Flint maize (Zea mays L. ssp. mays) landraces



Open access

Author
Eschholz, Tobias Wilhelm

Date
2008

Type
Doctoral Thesis

ETH Bibliography
yes

Download
[Abstract \(PDF, 138.5Kb\)](#) ↕
[Fulltext \(PDF, 3.376Mb\)](#) ↕

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Subject
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Organisational unit
03265 - Stamp, Peter

Notes
Diss., Eidgenössische Technische Hochschule ETH Zürich, Nr. 17715, 2008.

More
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Use of maize in Switzerland

Utilization:

- Polenta in the south
- Ribel: in the Rhinvalley
- Bread, in mixture with Rye-flour



The two landraces currently in commercial use – ***Rheintaler Ribelmals*** and ***Rote Tessiner Mais*** – require continuous breeding efforts. In particular, *Rheintaler Ribelmals* needs improvement, as it is susceptible to diseases that were not problematic under past cultivation conditions. This may seem contradictory to the common belief that landraces are naturally best adapted to their environment. **However, it highlights the need for traditional varieties to adjust to changing environmental and agricultural conditions.**

Use of maize in Switzerland

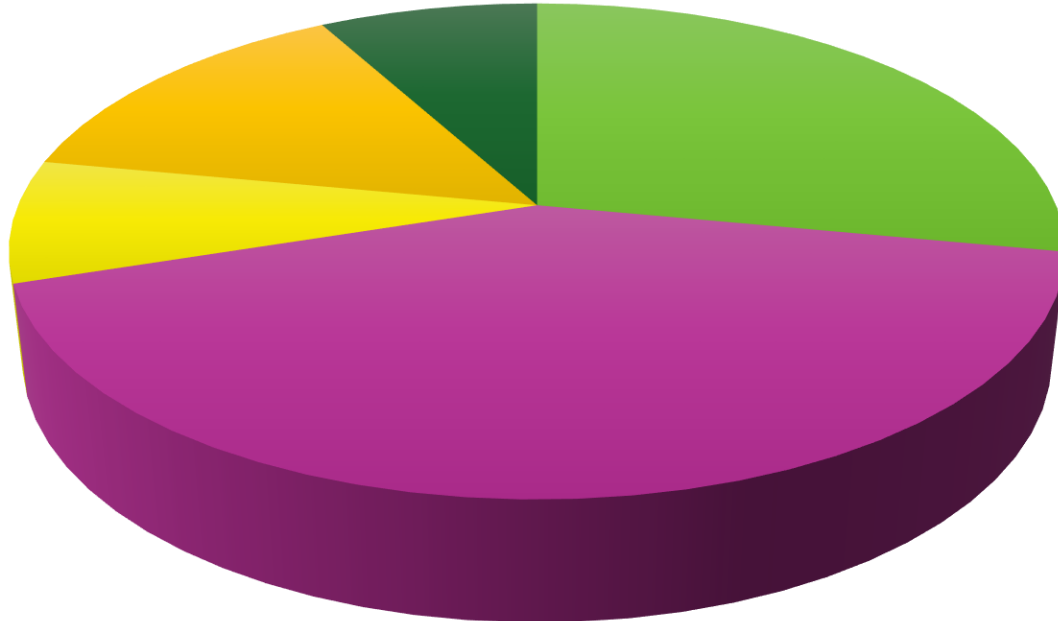
Cultivation areas :

- Polenta : 200 t (2023), 15 farmers
- Ribel: 65 ha



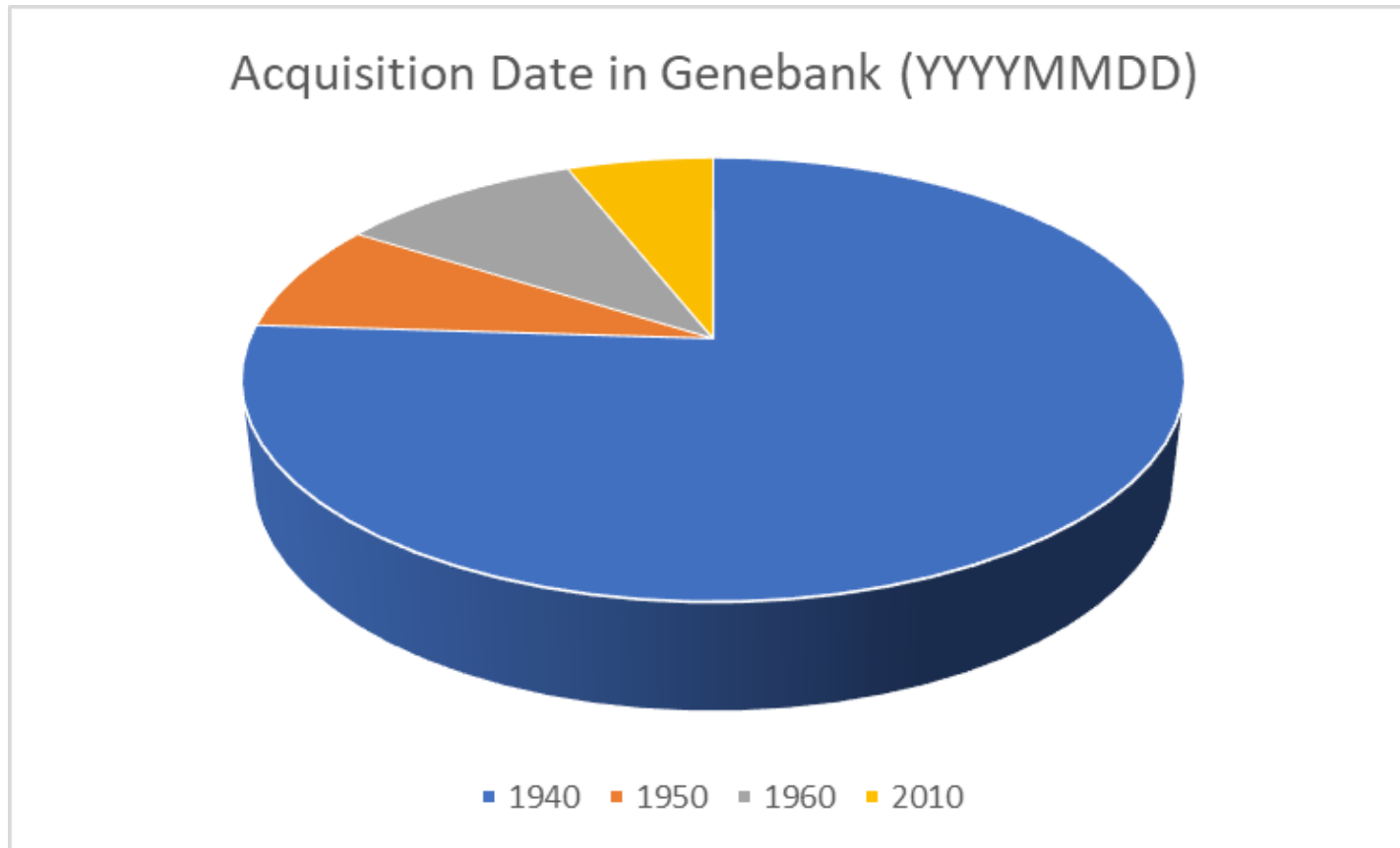
Swiss accessions in Malanirs

state(region) or subregion in country



■ Grison ■ St. Gallen ■ Tessin ■ Valais ■ France, Austria, Peru, Germany

Swiss accessions in Malanirs



Availability of phenotypic and genotypic data

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Federal Administration admin.ch
Banque de gènes nationale

Rechercher Administration | beates

Accueil → Mais → Mais variétés locales → ZM007 - Tartar, Gr.4-2

ZM007 - Tartar, Gr.4-2

Accession

Numéro d'accession unique (MCPD 2):
ZM007

Date acquisition (MCPD 12):
1942-04-12

Nom de variété (MCPD):
Tartar, Gr.4-2

Nom d'accession (MCPD 11):
Tartar

Code variété (MCPD):
13-001-7

Nom commun français (MCPD):
Mais

Cropname (MCPD 10):
Maize

Nom latin (MCPD):
Zea mays L.

Genre (MCPD 5):
Zea

Type de reproduction (MCPD):
allogame, auto fertile mais avec une forte dépression de consanguinité, anémophile

Actif accession (MCPD):
oui

STATUT (MCPD):
vivante

Présence sur la liste positive PAN (MCPD):
Oui

Type de sélection (MCPD 19):
Cultivar traditionnel ou variété locale

Remarque (MCPD):
Fait partie de la core collection

Origine et provenance

COLLECTOR (MCPD):
Joh. D. Holzner

Date de collecte de l'échantillon (MCPD 17):
1942-04-12

Pays d'origine (MCPD 13):
Switzerland

Localité (MCPD):
Tartar (Cazis)

Latitude of collecting site (DMS) (MCPD 15.2):
464310N

Longitude du site de collecte (MCPD 15.4):
0092510E

Élévation du site de collecte (m) (MCPD 16):
984

Instcode donateur (MCPD 22):
CHE002 - Swiss Federal Research Station for Agronomy

Pays donateur (MCPD):
Switzerland

ZM007 2021

ZM007 2021

Attribut...
Photo...
Fichier...
Tâche...
Accession...
Lot...
Dupliquer...

www.swissgenebank.ch

Availability of phenotypic and genotypic data

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

PGRFA

Schierscher Beate Contact DE FR IT EN

zm007


Publication status: National and private

Search

Tartar (M0000000399)

Varieties (0) **Accessions (1)** Multiply Lists (6) Use History History (BDN)

Title: Tartar (A0000023510)

Images:  Tartar 13-001-7 2003ETH

Accession

Load/Hide data

Characteristics

Linked multiplies (CALC_LINKED_PUIMULT)	M0000000399
Contact person (CONTACT)	Federal Office for Agriculture FOAG
Number of conservation collections wi... (CALCCONLISTNUMB)	2

Conservation

Collections (CALCCONLIST_ACC)	Core Collection Mais Banque de gènes nationale Agro...
Conservation state accession (ACCCONSERVSTAT)	yes - yes
Conservation criterion (CRITCODE_ACC)	1B - variety with a local name which has contributed to...
Type of germplasm storage (STORAGE)	13 - Long term

www.pgrel.admin.ch

Stem	
Stem color (STEMCOL)	4.066999912261963
Evaluation	
Site (SITE)	ETH Zürich, Departement für Agrar- und Lebensmittel...
Name of person in charge of characteri... (NAPECH)	Andreas Hund Niclas Freitag
Growth	
Plant emergence [%] (EMERGENCE)	86
Early vigour (EARLYVIG)	2 - very bad-bad
Tassel	
Length of main axis of tassel above lo... (TASSEN1ABS)	41.525001525878906
Number of primary branches on tassel (NUMPRIMBRAN)	11
Length of main axis above lowest side ... (LEAXLO2)	40.0
Length of main axis of tassel above up... (TASSEN2ABS)	26.334999084472656 30.0
Anthocyanin coloration of glumes excl... (GLUMECOL_2)	1 - absent or very weak
Anthocyanin coloration of anthers (ANTHERCOL)	2 - very weak-weak
Tassel: angle between main axis and la... (TASSELANGLE)	4.515999794006348
Total tassel dry matter [g] (TASSELDRYMATTER)	65.66400146484375
The length of the husk leaves [cm] (HUSKLEAFLENGTH)	8.288000106811523
Kernel dry matter was assessed by thre... (KERNELDRYMATTER)	0.9261800050735474
Plant dry matter was assessed by harve... (PLANTDRYMATTER)	2.1085100173950195
Anthocyanin coloration of anthers, (ANTHERCOL_2)	6.1519999504089355
Tassel: number of primary lateral branc... (NUMPRIMBRAN_2)	15.949999809265137

Expectations from EVA Maize/Malanirs

- We are interested in this project : an excellent opportunity to evaluate and characterize our maize collection
 - It allow us to gain deeper insights into the genetic diversity, agronomic traits, and potential uses of our accessions
- ultimately contributing to their conservation and effective utilization in breeding and research programs.