

# Southern maize local landraces

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# Objectives:

- to improve *ex situ* conservation and characterization of maize local landraces in each partner country implied in this project (Albania, Bulgaria, Federation of Bosnia and Herzegovina, Republic of Srpska, Romania);
- to strengthen the national capacities in utilization of maize genetic resources.

# Partners

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- Suceava Genebank, Romania - 64 accessions
- Institute of Plant Genetic Resources, Sadovo, Bulgaria - 40 accessions
- Agricultural University of Tirana, Albania - 30 accessions
- Faculty of Agriculture Sarajevo, Bosnia and Hertzegovina- 10 accessions
- Faculty of Agriculture , Republic Srpska - 7 accessions

# Activities – 2007 (the first year)

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- **Check of passport data and viability - 150 samples**
- **Multiplication of local landraces – 150 samples**
- **Molecular characterization - 50 samples**

**Romania with origin sites  
of studied maize  
landraces**



**Suceava - 17 villages**

**Bistrita Nasaud – 16 villages**

**Maramures – 13 villages**

**Cluj – 14 villages**

**Alba – 4 villages**

## Report of the project Southern maize local landraces – Partner nr. 1

Sowing time: Mai, 2, 2007, place Suceava Genebank, Romania

- each sample was sowed in four rows;
- distance = 70x25 cm;
- germinability in % (February 10, 2008.)

sample 1 = 100%	sample 23 = 98%	sample 44 = 99%
sample 2 = 100%	sample 24 = 100%	sample 45 = 100%
sample 3 = 100%	sample 25 = 100%	sample 46 = 100%
sample 4 = 100%	sample 26 = 100%	sample 47 = 100%
sample 5 = 99%	sample 27 = 100%	sample 48 = 100%
sample 6 = 100%	sample 28 = 100%	sample 49 = 98%
sample 7 = 100%	sample 29 = 100%	sample 50 = 99%
sample 8 = 100%	sample 30 = 100%	sample 51 = 100%
sample 9 = 100%	sample 31 = 100%	sample 52 = 100%
sample 10 = 100%	sample 32 = 100%	sample 53 = 100%
sample 11 = 100%	sample 33 = 99%	sample 54 = 100%
sample 12 = 100%	sample 34 = 100%	sample 55 = 100%
sample 13 = 100%	sample 35 = 100%	sample 56 = 100%
sample 14 = 100%	sample 36 = 99%	sample 57 = 100%
sample 15 = 100%	sample 37 = 100%	sample 58 = 100%
sample 16 = 99%	sample 38 = 100%	sample 59 = 99%
sample 17 = 100%	sample 39 = 99%	sample 60 = 100%
sample 18 = 100%	sample 40 = 100%	sample 61 = 100%
sample 19 = 100%	sample 41 = 100%	sample 62 = 100%
sample 20 = 100%	sample 42 = 99%	sample 63 = 98%
sample 21 = 100%	sample 43 = 100%	sample 64 = 100%



## Report of the project Southern maize local landraces – Partner 2

Sowing place - Sadovo, IPGR Bulgaria

- each sample was sowed in four rows;
- distance = 70x25 cm;
- germinability in % (April 25, 2007.)

sample 1 = 89%

sample 2 = 90%

sample 3 = 90%

sample 4 = 95%

sample 5 = 94%

sample 6 = 91%

sample 7 = 92%

sample 8 = 87%

sample 9 = 86%

sample 10 = 96%

sample 11 = 98%

sample 12 = 97%

sample 13 = 98%

sample 14 = 93%

sample 15 = 94%

sample 16 = 93%

sample 17 = 95%

sample 18 = 96%

sample 19 = 94%

sample 20 = 95%

sample 21 = 96%

sample 22 = 93%

sample 23 = 96%

sample 24 = 96%

sample 25 = 93%

sample 26 = 96%

sample 27 = 93%

sample 28 = 94%

sample 29 = 93%

sample 30 = 95%

sample 31 = 96%

sample 32 = 94%

sample 33 = 95%

sample 34 = 96%

sample 35 = 93%

sample 36 = 96%

sample 37 = 95%

sample 38 = 96%

sample 39 = 93%

sample 40 = 96%

**Albania with origin sites  
of studied maize  
landraces**



## Report of the project Southern maize local landraces – Partner 3

### Sowing place – Tirana, Agricultural University

- each sample was sowed in four rows;
  - distance = 70x25 cm;
  - Germinability in %
- |                   |                   |                   |
|-------------------|-------------------|-------------------|
| ▪ sample 1 = 89%  | ▪ sample 11 = 97% | ▪ sample 21 = 90% |
| ▪ sample 2 = 90%  | ▪ sample 12 = 90% | ▪ sample 22 = 90% |
| ▪ sample 3 = 90%  | ▪ sample 13 = 90% | ▪ sample 23 = 90% |
| ▪ sample 4 = 95%  | ▪ sample 14 = 90% | ▪ sample 24 = 90% |
| ▪ sample 5 = 94%  | ▪ sample 15 = 90% | ▪ sample 25 = 90% |
| ▪ sample 6 = 91%  | ▪ sample 16 = 90% | ▪ sample 26 = 90% |
| ▪ sample 7 = 92%  | ▪ sample 17 = 90% | ▪ sample 27 = 90% |
| ▪ sample 8 = 87%  | ▪ sample 18 = 90% | ▪ sample 28 = 90% |
| ▪ sample 9 = 86%  | ▪ sample 19 = 90% | ▪ sample 29 = 90% |
| ▪ sample 10 = 96% | ▪ sample 20 = 90% | ▪ sample 30 = 90% |

# Bosnia & Herzegovina with origin sites of all maize landraces

- sample 1 (place Kakanj)
- sample 2 (place Odžak)
- sample 3 (place Sarajevo)
- sample 4 (place Bihać)
- sample 5 (place Tuzla)
- sample 6 (place Travnik)
- sample 7 (place Vitez)
- sample 8 (place Bihać)
- sample 9 (place Kalesija)
- sample 10 (place Kalesija)



## Report of the project Southern maize local landraces – Partner 4

Sowing time: Maj, 10, 2007, place Butmir near Sarajevo

- each sample was sowed in four rows;
- distance = 70x25 cm;
- germinability in % (October, 2007.)

sample 1 = 93%

sample 2 = 94%

sample 3 = 93%

sample 4 = 95%

sample 5 = 96%

sample 6 = 94%

sample 7 = 95%

sample 8 = 96%

sample 9 = 93%

sample 10 = 96%

# Republic of Srpska with origin sites of maize landraces

**KNEZEVO**– 4 samples

**PRNAJAVOR** – 3 samples



## Report of the project Southern maize local landraces – partner 5

Sowing place - Banija Luka, Institute of Agriculture

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- each sample is sowed in four rows;
- distance = 70x25 cm;
- germination in % (April 25, 2007.)

sample 1 = 92%

sample 2 = 96%

sample 3 = 94%

sample 4 = 98%

sample 5 = 96%

sample 6 = 93%

sample 7 = 95%

# MOLECULAR CHARACTERIZATION

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## Objectives:

- **Determination of the maize genetic variability of the studied samples;**
- **Obtaining of the useful information for breeders;**
- **Elimination of the possible duplicates.**

# Work method

- The Analyses were conducted with application of the fluorescent version of AFLP, using ABI-PRISM 377 AFLP techniques.
- Minimum of a height of the peak taken to the analysis was 100 points.
- Range of the analysis was from 50 to 500 bp.
- Electrophoresis was conducted on the 4,5% polyacrylamide denaturing gel 36 cm long, during 4 h, with voltage 2400 V.
- Pictures of bands were performed using Genescan software. Zero-one template was generated with application of the Genotyper software.
- The binary data were analyzed function by presence or absence of the DNA fragments (SPSS 10.0 program)

C A S E      0            5            10            15            20            25  
 Label      Num    +-----+-----+-----+-----+-----+-----+

G1

SVGB-10372    ↓×↓↓↓↓↓↓↓↓↓↓↓  
 SVGB-10266    ↓↗            □↓↘  
 SVGB-12286    ↓↓↓↓×↓↓↓↓↓↓↓↗    □↓↓↓↓↓↓↓↓  
 SVGB - 1290    ↓↓↓↓↗            ⇔            ⇔

G2

SVGB - 1336    ↓↓↓↓↓↓↓↓↓↓×↓↓↓↗            □↓↘  
 SVGB-14529    ↓↓↓↓↓↓↓↓↓↓↗            ⇔    □↓↘

G3

SVGB- 1731    ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↗    ⇔    □↓↘  
 SVGB - 3989    ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↗    ⇔    ⇔  
 SVGB - 515    ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓×↓↓↓↓↓↓↓↓↓↓↓↗    □↓↓↓↓↘  
 SVGB - 682    ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↗            ⇔    □↓↘  
 SVGB - 695    ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↗            ⇔    ⇔  
 SVGB - 716    ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↗    □↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↘

G4

SVGB - 718    ↓×↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↗            ⇔            ⇔  
 SVGB - 8998    ↓↗                            □↓↓↓↓↓↓↓↓↓↓↓↓↓↗            ⇔  
 SVGB - 9033    ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↗                            □↓↓↓↓↓↓↘

G5

SVGB - 9036    ↓↓↓↓×↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↗                            ⇔            ⇔  
 SVGB - 1604    ↓↓↓↓↗                            □↓↓↓↓↓↓↓↓↓↘            ⇔            ⇔  
 SVGB -10178    ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↗                            ⇔            ⇔            ⇔

G6

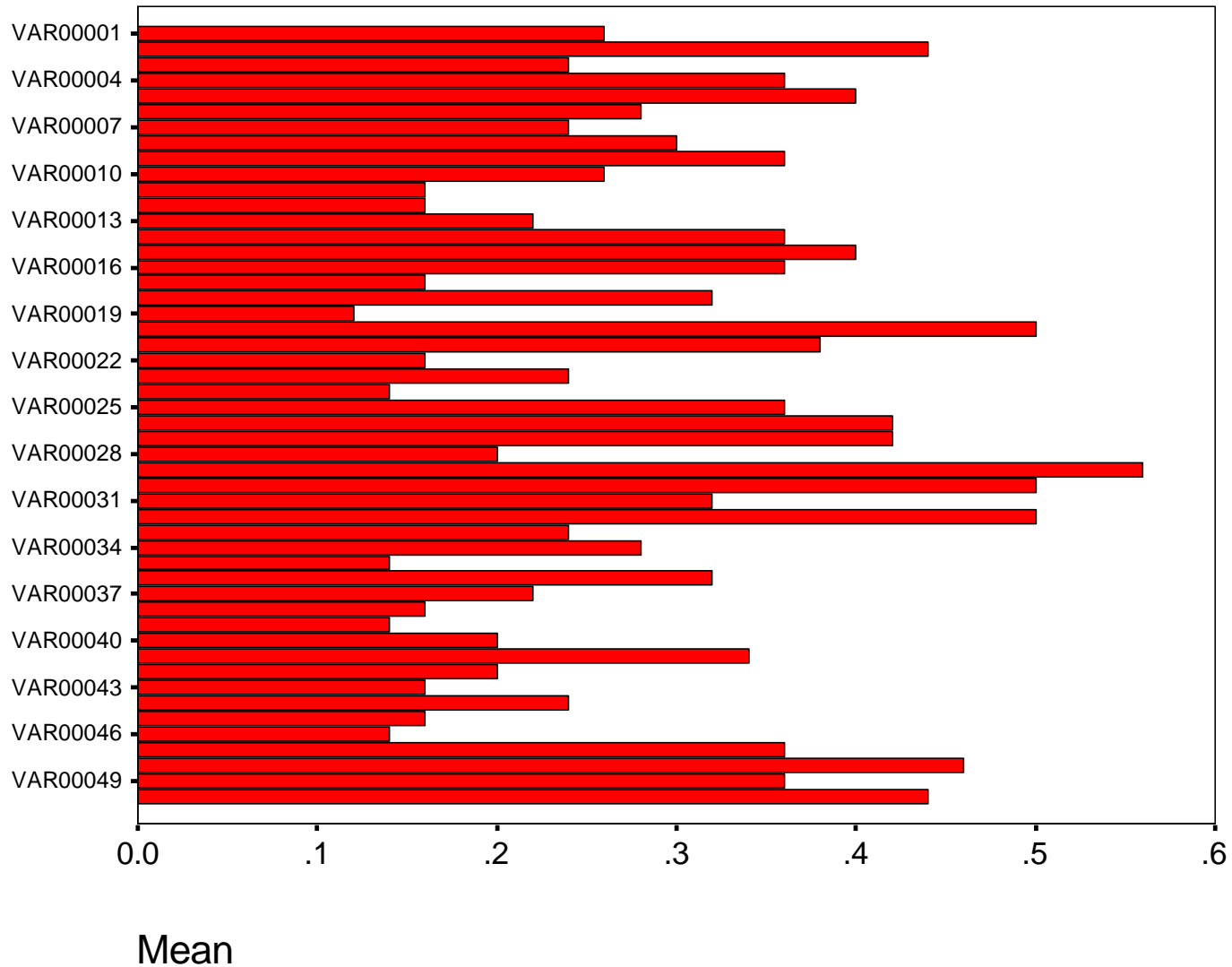
SVGB - 10373    ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓×↓↓↓↓↓↘            □↓↓↓↓↓↓↓↓↓↗            ⇔  
 SVGB - 10376    ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↗            □↓↓↓↘            ⇔            ⇔  
 SVGB - 1254    ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓×↓↓↓↘    ⇔            ⇔            ⇔            ⇔  
 SVGB - 13669    ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↗    □↓↗            □↓↓↓↓↓↓↓↗            ⇔  
 SVGB - 13796    ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↗            ⇔            ⇔  
 SVGB - 13880    ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↗                            ⇔  
 SVGB - 15997    ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↗

**Relationships among the investigated maize genotypes using AFLP data.**

# Relationships among the investigated maize genotypes using AFLP data.



# Frequency of the analyzed maize local landraces



## Romanian maize local landraces used for AFLP analyzes

Current no.	Accession number	Origin of accessions	
		Village	County
1	SVGB-10372	STRAMTURA	SUCEAVA
2	SVGB-10266	STRAJA	SUCEAVA
3	SVGB-12286	STRAJA	SUCEAVA
4	SVGB-1290	BRODINA	SUCEAVA
5	SVGB-1336	STRAJA	SUCEAVA
6	SVGB-14529	RUNCU	SUCEAVA
7	SVGB-1731	VORONET	SUCEAVA
8	SVGB-3989	CIOCANESTI	SUCEAVA
9	SVGB-515	CIOCANESTI	SUCEAVA
10	SVGB-682	FRUMOSU	SUCEAVA
11	SVGB-695	VATRA MOLDOVITEI	SUCEAVA
12	SVGB-716	POJORITA	SUCEAVA
14	SVGB-718	POJORITA	SUCEAVA
15	SVGB-8998	VAMA	SUCEAVA
16	SVGB-9033	DELENI	SUCEAVA
17	SVGB-9036	PIRTESTII DE SUS	SUCEAVA
18	SVGB-1604	VICOVU DE JOS	SUCEAVA
19	SVGB-10178	MOISEI	MARAMURES
20	SVGB-10373	SACEL	MARAMURES
21	SVGB-10376	BOGDAN VODA	MARAMURES
22	SVGB-1254	SACEL	MARAMURES
22	SVGB-13669	BISTRA	MARAMURES
23	SVGB-13796	SLATIOARA	MARAMURES
24	SVGB-13880	COMLAUSA	MARAMURES
25	SVGB-15997	BISTRA	MARAMURES

Current no.	Accession number	Origin of accessions	
		Village	County
26	SVGB-910	ARDUSAT	MARAMURES
27	SVGB-8534	STRIMTURA	MARAMURES
28	SVGB-5154	BOTIZA	MARAMURES
29	SVGB-1679	CICARLAU	MARAMURES
30	SVGB-1035	BERINDU	CLUJ
31	SVGB-9955	BUCERDEA	ALBA
32	SVGB-9909	GALATII BISTRITEI	BISTRITA NASAUD
33	SVGB-935	UNIREA	BISTRITA NASAUD
34	SVGB-7432	TELCIU	BISTRITA NASAUD
35	SVGB-527	NEPOS	BISTRITA NASAUD
36	SVGB-501	TIHA BIRGAULUI	BISTRITA NASAUD
37	SVGB-491	PRUNDU BIRGAULUI	BISTRITA NASAUD
38	SVGB-16413	FELDRU	BISTRITA NASAUD
39	SVGB-14538	CETATE	BISTRITA NASAUD
40	SVGB-14531	SIEU MARE	BISTRITA NASAUD
41	SVGB-14523	REBRISOARA	BISTRITA NASAUD
42	SVGB-14510	MAIERU	BISTRITA NASAUD
43	SVGB-14437	PARVA	BISTRITA NASAUD
44	SVGB-14414	REBRISOARA	BISTRITA NASAUD
45	SVGB-1320	FELDRU	BISTRITA NASAUD
46	SVGB-1169	ILVA MICA	BISTRITA NASAUD
47	SVGB-9957	CALDAU	BISTRITA NASAUD
48	SVGB-1035	BERINDU	CLUJ
49	SVGB-16396	SACALAI	CLUJ
50	SVGB-3993	BALCESTI	CLUJ



