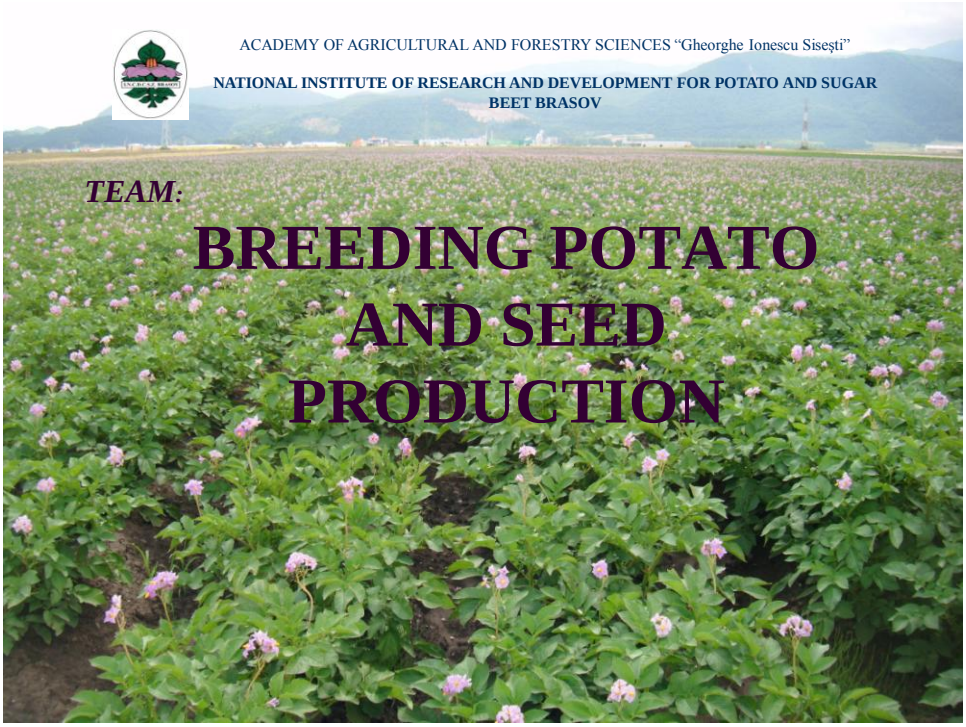


Directions of research, development, innovation

- Maintaining and improving the genetic fund / patrimony on potato;
- Creation of new varieties of potato by using classical and unconventional methods using wild and cultivated species with good adaption to Romanian conditions, with diseases resistance, using better organic and technological resources;
- Improve the quality of seed potatoes and promote biotechnology (in vitro culture, micro and mini tubers);
- Modernization of research infrastructure, human resources and research direction for realization of joint projects with partners from Europe.

The dynamics of human resources in AMSEM team

Scientific degree	2007	2008	2009	2010	2011
CS I	4	2	2	2	2
CS II	1	1	1	1	1
CS III	4	3	3	3	3
CS	-	1	1	1	1
ACS	-	1	2	2	3
Supporting staff	30	24	23	20	20
Total	**39**	**32**	**32**	**29**	**30**

❑ The team is represented by 10 researchers (out of which two are senior researcher 1st degree, one is research 2nd degree, three are researchers 3rd degree, one is scientific researcher and two assistant researchers), and six from this team have PhD degree.

Infrastructure, endowment with apparatus

Working spaces:

- labs (breeding, virology);
- warehouse equipped with heat-insulated spaces;
- offices;
- land for experiences;
- set of agricultural machinery for land preparation, planting, sowing, maintenance works, chemical and ecological treatments, tractors;
- microscopes and stereomicroscopes, laboratory scales, starch scales, accessories, laboratory glassware;

Infrastructure, endowment with apparatus

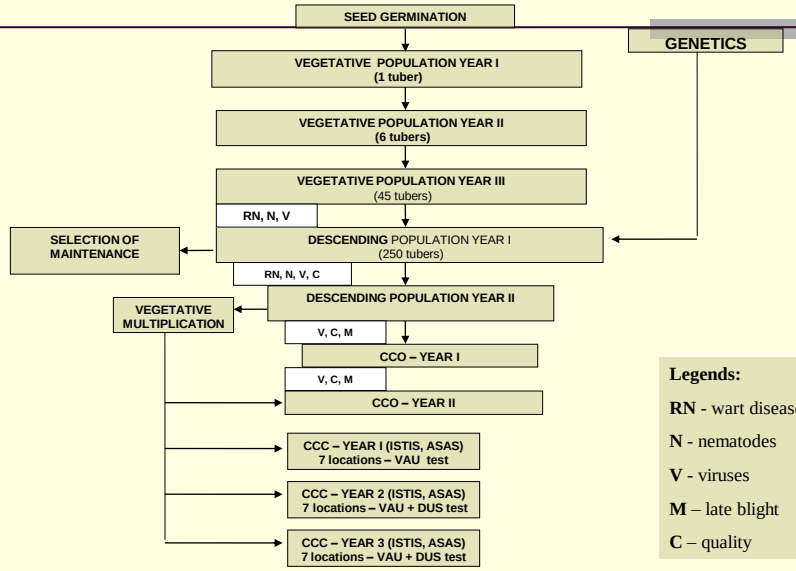
- laboratory apparatus: ELISA reader, PR1100, Binder oven, Climas incubator with cooling, Bioquell 750, analytical balance SHIMADZU, technical balance KERN, pH-meter INOLAB, centrifugal with colling K23, centrifugal with cooling Beckman, centrifugal with cooling tubes Eppendorf MIKRO 220R, ELISA washer boards, Tecan ELISA washer boards, Wathman ELISA washer boards LP36, ELISA plate Dispenser Sumal AD96, plant juice extractor Sapex Hamilton, blender Minimix Bagmixer, magnetic stirrers with heating, magnetic stirrers, mixer Vortex HEIDOLPH bidistiller GPL 2014, blender PRO250.

Researches Funds and their Sources

Year	Total Expenses	Projects resources	Self-finances
	€	€	€
2007	322.556	243.741	78.814
2008	248.927	221.712	27.214
2009	192.628	123.593	69.034
2010	224.438	111.196	113.245
2011	247.197	199.460	47.737
Total	**1.235.746**	**899.702**	**336.044**

BREEDING SCHEME

♂ ✖ ♀



Legends:

RN - wart disease

N - nematodes

V - viruses

M – late blight

C – quality

Field germplasm collection

- For realizing the intra-specific hybridizations in terms of obtaining new potatoes genotypes are used the 580 potatoes varieties and 11 wild species existing in our institute collection *in vivo*.

Wild species collection

Crt. No.	Species	Tuber no.
1.	SOLANUM VERNEI 74 B	38
2.	SOLANUM AGRIMONIFOLIUM 54	50
	SOLANUM AGRIMONIFOLIUM A	40
	SOLANUM AGRIMONIFOLIUM B	54
3.	SOLANUM DEMISSUM 38 B	1
	SOLANUM DEMISSUM 40 B	11
	SOLANUM DEMISSUM 51 B	30
4.	SOLANUM PINNATISECUM 55	60
	SOLANUM PINNATISECUM 64 B	27
	SOLANUM PINNATISECUM 42 B	19
5.	SOLANUM CHACOENSE	16
	SOLANUM CHACOENSE 12 B	20
6.	SOLANUM MICRODONTUM	21
7.	SOLANUM ACAULE	2
8.	SOLANUM POLYTRICHON	11
9.	SOLANUM COMMERSONI 14 B	15
10.	SOLANUM GOURLAY	13
11.	SOLANUM PHUREJA	100

Selection material obtained during 2008-2011

- To achieve these objectives were held works of intraspecific hybridization and worthwhile genotypes selection obtaining yearly the following types of material.

Types of selection material	Year 2008	Year 2009	Year 2010	Year 2011
Germinated seed no.	8.008	10.099	5.978	5.596
Population 1	2.955	5.410	4.830	3.813
Population 2	532	398	330	270
Population 3	120	110	70	96
Descendants 1	33	30	59	29
Descendants 2	17	18	16	32
New selected lines	13	11	14	21

The results obtained in team activity (2007-2011)

- 21 new selection lines ongoing testing and multiplication, from which 4 lines in spring 2012 will be sent to ISTIS.
- Seed potato of higher biological categories from Romanian and foreign varieties (breeding seed, A, B, C clones, pre-base, SE).

Preparing flowers for breeding operation

Producing of mini-tubers in the greenhouse

Mini-tubers produced in the greenhouse

Planting mini-tubers in the field

The breeding field

The results obtained in the team activity (2007-2011)

- 9 new potato varieties approved by ISTIS (State Institute for Variety Testing and Registration);
- from each 7 varieties (*Cumidava, Zamolxis, Ruxandra, Kronstad, Transilvania, Tâmpa, Christian*) are patented by OSIM (State Office for Inventions and Trademarks);
- 2 varieties are patent pending (*Rustic Românesc* and *Roclas Braşov*).

ROMÂNIA

OFICIUL DE STAT PENTRU INVENȚII ȘI MĂRCI

Brevet pentru soi de plante

Nr. 00190

Acordat în temeiul Legii nr.255/1998 privind protecția noilor soiuri de plante.

Titular: INSTITUTUL NAȚIONAL DE CERCETARE - DEZVOLTARE PENTRU CARTOF ȘI SFECLĂ DE ZAHĂR, BRAȘOV, RO

Denumirea soiului: ZAMOLXIS

Specia: CARTOF
SOLANUM TUBEROSUM L.

Amelioratori: BOZEȘAN ION, BRAȘOV, RO

Descrierea noului soi de plante face parte integrantă din prezentul brevet.
Durata de protecție a soiului este de 30 ani, cu începere de la data de 07.04.2009, cu condiția plății taxelor anuale de menținere în vigoare a brevetului.

Confirm cele de mai sus prin semnarea și aplicarea sigiliului
Director General

București, Data eliberării 30.09.2009

ROMÂNIA

OFICIUL DE STAT PENTRU INVENȚII ȘI MĂRCI

Brevet pentru soi de plante

Nr. 00192

Acordat în temeiul Legii nr.255/1998 privind protecția noilor soiuri de plante.

Titular: INSTITUTUL NAȚIONAL DE CERCETARE - DEZVOLTARE PENTRU CARTOF ȘI SFECLĂ DE ZAHĂR, BRAȘOV, RO

Denumirea soiului: CUMIDAVA

Specia: CARTOF
SOLANUM TUBEROSUM L.

Amelioratori: BOZEȘAN ION, BRAȘOV, RO; CHIRU SORIN CLAUDIU, BRAȘOV, RO

Descrierea noului soi de plante face parte integrantă din prezentul brevet.
Durata de protecție a soiului este de 30 ani, cu începere de la data de 15.04.2009, cu condiția plății taxelor anuale de menținere în vigoare a brevetului.

Confirm cele de mai sus prin semnarea și aplicarea sigiliului
Director General

București, Data eliberării 30.09.2009

ROMÂNIA

OFICIUL DE STAT PENTRU INVENȚII ȘI MĂRCI

Brevet pentru soi de plante

Nr. 00206

Acordat în temeiul Legii nr.255/1998 privind protecția noilor soiuri de plante.

Titular: INSTITUTUL NAȚIONAL DE CERCETARE - DEZVOLTARE PENTRU CARTOF ȘI SFECLĂ DE ZAHĂR, BRAȘOV, RO

Denumirea soiului: RUXANDRA

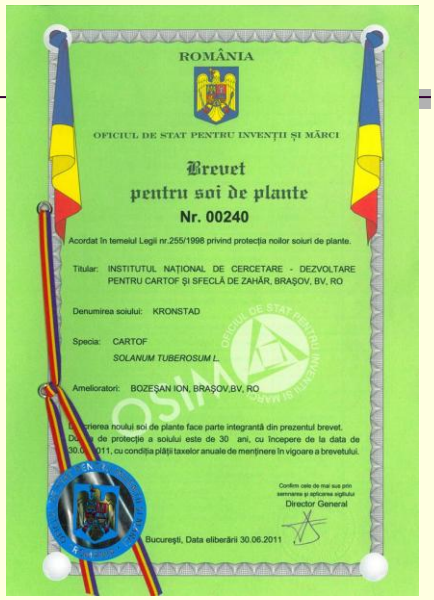
Specia: CARTOF
SOLANUM TUBEROSUM L.

Amelioratori: CHIRU SORIN CLAUDIU, BRAȘOV, RO; BOZEȘAN ION, BRAȘOV, RO

Descrierea noului soi de plante face parte integrantă din prezentul brevet.
Data de protecție a soiului este de 30 ani, cu începere de la data de 30.11.2009 condiția plății taxelor anuale de menținere în vigoare a brevetului.

Confirm cele de mai sus prin semnarea și aplicarea sigiliului
Director General

București, Data eliberării 31.03.2011



ROMÂNIA

OFICIUL DE STAT PENTRU INVENȚII ȘI MĂRCI

Brevet pentru soi de plante

Nr. 00240

Acordat în temeiul Legii nr.255/1998 privind protecția noilor soiuri de plante.

Titular: INSTITUTUL NAȚIONAL DE CERCETARE - DEZVOLTARE PENTRU CARTOF ȘI SFECLĂ DE ZAHĂR, BRAȘOV, BV, RO

Denumirea soiului: KRONSTAD

Specia: CARTOF
SOLANUM TUBEROSUM L.

Ameliorator: BOZEȘAN ION, BRAȘOV,BV, RO

Descrierea noului soi de plante face parte integrantă din prezentul brevet.
Durata de protecție a soiului este de 30 ani, cu începere de la data de 30.06.2011, cu condiția plății taxelor anuale de menținere în vigoare a brevetului.

Confirm cele de mai sus prin semnarea și aplicarea sigiliului
Director General

București, Data eliberării 30.06.2011


ROMÂNIA

OFICIUL DE STAT PENTRU INVENȚII ȘI MĂRCI

Brevet
pentru soi de plante
Nr. 00207

Acordat în temeiul Legii nr.255/1998 privind protecția noilor soiuri de plante.

Titular: INSTITUTUL NATIONAL DE CERCETARE - DEZVOLTARE PENTRU CARTOF ȘI SFECLĂ DE ZAHĂR, BRAȘOV, RO

Denumirea soiului: TRANSILVANIA

Specia: CARTOF
SOLANUM TUBEROSUM L.

Ameliorator: BOZEȘAN ION, BRAȘOV, RO

Descrierea noului soi de plante face parte integrantă din prezentul brevet.
Durata de protecție a soiului este de 30 ani, cu începere de la data de
2008 cu condiția plății taxelor anuale de menținere în vigoare a brevetului.

Director General

București, Data eliberării 31.05.2011


ROMÂNIA

INSTITUTUL DE STAT PENTRU TESTAREA ȘI ÎNREGISTRAREA SOIURILOR

Brevet
pentru soi de plante

Nr. 00259

Acordat în temeiul Legii nr. 255/1998, privind protecția noilor soiuri de plantare, republicată, cu modificările și completările ulterioare.

Titular: INSTITUTUL NAȚIONAL DE CERCETARE-DEZVOLTARE PENTRU CARTOF ȘI SFECLĂ DE ZAHĂR BRAȘOV

Denumirea soiului: TÂMPA

Specia: Cartof - *Solanum tuberosum* L.

Amelioratori: BOZEȘAN ION, DRAICA CONSTANTIN

Descrierea noului soi de plante face parte integrantă din prezentul brevet. Durata de protecție a soiului este de 30 de ani, cu începere de la data de 30.05.2011, cu condiția plății tarifelor anuale de menținere ale brevetului, în vigoare.

Director executiv,
Dr. ing. Antonia Ivașcu

Data: 14.03.2012

București


ROMÂNIA

INSTITUTUL DE STAT PENTRU TESTAREA ȘI ÎNREGISTRAREA SOIURILOR

Brevet
pentru soi de plante

Nr. 00258

Acordat în temeiul Legii nr. 255/1998, privind protecția noilor soiuri de plantare, republicată, cu modificările și completările ulterioare.

Titular: INSTITUTUL NAȚIONAL DE CERCETARE-DEZVOLTARE PENTRU CARTOF ȘI SFECLĂ DE ZAHĂR BRAȘOV

Denumirea soiului: CHRISTIAN

Specia: Cartof - *Solanum tuberosum* L.

Ameliorator: CHIRU SORIN CLAUDIU

Descrierea noului soi de plante face parte integrantă din prezentul brevet. Durata de protecție a soiului este de 30 de ani, cu începere de la data de 30.05.2011, cu condiția plății tarifelor anuale de menținere ale brevetului, în vigoare.

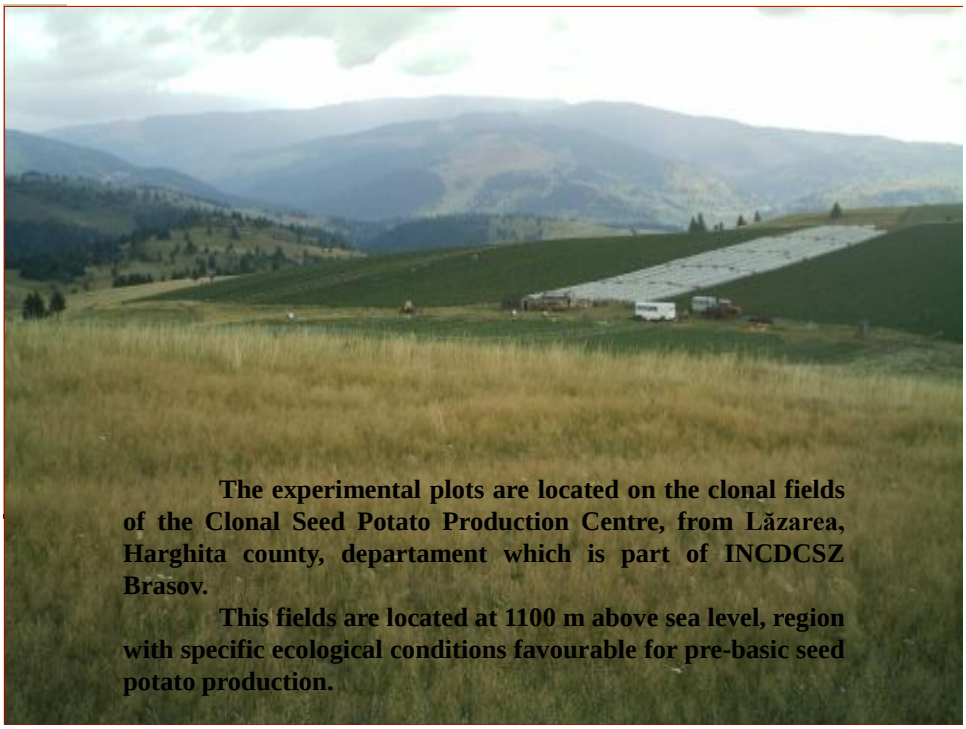
Director executiv,
Dr. ing. Antonia Ivașcu

Data: 14.03.2012

București

Seed multiplication

- AMSEM department took over annually basis micro and mini-tubers free from viruses from the Tissue Culture department to produce seed from high class clones of Romanian varieties;
- We multiply them in the special field from Lăzarea, which produces annual clones A, B, C and PB seed from each varieties;
- For maintaining the seed material free from viruses, annual screening is carried out by the laboratory (using ELISA technique), before planting the tubers (in pre-culture) and a new test of plants in field.



The experimental plots are located on the clonal fields of the Clonal Seed Potato Production Centre, from Lăzarea, Harghita county, departament which is part of INCDCSZ Brasov.

This fields are located at 1100 m above sea level, region with specific ecological conditions favourable for pre-basic seed potato production.

Potato clones obtained between 2007-2011

VARIETY	CLONES A (kg)	CLONES B (kg)	CLONES C (kg)
CUMIDAVA	1040	4600	1200
CHRISTIAN	4680	30050	9800
ZAMOLXIS	1780	22070	
DESIREE	850	2250	
GASORE	100		
RUXANDRA	760	4420	
OSTARA	1980	13000	4000
ROCLAS	4170	35620	76100
ROMANO	90	3870	
RUSTIC	2120	53350	700
SANTE	750	6200	3400
TOTAL	**18320**	**175.430**	**95900**

Number of mini-tubers annual obtained in ” insect proof” tunnels

No.	Variety	Tubers no. / year		
		2007	2008	2009
1	CUMIDAVA	4478	3208	3530
2	CHRISTIAN	11534	8928	36000
3	ZAMOLXIS	5700	3880	0
4	DESIREE	5264	2912	0
5	OSTARA	11086	10032	11040
6	RUXANDRA	2763	5064	3920
7	ROCLAS	5512	11328	47520
8	RUSTIC	5318	15040	8800
9	SANTE	0	0	7600
	TOTAL	51.655	60.392	118.410

PS 6.3.2. The efficient valorisation of the mountain areas resources from Romania by applying good agricultural practices

Number of mini-tubers annual obtained in the greenhouse

No.	Variety	Tubers no. / year				
		2007	2008	2009	2010	2011
1	CUMIDAVA	745	570	228	130	0
2	CHRISTIAN	1410	4544	4210	3247	5315
3	ZAMOLXIS	3475	2020	248	215	0
4	DESIREE	0	290	2926	3450	2687
5	RUXANDRA	1185	1230	486	498	0
6	OSTARA	680	590	916	590	10
7	ROCLAS	1275	1180	2342	1688	2185
8	ROMANO	525	209	0	0	0
9	RUSTIC	0	940	401	335	0
10	SANTE	1515	0	640	900	0
11	VIOLET	0	0	0	790	0
12	RIVIERA	0	0	0	0	1550
13	TRESOR	0	0	0	0	1300
14	IMPALA	0	0	0	0	907
TOTAL		10.810	11.573	12.397	11.843	13.944

Field trials for partners

- The behaviour testing of the French varieties in the Romanian conditions;
- Origin of the seed: ***SCICA BRETAGNE PLANTS – FRANCE;***
- 2008 Varieties: 17 (*Europa, Elodie, Amelie, Apolline, Florice, Coquine, Manon, Daifla, Pamela, Rubis, Universa, Eden, Daisy, Dalida, Triomphe, Aida* and *Oceania*);
- 2009 Varieties: 15 *(Adriana, Apolline, Blondine, Daifla, Eden, Elodie, Europa, Florice, Fribel, Fridor, Franceline, Oceania, Pamela, Universa, 97 F267-M*).

Test results for French varieties 2008

Varieties	Gp days	Skin color	Flesh color	Tuber shape	Eyes	Yield			
						To / ha	High tubers %	Medium tubers %	Small tubers %
EUROPA	75	y	y	o	m	28.0	56	40	4
ELODIE	75	y	y	o	m	33.6	69	29	2
AMELIE	80	y	y	o	s	25.2	45	44	1
APOLLINE	85	y	y	o	m	38.0	80	17	3
FLORICE	90	y	y	ro	s	37.0	73	23	4
COQUINE	80	y	y	o	s	24.0	26	60	14
MANON	75	y	y	o	s	27.9	52	39	9
DAIFLA	100	y	w	o	m	47.0	72	23	5
PAMELA	105	r	wy		m	39.3	73	24	3
RUBIS	105	r	w	lo	m	26.3	55	34	11
UNIVERSA	95	y	y	o	m	36.8	77	20	3
EDEN	105	y	y	lo	s/m	34.4	65	32	3
DAISY	95	y	y	o	m	31.9	80	17	3
DALIDA	75	r	y	o	m	26.4	76	23	1
TRIOMPHE	105	y	y	r	m	36.3	73	23	4
AIDA	90	y	y	o	s	27.9	57	34	9
OCEANIA	95	y	y	ro	s/m	30.6	30	64	6

Test results for French varieties 2009

Varieties	Skin color	Flesh color	Tuber shape	Eyes	Yield			
					To / ha	High tubers t/ha	Medium tubers t/ha	Small tubers t/ha
FRANCELINE	r	y	lo	s	67.27	36.60	23.10	7.50
EUROPA	y	y	ro	medium to deep	56.16	35.70	17.00	3.40
ELODIE	pale yellow	y	ro	medium to deep	79.98	49.40	24.30	6.20
PAMELA	light red	pale yellow	ro	s	69.27	42.60	20.90	5.70
BLONDINE	y	y	ro	s	78.08	50.50	20.10	7.40
APOLLINE	y	pale yellow	lo	s	66.77	41.30	21.30	4.10
UNIVERSA	y	pale yellow	ro	s	69.67	46.10	17.90	5.60
OCEANIA	y	pale yellow	r	medium to deep	56.86	31.20	18.90	6.70
FRIDOR	y	yellowish white	ro	medium to deep	64.36	40.40	18.70	5.20
FRIBEL	y	yellowish white	ro	medium to deep	61.16	35.00	19.70	6.40
FLORICE	y	yellowish white	r	medium to deep	60.06	37.40	18.00	4.60
EDEN	y	yellowish white	lo	s	55.56	34.70	15.60	5.20
97F-267-101	y	yellowish white	ro	s	55.16	37.50	14.10	3.50
DAIFLA	y	yellowish white	ro	medium to deep	57.66	42.60	12.90	2.10
ADRIANA	pale yellow	y	lo	s	62.36	45.10	15.40	1.80

International collaboration

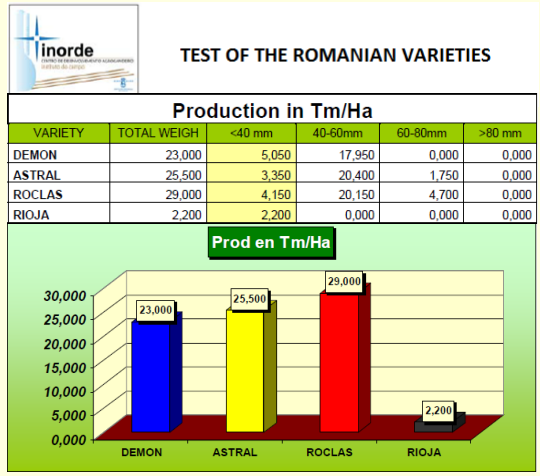
- Bilateral Project with Walloon Agricultural Research Center – Gembloux - Libramont from Belgium:

  "*The evaluation and genetic resources exploitation of the potato for creating new varieties with late blight resistance"*

  - Crossing between Romanian variety and variety which are send from Walloon side.
  - Testing of the seeds (16800 true potato seeds) which were obtained in Romania and tested in both countries for late blight resistance.

Collaboration with INORDE Spain

- The following varieties: *Roclas, Rustic, Christian, Cumidava* were send to our partner INORDE (Institute for Economic Development of Ourense Province) Spain.
- From those the *Roclas* variety was selected for its traits and it will be extended to the Spanish farmers.



Projects developed between 2007-2011

- The financial support received through institutional funding was successfully and significantly complemented by 5 projects.

Project	Achievements	Importance	Beneficiaries	Cross-dept. team
PN 07 44 01	Breeding of 9 potato varieties specialized on groups of products according to market demands	Ensure potato production according to the demands of the market	NIRDSPB, stations, farmers, processors, traders	T1+T2+T3
PS 2.2.1	Potato varieties list (16 varieties) adapted to the various areas of culture, adapted to the stress factors	Safety production under termo-hydric stress conditions	NIRDSPB, stations, farmers, processors, traders	T1+T2
PS 6.3.1	Recommended technology for growing potatoes under mountain agro-eco-system, with a focus on organic agriculture	Ensure the growth and quality of potatoes produced in the mountain area in ecological conditions	Farmers from mountain area. Farmers involved in organic agriculture.	T1+T2
PS 6.3.9	Specific technology of biomass production to be used in biogas	Ensure the use of the integral remainder of crops and the energetic independence of farm	Farmers will produce biogas in own farm	T1+T2
CEEX 415/2005	Presentation manual of systems in sustainable agriculture	Providing knowledge to farmers to practice sustainable agriculture	Farmers involved in sustainable agriculture	T1+T2

The way of exploiting the results

- During the period 2007-2011 the Department researchers performed and published 65 scientific papers as the first author and have collaborated on developing 50 scientific papers;
- Participated in 15 national symposia;
- Participation at 14 international scientific manifestation.

Articles ISI		**2**
Journals indexed in other international databases (BDI)		**7**
Articles indexed in other databases	**Journals indexed (CNCSIS B+)**	**20**
	Non-indexed journals	**15**
Books		**2**
Booklets		**4**
National Scientific Communications		**15**
International Scientific Communications		**14**
Other publications		**37**
The - patent pending registered at SOIT:		**4**
- existing patent		**7**
Articles in press		
Articles ISI		**1**
Journals indexed (CNCSIS B+)		**2**
Other publications		

Transfer of scientific results to the farmers

- Organize demo fields (annual), 15 demo plots in 2012;
- Attendance at 21 exhibitions organized in the country;
- Dissemination of knowledge by media (TV, newspapers);
- Offer valuable biological material for farmers (agricultural producers);
- Providing scientific and technical support for MADR strategies.

Strategic scientific objectives and directions

- Breeding of new potato varieties with export potential and tolerant to pests and diseases (to reduce the level of chemical inputs) in order to realize a better use of the environmental and technological resource;
- Improving the methods for potato foundation and basic seed;
- Development and adoption of new technologies for breeding and foundation seed production;
- The elaboration of scientific papers and knowledge transfer publications.