POSTER PRESENTATIONS

2015 EAPR Breeding and Varietal Assessment Section and EUCARPIA Section Potatoes

18TH JOINT MEETING

Vico Equense, Italy - November 15th – 18th, 2015

Investigation of the potato virus Y status in seed potatoes in Romania (preliminary studies)

Bădărău CL^{-1,2}, Rakosy E³, Damsa F¹, Olteanu G¹, Chiru SC ¹

- ¹ National Institute of Research and Development for Potato and Sugar Beet Brasov, ² Fundaturii, 500470 Brasov, Romania, tel. 0040268476795, fax: 0040268476608, e-mail: badarau_carmen14@yahoo.com
- ² Faculty of Food and Tourism, Transilvania University, Braşov, Romania
- ³ Faculty of Biology, Babeş-Bolyai University, Cluj-Napoca, Romania

The cultivar's selection is one of the most important critical component in the PVY control. Potato varieties wich demonstrate some resistence to PVY can be managed effectively in most regions and maintain their certification status. However, knowledges regarding each cultivar's reaction to PVY and the various strains of PVY (especially the necrotic one) are criticals. This preliminary studies investigating the status of the Potato virus Y (PVY) during two years (2014 and 2015), in five main seed potato growing areas of Romania, revelead large differences in PVY incidence. The samples tested were from the following cultivars: Christian, Roclas (romanian cv.), Riviera, Carrera, Bellarosa, Jelly, Hermes and Red Lady. Serological investigations by DAS ELISA showed that 49.5% of the PVY positive samples in 2014 and 68.4% in 2015, viruses belonging to the PVYN group were found. A selection of 126 samples collected in 2014 and all 72 serrological positive PVY^N samples collected in 2015 were further typified by molecular tests and by biological asays on tobacco and potato plants. The tests largely confirmed the predominance of the PVYN group and within this group, the prevalence of recombinant PVY^{NTN}, with 79.4% and 88.6% in 2014 and 2015, respectively.

Keywords: potato virus Y, seed potato, necrotic strains.

Acknowledgements. This work was supported by a grant of the Romanian National Authority for Scientific Research, CNDI-UEFISCDI, PN-II-PT-PCCA-2013-4-0452, project number 178/2014.

Repression of catalase activity by Antisens and co-suppression strategies accelerated dormancy breakage and sprouting of potato tubers (Solanum tuberosum L.)

Bettaieb T¹, Chikh-Rouhou H², M'Hamdi M³, Bajji M⁴ con Du Jardin P⁴

- ¹ Institut National Agronomique de Tunis. Cité Mahrajène, Tunisia.
- ²Centre de Recherches en Horticulture et Agriculture Biologique, Chott-Mariem, Tunisia.
- ³ Institut Superieur Agronomique de Chott-Mariem. 4042 Sousse. Tunisia.
- ⁴ Unite de Biologie Végétal, Faculté Universitaire des Sciences Agronomiques de Gembloux, Belgium

Potato (Solanum tuberosum L.) is the fourth most important food crop in the world mainly due to its starch content and high quality protein, substantial amounts of essentials vitamins, minerals and very low fat content. At harvest and for a finite period thereafter, potato tubers will not sprout and are both pre-and post-harvest conditions. Excessively long dormancy poses a problem in sprouting of seed tubers for early crop installation. Controlling the length of dormancy period could therefore be of considerable importance. In several vegetable species a relationship between the metabolism of active oxygen species and breakage of dormancy has been established. However, scarce information is available on the role of oxidative stress in potato tubers. The aim of the present investigation is to study the effect of catalase activity on the dormancy and the sprouting of potato, by generation of transgenic plants deficient in their CAT activity. Two constructs pCat2AS (Cat2, antisense orientation) and pCatGH (GH2, sense orientation) were mobilised into Agrobacterium tumefaciens (strain C58) and used to transform internodal explants of potato, cv. Desirée. The genes Cat2 from Nicotiana plumbaginifolia and GH2 from Gossypium hirsutum, both coding for the CAT2 isoform were used for suppression of catalase activity by antisense approach (2AS lines) or gene silencing by co-suppression approach (lines GH). The repression of CAT activity was associated with Ascorbate peroxidase (APX) accumulation and a decrease in the Hydrogen peroxide (H2O2) in potato tubers. The sprouting of transgenic tubers was accelerated as compared to the non-transformed control and was associated with an increase of APX activity.



BOOK OF ABSTRACTS

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Local organising committee: Riccardo Aversano, Amalia Barone, Maria Raffaella Ercolano, Edgardo Filippone, Luigi Frusciante (University of Naples Federico II, Dept. Agricultural Sciences)

Scientific committee: Glenn Bryan, Domenico Carputo, Finlay Dale, Luigi Frusciante, Dan Milbourne, Vanessa Prigge

Dear Participants,

It is a great pleasure to welcome you to the 18th Triennial Meeting of the EAPR Section 'Breeding and Varietal Assessment' and the EUCARPIA Section 'Potatoes' in Vico Equense, Italy. This meeting has been designed to bring experts and students together from disciplines covering all relevant aspects of modern potato genetics and breeding. We hope the relaxing environment stimulates new proficuous collaborations.

We are very glad that so many delegates are coming from all over the world to share their knowledge and expertise. There will be 6 keynote lectures, 33 oral presentations and several posters. The meeting will also have a special session on the occasion of Dr. Christiane Gebhardt's retirement, a great opportunity for the entire potato community to celebrate her exemplary career.

We would like to thank EAPR, EUCARPIA, the Department of Agricultural Sciences of the University of Naples Federico II and all the sponsors for their financial contribution, the Scientific Committee for continuous support and useful suggestions, PlantGeM and PQS for assistance in the organization of the meeting. Last but not least, many thanks to all of you for participating.

We hope you enjoy the scientific program as well as the unique environment of the Sorrento Peninsula!

The Local Organizing Committee

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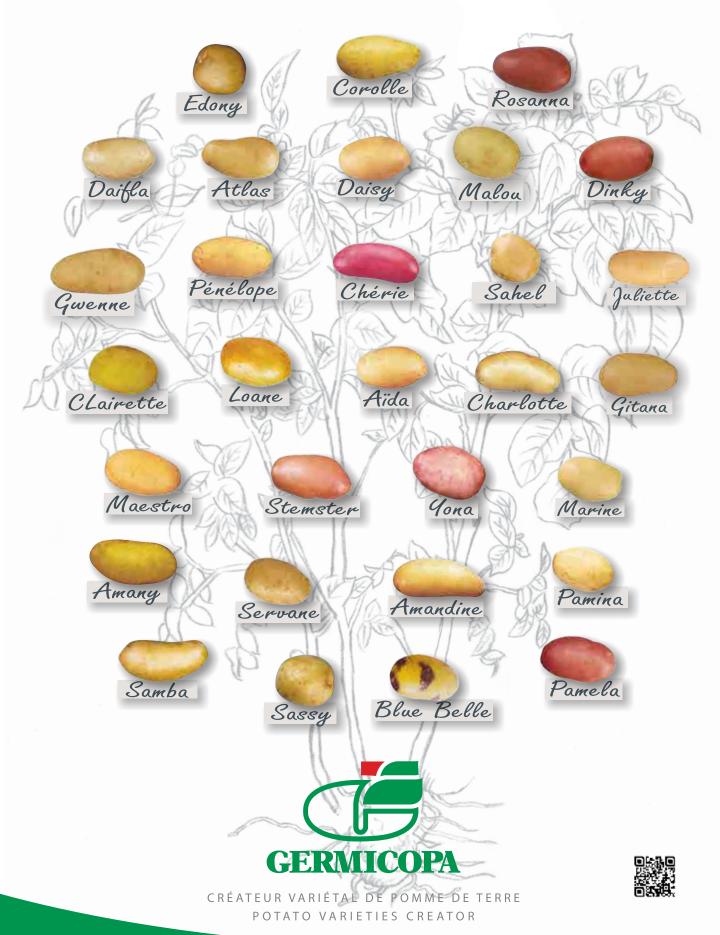
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La création, source d'innovation!





SCIENTIFIC PROGRAMME

MONDAY, NOVEMBER 16		
08.30 - 09.00	Opening ceremony	
	09:00 - 12:40 Session 1 – BIOTIC INTERACTIONS	
	Chairpersons: Prigge Vanessa, Visser Richard	
09.00 - 09.30	Keynote Lecture	
	Bradeen James	
	Borrowing from neighbors: comparative genomics	
09.30 - 09.50	approaches for resistance gene discovery and deployment Chen Xinwei	
09.30 - 09.30	Application of novel enrichment and sequencing approaches	
	for rapid marker development and fine-mapping of a broad-spectrum	
	blight resistance locus from <i>S. verrucosum</i>	
09.50 - 10.10	Fadina Oksana	
	Late blight resistance genes in complex interspecific potato hybrids	
10.10 - 10.30	Hutten Ronald	
10.30 - 10.50	Rpi-gene mediated late blight resistance in potato tubers Vossen Jack	
10.30 - 10.30	Novel R gene differential set plants for monitoring virulence in <i>P. infestans</i>	
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10.50 -11.20	COFFEE BREAK AND POSTER DISPLAY	
	Session 1 – BIOTIC INTERACTIONS (cont.)	
11.20 - 11.40	Milbourne Dan	
	Stability of resistance conferred by pyramiding two QRLs for G. pallida Pa2/3	
11.40 - 12.00	Valls Marc	
10.00 10.00	Molecular and genomic insights on potato resistance to bacterial wilt	
12.00 - 12.20	Jacobs Jeanne Soft ret registeres in potete lines derived from a comptic hybrid with Solenum nelvetre	
12.20 -12.40	Soft rot resistance in potato lines derived from a somatic hybrid with <i>Solanum palustre Discussion</i>	
12.40 -14.30	LUNCH	
	14.30 - 16.00 Session 2 - QUALITY TRAITS Chairpersons: Milbourne Dan, Mosquera Teresa	
	Champersons, inimodurie Dan, iniosquera Teresa	
14.30 - 15.00	Keynote Lecture	
	Sliwka Jadwiga	
	Most QTL for leaf sucrose content map to positions similar to positions	
15.00 - 15.20	of QTL for tuber starch content in diploid potato Mandolino Giuseppe	
15.00 - 15.20	Identification of new alleles for carotenoid biosynthesis and degradation in a	
	collection of potato varieties	
15.20 - 15.40	Diretto Gianfranco	
	Metabolic engineering of carotenoids in potato affects ABA metabolism	
	and tuber shelf-life	
15.40 - 16.00	Ngobese Nomali	
	Evaluating the yield and tuber quality performance of eight European cultivars in	
	Pietermaritzburg to improve potato production in South Africa	



A selection of our

Promising varieties

FLAMENCO

MEMPHIS

SUNITA

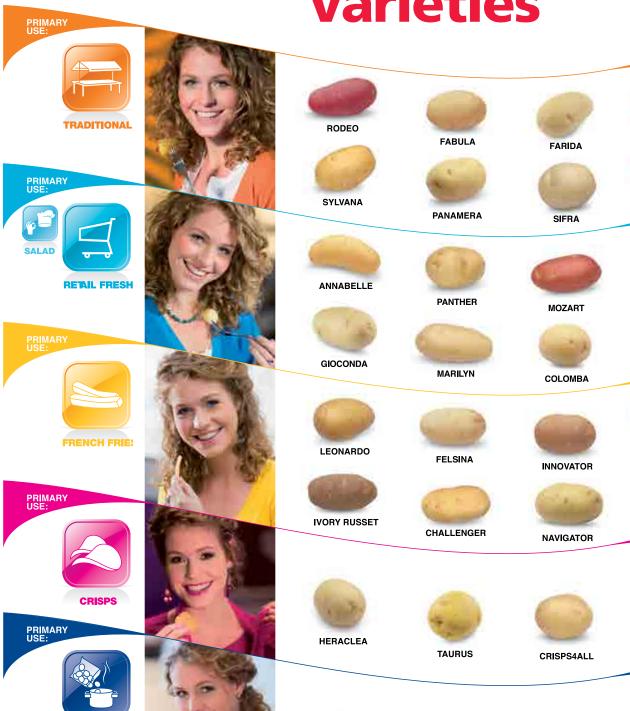
FORTUS

VICTORIA

SAGITTA

CHALLENGER

SALINE





PEELED



SAGITTA

ANNABELLE

16.00 -16.30	COFFEE BREAK AND POSTER DISPLAY
	16.30 - 18.20 Session 3 - ABIOTIC STRESSES
	Chairpersons: Zimnoch-Guzowska Ewa, Jacobs Jeanne
16.30 - 17.00	Keynote Lecture
	Visser Richard
17.00 17.00	Unraveling drought stress in potato
17.00 - 17.20	Aversano Riccardo Stress-tolerant Solanum commersonii: genome sequence and manipulation
17.20 - 17.40	Hosang Laura
17.20 17.10	Selection method for salt tolerance in potato
17.40 - 18.00	Prashar Ankush
	Sensing the plants: can we detect stress
18.00 - 18.20	Discussion
20:30	DINNER
	TUESDAY, NOVEMBER 17
	08.30 - 12.40 Session 4 - DIVERSITY, BREEDING AND SELECTION - 1
	Chairpersons: Douches David, Van Eck Herman
08.30 - 09.00	Keynote Lecture
00.30 - 03.00	Lindhout Pim
	Be aware: diploid hybrid potatoes are coming!
09.00 - 09.30	Keynote Lecture
	Jansky Shelley
	Progress toward the development of recombinant inbred lines
09.30 - 09.50	Douches David
09.50 - 10.10	Progress in diploid potato breeding with self-compatibility Greplová Marie
09.50 - 10.10	Somatic hybrids in sexual hybridization of potato
10.10 - 10.30	Smyda-Dajmund Paulina
	Genetic diversity and composition of S. x michoacanum (+) S. tuberosum somatic
	hybrids and 4x S. x michoacanum evaluated by Diversity Array Technology and PCR markers
10.30 - 10.50	Iwama Kazuto
	Genotypic differences in solar radiation used efficiency intercepted by plant canopy
10.50 - 11.20	and its relation to early tuber bulking in a CxE diploid potato population COFFEE BREAK AND POSTER DISPLAY
	Session 4 – DIVERSITY, BREEDING AND SELECTION - 1 (cont.)
11 00 11 10	Market Birthand
11.20 . 11.40	Visser Richard Towards durable resistance against <i>P. infestans</i>
11.40 - 12.00	Rogozina Elena
	New superior parental material developed by pre-breeding from potato collection at
	the Vavilov Research Institute of Plant Industry (VIR)
12.00 - 12.20	D'Amelia Vincenzo
	New insights into the role of anthocyanin duplicated genes in response
10.00 10.10	to cold stress in the potato plant
12.20 - 12.40 12.40 - 14.30	Discussion LUNCH
12.40 - 14.30	LONGIT



DALLA PREPARAZIONE DEL CAMPIONE

ALL'ANALISI BIOINFORMATICA DEI DATI

Sequencing

Sequenziamento Sanger: Sequenziamento di prodotti di PCR - Sequenziamento di vettori plasmidici - Walking primer

Next Generation Sequencing: Sequenziamento de novo di genomi batterici - Caratterizziazione metagenomica di campioni complessi - Rilevazione di patogeni - Identificazione di SNPs - Analisi Epigeniche e di Metilazione - Sequenziamento Whole Genome - Sequenziamento Trascrittoma

3 Oligo Synthesis

Sintesi di DNA/RNA primers, DNA probes, siRNA

5 Sample Processing

Estrazione di DNA/RNA da campioni biologici, RT-PCR, QPCR

2 Microarray

Profili di espressione genica - profili di espressione di miRNA - Interazione proteina /DNA Chip-on-chip - Metilazione del DNA mediante immunoprecipitazione meDIP-chip - Genomica Comparativa CGH

Protein Expression

profili di espressione di oltre 900 proteine in un singolo espreimento

> Per informazioni: Tel: 081 6107431 02 38234211

mail: ml@microgem.it

14.30 - 16.45 Session 5 – SPECIAL SESSION ON THE OCCASION OF THE RETIREMENT OF DR. C. GEBHARDT

Chairpersons: Bryan Glenn, Carputo Domenico

14.30 - 15.00	Salamini Francesco
	Christiane Gebhardt: what I do remember
15.00 - 15.30	Mosquera Teresa
	Potato genetic studies in <i>Solanum tuberosum</i> group Phureja
15.30 - 16.00	Debener Thomas
10.00 10.15	Transcriptome sequencing as a tool to study the potato wart interaction
16.00 - 16.45	Gebhardt Christiane
16.45 - 17.15	Molecular diagnostics of complex agronomic traits in tetraploid potato COFFEE BREAK AND POSTER DISPLAY
17.15 - 18.00	Section Meeting
20.30	Social Dinner
20.00	
	WEDNESDAY, NOVEMBER 18
	09.00 - 13.00 Session 6 – DIVERSITY, BREEDING AND SELECTION - 2
	Chairpersons: Bradeen James, Sliwka Jadwiga
09.00 - 09.30	Keynote Lecture
	Bryan Glenn
09.30 - 09.50	Analysis of potato traits in crosses and association panels Van Eck Herman
09.30 - 09.30	Haplotype reconstruction in tetraploids using sequence read based alignments
09.50 - 10.10	Lemm Jana
00.00 10.70	A simple approach to score SNP markers in a dosage-dependent fashion in tetraploid potato
10.10 - 10.30	Rodríguez Luis Ernesto
	Yellow diploid potato breeding through participatory selection for food security in Colombia
10.30 - 10.50	del Rio Alfonso
	Use of potato genetic diversity to challenge abiotic stresses in the high Andes of Peru
10.50 - 11.20	COFFEE BREAK AND POSTER DISPLAY
	One in a DIVERGITY DESCRIPTION OF SOTION OF SOTION
	Session 6 – DIVERSITY, BREEDING AND SELECTION - 2 (cont.)
11.20 - 11.40	Ruiz de Arcaute Roberto
	Accelerated breeding choosing best parentals for chip quality
11.40 - 12.00	Slater Tony
	Improving the selection efficiency in potato breeding
12.00 - 12.20	Getahun Baye
	Assessment of genetic diversity and relationships for agronomic nitrogen use efficiency
	and related traits in potato (Solanum tuberosum L.) under contrasting N regimes
12.20 - 12.40	Young Vanessa
10.40 10.00	James Hutton Limited: The link between molecular marker development and commercialisation
12.40 - 13.00	Discussion and closing cerimony
13.00	LUNCH





Top latest publications

Aversano, R., Contaldi, F., Ercolano, M. R., Grosso, V., Iorizzo, M., Tatino, F., et al. (2015). *The Solanum commersonii Genome Sequence Provides Insights into Adaptation to Stress Conditions and Genome Evolution of Wild Potato Relatives.* The Plant Cell, tpc.114.135954–60.

Cabañes, F. J., Sanseverino, W., Castellá, G., Bragulat, M. R., Cigliano, R. A., & Sánchez, A. (2015). Rapid genome resequencing of an atoxigenic strain of Aspergillus carbonarius. Scientific Reports. 5.

Sanseverino, W., Hénaff, E., Vives, C., Pinosio, S., Burgos-Paz, W., Morgante, M., et al. (2015). *Transposon Insertions, Structural Variations, and SNPs Contribute to the Evolution of the Melon Genome.* Molecular Biology and Evolution, msv152.

Pérez-García, P., Ma, Y., Yanovsky, M. J., & Mas, P. (2015). *Time-dependent sequestration of RVE8 by LNK proteins shapes the diurnal oscillation of anthocyanin biosynthesis*. Proceedings of the National Academy of Sciences, 112(16), 5249–5253.

Takahashi, N., Hirata, Y., Aihara, K., & Mas, P. (2015). A Hierarchical Multi-oscillator Network Orchestrates the Arabidopsis Circadian System. Cell, 163(1), 148-159.

Headquarters
Barcelona Science Park
Phone +34 93 010 73 68
www.sequentiabiotech.com

ORAL <u>PRESENTATIONS</u>

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