ANEXA 5.1 - LUCRĂRI FĂRĂ COTAȚIE ISI

SPECIFICAȚIE		2002 01.11.02-31.12.02	2003	2004	2005	2006	2007 01.01.07 – 31.10.07	TOTAL
LUCRĂRI ŞTIINȚIFICE publicații româneşti ANEXA 5.1.	Număr	**0**	**0**	**1**	**0**	**1**	**0**	**2**
	Punctaj	**0**	**0**	**5**	**0**	**5**	**0**	**10**
LUCRĂRI ŞTIINȚIFICE publicații străine ANEXA 5.1.	Număr	**0**	**0**	**0**	**9**	**3**	**1**	**13**
	Punctaj	**0**	**0**	**0**	**45**	**15**	**5**	**65**
TOTAL	Număr	**0**	**0**	**1**	**9**	**4**	**1**	**15**
	Punctaj	**0**	**0**	**5**	**45**	**20**	**5**	**75**

LUCRĂRI ŞTIINŢIFICE (TEHNICE) PUBLICATE ÎN REVISTE DE SPECIALITATE FĂRĂ COTAŢIE ISI
LISTA LUCRĂRILOR GRUPATE PE ANI –perioada noiembrie 2002-noiembrie 2007

Lista lucrărilor ştiinţifice publicate în reviste româneşti cotate CNCSIS, categoria B

Nr. crt.	Titlul lucrării ştiinţifice	Revista	Autori Institutul	Punctaj
0	1	2	3	4
		ANII 2002, 2003		
			Total puncte anii 2002, 2003	0
		ANUL 2004		
1	Mechatronics in agriculture-one of the research directions within the Precision Mechanics and Mechatronics Department with Transilvania University of Brasov	„Mecatronica" , Publicatie trimestriala a Societăţii Române de Mecatronică, 2 , 2004	C. Olteanu [1], S. Zamfira [1], Gh. Olteanu[2], F.Olteanu [1],C. Turcu[1], [1] Transilvania University of Braşov [2] INCDCSZ Braşov	5
			Total puncte anul 2004	5
		ANUL 2005		
			Total puncte anul 2005	0
		ANUL 2006		
2	Designing and implementing an intelligent system for measuring, acquiring and tracing maps with regard to soil electrical conductibility experimental model	„Acta Technica Napocensis" Series Applied Mathematics and Mechanics, Technical University of Cluj-Napoca, 49 vol. III	C. Olteanu [1], S. Zamfira [1], Gh. Olteanu[2], C. Turcu[1], F.Olteanu [1] [1] Transilvania University of Braşov [2] INCDCSZ Braşov	5
			Total puncte anul 2006	5
		ANUL 2007		
			Total puncte anul 2007	0
			TOTAL PUNCTE	***10***

Lista lucrărilor ştiinţifice publicate în reviste străine fără cotaţie ISI

Nr. crt.	Titlul lucrării ştiinţifice	Revista	Autori Institutul	Punctaj
0	1	2	3	4
		ANII 2002, 2003, 2004		
			Total puncte anii 2002, 2003, 2004	*0*

Nr. crt.	Titlul lucrării ştiinţifice	Revista	Autori Institutul	Punctaj
0	1	2	3	4
		ANUL 2005		
1	Using soil electrical conductivity maps in improving of potato crop technology in precision farming	„ABSTRACTS OF PAPERS AND POSTERS", 16th Triennal Conference of the EAPR-2005, Eusko Jaurlaritzaren Argitalpen Yerbitzu Nagusia, Servicio Central de Publicaciones del Gobernio Basco, Vitoria-Gasteiz, 2005	Gh. Olteanu[1], R. Cramariuc [2], M. I. Olteanu[1], M. Ianoşi[1], Turcu C.[3], Gh. Pamfil [1] & C.Aldea [3] [1] ICDCSZ Braşov [2] CCEE Bucureşti [3] Transilvania University Braşov	5
2	Behavior of new romanian potato varieties	„ABSTRACTS OF PAPERS AND POSTERS", 16th Triennal Conference of the EAPR-2005, Eusko Jaurlaritzaren Argitalpen Yerbitzu Nagusia, Servicio Central de Publicaciones del Gobernio Basco, Vitoria-Gasteiz, 2005	Bozeşan I., Chiru S. C., Bran Ş., Hermeziu M & Donescu V. ICDCSZ Braşov	5
3	The accomplishment of experimental model through integration of medicinal plants and herbs with repellent and insecticide effection the potato crop for biological control of main pests	„ABSTRACTS OF PAPERS AND POSTERS", 16th Triennal Conference of the EAPR-2005, Eusko Jaurlaritzaren Argitalpen Yerbitzu Nagusia, Servicio Central de Publicaciones del Gobernio Basco, Vitoria-Gasteiz, 2005	D. Bobiţ [1], A. C. Tofan [2]&Gh.Olteanu [1] [1] ICDCSZ Braşov [2] USAMV Bucureşti	5
4	Efficacy of fungicide programmes for the control of late blight in Romania	„ABSTRACTS OF PAPERS AND POSTERS", 16th Triennal Conference of the EAPR-2005, Eusko Jaurlaritzaren Argitalpen Yerbitzu Nagusia, Servicio Central de Publicaciones del Gobernio Basco, Vitoria-Gasteiz, 2005	M. Hermeziu & R. Hermeziu ICDCSZ Braşov	5
5	Using of new methods in potato microtubers production- temporary immersion system	„ABSTRACTS OF PAPERS AND POSTERS", 16th Triennal Conference of the EAPR-2005, Eusko Jaurlaritzaren Argitalpen Yerbitzu Nagusia, Servicio Central de Publicaciones del Gobernio Basco, Vitoria-Gasteiz, 2005	Roşu R[1], Rolot J. L.[2],Chiru N&Chiru S.[1] [1] ICDCSZ Braşov [2] CRA Libramont, Belgia	5
6	Studies on potato production from true potato seed in Romania	„ABSTRACTS OF PAPERS AND POSTERS", 16th Triennal Conference of the EAPR-2005, Eusko Jaurlaritzaren Argitalpen Yerbitzu Nagusia, Servicio Central de Publicaciones del Gobernio Basco, Vitoria-Gasteiz, 2005	Prodan M. A., Hermeziu R., Bozeşan I. & Chiru S. ICDCSZ Braşov	5
7	Breeding and seed potato production in Romania	„ABSTRACTS OF PAPERS AND POSTERS", 16th Triennal Conference of the EAPR-2005, Eusko Jaurlaritzaren Argitalpen Yerbitzu Nagusia, Servicio Central de Publicaciones del Gobernio	S. C.Chiru, I. Bozeşan, Chiru N. & Roşu R. ICDCSZ Braşov	5

Nr. crt.	Titlul lucrării ştiinţifice	Revista	Autori Institutul	Punctaj
0	1	2	3	4
		Basco, Vitoria-Gasteiz, 2005		
8	The dynamic characteristics of potato tubers sprouting during storage	„ABSTRACTS OF PAPERS AND POSTERS", 16th Triennal Conference of the EAPR-2005, Eusko Jaurlaritzaren Argitalpen Yerbitzu Nagusia, Servicio Central de Publicaciones del Gobernio Basco, Vitoria-Gasteiz, 2005	Donescu V & Chiru S. ICDCSZ Braşov	5
9	Aphids in seed potato crops of Romania	„ABSTRACTS OF PAPERS AND POSTERS", 16th Triennal Conference of the EAPR-2005, Eusko Jaurlaritzaren Argitalpen Yerbitzu Nagusia, Servicio Central de Publicaciones del Gobernio Basco, Vitoria-Gasteiz, 2005	Donescu D. & Chiru S. ICDCSZ Braşov	5
			Total puncte 2005	*45*
		ANUL 2006		
10	Actual state and future trends of the Romanian potato industry	POTATO DEVELOPMENTS IN A CHANGING EUROPE Wgeningen Academic Publishers, The Netherlands, 2006	S. C. Chiru, Gh. Olteanu, E. L. Dima INCDCSZ Braşov	5
11	An intelligent system for measuring soil electrical conductivity	ANNALES OF DAAAM FOR 2006 & PROCEEDINGS of the 17th international DAAAM symposium „Intelligent manufacturing & automation: focus on mechatronics and robotics" , Vienna, Austria, 2006	Olteanu C. , Zamfira S., Olteanu Gh. [1] & Olteanu F. [1] INCDCSZ Braşov	5
12	Fertilization in potato crop. Using the soil electrical conductivity maps in improving of potato crop technology precision farming	SOIL FERTILITY AND THE FUTURE OF AGRICULTURE IN EUROPE, Proceeding of the International Workshop asociated to the 4th UEAA General Assembly Bucharest, The Publishing House of the Romanian Academy, Bucarest, 2006	Oltean M. I., Ianoşi M., Chiru S. C., Olteanu Gh., Donescu V. INCDCSZ Braşov	5
			Total puncte 2006	*15*
		ANUL 2007		
13	Agritronics: aids from mechatronics	„TRENDS IN THE DEVELOPMENT OF MACHINERY TECHNOLOGY" TMT 2007, Proceedings, Hammamet, Tunisia, Katalogizacija publikaciji nacionala i univerzitetska biblioteka Bosne i Hecegovinne, Sarajevo Edithors: Dr. Sabahudin Ekinovic, Dr. Senay Yalcin, Dr. Joan Vivancos Calvet,	C. Olteanu [1], S. Zamfira [1], Gh. Olteanu [2], F. Olteanu [1], C. Turcu [1], [1] Transilvania University of Braşov [2] INCDCSZ Braşov	5
			Total puncte 2007	*5*
			TOTAL PUNCTE lucrări publicate in reviste din străinătate	*65*
			***TOTAL PUNCTE** reviste cotate CNCSIS categoria B+lucrări publicate în reviste din străinătate*	*75*

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Publicaţie trimestrială a Societăţii Române de Mecatronică

Mechatronics in agriculture – one of the research directions within the Precision Mechanics and Mechatronics Department with Transilvania University of Braşov

Ciprian Olteanu, *Member, SROMECA*, Sorin Zamfira, *Member, SROMECA*, Gheorghe Olteanu, Felicia Olteanu and Cătălina Turcu

Abstract— **The paper aims to present the results obtained and also the research perspectives developed by the Precision Mechanics and Mechatronics Department of *Transilvania* University of Brasov, with respect of the mechatronical implementation in agriculture. From the results achieved the next ones can be mentioned: Automatically installation assisted numerical computer for measuring the content of starch and dry substance from the potato's tubers; The research, the testing and the equipment of a mobile lab and also of the acquisition and the automatically processing of the phytoclimate data from the potato crop; Installation for the automatically dozing of the chemical liquids used as manure. At the same time, workings started concerning the measuring of the soil electrical conductivity in order to trace out its' electrical conductivity maps by means of the global positioning, acquisition and data processing systems.**

Index Terms— **electrical conductivity maps of the soil, installation for measuring the content of starch, mobile lab, mechatronics in agriculture.**

I. Introduction [1]

THE entire world faces three major issues generating different problems and conflicts, more or less generalized: the demographic increase, the restraint of the food resources, the polution and the deterioration of the environment. Agriculture can and must interfere in solving this major problems. The agriculture of the past years, the performances realized in the developed countries, the technologies used, outline the agriculture of the third millenium.

The main objective of the modern agriculture is represented by the continuous improvement of the production process. This is possible only by modernising the concepts and the research methods in the agricultural practice, by using the recent scientific achievements, the experimental and the calculation techniques, as well as the interpretation of the results.

The precision agriculture represents a new method (which aims to a new agricultural system), may represent the key for solving many of the up-to-date problems.

The oportunities for a precision agriculture are:

- The capacity for comprehending the complexity of the agricultural systems – sistemic and holistic approach;
- The capacity to monitorize the phenomenons and processes – the automatization of the data aquisition;
- The achievements in the computing techniques – hardware, software, fineware and data bases;
- The improvement of the computing and interpretation methods – statistics, modelling, simulation, decision supporting systems – DSS;
- The development of the geographical informational systems – GIS;
- The appearance and development of the spatial analysis and statistics – teledetection, GPS;
- Technic achievements in the improvement and automatization of the machines used in agriculture – mechatronics in agriculture.

Mechatronics in agriculture, as an important part of the precision agriculture, represents the entire inteligent Devices and Implements – IDI, which represent part of the performant machines used in agriculture and of the research equipments and which enables the monitorisation of the production conditions and the control of the inputs. The main components are the computing tecnique, the GPS, electronical hidraulical and mechanical equipments. A special type of IDI is represented by the Variable Rate Technology – VRT, which allows the application of the chemical manures and

C.Olteanu is professor with "Transilvania" University of Braşov, Precision Mechanics and Mechatronics Department, 17 Vlad Ţepeş St., Romania, phone: (4)0268416352, ext 168 , olticip@unitbv.ro

S.Zamfira is assoc. professor with "Transilvania" University of Braşov, Precision Mechanics and Mechatronics Department, 17 Vlad Ţepeş St., Romania, phone: (4)0268416352, ext 168, zamfira@unitbv.ro

Gh.Olteanu is scientific manager with Potatos Research and Production Institute Braşov, 2 Fundăcurii St., phone (4)0268476795 olgeo@potato.ro

Felicia Olteanu is assoc. professor with "Transilvania" University of Braşov, Descriptive Geometry and Technical Graphics Department, 1 Colinei St., Romania, phone: (4)0268 412921, ext 156, oltina@unitbv.ro

Cătălina Turcu is researcher with "Transilvania" University of Braşov, Precision Mechanics and Mechatronics Department, 17 Vlad Ţepeş St., Romania, phone: (4)0268 416352, ext 168, cturcu2000@yahoo.com

TECHNICAL UNIVERSITY
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ACTA TECHNICA NAPOCENSIS

SERIES:
APPLIED MATHEMATICS AND MECHANICS

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DESIGNING AND IMPLEMENTING AN INTELLIGENT SYSTEM FOR MEASURING, ACQUIRING AND TRACING MAPS WITH REGARD TO SOIL ELECTRICAL CONDUCTIBILITY EXPERIMENTAL MODEL

Ciprian OLTEANU,Sorin ZAMFIRA**,Gheorghe OLTEAN***,Catalina TURCU****, Felicia OLTEANU******

Romania's integration within the European Community structures imposes the alignment of the Romanian agriculture with the quality, economic efficiency and environment protection-oriented standards required in the developed countries. The reference parameters used in the European Union countries may be reached by increasing the resources monitoring and control upon all factors involved in the management of production agriculture system. In the last few years in the European Community countries there has been developed a precision agricultural system, strongly automated, based on intelligent mechatronic systems.

I. INTRODUCTION

The Department of Fine Mechanics and Mechatronics from *Transilvania* University Library of Brasov in collaboration with the Research and Development Institute for Potatoes and Beetroots of Brasov - I.C.D.C.S.Z Brasov - has had intense preoccupations in the field of mechatronics applied in agriculture:

a. Computer-aided installation for measuring the starch and dry substance content in potatoes tubers;

b. Installation for automated dosage of chemical liquids used as fertilizers;

c. Research and experiment of a mobile laboratory and of the automated system of acquisition and processing of phytoclimate data in the potatoes growing.

The precision agriculture, which comprises the agriculture as an application of mechatronics, enhances a new methodology (that aims at a new agricultural system) that could be the key to many current problems.

The opportunities that have favored the development of precision agriculture are:

- Capacity to understand the complexity of agricultural systems – systemic and holistic approach;
- Capacity to monitor the phenomena and processes – computer-controlled data acquisition;
- Achievements in computing techniques – hardware, software, fineware and data bases;
- Improvement of interpretation and computing methods – statistics, modeling, simulation, decision support systems – DSS;
- Development of geographic informational systems – GIS;
- Occurrence and development of spatial analysis and statistics – Geostatistics;
- Progresses of spatial technique – teledetection, GPS;
- Technical achievements in automating and improving agricultural machines – agricultural mechatronics;

The precision agriculture aims to optimize the use of soil, water and chemical inputs resources (fertilizers and pesticides) on local specific bases and pursuits the following objectives:

- Obtaining quality and important productions, constant in time and space;
- Optimizing the economic profits;
- Achieving the environment protection;

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str. Constantin Daicoviciu nr. 15, 400020 Cluj-Napoca, România
tel. +40(0)264 401200 fax +40(0)264 592055
http://www.utcluj.ro

ISSN 1221-5872

THE ACCOMPLISHMENT OF AN EXPERIMENTAL MODEL THROUGH INTEGRATION OF MEDICINAL PLANTS AND HERBS WITH REPELLENT AND INSECTICIDE EFFECTION THE POTATO CROP FOR BIOLOGICAL CONTROL OF MAIN PESTS

Dana Bobiț[1] Adriana-Cristina Tofan[2] & Gh. Olteanu[1]

1[0] Research and Development Institute for Potato and Sugar Beet, 2, Fundăturii str, 500470 Braşov, Romania, email: danabobit@yahoo.com
2[0] University of Agricultural Sciences and Veterinary Medicine, 59, Mărăşti Blv., 011464 Bucharest, Romania,

Keywords: perennial medicinal plants, experimental model, repellent and insecticide effect, biological control, production on lot

INTRODUCTION

The considerations upon the medicinal plants and herbs as a way of restoring the production potential of the soil, but also as a source of biological control of crop pests, were the starting point on the accomplishment of a research project for the period 2001-2004 and a concern of strong present interest also in the countries of European Community.

The main objectives were:
The biological control of principal pests of potato through placement in the traditional rotation of medicinal plants with repellant and insecticide effect;.

Establishment of a method to set up each studied species in the frame of the experimental model and to elaborate a crop technology.
Promotion of principles of biological agriculture and extension of cultivated medicinal plants
Introduction of medicinal and aromatically plats with repellant and insecticide effect in potato rotation and verification of their influence as precursor and neighbored plant upon the yield;

The growth of the cultivated area with medicinal plants in the organic farms.

MATERIAL AND METHODS

During 2003 we studied 16 species of annual medicinal plants as precursor (EM-1), after them we set up in 2004 potato crop.

To analysed the influence of the neighborhood upon potato yield (EM-2), we set up 10 experimental lots with perennial medicinal plants. In 2003 they alternate each with a lot of annual species of *Trigonella foenum graecum L.* (Fenugreek) becoming 2004 the lot for the potato crop, variety OSTARA. No chemical and herbicides treatments were applied.

We evaluate the yield on lot (kg/30 m^2) and the medium yield, the results being compared with yields obtained in condition of classical technology.

The perennial species was planted (2003) in alternation with an annual species mend to be the precursor plant of the potato crop (2004). We studied the most efficient multiplying method for the proposed goal, the behavior of the species, the running through the vegetation phases and the yields obtained in the first and second year of vegetation at the medicinal plants.

16th Triennial Conference of the EAPR
European Association for Potato Research
EAPR-2005, July 17 to 22, 2005, Bilbao, Spain

ABSTRACTS OF PAPERS AND POSTERS

I
PROGRAMME AND ORAL PRESENTATIONS

E. Ritter, A. Carrascal
Neiker - Instituto Vasco de Investigación y Desarrollo Agrario

EUSKO JAURLARITZA GOBIERNO VASCO
NEKAZARITZA ETA ARRANTZA SAILA
DEPARTAMENTO DE AGRICULTURA Y PESCA

Eusko Jaurlaritzaren Argitalpen Zerbitzu Nagusia
Servicio Central de Publicaciones del Gobierno Vasco

Vitoria-Gasteiz, 2005

USING SOIL ELECTRICAL CONDUCTIVITY MAPS IN IMPROVING OF POTATO CROP TECHNOLOGY IN PRECISION FARMING

Olteanu Gh.[1], Cramariuc R.[2], Oltean M.I.[1], Ianosi Maria[1], Turcu Catalina[3], Pamfil Gh.[1]& Aldea C.[3]

[1] *Research and Development Institute for Potato and Sugar Beet, Fundăturii str., 2, 500470 Brasov, Romania, E-mail: olgeo@potato.ro*
[2] *CCEE Bucuresti.*
[3] *TRANSILVANIA University, Brasov.*

Key words: Chemical and physical resources in the soil, soil electrical conductivity, precision farming.

INTRODUCTION

Potato is one of the most intensive crops, requiring great amounts of technological resources, at high costs and a negative impact on the environment. The improvement of cropping technologies imposes the promotion of some new methodologies. The scientific and technological achievements have encouraged the introduction of automatization and IT technology within the farming techniques (Olteanu et al., 2002).

The precision farming system is now very alike to achieve, especially the optimization of the chemical resources by using the most recent scientific conquests during the management process (the systemic approach, modeling and simulating of the processes, utilization of the decision support systems - DSS, the geographical information system - GIS, the global positioning system - GPS, the satellite analysis, monitoring the resources and the evolution of crops) (Olteanu et al., 2004).

The paper presents the preliminary results concerning the design, the creation, experimentation and promotion of static and mobile device for monitoring the electrical conductivity.

MATERIAL AND METHODS

Experimental field trial was divided into 230 uniform of 15 sqm. It has been accomplished measurements and analysis for: electrical conductivity, soil humidity, pH, texture, humus, N, P, K etc. For these parameters it have been calculated statistical indexes (minimum, maximum, standard deviation, and variation coefficient), and interpolated with kriging method.

For the parameters above the following statistical indices were computed: minimum, maximum, standard deviation, coefficient of variation, and histogram, using the statistics package MSTAT-C and SPSS. Space variation was analyzed through Spline interpolation, representation 2D-isolines and 3D (statistics package STATISTICA CSS) and through shaping the variogram for the data set, followed by kriging estimations for map representation (Minasney and colab., 2002; ESRI, 1996)

The measurements were made in the experimental field of ICDCSZ Brasov on a chernozem-type cambial soil. The plot was subdivided into 29 columns and 8 blocks (232 parcels) of 2.25 m x 6.50 m (14.625 sqm) and cultivated with potato applying a similar

EFFICACY OF FUNGICIDE PROGRAMMMES FOR THE CONTROL OF LATE BLIGHT IN ROMANIA

Manuela Hermeziu & R. Hermeziu

Research and Development Institute for Potato and Sugar Beet (ICDCSZ)
Brasov, 500470, 2 Fundaturii, Romania, e-mail: icpc@potato.ro

Keywords: late blight, fungicides, production

INTRODUCTION

Late blight caused by *Phytophthora infestans* (Mont.) de Bary remains the greatest potential disease to the potato crop in Romania. The climatic conditions are favorable to potato production and also favor blight.
Usually foliage infection develops early enough to reduce yield.
Potato production answer very well to repeteated and frequent fungicide applications knowing that almost potato cultivars are susceptible to blight (Louise Cooke and &,1996)

Field experiments were conducted between 2003 and 2004 to determine the effectiveness of fungicide spray programme for the control of potato late blight. We made trials in Potato Research Institute Brasov and to a farmer in Halchiu.
Trials relied in natural infection in both location and we establish an alternative usage of some fungicides very used in potato blight control.

METHODS

Trials were carried out in 4 replicates plots in a randomized complete block, 5 rows each with 20 plants.
In Potato Research Institute in both years it was used Sante variety, cultivar with medium resistance to *Phytophthora*.
In Halchiu in 2003 it was used Santana variety, cultivar moderately susceptible to blight and in 2004 it was used Kondor variety, an other cultivar moderately susceptible to blight
Planting was made in 23nd April 2003 and in 5th 2004
Late blight apparence: 2003 – 23rd July;
2004 – 21st (29th) July

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USING OF NEW METHODS IN POTATO MICROTUBERS PRODUCTION - TEMPORARY IMMERSION SYSTEM

Roşu, R.[1], Rolot J.L.[2], Chiru N[1]. & Chiru S[1]

[1]*Research and Development Institute for Potato and Sugar Beet*
Braşov, 500470, 2, Fundăturii str., Romania, e-mail: icpc@potato.ro
[2]*Section Systemes Agricoles-CRA Libramont, Belgium*

SUMMARY

The variety, as biological resourse, represents one of the most important factors for the high, constant and economic yields achievement. Quantity of the certificated seed potato is influenced more than 50% by the biological and phytosanitary quality of the planting material. Seed potato production represents a complex, laborious scientific activity which implies a bigger concern than seed reproduction, because of the foolowing: progressive diminuation of production caused by viral and physiological degeneration, very small multiplication rate (1:4-1:10) and high water content and damage sensitivity of the tubers which impose special storage conditions. The need to improve the seed potato imposed a new planting material production scheme by „in vitro" multiplication technique ending at virus-free microtubers obtaining, microtubers which represent on important step in rapid multiplication of the romanian potato genotypes.

In order to obtain a higher number of bigger size microtubers than using the classical method there was tested a new method: temporary immersion in liquid medium. The preliminary researches were initiated with Romanian varieties Roclas and Christian and Belgian variety Gasoré. The system requires some further improvements, therefore the results obtained are partial and relevant just in the case of variety Roclas.

Keywords: in vitro, tuberization, microtubers, temporary immersion

INTRODUCTION

The use of liquid medium for microtubers production increased the number of microtubers and their size, simplifies handling, reduces production costs and is the best way to achieve automation. However there are some disadvantages: hyperhydricity and vitrification. To avoid these problems we developed a temporary immersion system. This kind of system was tested by other researchers too: C. Teisson and D. Alvard (1999), M. Akita and S. Takayama (1994), E. Jiménez (1999) etc.

THE DYNAMIC CHARACTERISTICS OF POTATO TUBERS SPROUTING DURING STORAGE

Donescu V & Chiru S
Research and Development Institute for Potato and Sugar Beet
Braşov, 500470, 2, Fundăturii str., Romania, e-mail: icpc@potato.ro

Keywords: sprouting, conservation, dynamic and typ of sprouting

INTRODUCTION

Sprouting is a natural process, which take place after breaking the tuber dormancy. It is favorised by enviroumental conditions and influenced by phisiological state of tubers (Ittersum, 1992, Muresan, 1976). Due to diferences observed during many years, on different typ of sprouting of potato varieties during storage, we started a series of study upon this phenomen, according with varieties, storage conditions and agroecological factors of vegetation period (Donescu, 1998).

The study was done on 17 romanian and foreigner potato varieties, during 3 years, on normal storage conditions. Analysing the experimental results with a exponential equation and graphical representation, alloweded to separeted potato varieties on 4 dynamic groups: with very rapid sprout, rapid, average and slow.

The form of buds is different also, depending on varieties. Between the typ of sprouting and his dynamics exist a correlation.

MATERIAL AND METHODS

From each varieties, 50 tubers on average size, healthy, unsprouted, harvested on maturity state were sampled. Tubers were stored at temperatures between 8°C-12°C and periodically analysed (7 days). The number of buds bigger than 3 mm were determined. Observations on one variety were finised when all the tubers sprouts. Number of days after which varieties sprouts 100% was determined. At the end of experiment, tubers weight, length and weight of buds were determined.

The experimental results were statistically analysed with exponential equation:

$$Y = b_0^{(b1*t)}$$

(t- represent an independent variable, days from harvest moment).

Values of exponential equation coefficients obtained, permmited the elaboration of graphics, on four distinct groups, according with dynamic of sprouting. These groups were mentained from a year to another, beeing on less mesure influenced by climatic condition of vegetation period or experimental ones.

RESULTS

The following varieties were placed on the first group: Fresco, Bârsa, and Super. Fresco variety sprouted very rapid, beeing out of dormancy at harvest time. Bârsa and Super varieties had a very short dormancy, a slow sprout, almost linear (Figure 1.), tubers beeing 100% sprouted at 98-102 days post harvest.

On second group (Figure 2) were included: Casin, Cibin, Rene, Sante and Eba varieties. On these varieties the sprouting was almost rapid, soon after harvest sprouted tubers were founded. On first phase the sprout was slowly, accelerated after 50-60 days. After 95-105 days almost 100% of tubers were sprouted.

Group 3 (Figure 3) contains 5 varieties (Ostara, Desiree, Roclas, Teo and Titus) with a longer dormancy period, of witch tubers do not sprout at all for 40-50 days. Than tubers sprouted

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STUDIES ON POTATO PRODUCTION FROM TRUE POTATO SEED IN ROMANIA

Prodan M-A, Hermeziu R., Bozeşan I & Chiru S.[1]

[1]*Research and Development Institute for Potato and Sugar Beet, Braşov*

SUMMARY

The potato (*Solanum tuberosum*) can be propagated in two ways, vegetatively (clonally) and sexually. Currently commercial potato production throughout the world is almost completely based on vegetative propagation. However, vegetative multiplication system is not without problems, which includ: disease transmission, bulkiness, low multiplication rate, high transport and storage cost and perishability of the seed tubers. In order to improve the supply of potato planting material, ther is an on-going research for developing new ways of potato multiplication, like sexual propagation. True potato seed is already a promising alternative in different regions throughout the world, many of these countries applying with success this new system of potato multiplication.
KEYWORDS: potato, TPS, seedling, isogenous potato line

INTRODUCTION

True potato seed technology is based on the natural ability of the potato to produce flowers, which are then fertilized and set berries that contain potato seed. The botanical seed (also known as true potato seed or TPS), which is extracted from the potato berries is then used as planting material. While several hundred diseases can be transmitted by the vegetative multiplication of the crop, only four diseases can potentially be transmitted through the botanical seed. The planting of one hectare of potatoes with botanical potato seed requires from 100 to 250 grams of seed, which is considerably less than the 2,000 to 3,000 kg of seed potatoes that are commonly used. These small seeds have very little food reserves to maintain the developing seedling after germination. Therefore, this new technology requires different agronomic practices compared to a seed tubers planting. Most important differences related to seed bed preparation, pre-plant pesticide and fertilizer application, seed spacing, depth placement and irrigation.

MATERIALS AND METHODS

Two isogenous potato lines, *MINDY* and *ZOLUSHKA*, have been taken into study, that were bred by the dutch company Bejo and are being studied at Research & Development Institute for Potato and Sugar Beet (ICDCSZ) Braşov. The breeding of these lines is based on a potato research programme, aiming at promoting the varieties obtained of true potato seed, adaptable to the different climatic conditions in the different parts of the world.

Braşov county is situated in a muntainous region of Romania, and that is why the most suitable method was the cultivation in protected spaces. The seeding was made at a very high density (approx. 400 seeds/m^2), the seeding depth being of 1 cm. The plants emerged 9 days after the seeding. The optimal temperature for germination and emergence ranges between 15 and 25°C. When the seedlings raised to approx. 10 cm in hight (approx. 20 days), they were transplanted in seedbeds, at a density of 150 plantlets/m^2.

The harvested minitubers were cleaned of the adherent ground, graded, packed in paper bags, labelled and stored under conditions of controlled temperature and humidity,

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Actual state and future trends of the Romanian potato industry

S.C. Chiru, Gh. Olteanu and Elena Laura Dima
National Institute of Research and Development for Potato and Sugar Beet (NIRDPSB) P. O. Box 500470, Brasov, Fundaturii st. 2, Romania

Abstract

Romania is preparing to become a member of the European Union in 2007. The potato industry must be adapted to the European competitive system. According to the importance of the potato crop (area and total yield), the seed production, and the market demands for varieties and consumption (fresh consumption will still be on the first place), a current analysis of the Romanian potato industry and future tendency based on a SWOT interpretation (strength, weakness, opportunity, threat) is carried out.

Keywords: statistic data, varieties, seed production, SWOT analyses, EU accession

Introduction

Romania is situated in the South-East part of Europe, at the intersection of principal communication axes between North-South and East-West. With a total area of 238,391 km^2, almost as large as the United Kingdom (244,100 km^2), Romania would become the ninth largest country in an enlarged European Union with 27 members states. It will represent 5.4% of the area and 4.7% of the EU population (MAFRD, 2006).

The Romanian agriculture, although with a high natural potential, is still far away from a compatible level to EU structures. From the 23.8 million hectares of total area, agriculture amounts to 14.8 million hectares. The overall crop production covers 8.88 million hectares (2004), of which cereals account for 62%, oleaginous plants for 15%, and potatoes for 3.2% (Salasan, 2003).

Actual state

Potato production has a relatively long tradition in the Romanian agriculture, first references being made in Transylvania in the 18th century. From that time on, crop importance increased and potatoes are now considered as the "second bread" of Romania. Excepting the years between 1970-1990, when the potato production was concentrated on an industrial level, both in anterior periods and in the present situation small plots prevail.

The EU joining of Romania in 2007 imposes a new production system for potato growing (Olteanu, 1997, Chiru, 2006):

- Changing the mentality of stakeholders;
- Increasing the surfaces of agricultural exploitation;

APHIDS IN SEED POTATO CROPS OF ROMANIA

Donescu D & Chiru S.

Research and Development Institute for Potato and Sugar Beet
Braşov, 500470, 2, Fundăturii Str., Romania, e-mail: icpc@potato.ro

Keywords: aphids, seed potato, virus vector.

INTRODUCTION

Aphids are one of the most widespread groups of pests in agricultural sistems. Plants may be affected directly and indirectly as a result of presence of aphid populations.

Direct effects come about through suction of feeding aphids, injection of active substance in saliva, interference with phisiological performance of crops and removal of amino-nitrogen from plants.

Indirect effects are caused by virus transmission, honedew excretion and influence on crop physiology.

The quality of seed potato production is dependent on structure and dynamics of aphid population. The damage to potato by aphids is mainly caused by virus transmission and virus attack. Viruses can lead to yield loss in potato crop becouse they cause infection disesses which are transferred with the seed tubers to the progeny crop.

Several aphid species can colonized potato plants in Romania: *Myzus persicae*, *Aphis nasturtii*, *Aphis frangulae*, *Aulacorthum solani*, *Macrosiphum euphorbiae*. All these species are important vectors of potato virus diseases.

In Romania yield loss producesed to plants secondarily infected with potato leaf roll virus (PLTV) can rise to 53%-81% and with potato virus Y (PVY) to 33%-89%, depending on the type of virus, the potato variety, rate of infection, growth and climatic conditions (Cojocaru, 1987).

Investigation were done to evaluate the structure of aphid populations from main seed potato crops. The knowledge of abundance and the species composition of aphid are indispensable for the development of a control strategy against vectors of virus diseases.

The present work aimed at collecting data of aphid population and species diversity in romanian seed potato production areas.

MATERIAL AND METHODS

Seed potato crops from different zones (Brasov, Sfîntu Gheorghe, Târgu Secuiesc, Miercurea Ciuc, Joseni, Munte, Lăzarea, Suceava, Ilisesti, Cluj) were monitored between 1996-2002.

Alata aphid monitoring was carried out by Moericke yellow water traps. Two Moericke traps (round, metalic, 10 cm. deep, and inside painted yellow), were installed at a heigh of 0,70 m., on each experimental area. Aphids were collected daily, stored in glass vials containing preserving liquid (2 volumes of ethyl alcool 90%, and 1 volume lactic acid 75% w/w)(Eastop and van Emden, 1972). Each year the traps remained on potato fields from mid April to end of September.

Aphid identification was based on the keys described by Taylor (1981), Müller (1975), Jacky and Bouchery (1980), Blackmann and Eastop (1984, 1994), Remaudiere and Seco Fernandez (1990). Systematics and synonymies were based on Remaudiere and Remaudiere (1997).

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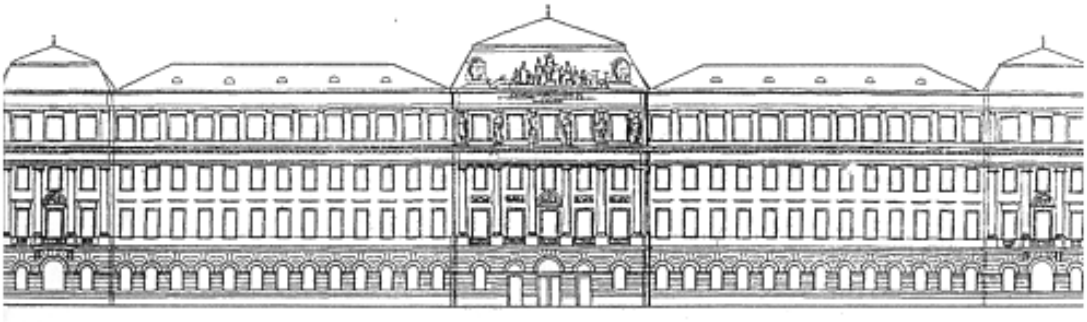

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150th Birthday of Nikola Tesla (1856-1943) Inventor of Mobile Robot Teleoperation

AN INTELLIGENT SYSTEM FOR MEASURING SOIL ELECTRICAL CONDUCTIVITY

OLTEANU, C.; ZAMFIRA, S.; OLTEAN, G. & OLTEANU, F.

Abstract: Romania's integration within the European Community structures imposes the alignment of the Romanian agriculture with the quality, economic efficiency and environment protection-oriented standards required in the developed countries. The reference parameters used in the European Union countries may be reached by increasing the resources monitoring and control upon all factors involved in the management of production agriculture system. In the paper we present the results obtained in the designing of the experimental model for soil conductivity measurement. The final result will be an integrated system able to measure, to acquire and to map the soil conductivity chart. This will give the opportunity to agriculture engineers to plan and obtain enhanced quality and quantity yields per hectares.
Key words: soil conductivity, agricultural mechatronics, terminal method, measuring.

1. INTRODUCTION

The Department of Fine Mechanics and Mechatronics from *Transilvania* University Library of Brasov in collaboration with the Research and Development Institute for Potatoes and Beetroots of Brasov - I.C.D.C.S.Z Brasov - has had intense preoccupations in the field of mechatronics applied in agriculture (Olteanu et al., 2004):

- computer-aided installation for measuring the starch and dry substance content in potatoes tubers;
- installation for automated dosage of chemical liquids used as fertilizers;
- research and experiment of a mobile laboratory and of the automated system of acquisition and processing of phytoclimate data in the potatoes growing.

The precision agriculture, which comprises the agriculture as an application of mechatronics, enhances a new methodology (that aims at a new agricultural system) that could be the key to many current problems (Oltean et al., 2005).

The opportunities that have favored the development of precision agriculture are (Oltean et al., 2004):

- capacity to understand the complexity of agricultural systems – systemic and holistic approach;
- capacity to monitor the phenomena and processes – computer-controlled data acquisition;
- achievements in computing techniques – hardware, software, fineware and data bases;
- improvement of interpretation and computing methods – statistics, modeling, simulation, decision support systems – DSS;
- development of geographic informational systems – GIS;
- occurrence and development of spatial analysis and statistics – Geostatistics;
- progresses of spatial technique – teledetection, GPS;
- technical achievements in automating and improving agricultural machines – agricultural mechatronics.

2. SYSTEM FOR MEASURING, ACQUIRING AND TRACING MAPS WITH REGARD TO SOIL ELECTRICAL CONDUCTIVITY

At the beginning of XX-th century Conrad Slumberger developed the plotting technique of geological sub-layers by inducing electric currents in the ground and by noting the distribution of the potential field resulted. Later on, the measurement of soil conductivity was applied in many areas of research: determining the rocks lithology, plotting the aggregates and clay deposits, plotting the subterranean water, locating the geo-thermal areas, plotting the archeological sites.
The conductivity is a measurement of a material's ability to transmit an electric charge. It stands for an intrinsic property of the material, similar to other properties such as density and porosity. The usefulness of soil conductivity stems from the fact that sands have low conductivity, silts have medium conductivity and clays have high conductivity.
Soil electrical conductivity (EC) is a property of soil that is determined by standardized measures of soil conductance (resistance^{-1}) by the distance and cross sectional area through which a current flows.
The movement of electrons through bulk soil is complex. Electrons may travel through soil water in macropores, along the surfaces of soil minerals (i.e. exchangeable ions), and through alternating layers of particles and solution. Therefore, multiple factors contribute to soil EC variability, including factors that affect the amount and connectivity of soil water (e.g. bulk density, structure, water potential, precipitation, timing of measurement), soil aggregation (e.g. cementing agents such as clay and organic matter, soil structure), electrolytes in soil water (e.g. salinity, exchangeable ions, soil water content, soil temperature), and the conductivity of the mineral phase (e.g. types and quantity of minerals, degree of isomorphic substitution, exchangeable ions).The electrical conductivity is influenced by a series of soil properties:

Porosity – the greater the porosity, the greater the electrical conductivity (the clayey soils have greater porosity as compared to sandy soils);

Water content – the electrical conductivity gets greater as the soil gets more humid;

Salinity level - the electrical conductivity is strongly influenced by the solution concentration in electrolytes, being directly proportional with it;

Cations exchange capacity influences the soil electrical conductivity through its content in positive ions of Ca, Mg, Na, NH_4 or H, which are held especially in soils with increased clay humus and minerals level;

SOIL FERTILITY AND THE FUTURE OF AGRICULTURE IN EUROPE

Cristian HERA
Cristian KLEPŞ
(Editors)

The Union of European Academies for Science Applied to Agriculture, Food and Nature (UEAA)

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FERTILIZATION IN POTATO CROP. USING THE SOIL ELECTRICAL CONDUCTIVITY MAPS IN IMPROVING OF POTATO CROP TECHNOLOGY PRECISION FARMING

OLTEAN M.I., IANOŞI Maria, CHIRU S.C., OLTEANU GH., DONESCU V.*

Key words: *chemical and physical resources in the soil; soil electrical conductivity; precision farming*

Abstract. Potato is one of the most intensive cultivated crops. The performances of potato crop are direct correlated with the technological inputs. From these, fertilization is represented a special place with impact in:

– yield quantity and quality;
– technological value of potato as row material for processing;
– diseases and enemies resistance capacity.

The requirements of fertilizers per tone obtained tubers and haulms quantity (0.3 t/ha) is for nitrogen 4.5 kg, phosphorus 1.8 kg, potash 7.8 kg, manganese 1.2 kg and 2.4 kg for calcium and microelements.

The methods for differential and doses calculation for fertilizers are based on agrochemical factors of the soil, physiological stage of the crops and technological factors. From these, electrical conductivity (EC) method presents many advantages – working with high speed, accuracy, good correlation with soil fertility.

INTRODUCTION

Potato is one of the most intensive cultivated crops, requiring great amounts of technological resources, at high costs and a negative impact on the environment. The improvement of cropping technologies imposes the promotion of some new methodologies. The scientific and technological achievements have encouraged the introduction of automation and IT technology within the farming techniques (Olteanu *et al.*, 2002).

* D.Sc., National Institute of Research and Development for Potato and Sugar Beet, Braşov, Romania, olgeo@potato.ro

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AGRITRONICS: AIDS FROM MECHATRONICS

Ciprian Olteanu
„TRANSILVANIA" University of Brasov
Grivitei, no. 54, Brasov
Romania

Sorin Zamfira
„TRANSILVANIA" University of Brasov
Garii nr.38, Brasov
Romania

Gheorghe Oltean
ICDCSZ – Brasov
Sarmisegetuza, no.12, Brasov
Romania

Felicia Olteanu
„TRANSILVANIA" University of Brasov
Grivitei, no. 54, Brasov
Romania

Catalina Turcu
„TRANSILVANIA" University of Brasov
Al. Vlahuta, no.12, Brasov
Romania

ABSTRACT

The precision agriculture, which comprises the agriculture as an application of mecha-tronics, enhances a new methodology (that aims at a new agricultural system) that could be the key to many current problems.

Precision agriculture components: teledetection and GPS, simulation models, support systems for decision and GIS, automatisation, robotised system, agricultural machines make possible to develop the Agricultural Mechatronics.

In the paper we present the opportunities that have favored the development of precision agriculture and the results obtained by the authors from the measurements of an important parameter of the soil: the conductivity. Dynamic measurements and GPS system, assure the simultaneous acquisition of the soil parameters. Specific data base can be obtained leading to high productivity and reduced chemical analysis cost.

Key words: *agritronics, soil conductivity measurements, maps on soil conductivity.*

1. INTRODUCTION

In these days the field of electronics continues to change and evolve rapidly. Electronics are increasingly being used to collect and process all types of data, transfer information, make decisions, and provide automation and control functions. Modern microcontrollers and semiconductor components offer many advantages and ease of use in designing custom measurement and control systems. The manual collection of field and laboratory data can be time- and labor-intensive. This constrains result in data often being collected at irregular or infrequent intervals. Automating the data-collection process can provide more information at regular and frequent intervals, and reduce labor requirements and costs. Advances in electronics and the availability and ease of use of electronic devices and components has made it easier and more affordable to automate many control and data-collection processes.

The Department of Fine Mechanics and Mechatronics from *Transilvania* University of Brasov in collaboration with the Research and Development Institute for Potatoes and Beetroots of Brasov - I.C.D.C.S.Z. Brasov - has had intense preoccupations in the field of mechatronics applied in agriculture [1].