temperatures above 70-80°C, which lead to a pasty crowded product, and low-yield reaction. On the other hand, a too low pH, resulted in polycondensation high speeds, exothermic and self-accelerated polycondensation process. Uncontrolled growth of the degree of crosslinking occurred, and final product resulted as a hard microcrystalline powder also affecting the index of activity values.

Regarding the effect of temperature on the finished product and the index of activity it can be stated that: at low temperatures (15-20°C), polycondensation have not initiated even after two hours, maintaining the liquid product. On the other hand, a temperature too high (> 80 ° C) leads to instant polycondensation, yielding hard microcrystals, difficult to process by filtration, granulation, extrusion, etc.

All four fertilizers microencapsulated at 40-60°C and pH 4-5 demonstrated high physical and chemical conditions facilitating the storage, handling and differential fertilization depending on the active substance content. For the four types of solid fertilizer compositions, microencapsulated slow-release products were obtained with a higher index of activity value than 40%, the minimum required for products to be considered as controlled-release (slow).

Objectively, these fertilizers can provide high quality fertilizer in the exploitation of nutrients in a greater extent, reducing doses without loss of plant productivity and reduce chemical pollution of the soil.

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EFFECT OF THERMO-HYDRIC STRESS OVER CERTAIN POTATO VARIETIES

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ABSTRACT
Taking into account the need for production of early potato for consumption, we considered it was necessary to test potato varieties, firstly in greenhouse. In our experiment, watering was stopped three weeks after tuberization begun. The biological material used was plantlets and microtubers. Five potato varieties were used: Christian, Roclas, Astral, Magic, Loial. Loial and Christian varieties achieved the highest values of tubers number /plant (3.65 and 2.45 minitubers/ plant, respectively).

Keywords: plantlets, microtubers, minitubers, thermo-hydric stress, greenhouse

INTRODUCTION

Potato is the fourth most important crop in the world. It is generally considered to be drought-sensitive and this limits its production to areas with adequate rainfall or irrigation possibilities, the latter influencing the production price. The context of changing climatic conditions resulting in higher temperatures, dry periods, and more erratic rainfall patterns in many regions will increasingly affect potato production in many areas of the world.

Global climate change manifested by increasing temperature, and rainfall regime change, have led in recent decades, to an increase in drought affected areas worldwide.

Water deficit is a common stress in potato production, which leads to a lower production and quality of potato. Because potato drought sensitivity (Hassapanah et al., 2008, quoted by Sakthivelu et al., 2008), water is necessary to increase the quality and potato production. Water deficit is a problem in several regions, due to temperature changes (Sakthivelu et al., 2008), this requiring studies of drought resistance for different varieties.

In the moment of emergence, drought reduced root growth. Drought installed after plant emergence inhibits stoloning, reducing the number of tubers. These processes are irreversible, even though soil moisture recovers later. Drought between emergence and budding hinders development of plants and extended tubers development period (Ianosi, 2002).

Taking into account the need for production of early potato for consumption, we considered it necessary to test potato varieties, firstly in greenhouse, then on field, watering was stopped three weeks after tuberization begun.

MATERIALS AND METHODS

The experimental variations were performed as shown in the Table 1, in a bifactorial way, (5 x 2); by combining two experimental factors, the number of variants investigated was 10. The experience was mounted in 2011, in Brasov INCDCSZ greenhouses.

Table 1

Experimental variants

Variant	Variety (a)	Biological material (b)
V_1	Christian (a_1)	Microtubers (b_1)
V_2		„In vitro" plantlets (b_2)
V_3	Roclas (a_2)	Microtubers (b_1)
V_4		„In vitro" plantlets (b_2)
V_5	Astral (a_3)	Microtubers (b_1)
V_6		„In vitro" plantlets (b_2)
V_7	Magic (a_4)	Microtubers (b_1)
V_8		„In vitro" plantlets (b_2)
V_9	Loial (a_5)	Microtubers (b_1)
V_{10}		„In vitro" plantlets (b_2)

From Table 1 results that the bifactorial experience 5 x 2, with 10 variants was performed using the following factors graduations of study:

–experimental factor a: variety with five graduations:

–a1-Christian

–a2-Roclas

–a3-Astral

–a4-Magic

–a5-Loial

– experimental factor b: biological material, with two graduations:

–b1-microtubers

– b2- "in vitro " plantlets

Research objectives were focused on implementing new technological solutions and concepts for the production of early potatoes for consumption in thermo-hydric stress; checking termo-hydric' resistance to stress, of the early and semi-early potato varieties and validation of results

RESULTS AND DISCUSSION

Results regarding the number of tubers / plant

The total minitubers number obtained at harvest, as overall average is higher when using microtubers (2.62 minitub.) compared with plantlets (2.4 minitub), so using microtubers increases termo-hydric stress resistance. In terms of varieties obtained on calibration class

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(Table 2) the best results are given by microtubers fraction > 25 mm, which registered the highest number of minitubers (1.04) for minitubers, followed minitubers fraction of 15-25 mm, that has given 0.98. tub. The other option have given less minitubers (0.78 minitubers).

Table 2

The average number of minitubers obtained

Size fraction (mm)	Average number of minitubers obtained from microtubers		Average number of minitubers obtained from plantlets	
	Number	%	Number	%
<15	0.8	30.53	0.72	30.00
15-25	0.78	29.77	0.98	40.83
>25	1.04	39.69	0.7	29.17
Total	**2.62**	**100**	**2.4**	**100**

Statistical interpretation of minitubers number

Bifactorial statistical analysis was made considering the number of minitubers obtained from five potato varieties. The variety was the first factor examined, the second factor was the biological material. In terms of the influence of the variety (Table 3), we see that the four varieties showed different results, from very significant negative for Magic and Astral varieties (-2.05 and -1.9 minitub. / pl) to insignificant for Loial variety (1.2 minitub. / pl). It can be seen that Christian, Loial and Roclas are varieties with resistance to thermal and hydric stress.

Table 3

Variety influence on the number of minitubers

Variety	Average number of minitubers, obtained / plant		Differences	Significance
	Number	%		
Christian (Ct)	3.65	65.75	-	-
Roclas	2.4	47.95	-1.25	0
Astral	1.75	67.12	-1.9	000
Loial	2.45	43.84	-1.2	n.s.
Magic	1.6	65.75	-2.05	000

LSD a 5% =1,22 (minitub.) LSD a 1% =1,33 (minitub.) LSD a 0,1% =1,54 (minitub.)

By comparing the results obtained within the variants planted with microtubers and plantlets (Table 4) it is found that the average number of minitubers was close, difference being very significant negative, by -0.5 minitub. / plant. Thus, to increase resistance to thermo-hydric stress for potato, it is recommended to use microtubers.

In the case of the combined influence of the biological material and varieties studied (Table 5), were obtained differences very significant negative, statistically assured for Roclas Astral, Loial and Magic varieties, (-0.80 minitub. / plant, -0.50 minitub. / plant, -1.1 minitub. / plant) and a significant difference, negative, for Magic variety (-0.2 minitub. / plant).

Table 4

Influence of biological material over the minitubers number

Variety	Average number of minitubers, obtained / plant		Differences	Significance
	Number	%		
Microtubers (Ct)	2,62	100,00	-	-
Plantlets	2,12	80,92	-0,5	ooo

LSD b 5% =0,11 (minitub.) LSD b 1% =0,16 (minitub.) LSD b 0,1% =0,24 (minitub.)

In the case of the combined influence of the biological material and varieties studied (Table 5), there were obtained differences very significant negative, statistically assured for Roclas Astral, Loial and Magic varieties, (-0.80 minitub. / plant, -0.50 minitub. / plant, -1.1 minitub. / plant) and a significant difference, negative, for Magic variety (-0.2 minitub. / plant).

Table 5

Influence of variety and biological material over the number of minitubers obtained/ plant

Variety / Biological material	Christian		Roclas		Astral		Loial		Magic	
	Nr.	Dif. Semn	Nr.	Dif. Semn	Nr.	Dif. Semn	Nr.	Dif. Semn	Nr.	Dif. Semn
Microtub (Ct)	3,60	-	2,80	-	2,00	-	3,00	-	1,70	-
Plantlets	3,70	0,1 ns	2,00	-0,80 000	1,50	-0,50 000	1,90	-1,1 000	,1,50	-0,2 0

LSD a 5% =0,20 (minitub.) LSD a 1% =0,28 (minitub.) LSD a 0,1% =0,41 (minitub.)

n.s. = not significant

CONCLUSIONS:

Loial and Christian varieties achieved the highest values of tubers number / plant (3.65, and 2.45 minitubers / plant).

The number of minitubers depending by the planting material is greater when using microtubers compared to plantlets (2.62 tubers / plant, using microtubers and 2.12 tubers / plant, using plantlets).

Our research has rated certain genotypes resistant to stress, knowing that potato plants are exposed throughout their lives to many stressors, which cause changes in normal physiological function in all plants, including important economic impacts on plants culture.

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LUBRICANT AND OIL POLLUTION INVESTIGATION AND ASSESSMENT ON AN INDUSTRIAL SITE LOCATED IN THE CENTRAL PART OF ROMANIA

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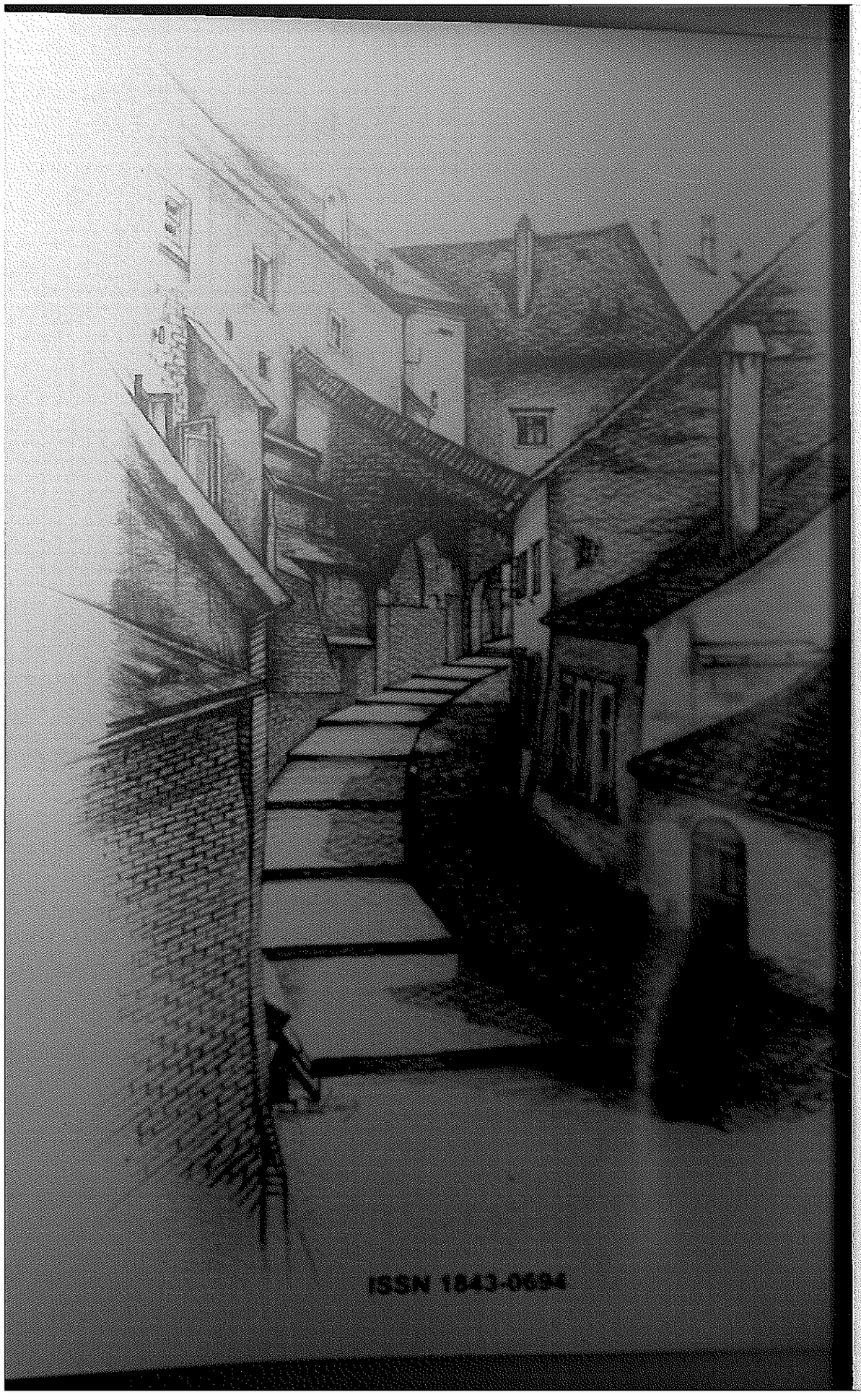
Abstract
This paper presents the steps taken in order to conduct a preliminary investigation and assessment of lubricant and oil pollution on an industrial site located in Brasov County. The company was founded in 1879, having as main activity, lubricant and grease fabrication; in 2005 the activity was stopped. All the constructions were demolished and all the utilities on it disabled. Firstly, data and information analysis, the local conditions of the area (climate, geology, hydrology, and hydrogeology), site history, former environmental studies conducted on the analyzed site, environmental authorizations and inspection reports elaborated by the environmental regulators were taken into consideration. Secondly, preliminary site investigation and assessment, the following actions were undertaken: pedological, geological, hydrogeological, geochemical research of the soil. Due to the site hydrogeological conditions encountered in former studies, to the soil characteristics, and also to the specific pollutants characteristics, it can be stated that the aquifer located in the area, at depths of over 15m, might not be affected by pollutant migration. During this step, along with a source-pathway-receptor risk assessment, the former environmental studies lead to the conclusion that there is a decreasing tendency of pollutant concentration in the geological environment. The preliminary investigation and assessment step of contamination for the geological environment it is considered, according to HG no. 1408/2007, an informative step of recognition in investigating and assessing a potentially contaminated site. The analysis of the investigation results regarding soil quality on the analyzed site has locally highlighted significant soil contamination with TPH, for a sensitive land use. The level of the measured concentrations, as well as their decreasing tendency, according to the former analyses, indicate a historical pollution, that has taken place many years ago, and does not present the effects of a recent accident/incident that might have affected the quality of the geological environment. A detailed investigation and assessment it is recommended to be done, in order to achieve feasible and cost-efficient remediation strategy for the site under analysis.

INTRODUCTION

Sites contaminated with hazardous materials are a common and burgeoning problem all over the world. Over the next years there will be an increasing need to develop existing brownfield sites, and therefore innovative remediation solutions, using transferable skills and techniques from other sciences, will be required by legislation [1, 4]. Such solutions could include better risk assessment techniques using new methods of investigation, detection and statistical analysis together with sampling and in situ testing [3,5]. A site-specific risk assessment is an evaluation of the risks posed to human beings and the surrounding environment by exposure to site contamination in various media [2, 8, 9].

Contaminated land, as a recognized environmental risk problem, is a recent phenomenon, coming relatively late to public attention and political concern compared to issues such as air and water pollution. Contaminated land is primarily a post-1800s problem



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Distinguished guests and colleagues, I am delighted to address some thoughts for the today's event, which is honour, enjoy and also it oblige us to make a retrospective regarding our beginnings as a Faculty as well as on the positive evolution of new proposed specializations, so today we may have a solid and complete educational offer, supported today through our scientific and educational results obtained during the evaluation that took part.

We are living today a very difficult stage in the evolution of the Romanian Education system, a stage of search and ongoing settlement of its own identity overlapped with the economic crisis that we feel full. But it never was that easy and now we are celebrating 20 years of Agricultural Education at the "Lucian Blaga" University of Sibiu, the Faculty of Agricultural Sciences, Food Industry and Environmental Protection which confirms that, through perseverance and tenacity, but especially hard working and with dedication, small or large obstacles inherent in fact, can be met, can "weld" collectives and may develop characters.

Two years ago we celebrated 20 years of Food High Education in Sibiu in our Faculty, an opportunity to meet again emotionally with fellows, graduates of our faculty, friends and partners from our country and abroad who have honored that time with their presence. Thus, there are two major events that make us to look with pride and hope to the future.

Our Faculty of Agricultural Sciences, Food Industry and Environmental Protection as an institution aims to meet the European requirements and standards, by educating specialists able to adapt the advanced scientific and technological values.

Currently of high priority are activities providing a creative and innovative environment for the Romanian High Education System by encouraging high standards for the scientific research and teaching process as these are the priority for supporting our integration into the European and international scientific community, and also by taking into consideration the current economic trends which require a growing demand for engineers with management skills in research projects.

In this context there emerged, developed and took shape the current agricultural high education curricula of Sibiu, which from year to year have become increasingly popular among students rewarded by the society by recognizing professional and specialized skills. Many graduates became successful managers in business, specialists in the production chain or research. The fact that more and more graduates are joining our efforts in the modernization of our high