



Ministry
of Education & Science
of the Russian Federation



Russian National Contact Point on FP7 Biotech-
nology, Agriculture & Food



European Commission

VII INTERNATIONAL SYMPOSIUM



«EU-RUSSIA: COOPERATION IN BIOTECHNOLOGY, AGRICULTURE, FORESTRY, FISHERIES & FOOD»

31 May – 1 June, 2012, Moscow

ABSTRACTS

Moscow

2012

VII INTERNATIONAL SYMPOSIUM

«EU-RUSSIA: COOPERATION IN BIOTECHNOLOGY, AGRICULTURE, FORESTRY, FISHERIES AND FOOD IN THE 7TH FRAMEWORK PROGRAMME»

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- DG RTD - Directorate E - Biotechnologies, Agriculture, Food
 - DG RTD - Directorate D - International cooperation
- FOREWORD**

Dear colleagues,

Dear participants of the VII International Symposium «EU-Russia: Cooperation in Biotechnology, Agriculture, Forestry, Fisheries and Food in the 7th Framework Programme»,

The present edition represents the proceedings of the VII International Symposium, devoted to EU-Russia cooperation in the field of biotechnology. The event took place at a crucial moment, when the Russian government has done several significant steps towards sustainable green growth. A lot of work is being done in different field of biotechnology which is represented by the abstracts below. I sincerely hope that all these work will contribute not only to the formation a new type of economy - the Knowledge-Based Bio-Economy, but also foster mutually beneficial international collaboration in this field. It`s my pleasure to note that regularly held EU-Russia

Symposiums form a strong basis for substantial discussions of the state-of-the-art and opportunities of biotechnologies development in our countries as it helps to give orientations on possible priorities for a mutually beneficial EU-Russia cooperation in the bioeconomy research areas.

Director of A.N. Bach Institute of Biochemistry RAS,
RAS corresponding member,

Vladimir Popov

A handwritten signature in black ink, appearing to read 'V. Popov', written in a cursive style.

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microelements etc.) which become available to plants in the process of bark mineralization; bark organic substance can initiate biological activity of the substrate which produces favorable environment for plant roots; carbon dioxide is released during the process of mineralization which improves carbonic nutrition of plants; wood bark possesses great adsorptive ability which allows preparation of long-acting organic-mineral fertilizers on its base; and finally, products of half-way decomposition of lignin which forms significant part of bark can participate in secondary synthesis of humic substances and stabilization of soil structure and consequently improve physical properties of soil. These soil properties are realized in composts and different bark preparations.

The most widespread way of wood waste processing to fertilizers is composting. Technology of composting of bark is sufficiently elaborated but in different countries including Russian Federation there is no full unity of technical requirements to raw materials, to the composting process itself and to the final product.

In ForestSpeCs, we are studying the suitable processes, usually via 'designer composting', to produce suitable materials for different applications. Key target application areas are in facilitating productive plant growth in poor soils. A specific case study concerning the applicability of the materials produced during the project is to be examined in a long-term field experiment of the potential of forest soil improvement for *Ribes nigrum* L., *Pinus sibirica* Du Tour. and *Pinus koraiensis* Siebold. et Zucc. Applied wooden bark composts positively effected physical-chemical characteristics, humic conditions and nutrition regime of soil which depends on significant humification of bark and decomposition of various compounds in the process of composting.

Another important case study is applying to the remediation of soils intensively contaminated with heavy metals and organic wastes. A typical objects of such study are wastelands around ore-dressing and processing enterprises, old mines etc. The first results show excellent features of especially 'designed bark-based composts' in improving of such soils from zero-fertility to acceptable condition.

Dr. A. Diagileva

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TECHNICAL LIGNIN AND ALUMINUM-CONTAINING WASTE AS A RESOURCE FOR MANAGEMENT OF DEGRADED SOIL STRUCTURES

The use of organic materials in the form of the modified lignin content in the natural cycles is rarely used. However, they can be used in conjunction with other mineral waste after their joint discharge from wastewater for regulation of soil processes in the upper layer of aeration. This can be considered as one

of the directions of recultivation of degraded soil layer in combination with other activities in the zones of active desertification.

The development of industrial ecology associated with the implementation of the limitations of anthropogenic type on the priorities of the economic development of most countries. One should distinguish three types of restrictions: environmental, investment (economic) and social. The implementation of these restrictions it is possible solely on the basis of the implementation of complex technological decisions with the maximum closed the resource cycle.

These decisions are at the stage of substantiation of investments in environmental expertise. In the modern technology you need every kind of by-product viewed as a potential resource for the next production cycle. It should be noted that this cycle may be beyond the scope of the production. He can be implemented in the management of the ecosystems of natural-territorial complex. The use of organic materials in the form of the modified lignin is currently is not being used.

In most cases, they are burned together with other wastes of organic origin. Thus the carbon goes into the category of greenhouse gases. It should be noted that lignin's of different origin may be used in combination with other mineral waste for the regulation of soil processes in the upper layer of aeration. This can be considered as one of the directions of recultivation of degraded soil layer in combination with other measures. The report examines the mechanisms of formation of organic and mineral structures in wastewater treatment technology from lignin impurities [1-3]. The considered solutions are also associated with lower secondary pollution of water systems [4]. The received structure in the technologies of treatment of specific waste water are close on properties to sedimentary structures of the natural cycle and can be used to control the properties of the upper layers of the soil in the areas of desertification.

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Book of abstracts

VII International Symposium
«EU-Russia: Cooperation in Biotechnology, Agriculture, Forestry, Fisheries and Food in the 7th
Framework Programme»

Moscow,
31st May – 1st June 2012

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Proceedings edited with support of the Ministry of Education and Science of the
Russian Federation in frame of the government contract № 12.741.11.0102