

0331 - Development of pulse technology for production of fertilizers from an organic waste

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Purpose of our research

The purpose of our research is the processing of organic waste for the production of fertilizers for plants nutrition. Our researches participate in the resolution of a global problem of cleanliness of the environment and restoration of the fertility of soils.

Technology description – how it works

A progressive technology which intensively and effectively processes almost all sorts of raw materials, has been developed, by using high-voltage pulse electric discharge. The materials are influenced by powerful pulse hydraulic blows and ultrasound and magnetic fields and light radiations. These physical processes intensively affect the materials. As a result there is a collapse of large organic molecules and crystals, and the activation and formation of new complex materials takes place. This intensive process has a destructive effect on pathogenic bacteria and parasites. Therefore, there is a disinfecting of an organic waste - pig manure-, the fallout of waste waters, and of the waste of the food and hydrolytic manufacturing. The influence of physical parameters on technological process of synthesis of new materials has been investigated. Optimum technical parameters and reactionary systems were defined. It was also determined that duration and amplitude of the pulse discharge depends on what kind of molecular link is collapsed. In this process, C-H and C-O links are most intensively collapsed, and there is an expense of energy in 3-5 times less for realization of reactions.

What is produced by the technology – description of the production, properties

As a result, complex fertilizers, growth-promoting factors for plants, ameliorators and artificial soil, are produced. This production is characterized by high agronomical value. The maintenance of humus in soil raises, with an increased productivity as well as the maintenance of useful substances in plants and fruits – sugar, starch, vitamins, oils and others. The levels of nitrates in plants decreases, their immunity to illnesses and wreckers raises. There are neutralized nuclides and heavy metals in the soil. Fertilizers are tested in frames of the World Bank project “Introduction of progressive methods of manufacturing agricultural production. Georgia, 2009”. It is received the harvest increase on vegetable cultures at the average of 30-40%. The production is also effective for restoration of woods after fires and against erosion of soils.

Effect from the project – agronomical, ecological

Introduction of our research facilitates the increase of producing of ecologically clean foodstuff, accelerates circulation of organic substances and provides ecological cleanliness of environment.