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STUDY OF THE BIO CONTAINERS OF OPTIMAL COMPOSITION TO IMPROVE THE GROWTH AND DEVELOPMENT OF PLANTS

Abstract. The article deals with the ways and technologies of creating biocontainers of optimal composition for laying highly productive plants with high biological potential has acquired practical value. The use of biocontainers with a real volume of components leads to economic efficiency of saving fertilizers, does not threaten the safety and security of the environment and products. The approaches to the introduction of effective components of biocontainers in agriculture, which increase the yield of plants on the basis of agricultural waste and minerals, comprehensively solving the environmental problem, are defined. The method of effective agricultural technology, ensuring the safety of the environment and food, saving fertilizers, feed supply for each plant, stabilization of quality and quantity of products. The conducted research allowed to scientifically prove the effectiveness of the use of biocontainer phytotechnology in two directions: in a short time to grow high-quality plant seedlings and repeatedly receive plant products in the season.

Keywords: biocontainer, phytotechnology, soil, fertility, agriculture, optimal composition, vermicompost, glauconite.

Introduction. According to today's data, the amount of pollutants in soils in the industrialized regions is much higher than the background concentration. In our case it is very difficult to obtain a lot of saline soils. It requires constant fertilization with a variety of fertilizers, which is complicated and expensive. In this regard, it is crucial to provide ways to cope with the factors that hinder the growth of plants. Thousands of tons of agricultural waste will be produced annually in Kazakhstan. Collected wastes can pollute the soil, air and water sources, and create conditions for the spread of various diseases and endanger the environment. The toxic substances contained in the waste accumulate in the soil and eventually lead to its degradation and the formation of technogenic deserts. This situation is economically inefficient for the growing plant growth in damaged, non-fertile soil. In recent years, biotechnology methods and processes have been widely used to address these issues. This method will allow for the deep processing of agricultural, industrial and household wastes, as well as the production of high quality products.

The purpose of the research is to create a new and effective composition of biocontainers on the basis of agricultural wastes and natural minerals for the planting of high-productive seeds that provide environmental safety.

In recent years (2000-2009), major scientific researches in the field of agro-engineering have mainly focused on: the discovery of new types of organic and mineral fertilizers; environmental assessment and optimal clean products; to find a combination of chemical and biological melioration in the field of specialized crop rotation of cultural and agricultural plants; control over the improvement of product quality, mineral nutrition and soil fertility changes in climatic conditions. In this regard, it is crucial to provide ways to cope with the factors that hinder the growth of plants. In this regard, bioconstransformers, which are based on agricultural waste that improve our plant growth, will be the solution to the problem. According to the results, biocontainers have shown that it is possible to plant crops, gardening, medicinal or ornamental plants, vegetables, seedlings and tubers as well as planting of green sprouts of various crops.

Using biocontainers all over the world is an innovative way to ensure a high growth rate of any grain and melon crops and increase their productivity. Bio-container is a ball-shaped material with a cylinder or small well, depending on the selected technology. According to the Committee of the Federation Council on Industrial Policy of Russia (2009), only 1-2% of biocontainer research is implemented in Russia and 70% in the United States. Brazil has introduced biocontainers as a resource-saving technology for 60% of agricultural land, with an annual revenue of $ 10 billion, generating an area of 11% for the last decade. In Germany, more than 70% (large and small) farming uses these new technologies. The technology of cultivation of therapeutic and decorative plants in biocontainers is also popular in Holland and Denmark. In these countries, potato cultivation in pesticides was done in small quantities because potato seeds were grown in active containers. In China, near Shanghai, the purpose of using biocontainers is the balanced nutrition of plants. In agro technology, watermelon intensified by 14 to 27%, potatoes three times, rice harvesting by 9-13%, wheat by 18%.

Land processing through natural fertilizers is an environmentally profitable technology. It is widely used in many countries, particularly in Russia, China and the United States [1, 2].

However, the technology of producing this efficient biogasm requires a long time. In this regard, we have conducted scientific research to accelerate the technology of vermicultural technology.

We used calcium peroxide, which is widely used in various sectors of the national economy, to take care of the Californian worm life in the need of oxygen and calcium, and to help eliminate hazardous helminths and other harmful microorganisms in manure. One of the pleasant properties of calcium peroxide is the ability to prevent unpleasant smells that occur during the rotation process, meaning active participation in the oxidation of toxic substances. Also, when the calcium is gradually decoupling peroxide, one of the substance dissolved makes the medium hydrogen peroxide [3-5].

The following way is used for growing rainfall. Individual wooden boxes include a variety of animal fodder, plant residues, wooden fibrous and propagated wastes, 1% calcium peroxide, and red californian worms were sent to them.

Then the second layer of the manure is laid, worms are also sent to there and flooded. In the process of obtaining the biomass, the content of the feed should be about 70-80%, and the darkness (worms in the light-resistant) room so that the temperature is <18 ° C for the worm breeding and development [6].

The content of biogumous from different species is shown in table 1 below.

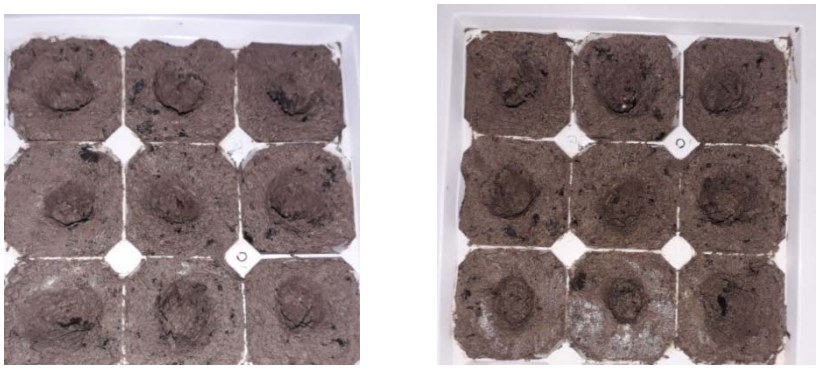
Table 1 – Basic composition of cocoa and bio humus (%)

Indicators Name	Mixture Manure	Biogumus
The average reaction	8,11± 0,33	6,74± 0,22
Organic substances	24,03± 0,45	47,23± 0,56
Hormonic acid	2,42± 0,15	3,74± 0,04
Folic acid	0,53± 0,01	2,83± 0,01
Organic carbon	2,12± 0,02	3,92± 0,02
Nitrogen	1,50± 0,03	3,51± 0,03
Phosphorus	0,42± 0,01	0,50± 0,01
C:N	1,13± 0,02	1,02± 0,01
In general, the K_2O	2,01± 0,01	2,40± 0,02
The bacterium of the intestinal bacterial group	0,05	Don’t exist
Pathogenic microorganism	Exist	Don’t exist
Helminths and their eggs	Exist	Don’t exist

Development of optimal composition of bioconaters based on biomass. Bio-container is a connecting element between the plant material (seeds, seedlings, sprouts, etc.) and soil, which allows for the development of the plant, the target nutrition of the plants and their good development.

Biocontainers are composed of highly active biological components such as humus, peat, and various soil mixtures from the soil that grows from the plants that act as natural fertilizers. Cylindrical or ball-shaped forms are formed after these ingredients and special bonding organic admixtures, which are suitable for plastic processing. In some cases mixing mineral fertilizers to biocontainers for the use of very poor composition, such as phosphate, potassium and others [7].

In our work, biocontainers are the optimal amount of organic, ecologically clean substances which are needed for plant growth, without chemical additives. They contain mainly biohumus, which is about 95% of the dry matter, which we received in bioguum in the previous section, meaning the remnants of agricultural wastes and cattle, with the help of California red worms. Bio-container is a natural mineral bentonite for resistance to environmental factors and resistance to toxic substances. In the case of introduction of bentonite clay into the composition of biocontainers, the volume of openings filled with capillary water increases and the air filling decreases. In particular, benthonite clay allows water to be stored in the soil system, meaning the moisture content of the soil required for the plant increases by 3-5% in relevance to the amount of bentonite clay (figure).



Optimal biocontainers

The share of nutrients contained in biocontainers is as follows: nitrogen (N) not less than -0.7%; phosphorus (P) -0.6%; Potassium (K) not less than -0.9%; PH-7.0. Microelement content: Zn, Gu, Mn, Mo, B, Fe, Se. There is a shell of one or more blends of biological substances that are available for planting bioconcredit material. The material of the material contains absorbent granules that absorb water in the soil.

According to the technology developed biocontainers have the following properties:

- Ensure the growth of plants and high crops in the fertile soils;
- Protects from unfavorable external climatic environment factors, especially frost and drought;
- in terms of economic efficiency, the amount of fertilizers and their purchase will be less, as the seeds or seedlings of the plant consume nutrients contained in the biocontractor;
- Reduces the number of the most damaging weeds in the field of agriculture, reduces the number of diseases and pests, and, consequently, the cost of combating them decreases;
- Reduces the appearance of fine sprouts and seedlings.

The use of biocontainers with a substantial amount of components - economically feasible in fertilizer saving, does not jeopardize the environment and product cleanness [8].

Technology of seed sowing in biocontainers. Biocontainer is a substance containing a compressive compressive substrate for the cultivation of various seeds in suitable environments. Bio-container provides nutrients in the early stages of seed or seedlings and protects the environment from stress factors. In this case, the weeds, the fertile soil, and the sick are not terrifying. Bio-container consists of bioguum, bentonite, cotton wastes and nutrients. In our research, the biocompatibility was different in shape and diameter, but in most cases 50 mm.

At the start of the season, biocontainers are planted on wet soils with seeds (or other planting material) of the plants. Additional irrigation works are carried out when the initial soil moisture is insufficient. When placed on wet soils, the biocontainer will be increased to at least 1.5-2.5 times with water supply at 60-80%. Due to the lack of adhesives or other binders in the bioconstrictor material, it quickly releases the moisture, molecular interaction interruption, and absorbs the matter quickly for several hours (with soils over moisture) or for some hours (due to soil moisture deficiency) that absorbs the substance and increases its volume, The result is a favorable microclimate around the seeds or seedlings, and the seeds are provided with full primary nutrition. In addition, biocontainer prevents the growth of weeds and its external nutritional bark protects plants from early illnesses such as disease, cold, stroke and infection [9].

Since biocontainer is a complex three-dimensional structure, ultimately, when the outer shell has been completely degraded in the soil, homogeneous biogumus and bentonite distribution in the soil leads to a good development of plant-based substances and moisture collection root systems. The soil was sown on the bottom of the bio-container so that the seeds were planted and additional soil was closed so that two to three millimeters thick from the surface to the surface. Bio-containers are planted at a depth of 4 for 5-7 cm for large seeds (maize, cucumber, pumpkin, etc.) and for small seeds (tomatoes, peppers, standing etc.). Then, with a 200- 300 ml water hole with a bio-container, it was covered with soil, waiting for one or three minutes. For growing seedlings, biocontainers can be placed in boxes or platos. In this case, no additional soil is used. Biocontainers are filled with water, and after a while, they tend to take up the whole volume. After irrigation in wet soils, the bioconvitation of the molecules interrupts and breaks down. Around the seed loose, airborne, nutrient-rich environment, which forms approximately twice as high as the original size.

Features of the studied biocontainers. Biocontainers can be used to plant almost all plantations. The only limiting factor in this direction is the need to overuse some crops. Research shows that, for example, the high cabbage irrigation rates are high, the active ingredients in the biocontractor can cause the root system to burn and cause the death of the root system. By maintaining all standards, growth and yield can be provided at a high level. In addition, the bioconnector reduces the consumption of organic and mineral fertilizers, reducing the cost of the harvest by 19-25%, due to the immune system in plants due to fertilizer components that are included in the soil composition. Biocontainer reduces the consumption of organic and mineral fertilizers by 19-25%. Bioconnectors with organic fertilizers application to local soil is an effective means of increasing its fertility, Organic components of biokondrier improve agrophysical, agrochemical and biological properties of soil, provide intensive growth of plants, improve their productivity and improve product quality. One of the interesting and important properties of biocontainers is the increase in volume by 2-2.5 times after their placement in wet soils , contact with the roots of plants, free space around plant seeds, the formation of breathing space, nutrient biocontainers can also be used to grow nutrient-intensive care products. The important components of bioseconds are the presence of biocontainers that go into plants and produce iron, potassium, calcium, iodine and other micro-macro elements complement the shortage.

Conclusion. Biocontainers are encouraged to have a positive impact on their release during sowing. Their seeds are packed with power from the point nutrition process and immediately form a strong root system. An ecological and agro-technical basis for the creation of optimal composition of biocontainers of different sizes has been developed and the possibility of cultivation of agricultural plants in field conditions in the fields has been proven. The use of biocontainers for optimal composition of biocontainers for planting large plants with high biological potential has proven to be of practical value. The use of biocontainers with a substantial amount of builders results in economical effectiveness in fertilizer saving and does not jeopardize the environment and product cleanness. Researchers have shown that biocontainers can be used to plant crops, gardening, medicinal or ornamental plants, vegetable seedlings, tubers as well as planting green sprouts of various crops.

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ӨСІМДІКТЕРДІҢ ӨСІП ӨНУІН ЖАҚСАРТАТЫН ОҢТАЙЛЫ ҚҰРАМДЫ БИОКОНТЕЙНЕРЛЕРДІ ЗЕРТТЕУ

Аннотация. Мақалада жоғары биологиялық потенциалы бар мол өнімді өсімдіктерді отырғызу үшін оңтайлы құрамды биоконтейнерлер жасау технологиясы практикалық құндылыққа ие болғаны дәлелденді. Құрауыштардың нақты көлемді мөлшері бар биоконтейнерлерді қолдану – тыңайтқыштарды үнемдеуде экономикалық жағынан тиімділікке әкеледі, қоршаған ортаның және өнімнің таза болуына қауіп төндірмейді. Экологиялық мәселені жан-жақты шешетін ауылшаруашылық қалдықтар мен минералдар негізінде өсімдіктердің өнімділігін арттыратын тиімді құрамды биоконтейнерлерді егіншілікке енгізу тәсілі айқындалды. Қоршаған ортаның және азық-түліктің қауіпсіздігін қамтамасыз ететін, тыңайтқыштарды үнемдейтін, әр бір өсімдікке қажетті қоректі жеткізетін, өнімнің сапасы мен мөлшерін жоғарылатып тұрақтандыратын тиімді агротехнология әдісі ұсынылды. Жүргізілген зерттеулер биоконтейнерлік фитотехнологияны пайда-

ланудың тиімділігін екі бағыт бойынша ғылыми негіздеуге мүмкіндік берді: қысқа мерзімде өсімдіктердің жоғары сапалы көшетін өсіру және өсімдіктер өнімдерін маусымға бірнеше рет алуға.

Түйін сөздер: биоконтейнер, фитотехнология, топырақ, құнарлылық, ауыл шаруашылығы, оңтайлы құрамы, биогумус, глауконит.

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ИССЛЕДОВАНИЕ БИОКОНТЕЙНЕРОВ ОПТИМАЛЬНОГО СОСТАВА УЛУЧШАЮЩИХ РОСТ И РАЗВИТИЕ РАСТЕНИЙ

Аннотация. В статье рассматриваются пути и технологии создания биоконтейнеров оптимального состава для закладки высокопродуктивных растений с высоким биологическим потенциалом приобрела практическую ценность. Применение биоконтейнеров с реальным объемом компонентов-приводит к экономической эффективности экономии удобрений, не угрожает сохранности и безопасности окружающей среды и продукции. Определены подходы к внедрению в земледелие эффективных составляющих биоконтейнеров, повышающих урожайность растений на основе сельскохозяйственных отходов и минералов, всесторонне решающих экологическую проблему. Предложен метод эффективной агротехнологии, обеспечивающий безопасность окружающей среды и продуктов питания, экономию удобрений, поставку кормов для каждого растения, стабилизацию качества и количества продукции. Проведенные исследования позволили научно обосновать эффективность использования биоконтейнерной фитотехнологии по двум направлениям: за короткое время выращивать высококачественные саженцы растений и многократно получать растительную продукцию в сезон.

Ключевые слова: биоконтейнер, фитотехнология, почва, плодородие, сельское хозяйство, оптимальный состав, биогумус, глауконит.

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