

**Title:** Value of biological (Biohumus, Biomac, biomic) fertilizer and application rates on production of seed potato with the help of intensive technology.

**Author:** Dr. Merganov Avazhon Turgunovich

**Corresponding Author's detail:** Merganov Avazhon Turgunovich, Dr; Department of Chemistry and Technology, Faculty of Agriculture, Namangan Engineering and Technology Institute, 7 Kasansay Street, Namangan, 160115, Uzbekistan. Phone: +998936782534  
Email: [neti.info.uz@gmail.com](mailto:neti.info.uz@gmail.com)

**Name of the Journal:** Journal of Agriculture and Environmental Science

**Abstract:** On base of intensive technology to raise productivity of potatoes more than ten times produced ecological clean fertilizer. This fertilizer can be widely applied while taking virusless potato seed. Rational use of water and land is similar and using biological fertilizer does not require additional resources such as water. It affects positively to soil fertility and helps to keep natural taste of potato. Value of biological (Biohumus, and Biomac, biomic) fertilizer is taken and application rates for seed potato production is experimented in Uzbekistan.

The peculiarities of biological fertilizers and standards for seed potato production, lack of action character in the soil vermicompost and macro-micro elements are considered and studied.

Created list of main types of biological fertilizers and basic prerequisites for making vermicompost, Biomac, biomic and its role on increasing the yield of potatoes is mentioned. Developing systems using biological fertilizers and its durability, application rate are shown according to experiments.

**Keywords:** Biohumus, Biomac, biomik enzyme, detritus, fungi, nematodes

## **1. Introduction**

### **1.1. Importance of worms on soil fertility.**

Earthworms together with soil consume a huge amount of plant detritus, bacteria, fungi, nematodes and others, they kill and digest them, at the same time extract a large number of

coprolites with their own intestinal microflora, enzymes, vitamins, which have antibiotic properties and inhibit the development of pathogenic flora, isolation malodorous gases as well as decontaminate soil. [1]

In the process of digestion of plant residues in the intestine worms humus substances are formed. Entering the soil, they slow leaching of its movable joints, prevent from water and wind erosion. Humus is contained 15-18% in coprolites of natural worm populations. [2]

## **1.2. Anthropogenic factors and microbial life.**

Worms have the unique ability to form, meliorate and structure the soil. This function is not duplicated by any other animals and agroforestry techniques.

Soil microbial community is very sensitive to various anthropogenic factors. The use of chemical fertilizers and pesticides has a detrimental effect on all groups of micro-organisms in the soil. Under their influence huge areas of the worm partially or completely are degraded. Moreover, many pesticides destroy natural enzymes and complex humus that is necessary for plant life, causing an imbalance of the natural composition of the soil, which are not restored in this field. Arable land is declined and fertility is removed. [2]

## **2. Materials, objects and methods**

### **2.1 Consequence of chemical fertilizer.**

Organic fertilizers are needed in traditional farming. The desire to harvest with chemical fertilizers and pesticides led to the known consequences. It was necessary to return using of manure and compost to improve soil fertility over large areas, but it does not give expected effect as low efficiency of organic fertilizers is predetermined in degradation soil zoofauna which can not process effectively the organic matter into humus.

### **2.2 Methods of hanging pladorodie soil.**

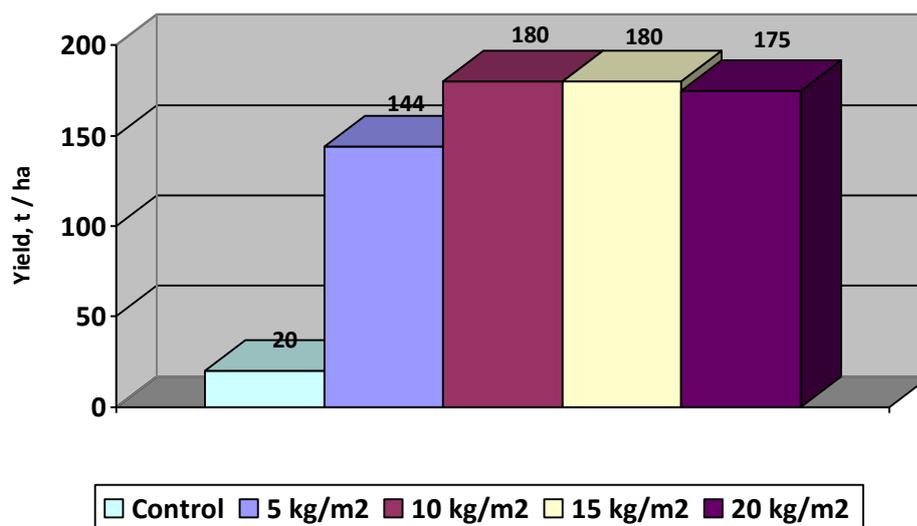
Solutions to this problem - it is possible to restore soil fertility, using biological fertilizers - biohumus, biomik, Biomak which processes organics with the help of worms. They grow well in artificial nutrient compost in certain recipes prepared on the basis of cattle manure and plant residues, etc. while they are recycling compost in balanced granular humus fertilizer containing - 30 of humus, nitrogen 1.2-3.5, 1,4-6,2 phosphorus, potassium 1.1-1.4, 3-5% calcium. During one cycle 0.5-0,6 kg worms in 1m<sup>2</sup> produce 500 kg humus fertilizer out of one ton compost, pH 7.0 - 0.4. [2]

In 2000-2010 Namangan Institute of Engineering and Technology and Namangan production - scientific system for the production of seed potatoes (PNS) determined using biological effectiveness (Biohumus, and Biomak biomik) of fertilizers in production of disease-free seed potatoes and other vegetable crops in different soil - climatic conditions and comparing their actions with control. [2].

### 3. Results

The results of the production test have confirmed high efficiency of the use of biological fertilizers. In fields where they were used, before planting seedlings or tuber, yield of potatoes are given in the following form: in the control variant - 250-300 kg / ha, with the introduction of biohumus - 5 kg per 1 m<sup>2</sup>-14,40 t / ha, 10 kg per 1 m<sup>2</sup> – 18,00 t / ha; (figure 1).

**Figure 1. Influence of fertilizer biohumus on potato yield applied in sort "Icar"**



-while using Biomak 2.5 kg per 1 m<sup>2</sup> – 120 t / ha, with a double dose of 1 m<sup>2</sup> – 122 t / ha. With the increase of 10-15 kg per 1 m<sup>2</sup> – 140 t / ha, (figure 2),



					gramm			
1	Control	-	1,6	4,8	16	77,0	20	0,78
2	Biohumus	5,0	1,8	8,9	36,0	320,4	144	0,70
		10,0	1,8	9,0	40,0	360,6	180	1,19
		15,0	1,7	8,0	42,0	336,0	180	1,47
		20,0	1,7	8,2	40,0	328,0	175	0,66
R=						0,34	0,34	
Hcp05						0,45	0,45	
3	Control	-	1,4	4,2	15,0	63,3	20	0,52
4	Biomak	2,5	1,6	6,4	30,0	112,0	120	0,62
		5,0	1,7	6,8	33,0	224,0	122	0,97
		10,0	1,7	6,9	35,0	241,5	140	0,96
		15,0	1,7	7,0	32,0	266,0	146	0,76
R=						0,98	0,98	
Hcp05						5,87	5,87	
5	Control	-	1,5	4,5	16,0	72,0	25	0,79
6	Biomik	2,0	1,7	7,1	33,0	234,3	130	0,56
		3,0	1,8	7,2	35,0	252,0	135	0,54
		4,0	1,8	7,3	38,0	277,4	150	0,54
		5,0	1,8	7,3	38,0	277,4	155	0,65
R=						0,95	0,95	
Hcp05						4,42	4,42	

Thus, the production test data provides a basis that is calculated the inclusion of worms in recycling of manure and other organic matter in humus fertilizer. It is only way to increase humus content in the soil, structure and fertility as well as the quality and persistence without exception, all seed potatoes and other agricultural rehabilitation of soil and increase in productivity of agricultural cultures.



## References

Merganov Avazhon Turgunovich. *Importance of Microscopic Diagnosing of Viruses in Initial Material of Seed Potatoes*. Journal of Agriculture and Environmental Sciences March 2014, Vol. 3, No. 1, pp. 39-44

Merganov A.T, Merganov R.A. (2007)“Basis of growing seed and consumable potatoes on the basis of intensive technology”. Journal of Agrobook. pg 21-28.

Shmigaya V.A. (1991) Improved potato, journal of “Potato and vegetable”. Volume № 6, pp 41-42

Velednitskiy A. (1985) How to know virus?, Journal of “Technics and science”. Volume№ 6, pg 17-18