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TECHNOLOGY OF USING ORGANIC FERTILIZER IN AGRICULTURE

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ABSTRACT

The article presents the data on the technology of using organic and mineral fertilizers in agriculture. About the growing needs of the population for high-quality food products, the main technologies of application of mineral fertilizers.

KEYWORDS: Organic Fertilizer, Mineral Fertilizer, Food Products, Technology Of Use, Potassium, Sodium, Phosphorus, Humus, Humus, Compost.

INTRODUCTION

In subsequent years, the increase in the world's population led to an increase in demand for food products. this, in turn, imposes a great responsibility on the workers of the agricultural sector. This means a high-quality and safe food product.

The widespread use of organic fertilizers is of great importance in restoring soil fertility, increasing the efficiency of mineral fertilizers, crop yields, especially in improving product quality.

The practical part

Organic fertilizers contain all the microelements necessary for the plant. Manure and compost made from agricultural and wastewater, as well as lignin, cotton stalks and intermediate crops form the basis of organic fertilizers.

It is difficult to overestimate the role of organic fertilizers in increasing the efficiency of mineral fertilizers and soil fertility, as well as in obtaining abundant and high-quality harvests.

Organic fertilizers include manure, jiju, peat, bird droppings, faeces, various compost and fertilizers from greenery.

Fertilizer from greenery can be artificially prepared under laboratory conditions, for example, chlorella, a single-celled blue-green algae. The biotechnology of soil enrichment with organic matter is used very effectively. Organic fertilizers contain nitrogen, phosphorus, potassium, calcium and other elements necessary for plant nutrition, as well as organic substances that favorably affect the properties of the soil. In one ton of manure there are 5 kg of nitrogen, 2.5 kg of phosphate anhydride, 6 kg of potassium oxide. This suggests that in order to meet the soil's need for minerals, it is necessary to use from 20 tons to 40 tons of manure per hectare.

If we explain the composition of organic fertilizer from a scientific point of view, then we found out in the laboratory that the composition of manure contains the following elements that have a beneficial effect on the composition of the soil and plant development.

The manure we examined was humus, the feces of large and small cattle and the remains of plants. When using bird feces, one should be careful, since it contains more nitrogen salts than livestock feces. Bird droppings is an organic fertilizer, the most concentrated and fast-acting among other organic fertilizers. It refers to local fertilizers containing 30-50% in a non-bedding form, and about 10% of ammonia nitrogen from the total amount of nitrogen in the litter.

The content of nutrients in the litter depends on the composition and quality of feed, to a lesser extent - on the methods of maintenance.

The litter contains trace elements: 100 g of dry matter contains 15-38 mg of manganese, 12-39 mg of zinc, 1-1.2 mg of cobalt, 1-2.5 mg of copper, 300-400 mg of iron. Most of the food elements in bird droppings are in a water-soluble form.

Chicken manure surpasses manure in its fertilizing qualities, and is not inferior to mineral fertilizers in terms of speed of action. The droppings of geese and ducks contain more moisture, the nutrient content is close to manure. In a year, poultry farms can collect 6-8 tons of litter from 100 chickens, 7-9 tons from ducks, 10-12 tons from geese.

The shrinkage of chicken manure at the cellular content after 8 hours is 10-12%, after 12 hours - 13-16%, after a day - 27-32%. With floor maintenance, litter manure is obtained, the shrinkage of which occurs faster — in 12 hours it reaches 50%, under ducks and geese - 35%.

Таблица. Химический состав птичьего помета, %
[efn_note]Агрохимия. Учебник/В.Г. Минеев, В.Г. Сычев, Г.П. Гамзиков и др.; под ред. В.Г. Минеева. – М.: Изд-во ВНИИА им.

ПОМЕТ	H ₂ O	N	P ₂ O ₅	K ₂ O	CaO	MgO	SO ₃
Куриный	56	1.6	1.5	0.8	2.4	0.7	0.4
Утиный	70	0.7	0.9	0.6	1.1	0.2	0.3
Гусиный	76	0.5	0.5	0.9	0.8	0.2	0.1

When using bird fertilizer, much attention should be paid to the measures and technology of use, since it was said above, it is rich in nitrogen.

Organic fertilizers cannot meet the growing demand of agriculture on a daily basis, since the nutrients contained in manure and other organic fertilizers are several times less than in mineral fertilizers.

For example, if 1 ton of manure contains 5 kg of nitrogen, then 1 ton of ammonium nitrate contains 350 kg of nitrogen. According to the following table, we can study the chemical composition of manure in various animals.

TABLE-2 THE COMPOSITION OF SOLID AND LIQUID ANIMAL EXCREMENT IN % ((ACCORDING TO I.P.MAMCHENKOV 1964)

animals	water	Dry matter	nitrogen	P ₂ O ₅	K ₂ O	CaO	MgO	SO ₄
Fresh feces								
Cattle	83,6	16,4	0,29	0,17	0,26	0,35	0,13	0,04
pigs	82,0	18,0	0,43	1,41	0,15	0,09	0,10	0,04
pigs	75,7	24,3	0,44	0,35	0,35	0,45	0,24	0,06
sheep	65,5	34,5	0,55	0,31	0,26	0,46	0,15	0,14
Fresh urine								
Cattle	93,8	6,2	0,58	0,01	0,83	0,01	0,04	0,13
pigs	96,7	3,3	0,60	0,07	0,49	0,00	0,08	0,08
pigs	90,1	9,9	1,55	0,00	1,50	0,15	0,12	0,06
sheep	87,2	12,8	1,95	0,01	2,26	0,16	0,34	0,30

According to the physical state, the excrement is characterized as a heterogeneous polydisperse suspension with quasi-plastic fluid properties. It includes solid particles (dispersed phase) and an aqueous solution of salts, acids and alkalis (liquid phase or dispersion medium). In the excrement of cattle, the proportion of the solid phase is about 60% of the dry matter mass, and in pigs - 70-75%. The density of the dry matter of the excrement is about 1300 kg /m³, and suspended particles - 1050-1060 kg / m³. The density of the dispersion medium in the excrement of cows is 1017 kg /m³, pigs - 1010 kg / m³. Due to the small difference in the densities of the dispersed phase and the dispersion medium and high viscosity, long-term storage of the mixture of excrement without stratification is possible. Due to the presence of gases in the excrement mixture, feces do not sink in water. When feces are mixed with water, solid particles almost completely precipitate.

CONCLUSION

Manure - occupies the most important place in organic fertilizers for sowing, because it contains all the basic nutrients necessary for plants. Accordingly, it is the most important source of nutrients for plant nutrition, the use of which is of great importance for regulating the circulation of nutrients in agriculture.

This also has a positive effect on increasing crop yields, not only in the first year of soil fertilization, but also in subsequent years. Also, the content of nitrogen, phosphorus and potassium in its composition, 15-20, 10-15 percent are used for crops of the second year, 10-15 5-10 and 0-10 percent for crops of the third year, respectively.

The technology of preparation and application of organic fertilizers should ensure the complete preservation of nutrients contained in fertilizers and their availability in a state of absorption in plants, ensuring the complete destruction of seeds of alien plants that are part of environment protection Products and fertilizers.

The technology of manure preparation, it is better to call it humus, is very simple and does not require extra effort. For a long time, our people collected manure in a pile 2-2.5 m high, 5-6 meters wide around the fields where they were going to sow cultivated plants. This fertilizer will be enough for 4-6 hectares of land. Sand with a thickness of 10 cm is poured on top, this is to accelerate the process of humus, since the composition of the sand contains putrefactive bacteria. It is necessary to pay attention to the technology of sand sprinkling, it should not exceed 25% of manure.

The size of each fertilizer built in the field depends on the size of the fertilizer field and the fertilizer application rate, the volume of which should not exceed 3000 m³.

Before fertilizing or before planting, 15-20 tons are given for each hectare, or special ditches are dug, they are filled with manure and filled with water, soaked. Since the plant cannot assimilate solid organic matter, after a few days the manure juice dissolves in water, fermentation and oxidation processes occur, liquid, manure comes to an easily digestible state by plants, various algae also multiply and cover the surface of the water, this enriches the compost.

When watering, water passes through these ditches and evenly enters all rations in a state of juice. In this case, the compost can be enriched with chlorella suspension prepared in the laboratory. This technology also gives a very good result.

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