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RESULTS OF PHYSICAL AND CHEMICAL RESEARCH OF PHOSPHORUS FERTILIZERS AND PROBLEMS IN CERTIFICATION

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ANNOTATION:

The results of the study of physicochemical properties of phosphorus in the Central Kyzylkum deposit using nitric acid are presented. It has been shown that the pressure of saturated vapors and the crystallization temperature of liquid nitrogen-phosphorus-calcium fertilizer depend on the norm of nitric acid. It is recommended to use the resulting solution as a liquid nitrogen-calcium fertilizer in the spring-summer period.

Keywords: phosphorus fertilizers, enrichment, ethanol, ammoniazed nitro-calcium phosphate alcohol pulp, physiochemical properties.

INTRODUCTION:

In the Republic of Uzbekistan, the main raw material for the production of phosphorus fertilizers is the phosphorite deposit located in the Central Kyzyl Kum region. However, due to the low phosphorus content, high calcium modulus and high carbonate content, the phosphorites of this deposit are practically unsuitable for acid processing in order to obtain concentrated phosphorus-containing fertilizers. For example, the average sample of phosphorites from the Dzheroy-Sardarinsky deposit contains (wt%): 16.2 P2O5; 46.2 CaO; CaO: P2O5 = 2.85; 17.7 CO2; 0.6 MgO; 2.9 (Al2O3 + Fe2O3); 1.5 (K2O + Na2O); 2.65 SO3; 1.94 F; 0.1 Cl and 7.8 insoluble residue. In this regard, studies devoted to the development of new methods of enrichment of low-grade phosphorites are of particular relevance.

Phosphorus fertilizers - mineral and organic substances containing phosphorus; It is used to improve the phosphorus nutrition of plants. It is the only source of replenishing the phosphorus accumulated by plants in the soil. Phosphorus fertilizers are used to process ores containing phosphorus - apatite and phosphorite. In addition, metallurgical wastes - slag and marten phosphate slag, as well as organic matter, alcohol, bone meal, nightshade, etc. are used as phosphorus fertilizers. Phosphorus fertilizers supplied to agriculture. Phosphorus is present in the form of orthophosphate salts of orthophosphate acid (N3RO4). Some Phosphorus Fertilizers. and polyphosphate (superphosphate) acids, including metaphosphate acids. Phosphorus fertilizers. is one of the first industrially produced mineral fertilizers (superphosphate was produced in Great Britain in 1842). Phosphorus fertilizers depending on the degree of solubility. can be divided into 3 main groups: water-soluble (simple, double and ammonium superphosphate, ammophos, diammophos) Phosphorus fertilizers. In these fertilizers, phosphorus is in the form of monobasic calcium phosphate Ca (N2RO4) 2N2O; water-insoluble (precipitate or calcium hydrophosphate, slag, marten phosphate, fluorinated phosphate and

other thermal phosphates) Phosphorus fertilizers; These fertilizers contain phosphorus 2-based calcium phosphate - SaNRO4N, O or tetracalcium phosphate - Sa4R2O5. These fertilizers, which are soluble in ammonium citrate and citric acid solutions, are used as the main fertilizer in plowing or during cultivation; Phosphorus fertilizers that are insoluble or insoluble in water and strong acids (phosphite flour and bone meal). Phosphorus is present in the form of calcium phosphate - Sa3 (RO4) 2. Such fertilizers are applied in high doses as an indirect fertilizer to sour mulch, which forms insoluble phosphates that can be assimilated by plants. The specificity of the use of phosphorus fertilizers depends on their solubility.

Water-soluble phosphorus fertilizers. powders and granules are used in the form of powders that are soluble in citric acid and ammonium citrate, and in the form of very fine powders that are difficult to dissolve. Phosphorus fertilizers, usually soluble in water, are used in irrigated agriculture. applied. They don't all get wet, they don't get punched. Phosphorus fertilizers in fertile soils. phosphorus, nitrogen and potassium ratios 1: 0.7: 0.3; It gives good results when applied to meadow oasis soils in the ratio 1: 0.8: 0.5. Phosphorus accumulates in the topsoil without being washed away due to its low solubility in water. Phosphorus fertilizers applied to the soil. 20-25% of phosphorus is absorbed by plants in 2-3 years, and 40-60% in 2-3 years. Phosphorus fertilizers. is a necessary fertilizer for plant growth. Phosphorus fertilizers. This accelerates the ripening of the crop, increases the yield, improves the quality of the product, increases the starch in potatoes and sugar in sugar beets (in the absence of phosphorus the edges of the leaves darken and dry out, the plant grows weak).

Phosphorus fertilizers in Uzbekistan. It is produced at the Almalyk Ammophos Association, Samarkand Chemical Plant and Kokand Superphosphate Plant

Phosphate fertilizers are mainly produced according to the technology using the process of thermal enrichment of phosphorites based on thermoconcentrate, which involves high energy costs. The proposed technology is devoted to the problem of obtaining phosphoconcentrate by chemical enrichment.

Potassium fertilizers with mineral phosphorus play a leading role in the growth and fruiting of plants. Used for planting drugs (nitrogen), during the formation of bouquets and fruits (phosphorus, potassium). You can use mono-drugs and complex formulas that contain several necessary components at once.

Phosphorus-potassium fertilization in commercial flower gardens produces green and beautiful buds. The same is true for farms that grow thuja, food, and other evergreens. With the emergence of culture, you can feel the lack of phosphorus and potassium - growth slows down, flowering occurs later, the fruits do not ripen, hurt, and the leaves have an unusual shade.

PhosAgro is the world's top-ranked phosphorus producer, the world's second-largest producer of diamond phosphate and ammophos, the only supplier of monocalcium phosphate in Russia, and a leading supplier in Europe;

Uralkali is a world leader in potassium production. The company is developing the Verkhnekamskoye field;

EuroChem produces nitrogen, phosphorus and potassium fertilizers.

Features of application depending on the content

Mineral fertilizers are inorganic substances, mainly salts, that contain nutrients necessary for plants. Almost all mineral fertilizers are produced in the chemical industry of agronomic ores. Natural salts, such as sodium nitrate (chili nitrate) and industrial waste, are

also used. Mineral fertilizers. It has been around since the 19th century. From the middle of the 20th century, the production and application of mineral fertilizers grew rapidly. Prior to that, manure, ash and other wastes were used as fertilizers. Mineral fertilizers. is a tool that has a strong effect on the soil (its physical, chemical and biological properties); they enrich the soil with nutrients, alter the reaction of the soil solution, influence microbiological processes, and so on. Due to the fact that plants are mainly nourished by roots, the application of mineral fertilizers to the soil contributes to the growth and development of plants, and therefore to the general biol. actively affects productivity. Mineral fertilizers. Increases crop yields, improves quality: increases the technological properties of cotton, hemp, flax and lub fiber, sugar beet, grape sugar, potato starch, grain protein. Mineral fertilizers. It gives better results when used in combination with organic fertilizers. Mineral fertilizers for agronomic purposes. divided into direct and indirect fertilizers. Directly applied fertilizers contain elements such as nitrogen, phosphorus, potassium, as well as magnesium, boron, zinc, copper, molybdenum, manganese, and sulfur, which are necessary for plant nutrition. Fertilizers in this group are mainly composed of one nutrient, mas, nitrogen, phosphorus or potassium, and complex, ie mixed and complex fertilizers. Mixed Mineral Fertilizers. In the factory or on the farm itself, several different fertilizers are mixed, and complex fertilizers are made in the factory. Indirectly used mineral fertilizers. (eg, lime fertilizers, gypsum, etc.) are mainly used to improve the agrochemical and physicochemical properties of soils. Mineral fertilizers. It is produced in the form of solid, ie powdery, granular and liquid - ammonia water, liquid ammonia, ammonia.

The phosphorus group includes superphosphate (simple and double), phosphorite and bone meal, thermophosphate, slurry and sediment. The drugs are used as a basic or additional fertilizer.

Superphosphate is present in granules and gray powder. It contains up to 20% phosphoric acid, so it should not be used in acidic soils. The granules dissolve longer in the soil, so the powder is used for rapid assimilation. Due to its roasting ability, the powder is not used on shrubs and trees. Phosphoric acid accumulates in the application area and hardly moves in the soil, so it is recommended to make the fertilizer deeper, closer to the roots.

Double superphosphate contains up to 50% phosphoric acid. Not suitable for slightly acidic and acidic soils, not recommended for fertilizing fruit trees. It is introduced in the fall, after the harvest. Farmers are advised to add the concentrate by mixing it with a little humus. Phosphate rock is used as a basic fertilizer in the fall. It is enough to make a deposit once in 2-3 years.

The dose of listed fertilizers is 1 sq. M. m respectively as staple food and top dressing:
superphosphate - 30-45 and 15-20 g;
double superphosphate - 14-19 and 9 g;
phosphate rock - 80 and 40 g.
Selection of the product taking into account the characteristics of the soil

The effectiveness of mineral fertilizers depends on the biological properties of the plant, the rate of fertilizer applied per hectare, the use of organic fertilizers, the quality of applied agro-technical measures, and so on. Mineral fertilizers applied to the soil to obtain the highest yields from agricultural crops. The correct determination of the norm is important in the use of mineral fertilizers, and this norm is determined by the amount of pure active nutrients in kg / ha. Mineral fertilizers. It should be applied taking into account the biological properties of the plant, their nutrient requirements, the amount of plant nutrients in the soil, the nature of the fertilizers used, and

the conditions necessary for normal plant growth and development. Mineral fertilizers. It is applied in autumn or early spring (basic fertilization), at planting and during the growing season (feeding plants). Mineral fertilizers. Improper use of water can cause significant damage to the biocenosis and environmental pollution. Mineral fertilizers undergo various changes in the soil, which affect the solubility of nutrients, their movement in the soil and their absorption by plants.

The efficiency of mineral fertilizers is very high. According to estimates, in Karaganda, cotton uses 30–70 kg of pure nitrogen, 10–20 kg of phosphorus, and 30–60 kg of potassium to harvest 1 ton of cotton. Approximately 50% of the total crop yield is achieved through the use of fertilizers, 25% through varietal advantages and 25% through cultivation technology. Used in the right proportions, NPK yields an average of 10 kg of grain or other equivalent per kg of mineral fertilizer. I .t. According to the results of inspections, the best ratio of nitrogen, phosphorus and potassium in Uzbekistan is 1: 0.75: 0.35.

In the world in the early 90s of the 20th century, 150 million tons. more Mineral fertilizers. produced. Mineral fertilizers in the USA, Germany, France, Italy, Japan and other countries. production is developed and their application is 32-80 kg and more NPK per capita. Mineral fertilizers in Uzbekistan. It has been in use since the 1920s. In 2001, 801 thousand tons (100% of nutrients) of mineral fertilizers were produced in Uzbekistan. produced

Complex phosphorus-potassium fertilizers have a beneficial effect on plant growth and increase productivity. Phosphorus increases the resistance of plantations to cold and disease, and potassium accelerates flowering and fruit set. Each culture has a different need for a particular diet, so there is no universal dose.

In the absence of phosphorus, tomatoes are deformed, stained and lose their sweetness. The formation of the green mass of the bush depends on potassium. Indoor and greenhouse plants are suitable for spraying with wood ash and potassium monophosphate.

Cucumbers are fed 4–5 times a season. Phosphorus deficiency is manifested by the loss of thin and lifeless buds, potassium - ovaries and bluish foliage. The use of potassium monophosphate brings the plant back to life quickly, and if you apply potassium-phosphorus fertilizer again after 2 weeks, you can correct the result. Yeast and wood ash can be added to the mixture.

Liquid phosphorus-potassium fertilizers for flowers are necessary for all plants, both in the soil and at home. However, the following rules must be followed:

feeding young plants by halving the recommended dose;

watering the plant before fertilization;

follow the instructions on the diet;

Prepare a fresh solution each time for spraying.

The rate of application of phosphorus-potassium fertilizers for garlic, grapes, strawberries, roses and orchids, lawns and apple trees depends on soil composition, crop appearance and season. The main stages of soil cultivation are during the growing season - from early spring to late autumn. The first procedures give the plants the strength to grow and bear fruit, while the second helps to boost immunity and survive the winter cold.

The best potassium-phosphorus fertilizers are not declared in the ranking, but are fertilizers that are optimally suited to a particular soil, taking into account the soil and crops grown.

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