



## Synthesis of Organic Fertilizers Based on Phenol and Benzoic Acid Derivatives and Application Technology to Plants

**Mamatkulov Nematillo Narzullayevich**

*Associate Professor of the Faculty of Chemistry of the University of Technical Uzbekistan*

**Ochilov Mansur**

*Senior teacher Almalyk branch of Toshkent State Technical University named after Islom Karimov*

**Pattaeva Zilola**

*Student Almalyk branch of Toshkent State Technical University named after Islom Karimov*

**Annotation:** This article presents the problems of the synthesis of organic fertilizers and information on their application. In the following years, it is envisaged to ensure that the quality and safety indicators of agricultural products comply with international standards. In order to solve similar problems in the article, research was carried out on the synthesis of organic fertilizers and their application. Compounds synthesized on the basis of synthesized phenols and cresols were used as liquid fertilizers in cotton and corn plants and test work was carried out. The fertilizers used were found to be hollow.

**Key words:** Fertilizer, safe, organic, organic-mineral, soil, biological, yield, plants, cotton, corn, bacteria, ammonifiers, nitrifiers, microorganisms, phenol, cresols.

Currently, requirements for organic products, raw materials and fertilizers have been established. It is envisaged to ensure that the quality and safety indicators of agricultural products comply with international standards. Developing regulatory legal acts on the safety of organic products and raw materials and organic-mineral fertilizers.

In accordance with the established requirement, it is necessary to develop and approve a general technical regulation on the safety of organic and organic-mineral fertilizers. It is determined by the requirements for the safety, production, transportation, storage, disposal, processing and sale of these products. Mainly as organic fertilizers, fertilizers containing nutrients in the form of organic compounds of plants or animals are widely used. Organic fertilizers include local fertilizers, green fertilizers, municipal household waste, coal and industrial waste and sapropel (muddy sediment), peat and so on [1].

The Republic planned to produce a total of 1.45 million tons of mineral fertilizers (of which: nitrogen fertilizers – 246.3 thousand tons, phosphorus fertilizers – 21.8 thousand tons, potash fertilizers – 6 thousand tons), increasing the volume of production of mineral fertilizers in 2021 in its pure form to 274 thousand tons (of this: nitrogen fertilizers – 1105.4 thousand tons, phosphorus fertilizers – 133.4 thousand tons, potash fertilizers – 216 thousand tons) and practical work was carried out.

To obtain the highest yield from agricultural crops, the correct setting of the norm of mineral fertilizer, which is applied to the soil, is important in the use of mineral fertilizer, and this norm is determined by the kg/ha content of pure-acting nutrients in fertilizer. Mineral fertilizer should be applied taking into account the biological characteristics of the plant, their demand for nutrients, the amount of elements that the plant absorbs in the soil, the nature of the fertilizers used, the necessary conditions for the normal growth and development of the plant. Improper application of Mineral



OGE can cause great harm to biocenosis, cause environmental pollution. Mineral fertilizers undergo various changes in the soil, these changes affect the solubility of nutrients, their movement in the soil and absorption into plants.

The effectiveness of Mineral fertilizers is very high. According to calculations, Acorns absorb pure 30-70 kg of nitrogen, 10-20 kg of phosphorus, 30-60 kg of potassium to accumulate 1 t cotton crop. About 50% of the total crop yield is provided by fertilizer application, 25% by varietal preferences, and 25% by Cultivation Technology. Each kg of NPK mineral fertilizers applied in the correct proportions gives an average of 10 kg of grain or equivalent other agricultural products. According to the results of the inspection of scientific inspection institutions, the best ratio of the application of nitrogen, phosphorus and potassium in Uzbekistan is set at 1:0.75:0.35.

In recent years, our republic has been involved in the cotton industry in various forms of organic optimal deadlines and methods of applying fertilizers in combination with mineral fertilizers, complex measures for feeding blueberries from organo-mineral composts are carried out. As a result of applying peat, sand-desert, peat and other organic fertilizers to the soils of our region, a high and effective harvest of cotton can be obtained. With autumn plowing, an additional yield of 1.0 centners per hectare is obtained by applying a ton of manure to cotton.

Today, In the world is an organic and organo-mineral of various forms research on the usefulness of fertilizers is carried out in the following priority areas: application of organic and organo-mineral fertilizers of various forms in the Acorn; determination of the effectiveness of applying biogumus separately and in combination with mineral fertilizers; organo-mineral improved composting and application technologies are being developed.

Organic fertilizers strengthen biological processes in the soil, improve its physical-chemical properties, increase the amount of nutrients, comprehensively affect the important agronomic properties of the soil and, when applied correctly, dramatically increase the yield of all crops. As a result of the vital activity of soil microorganisms, when organic fertilizers break down, mineral compounds and humus are formed, which plants can absorb. Through manure, all the nutrients necessary for plants fall into the soil. Such fertilizers are called Full fertilizers. Organic fertilizers affect not only the year of application to the soil, but also for several years. Organic fertilizers are not only a source of mineral nutrients for plants, but also a source of CO<sub>2</sub>. Organic fertilizers serve as an energy material and food source for soil microorganisms. The release of organic fertilizers increases the activity of nitrogen-collecting bacteria, ammonifiers, nitrifiers and groups of beneficial microorganisms in the soil. The usual water permeability of the soil is greatly improved when manure is applied to a hill on the ground for many years.

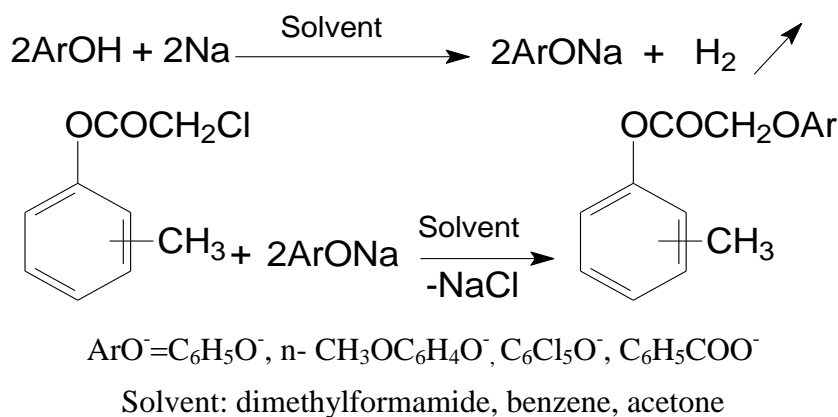
Naphthoxisir, phenoxyric acid and its derivatives [2-3] are used as herbicides in weed loss. In addition to their herbicide properties, they also have the properties of accelerating plant growth in a small concentration and are widely used in agriculture to accelerate fruit yield, growing seedless tomatoes. One of the main technical crops planted in the fields of our republic is cotton. But in recent years, root rot and gummosis diseases have become common in cotton varieties. This negatively affects the decrease in the yield and quality of cotton fibers.

The fungus that causes root rot is *Thielaviopsis basicola*, which is also found in about 100 plant species in addition to the cotton.

Gummosis is also common in cotton. Causative microorganism- *Xantamanas malvacearum* E. Gummosis disease is more common on the canopy and on land with high rainfall in the first half of summer. Due to this disease, cotton yields can be reduced by up to 35%. Therefore, in the face of chemists of Uzbekistan, the search for substances that destroy harmful microorganisms, the application of substances that effectively affect agriculture is one of the main tasks [4-5].



For this purpose, research has been carried out on the synthesis of organic mineral fertilizers and preparations used to prevent plant diseases. Organic compounds were synthesized as a result of the reaction of phenol and isomeric cresols and benzoic acid with chloroacetyl chloride.



The bactericidal, fungicidal and stimulating properties of the synthesized substances were tested in an experiment in the Phytopathological evaluation laboratory of the Research Institute of cotton selection and seeding of Uzbekistan.

"Fentiuram" was used to compare the bacteriocidal and fungicidal properties of substances. When 1 T of seed was treated with 1 kg of "Fentsetat" during cotton planting, up to 88% of acorns gummosis and root rot disease microbes were found to be absent. In addition, these drugs also showed a stimulant nature. After harvesting, the remaining cottonwood in the field were harvested and its contents examined. Cotton have not been found to contain harmful compounds. Testing work was carried out with the aim of using these cottonwood as fertilizers. Currently, about 3 million T of pine trees are harvested on the scale of our Republic. in its composition, nitrogen, phosphorus, potassium and microelements are almost 2 times higher than manure. At the cost of using cotton as fertilizer, the yield of cotton increases on average by 2-3 ts/g. Grinding cotton in place with a special technique will have different effect from plowing and direct sending. The main reason for this lies in the fact that in the second case the cottons are not driven out of quality by mixing them into the soil. The substances synthesized can increase the yield of cotton by 3-4. 5 ts / g, but it is not widely used due to the high cost of its preparation.

Since cotton ash is rich in phosphorus and potassium, it can be used effectively in alfalfa cultivation.

Organic fertilizers are mainly applied in a liquid state. Organic fertilizers do not have a strictly defined storage period, since over time the solutions become more concentrated and accumulate carbon dioxide, which serves as the basis for increasing the content of useful substances, including useful microflora.

We used organic liquid fertilizers synthesized from phenols and cresols in addition to cotton and wheat plants in corn. At the first stage, the seed is planted by fertilizing. Then it was processed during the period of leafing and flowering.

Corn is planted for cereals and blue stems. It is accompanied by autumn grain crops, legumes-grain crops, and it itself is considered a good predecessor.

Corn is very demanding on the food regime of the soil and leaves soils with a porous and non-mechanical composition. The bulk of the root system (about 60%) spreads in the plowing layer of the soil. This requires organic nutrients throughout the entire growing season (until the grain is dumbfounded). Especially between the short period from the release of the crown to flowering, the food absorbs mods quickly and a lot.



Milk accumulates 90% nutrients and 80% dry matter during the ripening period. The greatest accumulation of nutrients corresponds to the ripening period of the wax. Since corn germination is very sensitive to the concentration of soil solution, with planting we have worked and planted a seed that reaches 0.5 - 1 kg of organic compound, organic fertilizer per hectare.

Organic fertilizers close to the release of cornstarch are fed twice. The second seedlings were given to weakly developing seedlings, organic fertilizers with a full content of fertilizers.

#### **LIST OF USED LITERATURE**

1. Mamatkulov N.N. Chemical Treatment Of Water In Ammophos Production Plants// The American Journal of Agriculture and Biomedical Engineering (ISSN – 2689-1018) Published: June 18, 2021.
2. Mamatkulov N.N. Superfos o'g'it ishlab chiqarishda klassifikator qurilmasining hisobi// Oriental Renaissance: Innovative, educational, natural and social sciences. volume 1 | issue 5 issn 2181-1784.
3. Маматкулов Н.Н. Определение оптимальных условий синтеза п-толилбензоилоксиацетата// Вестник науки и образования научно-методический журнал Москва. Май. 2020. № 10 (88). часть 2. –С. 19-21.
4. Маматкулов Н.Н. Влияние соотношения реагентов и катализатора на выход реакции хлорацетилирования фенола и изомерных крезолов // Universum: химия и биология : электрон. научн. журн. 2021. 4(82). URL: <https://7universum.com/ru/nature/archive/item/11397> (дата обращения: 05.04.2021).
5. Mamatkulov N.N., Khoshimkhanova M. Development of the mechanism of action and reaction of O-chloroacetylation// International Journal of Advanced Research in Science, Engineering and Technology Vol. 7, Issue 1 , January 2020. Pp. 12636-12639.
6. Ф.Б Исакулов, А А Набиев, СБ Рахимов, НК Имамова(Н.К. Мадусманова), ЗА Сманова, ХС Таджимухамедов Свойства нового синтезированного аналитического реагента 2-нитрозо-5-метоксифенола//Science and Education 2020 V. 1. Т. 3. P. 61-69.
7. ЗА Сманова, МС Инатова, НК Мадусманова, ХУ Усманова Новые производные нитрозоафтолов и их комплексообразование с ионами меди, кобальта и железа.// In «Новые функциональные материалы и высокие технологии» VI Международная научная конференция, Тиват, Черногория, 17-21 сентября 2018г.: тезисы докладов.– Иваново: Институт химии растворов им. ГА Крестова РАН, 2018.-194 с
8. R. M. Mirzakhmedov, N. K. Madusmanova, G. U. Makhmudova SORBTSION-PHOTOMETRIC DETERMINATION OF RHENIUM METAL IN Zr AND Pb CAKE// Oriental renaissance: Innovative, educational, natural and social sciences 2022y. V.2. №4. P. 663-669.