International Journal of Education, Social Science & Humanities. FARS Publishers
Impact factor (SJIF) = 6.786

Volume-11| Issue-1| 2023 **Research Article**

AGROCHEMICAL INDICATORS OF THE SOIL DEPENDING ON THE STANDARDS OF MINERAL FERTILIZERS

https://doi.org/10.5281/zenodo.7568348

Xabibullayev Abdullazizxon Omonillo o'g'li
Teacher, Namangan State University
abdullazizxon@gmail.com

Abstract: In order to increase the organic matter in the soil in order to obtain a high and quality product from the amaranth plant, after harvesting the cotton crop of cotton, which is the main crop, rye and rapeseed were planted as siderate crops. In early spring, 380-400 ts/ha of blue mass was thrown on the ground and plowed. As a result, it was observed that the amount of humus in the soil increased by 0.001%, and the general forms of nutrients increased by 0.001-0.002%.

Keywords:. Amaranth, soil, humus, nutrients, soil, nitrate nitrogen, mobile phosphorus, exchangeable potassium, plant, product, leaf, root.

Received: 22-01-2023
Accepted: 22-01-2023
Published: 22-01-2023

INTRODUCTION

Medicinal plants are the most important among agricultural crops. Because it is important that the products obtained from plants do not contain substances that have a negative effect on human health. If these products are consumed for treatment, the presence of other substances in them will lead to the development of other diseases, not for treatment.

That's why today all over the world great importance is being paid to the quality of medicinal plants along with the increase of cultivated areas and lpi yield. For this purpose, scientific and research work aimed at the development of high agrotechnologies for plants is being carried out. In particular, great work is being done in this regard in our republic. Paying particular attention to bringing and introducing valuable medicinal plants that do not grow in our republic, 9 plants are currently being grown in large areas in Namangan region.

One such plant is amaranth, whose seeds and leaves are used medicinally. There are many types of amaranth plant, and in the first years of our republic's independence, the species used as fodder for cattle were brought and planted. When attention was paid to medicinal plants in our republic, its species with high medicinal properties were brought and planted. In this regard, in our republic, as well as in the world, scientific and research work has begun.

LITERATURE ANALYSIS AND METHODOLOGY

The uniqueness of amaranth is its unusually high nutritional value and the consumption of all its parts without exception: stems, leaves, seeds. Research in recent decades has revealed many possibilities of using amaranth for the treatment

and prevention of various diseases. Squalene was first extracted from the liver of a deep-sea shark in 1906 by Dr. Mitsumaro Tsujimoto [3; 12-14 p.] from Japan, and it was later identified as squalene (Latin squalus - shark). From a biochemical and physiological point of view, squalene is a biological compound, a natural unsaturated hydrocarbon, which is also present in amaranth products.

Some scientists say that recently the unique practical properties of amaranth have become very popular. In particular, the plant has a button to prevent the development of various oncological diseases, and it is also known that amaranth is very useful for people suffering from liver, heart, and kidney diseases. In addition, it helps you recover faster from colds and is very useful for diseases of the female genital organs.

According to scientists, amaranth contains only E from fat-soluble vitamins, B1, B2, B3 (PP), B6 and B9 from water-soluble vitamins.

Based on the beneficial properties of amaranth, we aimed to grow and study it in the conditions of typical gray soils of Namangan region. We know that among agrotechnical measures, the use of mineral fertilizers is the most important, and it has a strong effect on plant productivity, especially on its chemical composition. That's why we aimed to study the optimal rate of amaranth plant to preserve the substances useful for human health along with obtaining a high yield.

Field experiments and their phenological observations (Metody polevyx i vegetatsionnyx opytov s khlopchatnikom v usloviyax oroshenia. Tashkent: SoyuzNIXI [3; p. 225]), mathematical analyzes (Dospekhov B.A. Metodika polevogo opyta [1; p. 416]) was carried out in styles.

RESULTS

Table 1

Experience system

Variants	Standards of mineral fertilizers, kg\ha			Under the autumn drive		By sowing	After the single	The stem is fully formed and developing
	N	**P**	**K**	**P**	**K**	**N**	**N**	**N**
1	-	-	-	-	-	-	-	-
2	-	100	150	100	150	-	-	-
3	100	100	150	100	150	20	40	40
4	150	100	150	100	150	40	50	60
5	150	-	150	-	150	40	50	60
6	150	100	150	100	150	40	50	60
7	150	150	150	150	150	40	50	60
8	150	100	-	100	-	40	50	60
9	150	100	100	100	100	40	50	60
10	150	100	150	100	150	40	50	60

Table 2

Agrochemical indicators of experimental field soil

Soil layer cm	Common forms, %				Mobile forms, mg/kg		
	Hummus	nitrogen	phosphorus	potassium	**N-NO_3**	**P_2O_5**	**K_2O**
Before the placement of the first year experience							
0-30	1,380	0,107	0,190	1,340	25,2	26,9	290
30-50	1,100	0,081	0,182	1,206	20,3	19,4	240
50-70	0,987	0,067	0,154	1,107	14,8	16,2	220
70-100	0,743	0,034	0,121	1,003	8,9	10,4	180
After harvesting the first year's plant products							
0-30	1,381	0,108	0,189	1,339	24,7	25,8	280
30-50	1,101	0,081	0,183	1,207	20,1	19,2	230
50-70	0,987	0,066	0,155	1,207	14,7	16,1	210
70-100	0,743	0,034	0,121	1,003	8,9	10,4	180
Before the second year of experience							
0-30	1,374	0,087	0,169	1,297	26,4	30,2	300
30-50	1,097	0,065	0,136	1,191	22,4	21,6	270
50-70	0,896	0,046	0,108	1,089	15,6	15,8	210
70-100	0,689	0,028	0,078	0,899	9,7	11,0	190
After harvesting the second year plant products							
0-30	1,375	0,088	0,171	1,298	25,9	29,9	290
30-50	1,098	0,066	0,137	1,192	21,8	21,7	260
50-70	0,896	0,047	0,109	1,089	15,4	15,6	200
70-100	0,690	0,028	0,078	0,900	9,6	11,0	190
Before the placement of the third year experience							
0-30	1,297	0,091	0,176	1,280	27,4	31,3	310
30-50	1,067	0,058	0,142	1,212	23,1	22,8	290
50-70	0,789	0,038	0,102	1,097	14,8	17,8	230
70-100	0,565	0,025	0,086	0,079	8,9	10,7	200
After the harvest of the third year plant products							
0-30	1,298	0,092	0,177	1,282	27,0	30,9	300
30-50	1,069	0,059	0,143	1,213	22,7	22,5	280
50-70	0,790	0,038	0,102	1,097	14,6	17,7	225
70-100	0,565	0,026	0,086	0,079	8,9	10,7	200

DISCUSSION

Experimental system and methodology: the field experiment was conducted in the conditions of typical gray soils of Namangan region. The experiment consisted of 10 variants, stratified in 4 replications. The total area of one delyanka is

240 m2, and the reference area is 100 m2, and the total area of the experiment is 9600 m2. variant 1 of the experiment is a general control (no mineral fertilizers are given at all), variant 2 is a control for nitrogen (no nitrogen fertilizer is given), variant 5 is a control for phosphorus and variant 8 is a control for potassium. In the remaining options, mineral fertilizers are given in different rates. From mineral fertilizers, sodium nitrate, carbamide, simple superphosphate and potassium salt were used. For this purpose, we defined the experimental system as shown in Table 1.

Results of the experiment: we also paid attention to the previous crop when choosing the experimental area. The high content of organic compounds in the soil has a positive effect on the composition of the amaranth plant. That's why we chose cotton as a catch crop, so that after the cotton harvest, before amaranth is planted in early spring, siderate can be planted between the cotton rows. We chose rye and rapeseed as intermediate crops. Before planting these crops, we added to its phosphorous and potash fertilizers the amount of fertilizer that we should apply for amaranth according to the options. Because it takes 4-6 months for the phosphorus and potassium fertilizers to be transferred to the plant.

Before the experiment (in March) and after harvesting, soil samples were taken from the 0-30, 30-50, 50-70 and 70-100 cm layers of the soil and agrochemical analysis was carried out. This was repeated each year as we placed the experiment in space and time (Table 2).

Since the field experiments were carried out in space and time (every year was conducted in a different field), soil samples were collected and agrochemically analyzed each year before the experiment and after harvesting the crops in the experiment. According to the obtained data (Table 2), in the first year of the experiment, the amount of humus in the 0-30 cm layer of the soil was initially 1.380%, and after harvesting, it reached 1.381%. The amount of humus in the bottom layer of the soil (30-50 cm) also increased by 0.001%. The amount of soil humus remained unchanged in the lower (50-70 and 70-100 cm) layers. When we looked at the general forms of nutrients in the soil, it increased as well as in humus. For example, in the 0-30 cm layer of the soil, it was observed that the total forms of nutrients increased by the same 0.001%. The mobile forms of nutrients decreased from the beginning in all soil layers (except 70-100 cm). We can see that the amount of nitrate nitrogen in the 0-30 cm layer has decreased by 0.5 mg/kg, mobile phosphorus by 0.4 mg/kg, and exchangeable potassium by 10 mg/kg. As it goes down to the lower layers of the soil, the amount of nutrients decreases by a small amount compared to the upper layers. In the 30-50 cm layer of the soil, it was determined that $N\text{-}NO_3$ decreased by 0.2 mg/kg, P_2O_5 by 0.2 mg/kg, and K_2O by

10 mg/kg. Only in the 70-100 cm layer, the amount of nutrients has not changed from the beginning.

The humus content of the field soil selected for the second year of the experiment was slightly lower than the first, and it corresponded to 1.374% in the 10-30 cm layer. It should be noted that, in accordance with the amount of humus, the amount of total nutrients in the soil decreased compared to the previous year, while those in mobile form increased. For example, nitrate nitrogen increased by 1.2 mg/kg, mobile phosphorus by 0.3 mg/kg, and exchangeable potassium by 10 mg/kg. However, as in the previous year, in the determinations after the harvest of amaranth, their quantity decreased. The total amount of humus and nutrients in the soil has increased from the beginning. This is probably due to the siderates grown before the amaranth plant is planted.

Despite the fact that the amount of humus in the field obtained for the third year of the experiment was much lower than in previous years, it was observed that its general and kinetic forms were high. This year, the law of the previous year was preserved, and the amount of humus and general nutrients in the upper layers of the soil (at 0-30 and 30-50 cm) increased from the beginning. The mobile forms of nutrients decreased in all soil layers (except 70-100 cm), the decrease was seen to be relatively small in the lower layers.

CONCLUSION

It is important to maintain soil fertility and prevent soil pollution along with obtaining a high yield from agricultural crops. In our scientific-research work, in order to preserve the medicinal properties of amaranth plant in the conditions of typical gray soils of Namangan region, we selected an acceptable predecessor crop (cotton) and then used rye and rapeseed as siderate crops until the seeds of amaranth plant were planted. Taking this into account, the optimal norms of mineral fertilizers were studied to ensure that the amount of harmful substances in the soil does not increase and to obtain a product of high medicinal quality from amaranth. When we analyzed the effect of the agrotechnical measures on the agrochemical indicators of the soil, the siderates left in the soil and the applied mineral fertilizers increased the amount of humus by 0.001% and the total nutrients by 0.001-0.002%. This, in turn, led to an increase in the organic content of the soil and a higher quality of the obtained product.

LIST OF REFERENCES:

22. Доспехов Б.А. Методика полевого опыта (с основами статистической обработки результатов исследований). Москва: Колос, 1979, -С 416.

23. Методы полевых и вегетационных опытов с хлопчатником в условиях орошения. Ташкент: СоюзНИХИ. 1973. Изд-4, -С 225 .

24. Mitsumaro Tsujimoto Chemiral composition of amarantus.//Modernformoceftics, 2012 v, №6, 12-14 pp.

25. Отаханов Ш. Ш. У. и др. ИССЛЕДОВАНИЕ ПИЩЕВОЙ БЕЗОПАСНОСТИ И САНИТАРНЫХ ПОКАЗАТЕЛЕЙ ЦУКАТОВ ИЗ ОВОЩЕЙ //Universum: технические науки. – 2022. – №. 7-2 (100). – С. 60-64.

26. Omonilloyevich F. X. et al. FERTILIZERS USED IN CULTIVATION OF MEDICINAL AMARANTH PLANT AND NATURAL SOURCES ENRICHED WITH COMPOUNDS OBTAINED FROM CHICKEN EGG SHELLS AS NATURAL BIOACTIVE FERTILIZER //Finland International Scientific Journal of Education, Social Science & Humanities. – 2023. – Т. 11. – №. 1. – С. 321-325.

27. Fayziev X. O., Islomov A. X., Habibullayev A. O. FABRIKADA YETISHTIRILGAN TOVUQ TUXUMLARI QOBIG ‘INI MIKRO VA MAKROELEMENTLARI MIQDORINI ANIQLASH //Academic research in educational sciences. – 2022. – Т. 3. – №. 3. – С. 334-339.

28. https://fitaudit.ru/food/157555

29. https://health-diet.ru/base_of_food/sostav/19908.php