THE EFFECT OF COMPLEX FERTİLİZER RATES ON THE OBTAİNED FEED UNİT AND CHEMİCAL COMPOSİTİON FROM MAİZE OF GREEN MASS AND GRAİN YİELD (İN %)

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Abstract.

This article says that, the obtained results were slightly various depending on the effect of applied complex fertilizers. In the control variant without fertilizer, protein was 9.2%, starch was 50.4%, oil was 4.5%, and ash was 1.27%. 100 kg of Diammofos per hectare, the indicators are 9.5; 56.9; 5.2 and 1.36%, 10.7 in the variant applied Diammofos 120 kg; 60.7; 5.7 and 1.48, %, indicators 10.9 in the variant applied Diammofos 140 kg; 61.7; 6.0 and 1.54%, Diammofos 160 kg, the indicators were 9.8; 58.2 5.4 and 1.40%.

In the version where $(NH_4)_2SO_4$+$(NH_4)_2HPO_4$ +K_2SO_4 Ammofoska 100 kg per hectare was applied, the indicated indicators were 9.7; 58.3; 5.6 and 1.39%; Ammofoska -140 kg in the version applied 11.5; 64.7; 6.2 and 1.61 %, $(NH_4)_2SO_4$+$(NH_4)_2HPO_4$ +K_2SO_4 Ammofoska 160 kg per hectare was applied ,the indicated indicators were 10.1; 59.6; 5.8 and 1.48%.

In the control option without fertilizer, the grain yield of corn was 57.0 s/ha, and the fodder unit obtained for grain yield was 78.2 s/ha, while in the option given Diammofos -100 kg per hectare, those indicators were 69.8 s\ha and 80.6 s/ha; 74.5 and 84.7 s/ha in the variant applied Diammofos-120 kg; Diammofos -140 kg was 78.7 s/ha and 87.2 s/ha. Diammofos -160 kg was 68.3 s/ha and 81.3 s/ha. In the case of Ammofoska 100 kg per hectare, those indicators are 68.0 s/ha and 82.4 s/ha; - 75.6 s/ha and 86.6 s/ha in the variant applying 120 kg; It was 80.3 s/ha and 88.1 s/ha in the variant applying 140 kg. It was 68.8 s/ha and 83.0 s/ha in the variant applying 160 kg.

Keywords: Maize, intercropping, green mass crop, grain crop, feed unit, chemical composition, complex fertilizers.

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1. INTRODUCTION

The scientific-research works conducted in various regions of the Republic of Azerbaijan in the field of cultivation show that the impact of agricultural technology on the output of maize feed unit is very large. Based on the methodology of the research, the goal was to study this issue in the farm conditions of the "Agrodairy" company in the Jeyranchol massif of the Samukh region.

It is known that after the harvesting of intermediate crops planted during the replanting period, a considerable amount of plant residues and root mass remains in the soil. Depending on the biological characteristics of the cultivated plants and the amount of the total product they produce, intermediate crops keep 40-60 s/ha of plant residue and root mass in the soil. Those organic residues increase the amount of humus in the soil and improve its structural condition. Re-planting is efficient both from the agro-ecological point of view and from the economic point of view.

In order to preserve the fertility of the soil, to use the soil and solar energy as efficiently as possible, to select fast-growing varieties of cereal and cereal-leguminous plants for harvesting twice a year from a single area, to improve the hydro-physical properties of the soil by correctly following the studied agrotechnical measures, It is necessary to develop and research advanced cultivation technologies in order to maintain the balance of nutrients and fertility. This has led to the increase of fodder production in animal husbandry and the development of this area, the expansion of cultivated areas.

Nitrogen, phosphorus and potassium elements have a special role in the regulation of physiological and biochemical processes in plants. These elements are considered the main nutrients of plants. When applying both organic and mineral fertilizers, the biological characteristics of the cultivated plant, the cultivated area, the agrochemical indicators of the soil and the climatic conditions of the zone should be taken into account. In the early stages of growth and development, maize is more demanding of nitrogen and phosphorus. Maize does not grow well in very acidic soils. For its normal development, the reaction of the soil environment should be neutral (pH-6-7). [2, p. 74-80; 3, p. 37-42].

Most of the vegetative organs of agro-industrial plants contain 85-95% water, and dry matter is only 5-20%. The amount of water in mature seeds decreases, and the amount of dry matter increases to 85-90% of the total weight [5, 88 p. p. 11].

Maize plant is cultivated as an significant cereal plant with a potential for ensuring the food security of the population and strengthening the fodder base of livestock and poultry in all countries of the world, from the tropical zone to the Scandinavian countries. As the maize plant has high quality indicators, its grain is important in the preparation of various types of food products, the oil obtained by industrial method is important in the household, and its green mass is important in enriching the food ration of animals. Demand for food in developing countries is projected to increase by about 1.3% per year until 2020. By 2025, maize will be one of the world's most productive cereals, and by 2050, the demand for maize in developing countries will double [6, 460 pg].

Nitrogen, one of the main elements for plants, plays a key role in plant growth. Nitrogen makes up about 1-3% of plant dry matter and necessary substances such as nitrogen-containing organic substances, proteins, nucleic acid, nucleoproteins, chlorophyll, alkaloids, phosphatides, enzymes are included in the composition of simple and complex proteins, which are the main constituents of the plant. [8, 116 p. etc. 11].

Great attention has always been paid to the development of methods for determining the effectiveness of mineral fertilizer use in the agricultural industry, because the correct use of mineral fertilizers is the most important factor in the intensification of crop production and agricultural industry [9, p. 77-78].

The effect of complex fertilizer rates on the growth dynamics of maize, green and dry mass ratio was studied comparatively in the variants of the study. Maize is a nutrient-demanding plant. It should be provided with organic and mineral fertilizers in order to grow and develop normally and produce high yields throughout the growing season. Mineral nitrogen is absorbed by plant roots in the soil in the form of NO_3 anion and NH_4 cation [10, p. 53].

2. Object of research.

ADAU-80 maize sort purchased from the "Grains and Legumes" Field Laboratory of Azerbaijan State Agricultural University.

3. Research methods.

Determination of green and dry mass in the plant : According to variants, one plant is taken from each replication in the phases of tillering, formation of broom, milk ripening and full ripening. The wet mass of the plant is determined by weighing, it is dried naturally under covered conditions and the dry mass is determined.

Determination of product quality indicators : Protein, starch, fat and ash elements in the obtained product according to the intended repetitions of the options are determined in the laboratory.

4.Materials and discussions.

All studies analyze economic indicators for productivity. The effect of complex fertilizer rates on the economic indicators of the maize crop was different according to the green mass and grain yield obtained in the variants. Due to the high yield in the options given 120 and 140 kg of both complex fertilizers per hectare, the net income and profitability level were much higher in those options. [4, p. 138-140].

New conceptual approaches are needed to solve the problem of plant nutrition and effective management, including choosing the form and composition of fertilizers [7, p. 57-60].

If we look at table №1, it is clear that, in the control option without fertilizers, the grain yield of corn was 426.2 s/ha, and the fodder unit obtained per grain yield was 20.1 s/ha, while in the option with $(NH_4)_2HPO_4$ Diammofos 100 kg per hectare, those indicators were 456.9 s\ ha and 22.4 s/ha; $(NH_4)_2HPO_4$ 530.8 s/ha and 25.3 s/ha in the variant applied Diammofos 120 kg; $(NH_4)_2HPO_4$ Diammofos 140 kg was 625.7 s/ha and 26.8 s/ha, and $(NH_4)_2HPO_4$ Diammofos 160 kg was 622.1 s/ha and 22.1 s/ha.

100 kg per hectare (NH4)2SO4+(NH4)2HPO4 +K2SO4 -Ammophos - in the applied variant, those indicators were 495.3 s/ha and 23.1 s/ha;

120 kg per hectare (NH4)2SO4+(NH4)2HPO4 +K2SO4 -Ammophos- in the applied variant,those indicators were 561.6 s/ha and 26.5 s/ha;

140 kg per hectare (NH4)2SO4+(NH4)2HPO4 +K2SO4 -Ammophos- in the applied variant,those indicators were 661.4 s/ha and 27.0 s/ha ,

160 kg per hectare (NH4)2SO4+(NH4)2HPO4 +K2SO4 -Ammophos- in the applied variant,those indicators were 634.2 s/ha and 23.7.

As it can be seen, in the non-fertilizer version, in all cases, the indicators were much lower in grain yield of corn, as well as in green mass yield. The effect of complex fertilizer rates was different. In other words, the indicators of the variants given at the rate of 120-140 kg per hectare in both fertilizers were high. In the variants given to Ammofoska, the indicators were slightly higher.

In our experience, we observed that the chemical composition of the obtained maize grain also changes depending on the rate and duration of complex fertilizers applied per hectare in the research area, that is, depending on the area of light and nutrients falling on the plants. According to the methodology, the chemical composition of maize grains obtained from different options is given in table 1.

The effect of complex fertilizer rates on the obtained feed unit on the green mass yield of maize

Table 1

The name of the variety	Fertilizer rates, kg / ha	Maize green mass yield, s/ha	Fodder unit obtained for green mass product, s/ha
"ASAU-80"	Non-fertilizer control	426.2	20.1
	$(NH4)_2HPO_4$ -Diammofos-100 kg	456.9	22.4
	$(NH4)_2HPO_4$ Diammofos -120 kg	530.8	25.3
	$(NH4)_2HPO_4$ -Diammofos -140 kg	625.7	26.8
	$(NH4)_2HPO_4$ -Diammofos -160 kg	602.1	22.1
	$NH_4)_2SO_4$+$(NH4)_2HPO_4$ +K_2SO_4 Ammofos -100 kg	495.3	23.1
	$(NH_4)_2SO_4$+$(NH4)_2HPO_4$ +K_2SO_4 -Ammofos -120 kg	561.6	26.5
	$(NH_4)_2SO_4$+$(NH4)_2HPO_4$ +K_2SO_4 -Ammofos -140 kg	661.4	27.0
	$(NH_4)_2SO_4$+$(NH4)_2HPO_4$ +K_2SO_4 Ammofos -160 kg	634.2	23.7

It can be seen from the figures of table 2 that the obtained results were slightly different depending on the effect of applied complex fertilizers. In the control variant without fertilizer, protein was

9.2%, starch was 50.4%, oil was 4.5%, and ash was 1.27%.

100 kg per hectare $(NH_4)_2HPO_4$ -Diammophos - in the applied variant, those indicators were 9.5,56.9; 5.2 and 1.36 %;

120 kg per hectare $(NH_4)_2HPO_4$ -Diammophos - in the applied variant,indicators were 10.7; 60.7; 5.7 and 1.48, %;

140 kg per hectare $(NH_4)_2HPO_4$ -Diammophos - in the applied variant,indicators were 10.9; 61.7; 6.0 and 1.54 % ; 1.40 % .

160 kg per hectare $(NH_4)_2HPO_4$ -Diammophos - in the applied variant,indicators were 9.8; 58.2; 5.4 and

The effect of complex fertilizer rates on the chemical composition of the green mass product of maize, in %

Table 2

The name of the variety	Fertilizer rates, kg / ha	Protein	Starch	Oil	Ash
"ASAU-80"	Non-fertilizer control	9.2	50.4	4.5	1.27
	$(NH4)_2HPO_4$ .Diammofos-100 kg	9.5	56.9	5.2	1.36
	$(NH4)_2HPO_4$ Diammofos -120 kg	10.7	60.7	5.7	1.48
	$(NH4)_2HPO_4$ .Diammofos -140 kg	10.9	61.7	6.0	1.54
	$(NH4)_2HPO_4$ .Diammofos -160 kg	9.8	58.2	5.4	1.40
	$NH_4)_2SO_4$+$(NH4)_2HPO_4$ +K_2SO_4 Ammofos -100 kg	9.7	58.3	5.6	1.39
	$(NH_4)_2SO_4$+$(NH4)_2HPO_4$ +K_2SO_4 .Ammofos -120 kg	11.2	63.5	6.0	1.57
	$(NH_4)_2SO_4$+$(NH4)_2HPO_4$ +K_2SO_4 .Ammofos -140 kg	11.5	64.7	6.2	1.61
	$(NH_4)_2SO_4$+$(NH4)_2HPO_4$ +K_2SO_4 Ammofos -160 kg	10.1	59.6	5.8	1.48

100 kg per hectare (NH4)2SO4+(NH4)2HPO4 +K2SO4 -Ammophos - in the applied variant, those indicators were 9.7; 58.3; 5.6 and 1.39%;

120 kg per hectare (NH4)2SO4+(NH4)2HPO4 +K2SO4 -Ammophos - in the applied variant, those indicators were 11.2; 63.5; 6.0 and 1.57%;

140 kg per hectare (NH4)2SO4+(NH4)2HPO4 +K2SO4 -Ammophos - in the applied variant, indicators were 11.5; 64.7; 6.2 and 1.61 %,

160 kg per hectare (NH4)2SO4+(NH4)2HPO4 +K2SO4 -Ammophos - in the applied variant, indicators were 10.1; 59.6; It was 5.8 and 1.48%.

Keeping the biological regularity, higher indicators were obtained in the versions of both complex fertilizers applied at 120-140 kg per hectare.

The scientific-research works carried out by scientists in this field in the country show that the impact of agrotechnics on the output of maize feed unit is very large. The application of complex fertilizer in different rates and in the form of feeding at various times has also had a positive result in maize crops.

The effect of complex fertilizer norms on the obtained feed unit for grain yield is reflected in table 3.

In the control option without fertilizer, the grain yield of maize was 57.0 s/ha, and the fodder unit obtained for grain yield was 78.2 s/ha.

100 kg per hectare (NH4)2HPO4 -Diammophos - in the applied variant, those indicators were 69.8 s/ha and 80.6 s/ha;

120 kg per hectare (NH4)2HPO4 -Diammophos - in the applied variant, those indicators were 74.5 and 84.7 s/ha;

140 kg per hectare (NH4)2HPO4 -Diammophos - in the applied variant, those indicators were 78.7 s/ha and 87.2 s/ha ;

160 kg per hectare (NH4)2HPO4 -Diammophos - in the applied variant, indicators were 68.3 s/ha and 81.3 s/ha.

100 kg per hectare (NH4)2SO4+(NH4)2HPO4 +K2SO4 -Ammophos - in the applied variant, those indicators were 68.0 s/ha and 82.4 s/ha ;

120 kg per hectare (NH4)2SO4+(NH4)2HPO4 +K2SO4 -Ammophos - in the applied variant, indicators were 75.6 s/ha and 86.6 s/ha;

140 kg per hectare (NH4)2SO4+(NH4)2HPO4 +K2SO4 -Ammophos - in the applied variant, indicators were 80.3 s/ha and 88.1 s/ha ;
160 kg per hectare (NH4)2SO4+(NH4)2HPO4 +K2SO4 -Ammophos - in the applied variant, indicators were 68.8 s/ha and 83.0 s/ha.

As can be seen from the figures of table №3, the indicators were much lower in all cases in the variant without fertilizer. The effect of complex fertilizer rates was different. In other words, the indicators of the variants given at the rate of 120-140 kg per hectare in both fertilizers were high.

The effect of complex fertilizer rates on the obtained feed unit on the grain yield of maize
Table 3

The name of the variety	Fertilizer rates, kg / ha	Grain yield of maize, s/ha	Fodder unit obtained for grain yield, s/ha
"ADAU-80"	Non-fertilizer control	57.0	78.2
	$(NH4)_2HPO_4$ -Diammofos-100 kg	69.8	80.6
	$(NH4)_2HPO_4$ Diammofos -120 kg	74.5	84.7
	$(NH4)_2HPO_4$ -Diammofos -140 kg	78.7	87.2
	$(NH4)_2HPO_4$ -Diammofos -160 kg	68.3	81.3
	$NH_4)_2SO_4$+$(NH4)_2HPO_4$ +K_2SO_4 Ammofos -100 kg	68.0	82.4
	$(NH_4)_2SO_4$+$(NH4)_2HPO_4$ +K_2SO_4 -Ammofos -120 kg	75.6	86.6
	$(NH_4)_2SO_4$+$(NH4)_2HPO_4$ +K_2SO_4 -Ammofos -140 kg	80.3	88.1
	$(NH_4)_2SO_4$+$(NH4)_2HPO_4$ +K_2SO_4 Ammofos -160 kg	68.8	83.0

CONCLUSİON

As a result of the conducted research, the optimal version of complex fertilizer norms for the initiation of the main development phases of maize in the field crops was determined. Application of diamofos and ammofoska at the rate of 120 and 140 kg per hectare, and the application of that rate at sowing, pre-sowing cultivation and 2 times feeding, had a better effect on the development dynamics and phase formation of maize. [1, p. 6-10].

1. The obtained results were slightly different depending on the effect of applied complex fertilizers. In the control variant without fertilizer, protein was 9.2%, starch was 50.4%, oil was 4.5%, and ash was 1.27%.

Those indicators were 9.5; 56.9; 5.2 and 1.36 % 100 kg per hectare (NH4)2HPO4 -Diammophos - in the applied variant, 56.9; 5.2 and 1.36% in the 120 kg per hectare (NH4)2HPO4 -Diammophos ; 10.7; 60.7; 5.7 and 1.48, % 140 kg per hectare (NH4)2HPO4 -Diammophos ;(NH4)2HPO4 - Diammofos - Ammofos - 140 kg indicators in the variant applied were 10.9; 61.7; 6.0 and 1.54%, 9.8; 58.2; 5.4 and1.40 % in the variant of (NH4)2HPO4 -Diammofos -160 kg respectively.

2. **100 kg per hectare (NH4) 2SO4+ (NH4) 2H PO4 +K2SO4 -Ammophos -** in the applied variant, those indicators were 9.7; 58.3; 5.6 and 1.39%;**120 kg per hectare (NH4)2SO 4+ (NH4)2HPO4 +K2SO4 -Ammophos -** in the applied variant, those indicators were 11.2; 63.5; 6.0 and 1.57%;**140 kg per hectare (NH4) 2SO4+(NH4)2HPO4 +K2SO4 -Ammophos -** in the applied variant, indicators were 11.5; 64.7; 6.2 and 1.61 %;**160 kg per hectare (NH4) 2SO4+ (NH4)2HPO4 +K2SO4 -Ammophos -** in the applied variant, indicators were 10.1; 59.6; It was 5.8 and 1.48%.

3. In the control option without fertilizer, the grain yield of maize was 57.0 s/ha, and the fodder unit obtained for grain yield was 78.2 s/ha.**100 kg per hectare (NH4)2HPO4 - Diammophos - in the applied variant,** those indicators were 69.8 s/ha and 80.6 s/ha; **120 kg per hectare (NH4)2HPO4 -Diammophos - in the applied variant,** those indicators were 74.5 and 84.7 s/ha; **140 kg per hectare (NH4)2HPO4 -Diammophos - in the applied variant,** those indicators were 78.7 s/ha and 87.2 s/ha ; **160 kg per hectare (NH4)2HPO4 - Diammophos - in the applied variant,** indicators were 68.3 s/ha and 81.3 s/ha.

4. **100 kg per hectare (NH4)2SO4+ (NH4) 2HPO4 +K2SO4 -Ammophos - in the applied variant,** those indicators were 68.0 s/ha and 82.4 s/ha ;**120 kg per hectare (NH4)2SO4+(NH4) 2HPO4 +K2SO4 -Ammophos - in the applied variant,** indicators were 75.6 s/ha and 86.6

s/ha;**140 kg per hectare (NH4)2SO4+(NH4) 2HPO4 +K2SO4 -Ammophos - in the applied variant,** indicators were 80.3 s/ha and 88.1 s/ha ; **160 kg per hectare (NH4)2SO4+(NH4)2HPO4 +K2SO4 - Ammophos - in the applied variant,** indicators were 68.8 s/ha and 83.0 s/ha.

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