Study of the fertilizer "Multibar" for the productivity and characterization of eggplant varieties

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Abstract. The article considers the testing of the fertilizer "Multibar" for biological, agronomic properties and biochemical characteristics of fruits of eggplant sorts Spung (long, black), Mini Miss (round, black), Tavush (long, white). The results of the number of days to germination-ripening in the eggplant sorts Spung (long, black) was 100, Mini Miss (round, black) was 112, Tavush (long, white) 100 days. The results of the yield in the eggplant sorts Spung (long, black) was 756.3 c/ha, Mini Miss (round, black) was 625.4 c/ha, Tavush (long, white) was 710.2 c/ha. According to the obtained results, the new fertilizer "Multibar" provided an increase in both the crop efficiency and fruit quality. Consequently, the new fertilizer "Multibar" is suitable for introducing in the republic and similar regions of the world.

1 Introduction

Currently, in connection with the introduction of intensive varieties and hybrids of agricultural crops in production, there is a need to improve the fertilization system as well. Due to the fact that high-yielding, intensive varieties and hybrids extract more nutrients from the soil, high-yielding, intensive varieties and hybrids extract more nutrients from the soil, therefore it is necessary to synthesize new fertilizers, widely using new forms of complex and complex fertilizers. such as microfertilizers, their new, more optimal norms. [1-4]

LCF "Multibar" is a special fertilizer that has been used in field trials. To obtain the required solution, it is necessary to use 2-3 grams of fertilizer per 1 liter of water [1].

Brinjal eggplant is an important vegetable and popular crop in Armenia. The wide spread cultivation of eggplant could be explained by its ability to grow in various climatic zones, high productivity, nutrition value, and by multipurpose utilization of eggplant fruits. Of the problem of food production is a improving of cultivation methods of the varieties and hybrids [5-9].

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2 Materials and methods

The research was conducted within 2020-2021 period in the experimental household of Darakert community (the Ararat valley) of the Armenia. Fertilizer of "Multibar" were the subject for research. The experiments with the fertilizer under the conditions of the Ararat valley were conducted over a local selection of eggplant sorts - Spung (long, black), Mini Miss (round, black), and Tavush (long, white) which is certified in the Armenia. The experiment has in three options - 1) non-treated control (I samples), 2) ammonium nitrate treated (II samples), 3) "Multibar" processed (III samples). Eggplants are fertilized 3 times after planting every 20 days, at the rate of 3 grams per 1 liter of water, and ammonium nitrate 2 times, at the rate of 250 kilograms per hectare.

The experiment was carried out according to the “Methodological regulations of randomized block experimental design” of the World Vegetable Center [10]. The content of biochemical tests in fruits was determined by a agrochemistry method of Petersburgski A.V and Morion OK2i nitrate tester [11]. The field experiment and productivity were subjected by the method of Dispersion analysis of Dospekhov B A [12].

3 Results and Discussion

The number of days to germination- ripening in the studied eggplant sorts for long, black - Spung was 100 days (III samples), was 111 days (II samples), was 116 days (I samples). The III samples, which surpassed the control by 6 days, and the II samples by 5 days, differed in early maturity. In the eggplant sorts for round, black – Mini Miss, the number of days to germination- ripening in the studied was 112 days (III samples), was 113 days (II samples), was 117 days (I samples). The III samples, which surpassed the control by 5 days, and the II samples by 4 days, differed in early maturity. In a eggplant sorts of the long, white - Tavush, the number of days to germination- ripening in the studied was 100 days (III samples), was 102 days (II samples), was 107 days (I samples). The III samples, which surpassed the control by 7 days, and the II samples by 2 days, differed in early maturity (Figure 1).

![Figure 1](https://example.com/figure1.png)

**Fig. 1.** Period from germination to fruit maturity, days.

The results of the study of fertilizer studies (Figure 2) demonstrated that the yield of the eggplant sorts Spung was 756.3 c/ha (III samples), was 748.5 c/ha (II samples), was 369.5 c/ha (I samples). The yield was different in the III samples, which surpassed the control by 350.3 c/ha, and the II samples by 345.2 c/ha. The yield of the eggplant sorts Mini Miss was 625.4 c/ha (III samples), was 615.2 c/ha (II samples), was 324.6 c/ha (I samples). The yield
was different in the III samples, which surpassed the control by 389.7 c/ha, and the II samples by 379.8 c/ha. The yield of the eggplant sorts Tavush was 710.2 c/ha (III samples), was 700.3 c/ha (II samples), was 355.8 c/ha (I samples). The yield was different in the III samples, which surpassed the control by 279.2 c/ha, and the II samples by 269.1 c/ha.

Fig. 2. Productivity.

The average fruit (Figure 3) weight in the eggplant sorts Spung was 300.6 g (III samples), was 294.5 g (II samples), was 250.2 g (I samples) (Figure 4), in the Mini Miss was 255.4 g (III samples), was 244.3 g (II samples), was 214.6 g (I samples) (Figure 5), in the Tavush was 190.2 g (III samples), was 185.2 g (II samples), was 170.1 g (I samples) (Figure 6).

Fig. 3. The average weight of the fruits, gramm.
Fig. 4. Eggplant variety for long, black - Spung: a) Without treatment (control); b) Treatment with ammonium nitrate; c) "Multibar" processing.

Fig. 5. Eggplant variety for round, black – Mini Miss: a) Without treatment (control); b) Treatment with ammonium nitrate; c) "Multibar" processing.
Fig. 6. Eggplant variety of the long, whate – Tavush: a) Without treatment (control); b) Treatment with ammonium nitrate; c) "Multibar" processing.

Table 1. Biochemical indicators of tomato fruits, average for 2020-2021.

<table>
<thead>
<tr>
<th>Processing Options</th>
<th>Content in fruits</th>
<th>The concentration of nitrates in the product, %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dry matter, %</td>
<td>Sugars, %</td>
</tr>
<tr>
<td>Eggplant variety for long, black - Spung</td>
<td>7.1</td>
<td>2.9</td>
</tr>
<tr>
<td>Non-treated control (I samples)</td>
<td>8.9</td>
<td>3.8</td>
</tr>
<tr>
<td>Ammonium nitrate treated (II samples)</td>
<td>9.3</td>
<td>4.1</td>
</tr>
<tr>
<td>&quot;Multibar&quot; processed (III samples)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eggplant variety for round, black – Mini Miss</td>
<td>7.6</td>
<td>2.8</td>
</tr>
<tr>
<td>Non-treated control (I samples)</td>
<td>9.2</td>
<td>3.9</td>
</tr>
<tr>
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</tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Eggplant variety of the long, whate – Tavush</td>
<td>7.6</td>
<td>3.2</td>
</tr>
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</table>

The results of qualitative parameters (see Table 1). The content of dry matter in the eggplant sorts Spung was 9.3% (III samples), 8.9% (II samples), 7.1% (I samples). The content of sugars was 4.1% (III samples), was 3.8% (II samples), was 2.9% (I samples), the content of vitamin C - respectively – 6.55, 6.25, 4.65 mg%, acidity – 0.47, 0.48, 0.50%
concentration of nitrates in the product – 43, 45, 37%. The content of dry matter in the eggplant sorts Mini Miss was 9.8% (III samples), was 9.2% (II samples), was 7.6% (I samples), the content of sugar was 4.2% (III samples), was 3.9% (II samples), was 2.8% (I samples), the content of vitamin C - respectively – 6.95, 6.65, 4.75 mg%, acidity - 0.47, 0.48, 0.51%, the concentration of nitrates in the product - 45, 46, 38%. The content of dry matter in the eggplant sorts was 9.1% (III samples), was 8.9% (II samples), was 7.6% (I samples), the content of sugar was 4.2% (III samples), was 3.9% (II samples), was 2.8% (I samples), the content of vitamin C - respectively – 6.65, 6.35, 4.65 mg%, acidity - 0.52, 0.51, 0.50%, concentration of nitrates in the product - 41, 49, 35%.

4 Conclusion

Study of the fertilizer "Multibar" for biological, agronomic properties and biochemical characteristics of fruits of eggplant sorts Spung (long, black), Mini Miss (round, black), Tavush (long, white). The results of the number of days to germination-ripening in the eggplant sorts Spung (long, black) was 100, Mini Miss (round, black) was 112, Tavush (long, white) 100 days.

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