Հայաստանի ազգային
ագրարային համալսարանի

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ИЗВЕСТИЯ

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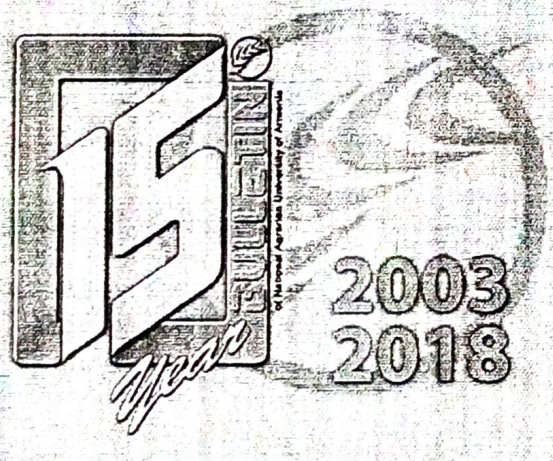
In the 15 years 2067 articles of the scientists from Armenia, Russia, the USA, Germany, the Netherlands, Sweden, Mexico, Bulgaria, Nigeria, Georgia, Ukraine, Kazakhstan, Belarus, Tajikistan, Estonia, Moldova and other countries have been published in the 62 issues of the "Bulleting of National Agrarian University of Armenia".

The journal regularly publishes materials of international scientific conferences held at the Agrarian University.

The topics of the published articles are extensive: agronomy, agroecology, plant protection, fruit growing, vegetable growing, viticulture, food safety, food technology, veterinary medicine, animal science, mechanization and electrification of agriculture, melioration and irrigated agriculture, land management, agricultural economics.

Great emphasis is placed on the problems of agrarian education, the participation of students in scientific conferences and various competitions.



«Известиям НАУА» 15 лет

За 15 лет в 62-х номерах «Известий Национального аграрного университета» напечатано 2067 статей ученых из Армении, России, США, Германии, Нидерландов, Швеции, Мексики, Болгарии, Нигерии, Грузии, Украины, Казахстана, Беларуси, Таджикистана, Эстонии, Молдовы и других стран.

В журнале регулярно публикуются материалы проводимых в аграрном университете международных научных конференций.

Тематика публикуемых статей обширна: агрономия, агроэкология, защита растений, плодоводство, овощеводство, виноградарство, продовольственная безопасность, технология пищевых производств, ветеринария, зоотехния, механизация и электрификация сельского хозяйства, мелиорация и орошаемое земледелие, землеустройство, экономика сельского хозяйства.

Большое внимание уделяется проблемам аграрного образования, участию студентов в научных конференциях и различных конкурсах.

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THE STUDY OF THE IMPACT OF ORGANIC FERTILIZERS ON THE AGRONOMIC CHARACTERISTICS OF SWEET BELL PEPPERS GROWN IN THE RA ARARAT VALLEY

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Key words: sweet bell peppers, organic wastes, biohumus, biological characteristics, economical valuable features

Great importance is now being paid to the chemical-free raw materials and their quality improvement in order to provide the population with agricultural products. This issue can mainly be solved by the production of organic fertilizers and their use in farms where valuable vegetable crops are cultivated (Sarikyan and Sargsyan). For this reason we have initiated tests on sweet bell pepper crops with the use of the organic fertilizer derived from biohumus and biohumus derived from organic waste.

Organomix, the new organic fertilizer derived from biohumus and organic waste derived biohumus is produced by ORWACO, an Armenian-Norwegian company, which are provided to the Scientific Center by the "Armenian Women for Health and Healthy Environment" NGO for the tests on sweet bell pepper crops. ORWACO aims at transforming organic waste into valuable organic fertilizers. Biohumus is derived from decontaminated compost, a by-product of mushroom farming. It is referred to as "Biohumus derived from organic waste". Biohumus is produced as a result of waste processing by Californian red worms and microorganisms. It is brittle with pleasant smell and looks like black soil.

The Chemical Constituents of Biohumus. Biohumus contains 53% of dry organic matter, 30-50% level of humidity, 1.8% of total nitrogen, 0.85% of total phosphorus, 0.72% of potassium, 6.4% of calcium, 0.67% of magnesium. Besides, it contains almost all the microelements, as well as biologically active substances.

The mixed organic fertilizer, Organomix, is a mixture of biohumus, peat and compost. It is referred to as a "new organic fertilizer, derived from biohumus".

The research was conducted during the period of 2013-2014 in the experimental farm of Darakert community (the Ararat valley) of Scientific Center of Vegetable and Industrial Crops. Biohumus, derived from organic waste, and the new organic fertilizer, Organomix derived from biohumus, were the subject for research. The experiments with the aforementioned fertilizers under the conditions of the Ararat valley were conducted over a local selection of sweet bell pepper called Natalie, which is certified in the RA. The seeding of bell peppers was conducted in the second half of May by the planting plan /90-70/-20 cm.

The phenological observations were carried out during the main phases of plant growth and development, the terms of overall germination, blossoming, fruiting and ripening were indicated.

The biometrical measurements were performed over 10 plants by measuring the bush height, the number of branches and their length. The number of leaves and crops, the average crop mass and crop length were measured. The crop mass was determined by weighing. The phenological observations, biometric measurements, plant disease resistance and crop weighing were performed by the "Vegetable and crop growing field experimental method" (Belik & Bondarenko, 1979).

The experiment was carried out according to the "Methodological regulations of randomized block experimental design" of the World Vegetable Center (Dolores, 2006).

Biochemical tests of overall productivity of crops were carried out over ripe crops. Dry matter was estimated by weighing, the sugars by Bertrand's and vitamin C by Murray's methods (Peterburgski, 1956). The following samples were tested:

Samples	Activities
Control	Without fertilization
I sample	Fertilized with Organomix into seeding pits followed by single feeding with biohumus (4.5 T for 1 ha)
II sample	Fertilized with Organomix into seeding pits followed by double feeding with biohumus (5 T for 1 ha)
III sample	Fertilized by biohumus, derived from organic wastes, into seeding pits followed by single feeding with biohumus (4.5 T for 1 ha)
IV sample	Fertilized by biohumus, derived from organic wastes, into seeding pits followed by double feeding with biohumus (5 T for 1 ha)
V sample	Fertilized by Organomix 20 and 40 days after seeding (4 T for 1 ha)
VI sample	Fertilized by biohumus, derived from organic wastes, 20 and 40 days after seeding (4 T for 1 ha)

We studied and estimated the impact of different varieties of the "new organic fertilizer, derived from biohumus" and "biohumus, derived from organic waste" on the valuable biological and economical characteristics and features of various species of sweet bell peppers. The results of the study demonstrate significant differences referring to blossoming, fruiting and ripening (see Table 1).

Table 1. The Impact of the Tested Fertilizers on the Biological Characteristics of Sweet Bell Peppers

Samples	Overall germination dates	Days to germination-overall bl ossming	Days to germination-overall maturity	Days to germination-technical ripening	Days to germination-biological ripening
			Natalie		
Control	1.04	93	106	127	148
1	1.04	91	102	123	147
2	1.04	89	101	120	145
3	1.04	61	104	124	146
4	1.04	88	100	120	145
5	1.04	92	105	125	147
6	1.04	92	106	127	148

The number of days to germination-overall blossoming in the tested samples of Natalie species was 88-93 days. Samples 4 and 2 of Natalie species blossomed 4 and 5 days earlier in comparison with the control samples of the same species grown without fertilizers (93 days). The same pattern was tracked in germination-overall maturity phase of Natalie species with 101 and 106 days correspondingly regarding the same samples as in the previous phase. The number of days to germination-technical ripening or germination-first harvesting in the studied varieties of Natalie species was 120 days. The number of days to germination-biological ripening in the studied varieties of Natalie species was 145 days. Samples 4 and 2 had the best indices of biological characteristics.

During the studies we tracked the morphological indices of sweet bell pepper crops within the period of seeding to the end of vegetation stage. The tested fertilizers did not have significant influence on the morphological properties. The plants did not catch diseases in different phases of growth and development. Samples 4 and 2 stood out in different phases by their vegetative growth and height. Samples 4 and 2 excelled by quantitative changes of vegetative and generative organs as a

result of sweet bell pepper respective studies. In the fruiting phase of these samples of Natalie sweet bell pepper species the following parameters were recorded: plant height – 60.5 cm and 63.4 cm, the total length of branches on one plant – 250.6 cm and 272.4 cm, the number of branches - 22.5 and 25.5, the number of leaves – 125.2 and 130.4.

Table 2. The Impact of the Tested Fertilizers on the Yield and Economically Valuable Features of Sweet Bell Peppers

Samples	Average yield, cwt/ha	Difference with the Experimental, cwt/ha	Number of crops on a single plant	Average crop mass, g	Crop length, cm
			Natalie		
Experimental	320.2	-	12	120.2	9.3
1	435.1	114.9	15	141.6	8.1
2	515.4	195.2	18	150.6	12.8
3	490.5	170.3	17	146.5	10.4
4	532.6	212.4	18	150.3	12.4
5	480.2	160.0	17	147.4	11.5
6	495.1	174.9	17	148.5	11.6

Sx=3.3 %, LDS 095: 25.6 cwt/ha – Natalie

The results of fertilizer studies (Table 2) demonstrated that the average yield of the samples of Natalie species was 320.2-532.6 cwt/ha. All the samples had higher yield as compared to the tester. Sample 4 of Natalie species demonstrated the highest crop yield of 532.6 cwt/ha, which exceeded the crop yield of the tester (320.2 cwt/ha) by 212.4 cwt/ha. Samples 4 and 2 stood out by the number of crops which is 18 in both cases. The average crop mass was 120.2-150.6 g in the tested samples. The crops of sample 4 had the highest average mass (150.6 g). The average crop length of the tested samples was 9.3-12.4 cm. The crops of samples 4 and 2 stood out by their length which was 12.8 cm and 12.4 cm respectively.

Table 3. The Impact of the Tested Fertilizers on the Qualitative Parameters of Sweet Bell Peppers in Technical and Biological Ripening Phases of Crops

Samples	Ripening phases	Content in crops		
		Dry matter, %	Sugars, %	Vitamin C, %
		Natalie		
Control	1*	7.6	3.0	79.10
	2**	9.3	4.1	112.70
1	1*	8.4	3.4	100.50
	2**	12.5	4.8	184.70
2	1*	8.8	3.5	104.60
	2**	15.4	5.7	194.60
3	1*	8.5	3.3	99.40
	2**	14.2	5.0	170.35
4	1*	8.8	3.6	106.75
	2**	15.7	5.9	198.70
5	1*	8.7	3.4	98.41
	2**	14.6	4.9	169.30
6	1*	8.4	3.5	99.15
	2**	12.7	5.2	170.10

1 - technical ripening phase; 2 ** - biological ripening phase*

The studied samples differ in their qualitative parameters as well (Table 3). In the phase of the biological ripening the crops of Natalie species had 9.3-15.7% of dry matter, 4.1-5.9 % of sugars, 112.7-198.70 mg% of vitamin C. The qualitative parameters are the same as those determined for sweet bell pepper (Peterburgski, 19560. Samples 4 and 2 stood out by their high qualitative parameters.

The results of the study demonstrated high indices of growth, development, yield and crop quality of local species of sweet bell peppers when fertilized by Organomix into seeding pits followed by double feeding with biohumus (5 T for 1 ha) and when fertilized by biohumus, derived from organic wastes, into seeding pits followed by double feeding with biohumus (5 T for 1 ha).

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ՕՐԳԱՆԱԿԱՆ ՊԱՐԱՐՏԱՆՅՈՒԹԵՐԻ ԱԶԴԵՑՈՒԹՅԱՆ ՈՒՍՈՒՄՆԱՍԻՐՈՒԹՅՈՒՆԸ ՔԱՂՑՐ ՏԱՔԴԵՂԻ ԿԵՆՍԱԲԱՆԱԿԱՆ ՀԱՏԿՈՒԹՅՈՒՆՆԵՐԻ ՎՐԱ ԱՐԱՐԱՏՅԱՆ ՀԱՐԹԱՎԱՅՐԻ ՊԱՅՄԱՆՆԵՐՈՒՄ

Կ.Մ. Սառիկյան, Գ.Ժ. Սարգսյան, Դ.Վ. Խաչատրյան
ՀՀ ԳՆ բանջարաբոստանային և տեխնիկական մշակաբույսերի գիտական կենտրոն

Հետազոտությունները կատարվել են 2013-2014 թթ. ընթացքում Արարատյան հարթավայրի Դարակերտ համայնքի տնտեսություններում:

Ուսումնասիրվել է հայ-նորվեգական «ՕՌՎԱԿՈ» կազմակերպության սնկարտադրության թափոններից արտադրված օրգանական թափոններից ստացված կենսահումուսի և կենսահումուսային հիմքով ստացված օրգանական պարարտանյութի ազդեցությունը քաղցր տաքդեղի Նատալի սորտի կենսաբանական առանձնահատկությունների վրա:

Ուսումնասիրությունների արդյունքները ցույց են տվել, որ տաքդեղի տեղական Նատալի սորտի մոտ աճի, զարգացման, բերքատվության և պտուղների որակի բարձր ցուցանիշներ ստացվել են երկու տարբերակներում էլ: Սածիլներին երկանգամյա սնուցում տրվել է 5 տ/1 հա հաշվով վեգետացիայի ընթացքում:

ИССЛЕДОВАНИЕ ВЛИЯНИЯ ОРГАНИЧЕСКИХ УДОБРЕНИЙ НА БИОЛОГИЧЕСКИЕ ОСОБЕННОСТИ СЛАДКОГО ПЕРЦА В УСЛОВИЯХ АРАРАТСКОЙ РАВНИНЫ

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Испытания проводились в 2013-2014 гг. в хозяйствах общины Даракерт Араратского марза.

Исследовали действие биогумуса из органических отходов и органического удобрения на основе биогумуса, полученных из отходов грибоводства армяно-норвежской организации «ОРВАКО», на биологические особенности сладкого перца сорта Натали.

Результаты исследования выявили высокие показатели роста, развития, урожайности и качества плодов сладкого перца сорта Натали, полученные в обоих вариантах. Двукратная подкормка рассады проводилась в период вегетации из расчета 5 т/1 га.