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**Effect of riverm on diseases manifestation and
Cucumber product quality in terms of
Bilyaevka area of odessa oblast
O.V.Samsiy, B.N.Milkus
Odessa State Agrarian University**

The studies found that the drug Riverm affects the growth, development, disease reducing, quality and increase of cucumber yields. In this regard, it should be recommended for cucumber cultivation.

Key words: cucumbers, growth regulators, disease.

Introduction. One of the crops that is widely grown in Ukraine and in particular in Odessa region is a vegetable of the family Cucurbitaceae - cucumber. Cucumber has great food value, defined by fruit taste. One of the modern methods of increasing yield and plant resistance to disease is the use of biologics.

Biologics in modern conditions are becoming increasingly important. Their use can increase plant resistance against stress of biotic and abiotic nature and ultimately increase yield and improve quality.

Development of biologization of plant protection in Ukraine is an important scientific and industrial problem, the future of humanity depends on its successful solution. The largest part in the structure of biological agents is occupied by biological products for nutrition improvement and increase of crops yield.

Biologics are biological preparations in which microorganism or product of its life is an active principal. They are used for the diagnosis and prevention of disease.

State of study. Large-scale industrial use of biologics in our country is developing rapidly. A review of scientific literature indicates that there isn't sufficient information on the use of biological agents on cucumbers. Therefore for their successful use the research results of patterns of action of these drugs have great importance.

The purpose and methodology of the study. The main purpose of study was to investigate the influence of the growth regulator Riverm on growth, development,

quality and expression of harmful cucumber diseases. The researches were conducted in areas with cucumbers which were laid on the experimental field of the Black Sea Institute of Agriculture of NAAS Ukraine, which is located in the central zone of Odessa Oblast (smt.Hlibodarske, Bilyaivka area). Soil – southern black soil with little humus, heavy loam. Humus content - 3.02%. The reaction of soil solution - slightly alkaline and pH-7.3. The area is characterized by continental climate, high heating with well-defined aridity and lack of rain.

The studied culture - cucumber (*Cucumis sativus*).

Cucumber hybrids: Rodnichok F 1, Caesar F 1, Brigadny F 1 and Borus F1, were sown.

The experiment was laid out in a 4-fold repetition. Area of accounting area - 10m². The scheme of planting – 140x70. Variants of the experiment: 1 - control 1 (without growth regulators); 2 - control 2 (with water); 3 - Riverm 50 ml / 10 liters of water. To determine the degree of disease destruction of plant, the method of visual inspection was used. The degree of destruction of cucumber by disease was performed at the beginning of mass flowering and further each decade by Research Methodology in Vegetable growing and Melons (Edited by G.L. Bondarenko, K.I. Yakovenko) [2]. Harvest of cucumbers was gathered by all options as far as ripening and harvest record was carried out gravimetrically on all repetitions of experiment.

Results. The study was conducted within 2011-2013, and on its results there were observed plant destructions by such diseases as peronosporoz and angular leaf spot. (**Table 1**).

Table 1. Effect of growth regulators on manifestation of cucumbers harmful diseases, 2011 - 2013.

№ of version	Options of experiment	Development of disease,%						The total prevalence,%		
		<i>Peronosporoz</i>			<i>Angular leaf spot of cucumber</i>					
		2011	2012	2013	2011	2012	2013	2011	2012	2013
Rodnichok F1										
1	control 1 without fertilizer	6.0	5.0	5.5	3.0	3.0	2, 8	9.0	8.0	8.3
2	control 2 with water	7.0	6.0	6.0	4.0	3.5	3.7	11.0	9.5	9.7
3	Riverm 50 ml / 10 liters of water	3.0	3.0	2.9	2.0	1.5	1.5	5.0	4.5	3.9
Caesar F1										
1	control 1 without fertilizer	5.5	5.0	5.0	2.5	2.5	3.0	8.0	7.5	8.0
2	control 2 with water	6.5	5.5	5.8	3.5	3.5	3.1	10 0	9.0	8.9
3	Riverm 50 ml / 10 liters of water	3.5	3.0	2.8	1.0	1.5	1.0	4.5	4.5	3.8
Brigadny F1										
1	control 1 without fertilizer	5.0	5.5	5.7	3.0	3.0	3.2	8.0	8.5	8.9
2	control 2 with water	6.0	6.5	6.9	4.0	3.5	3.6	10.0	10.0	10.5
3	Riverm 50 ml / 10 liters of water	1.0	1.5	1.4	2.0	2.0	1.5	3.0	3.5	2.9
Borus F1										
1	control 1 without fertilizer	4.5	4.5	4.3	2.0	2.0	1.5	6.5	6.5	5.8
2	control 2 with water	4.9	5.5	5.2	2.5	2.5	2.0	7.4	8.0	7.2
3	Riverm 50 ml / 10 liters of water	1.0	1.5	2.0	0.5	0.5	1.0	1.5	2.0	3.0

The total disease prevalence of cucumber for years of research varies, but in all variants it is observed beneficial effect of the drug Riverm. For all investigated hybrids the use of Riverm shows a significant reduction in the incidence of cucumbers. The slightest manifestation of disease is observed in the hybrids Brigadny F1 and Borus F1, respectively 2.9% and 3.0%. The highest contamination by diseases is found in the same hybrid Brigadny F1 under control 2. In general, it was found that hybrid Borus F1 relatively to other hybrids was least affected by diseases on all versions. All the hybrids under control 2 (using water) had the highest index of disease lesion, accordingly Rodnichok F1 - 9,7%, Caesar F1 - 8,9%, Brigadny F1 - 10,5%, Borus F1 - 7,2% .

Analyzing Table 2 we see that the use of Riverm does not worsen the state of fruits, even improves it, so we can conclude that the use of biologics is appropriate. The use of Riverm increases the sugar content in all versions, vitamin C increases too. In no experimental version there is negative influence of the drug.

Table 2. The results of cucumbers analysis, depending on factors studied, 2011-2013

№ of version	Power Level	Dry matter,%			Sugar,%			Vitamin C 100 mg per g			Nitrates mg per 100 g		
		2011	2012	2013	2011	2012	2013	2011	2012	2013	2011	2012	2013
Rodnichok F1													
1	1 control 1 without fertilizer	2.9	3.0	2.9	1.80	1.86	1.90	6.00	6.07	6.00	5.2	5.6	5.3
2	2 control 2 with water	3.0	3.2	3.0	1.94	1.93	1.89	6.20	6.18	6.17	6.5	6.6	6.1
3	VRiverm 50 ml / 10 liters of water	3.5	3.7	3.8	2.00	2.00	2.05	6.6 2	6.52	6.70	5 1	5, 3	5.2
Caesar F1													
1	1 control 1 without fertilizer	3.1	3.3	3.3	1.81	1.80	1.81	5 July 30	5.27	5.22	5 5	5.7	5.6
2	2 control 2 with water	3.3	3.5	3.6	1.82	1.89	1.90	5.70	5.68	5.62	5.9	6.0	6.1
3	VRiverm 50 ml / 10 liters of water	3.8	3.9	4.0	2.00	2.08	2.10	6.4 2	6.32	6.34	5, 3	5 5	5.4
BrigadnyF1													
1	1 control 1 without fertilizer	3.8	4.0	4.0	2.00	2.03	2.05	5 7 0	5.67	5.65	6.3	6.3	6.3
2	2 control 2 with water	4.0	4.0	4.2	2.40	2.37	2.30	5.78	5.78	5.26	6.6	6.6	6.7
3	V Riverm 50 ml / 10 liters of water	4.1	4.3	4.5	2.70	2.62	2.71	6.30	6.33	6.35	6 1	6.6	6.5
Borus F1													
1	1 control 1 without fertilizer	3.0	3.1	3.0	1.90	1.96	1.99	6.0 9	6.07	6.09	5.4	5.6	5.5
2	2 control 2 with water	3.2	3.2	3.3	1.88	1.98	2.00	6 2 0	6.10	6.11	6.0	6.1	6.0
3	V Riverm50 ml / 10 liters of water	3.8	3.9	4.0	2.00	2.04	2.11	6.31	6.31	6.32	5.5	5.6	5.6

Based on Table 3, we see some results, namely: a 3-year research of Riverm shows good results in comparison with control 1 and control 2. Looking at the average yield over the years, in all variants Riverm will increase the yield figures best for hybrid Borus F1 - 18.9 t / ha, it is higher than control 1 by 4.1t/ha and by 4.3 t / ha -indicators of control 2. Slightly lower are yields on the area of hybrid Brigadny F1 using the Riverm - 17.7 t / ha, respectively the results of control 1 - by 3,6t / ha and control 2 - by 4,0t / ha are lower above the specified index. The lowest average yield had hybrid Rodnichok F1, respectively using the Riverm 15,8t / ha, exceeding control 1 by 2,6t / ha and control 2 - by 2,9t / ha. Taking into account crop yields we can conclude that for all variants of the experiment the use of the drug Riverm increases productivity compared with control 1 and control 2.

Table 3. The yield of cucumbers, depending on investigated factors t / ha 2011 - 2013

№ of version	Options of experiment	2011		2012		2013		The average yield in years t / ha
		The average yield, t / ha	± before control 1, t / ha	The average yield, t / ha	± before control 1, t / ha	The average yield, t / ha	± to kontrolyu1, t / ha	
Rodnichok F1								
1	Control 1 without fertilizer	13.6	-	12.6	-	13.4	-	13.2
2	control 2 with water	13.4	-0.2	12.4	-0.2	13.0	-0.4	12.9
3	Riverm 50 ml / 10 liters of water	16.2	2.6	15.2	2.6	16.1	2.7	15.8
Caesar F1								
1	Control 1 without fertilizer	14.4	-	13.2	-	14.2	-	13.9
2	control 2 with water	14.1	0.3	13.1	-0.1	14.0	-0.2	13.7
3	Riverm 50 ml / 10 liters of water	17.6	3.2	16.7	3.5	17.3	3.1	17.2
Brigadny F1								
1	Control 1 without fertilizer	14.6	-	13.2	-	14.4	-	14.1
2	control 2 with water	14.3	0.3	12.9	0.3	14.0	-0.4	13.7
3	Riverm 50 ml / 10 liters of water	18.0	3.4	17.1	3.9	18.1	3.7	17.7
Borus F1								
1	Control 1 without fertilizer	15.2	-	14.1	-	15.0	-	14.8
2	control 2 with water	15.0	-0.2	14.0	-0.1	14.8	-0.2	14.6
3	Riverm 50 ml / 10 liters of water	19.1	3.9	18.3	4.2	19.2	4.2	18.9

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Abstract

Samsiy O.V., Mylkus B.N.. Riverm effect on disease manifestations and quality of cucumber products in terms of Belyaevka area of Odessa oblast. Studies have established that drug Riverm influences the growth, development, disease reducing, quality and increase of cucumbers productivity. In this connection it is recommended for cucumbers growing.

Key words: cucumbers, growth regulators, diseases.