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ANALYSIS OF THE OUTER PART MICROFLORA OF THE SEEDS OF MELON CROPS AND THE EFFECT OF SEED TREATMENT PREPARATIONS

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ABSTRACT

This article reveals the results of experiments on microbiological analysis of harmful microorganisms present in the outer shell of melon and watermelon seeds in order to select seed treatment preparations.

In the republic, sowing of seeds of vegetable and melon crops after having the treatment with particular preparations in the open field is not allowed. Because of this, seeds produced in our conditions are planted without chemical treatment, and the spread of the disease in the cultivated plants is leading to a sharp decline in productivity.

KEYWORDS: *melon, watremelon, seed, microflora, seed treatment preparations, preparation, bacteria, actinomycetales, fungus..*

INTRODUCTION

One of the reasons for the spread of the disease is the pathogens of fungi, bacteria and viruses that remain in plant seeds and soil. The most damaging viral diseases in tomatoes and cucumbers occur mainly in seeds and soil [2, 5, 6].

In modern seed production technology, plant protection control measures are aimed at preventing the spread of insects, fungal, viral and bacterial diseases.

The plant protection system is designed for preventive measures and eradication, serves to clean the plant residues in open and closed areas, to clean the technical organs, to apply chemical or thermal treatment of insects and diseases [1, 4, 6].

Treatment of melon seeds with preparations formalin and granozan against pests and diseases (NIUIF-2) has high effectiveness [3].

MATERIALS AND METHODS

Microbiological analysis of what harmful microorganisms are present in the outer part of melon and watermelon seeds is one of the main factors. For microbiological analysis of melon seeds, 1 g of each sample was weighed, ground in a mortar, and thoroughly mixed for 10 minutes in 10 ml of sterilized

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water.

In the separation of bacteria, 1 ml of the prepared solution was placed in a sterilized Petri dish, 10 ml of artificial nutrient MPA was added to it and incubated for 2-3 days at a temperature of 28-30 °C in a thermostat. For isolating the fungi, 1 ml of the prepared solution was poured into a sterilized Petri dish, over which 10 ml of artificial Czapek media was added and incubated in a thermostat at 28–30 °C for 5–7 days.

RESULTS AND DISCUSSION

In the separation of actinomycetales, 1 ml of the prepared solution was placed in a sterilized Petri dish, on top of which 10 ml of artificial ammonia starch was added and incubated in a thermostat at 28-30 °C for 5-6 days. To determine the outer microflora of the seeds, the above-mentioned artificial media was poured into a sterilized Petri dish and incubated for 3–4 days at a temperature of 28–30 °C, after placing in it the melon seeds (Table 1).

Table-1
Analysis of outer part microflora of melon crop seeds

Crop	BPA			SAA			Czapek agar		
	Bacteria	Actinomyce-tales	Fungi	Bacteria	Actinomyce-tales	Fungi	Bacteria	Actinomyce-tales	Fungi
Melon	11	-	5	4	-	2	3	3	5
Watermelon	12	-	11	5	-	2	3	2	5

When analyzing the outer microflora of melon crop seeds, in BPA – beef peptone agar nutrient media more than 11 bacteria and 5 fungi, in SAA- starch ammonia agar media 4 bacteria and 2 fungi, in Wort agar media 1 actinomycetale and in Czapec agar media 3 bacteria, 3 actinomycetales and 5 fungi were isolated.

When analyzing the outer microflora of watermelon seeds, 12 bacteria and 11 fungi were isolated in MPA – meat peptone agar media, 4 bacteria and 5 fungi in starch-ammonia media, 1 actinomycetale in Wort agar media, 3 bacteria, 2 actinomycetales and 5 fungi were isolated in Czapec agar media.

After the treatment of melon seeds (the 15th day) with chemical and microbiological preparations, development of outer microflora of seeds was analyzed and determined (Table 2, Fig. 2).

Table-2
The effect of seed treatment preparations on the microorganisms in outer microflora of melon seeds

Seed treatment preparations	Application rate, g/ml/kg	Czapek agar		
		Bacteria	Actinomy-cetales	Fungi
Maxim, 3.5% SC.	5	-	-	-
Seles Top, 31.2% SC	5	-	+	-
Hercules, 6% WSC	3	-	-	-
Vial TT, 12.9% WSC	3	-	+	
Bronopol, 12% P	6	-	-	+
Bronopol, 12% P	7	-	-	+
Gaucho gold, 35% WP	3	-	-	-
Gaucho gold, 35% WP	5	-	-	-
Kuklam-1 liquid	1,4	-	-	-
Kuklam-2 liquid	1,4	-	-	-
Trichodermin	1	-	-	-
Control (thermal treatment)	Thermal	-	+	+
Control	Without treatment	+	+	+

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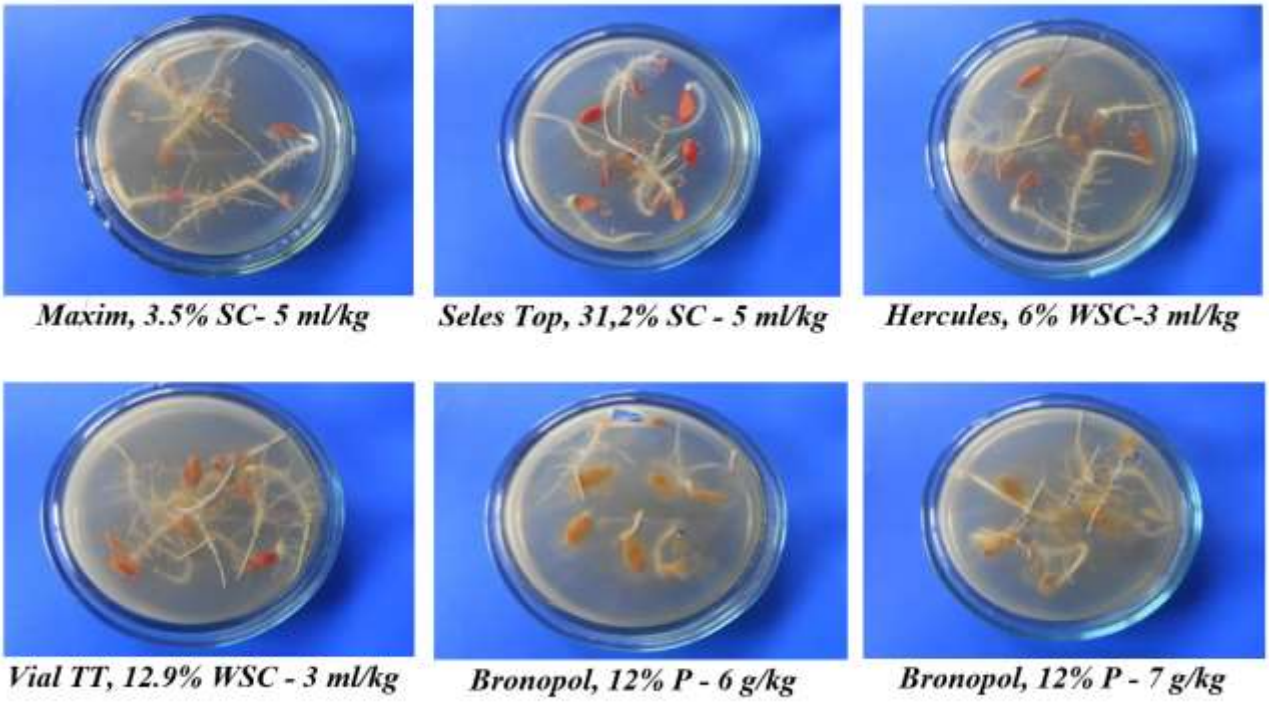

Fig. 2. Results of analysis of outer part micloflora of melon seeds

According to the results of microbiological analysis, when determining the development of outer part microflora of the seeds in artificial nutrient media condition, no any microorganism development was observed in the variants in which the preparations Maxim, 3.5% SC – 5 ml/kg, Hercules, 6% WSC – 3 ml/kg, Gaucho gold, 35% WP – 3 g/kg, Gaucho gold, 35% WP – 5 g/kg, Microgrower "Kuklam 1" – 1,4 ml/kg, Microgrower "Kuklam 2" – 1,4 ml/kg were being tested. But, in Bronopol, 12% P – 6 g/kg, Bronopol, 12% P – 7 g/kg variants, *Aspergillus* and *Penicillum* families related species of fungi were found.

In experimental variants with preparations Seles Top, 31,2% SC – 5 ml/kg, Vial TT 12.9% WSC – 3 ml/kg, actinomycetales were found, in control (with thermal treatment) variant actinomycetales and fungi, in other control variant (without treatment) bacteria, actinomycetales and fungi were found.

CONCLUSIONS

Based on the data obtained it was known that bacteria, fungi and actinomycetales were separated from the outer part of the melon seeds. For this analysis, fungicides were used for seed treatment to clean the outer part microflora of melon seeds from primary microorganisms.

According to the data obtained, the microbiological analysis of melon seeds showed that the most common microorganisms found belonged to *Bacillus*, *Pseudomonas* family of bacteria, and *Aspergillus*, *Penicillum* families of micromycetes.

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