SJIF Impact Factor: 6.093 Volume: 4 | Issue: 7 | July | 2019 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Peer Reviewed Journal

THE INFLUENCE OF SEED TREATING PREPARATIONS ON GERMINABILITY OF THE SEEDS OF MELON AND WATERMELON

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ABSTRACT
It is known that the plants have low immune system when they are young sprouts and they are easily damaged by pests then. The earlier plants get damaged during development period, the more their yield is lost and decreases yield quality. Therefore, at the stage of germination of crops it is important to use preventative (prophylactic) measures on the development and damage of diseases and pests, that is, to use seed-treating preparations before sowing in order to get high and qualitative yield.

In this article analysed the results of experiments conducted in the condition of greenhouse on the study of the influence of chemical and microbiological seed-treating preparations on the germinability of melon and water-melon seeds.
KEYWORDS: *seedtreating preparations, chemical and microbiological seed-treating preparations, germination, melon, watermelon.*

INTRODUCTION

In our republic before sowing seed-treating measures (prophylactic) for melon crops seeds with preparations in open fields has not been introduced yet. Therefore, due to sowing seeds without chemical processing the diseases can spread widely in growing plants resulting in rapid decrease of productivity.

Plant protection system refers to elimination and prevention, as most authors [1, 4, 6, 7, 9, 10, 11, 12] stated that it is also important to clean up open and protected areas from plant residues, to clean technical parts, to process chemically and thermal against pests and diseases.

Having studied the influence of microelements on the germination of the seeds of vegetable and melon crops, they concluded that this can influence positively on the increase in productivity of seeds of cucumber, beet and water-melon [5].

According to given data [8], it was recommended to keep the seeds in 1% manganic acid solution (2 g permanganic acid in 1 glass of water) and then to wash with fresh water, to keep in the solution of 0,1% manganic acid, 02% boric acid and 01% copper vitriol within 15 min. and then wash with fresh water.

Considering the preparation of seeds for sowing as an important agro-measure [2], it was recommended to use for tomato seeds the followings against the diseases: for enriching seeds with microelements, the seeds are to be kept in 10 l water with 2 g boric acid, 50 g baking soda and 2 g copper vitriol.

The experiments were carried out in Michurin district of Tambov region and it was noted that tomato had *Phytophtora* due to high humid weather of this region. During the experiments the seeds of Velikan, Jina, Marmande deBarao F_1 varieties and hybrids of tomato were sown after processing with TMTD preparation of 8 g/kg amount, at the vegetation period tomato was additionally processed 3-4 times with the solution of TMTD of 3-4 g/kg amount. As per research results, the resistance of plants to *Phytophtora* has increased [3, 7].

Considering the preparation of seeds for sowing as an important agro-measure, we have conducted

investigations on the determination of preparation types and norms that were scientifically proven for prophylactic using against pests and diseases, less harmful for environment and money-saving, integrated and important in the system of plant protection and can control chemical, microbiological growth of melon and water-melon seeds before sowing.

MATERIALS AND METHODS

Determination of seed germination before and after seed-treating process was carried out according to generally accepted (GOST 12030-84) methods, the efficiency of preparations used before sowing the seeds in the experiment was determined on the base of recommendation of Chemistry Commission of the Republic of Uzbekistan.

RESULTS AND DISCUSSION

In 2018 melon seeds were processed with selected chemical seed-treating preparations 15 days before sowing, then moistened in microbiological preparations 30 min before sowing. In order to study the influence of seed-treating on the germinability of seeds, they were sown in greenhouse. The data was shown in Table-1 on the influence of seed-treating on the germinability of treated melon seeds.

According to obtained data, when melon seeds were treated with chemical preparation Maxim 3,5% SC (fludioxonyl) in 4-5 ml/kg amount, seed germinability was 92-96% coming up to 20th day, and this indication was higher than control variant. While Selest Top 31,2% SC (25 g/l difenoconazole + 262,5 g/l thiamethoxam + 25 g/l fludioxonyl) preparation in 5-6 ml/kg amount was applied, seed germinability made 96-90% by the 20th day, and this also was higher than control one. When Gerkules 6% WSS (tebuconazole) preparation in 3-4-5 ml/kg amount was used seed germinability was 90-80-78% in the 15th day and it was lower than control variant. While Vial TT 12.9% WSC (80 g/l thiabendazole + 60 g/l tebuconazole) preparation in 3-4 ml/kg was applied, the seed germinability was 90-80% by the 15th day, and it was also lower than control version.

In the result of application of microbiological preparations – Kuklam-1, Kuklam-2 in 1-1,4 ml/kg, Trichodermine in 1 g/kg norm, Sporangine in 5 ml/kg norm, germinability showed 96-98% by the 20th day and it was also observed that sprouts germinability accelerated for 5 days.

Table-1

The influence of seed-treating preparations on the germinability of melon seeds

Preparation types	Using norm, ml/kg	Seed germinability, day									
		Seed quantity	11.03	12.03	13.03	14.03	15.03	16.03	17.03	18.03	%
Maxim. 3.5% SC	4	50	31	37	38	40	41	41	43	46	92
Maxim. 3.5% SC	5	50	29	36	33	36	37	39	43	48	96
Selest top 31.2% SC	5	50	33	41	41	42	44	46	47	48	96
Selest top 31.2% SC	6	50	28	32	33	34	40	42	45	45	90
Gerkules 6% WSS	3	50	32	37	38	39	40	42	45	45	90
Gerkules 6% WSS	4	50	27	33	34	36	39	39	40	40	80
Gerkules 6% WSS	5	50	30	37	38	39	39	39	39	39	78
Vial TT 12.9% WSC	3	50	36	45	45	45	45	45	45	45	90
Vial TT 12.9% WSC	4	50	30	36	39	39	39	40	40	40	80
Kuklam-1 liquid	1	50	34	46	46	47	47	48	48	48	96.0
Kuklam-1 liquid	1,4	50	36	48	49	49	49	49	49	49	98
Kuklam-2 liquid	1	50	41	47	47	47	48	48	48	48	96.0
Kuklam-2 liquid	1,4	50	38	48	49	49	49	49	49	49	98
Trihodermine	1	50	39	49	49	49	49	49	49	49	98
Sporangine	5	50	35	48	48	48	48	48	48	48	96
Control (thermal processing)	-	50	38	46	46	47	48	48	48	48	96.0
Control	-	50	41	47	47	47	48	48	48	48	96.0

- *SC – suspension concentrate, WSC – water suspension concentrate, WSS – water soluble suspension.*

The data on the influence of treated water-melon seeds on the germinability has been illustrated in table-2.

As per the obtained data, the application of chemical preparation Maxim 3,5% SC in 4-5 ml/kg norm to the seeds of water-melon resulted in seed germinability of 85-91,5% coming up to 20th day and this was lower than control variant. When the preparation Selest Top 31,2% SC in 5-6 ml/kg norm was applied, the seed germinability showed 93,3-91,6% in the 20th day being lower than the control one. While Gerkules 6% WSS preparation was used in 3-4-5 ml/kg

amount by the 20th day the seed germinability was 90-86,6-36%, and this also was lower than control variant. Vial TT 12.9% WSC preparation application in 3-4 ml/kg norm led to 61-11% seed germinability in the 15th day and was lower than control version.

Table-2

The influence of seed-treating preparations on the germinability of water-melon seeds

Preparation types	Using norm ml/g/kg	Quantity of sown seeds	Germinability, %								
			3/04	4/04	5/04	6/04	7/04	9/04	11/04	18/04	%
Maxim 3,5% SC	4	60	3	16	22	33	40	48	51	51	85
Maxim 3,5% SC	5	60	5	17	23	31	38	47	55	55	91,5
Selest Top 31,2% SC	5	60	1	20	27	33	40	45	55	56	93,3
Selest Top 31,2% SC	6	60	0	10	14	23	36	40	54	55	91,6
Gerkules 6% WSS	3	60	0	0	2	3	12	18	52	54	90
Gerkules 6% WSS	4	60	1	3	8	14	16	20	52	52	86,6
Gerkules 6% WSS	5	60	0	0	0	0	0	1	18	22	36
Vial TT 12,9% WSC	3	60	0	0	0	0	0	0	31	37	61
Vial TT 12,9% WSC	4	60	0	0	0	0	0	0	4	7	11
Kuklam-1 liquid	1	60	10	18	21	28	33	47	55	55	91,5
Kuklam-1 liquid	1,4	60	17	21	28	33	39	42	56	57	95
Kuklam-2 liquid	1	60	28	30	33	39	43	48	55	56	93
Kuklam-2 liquid	1,4	60	20	25	28	36	40	48	55	55	91,5
Trihodermine	1	60	23	28	30	37	42	50	56	57	95
Sporangine	5	60	19	27	33	39	44	51	55	55	91,5
Control (thermal processing)	-	60	21	26	30	34	42	50	54	54	90
Control	-	60	12	20	28	33	43	49	55	56	93

Seed germination made 91-95% by the 20th day when microbiological preparations – Kuklam-1 and Kuklam-2 in 1-1,4 ml/kg, Trichodermine in 1 g/kg norm, Sporangine in 5 ml/kg norm were used and sprouts germination accelerated for 4-5 days too. Germinability was 90% when water-melon seeds were processed thermally.

CONCLUSIONS

In greenhouse condition when were sown the seeds of melon and water-melon that were treated with seed-treating preparations and in the day of 20 chemical preparations Maxim 3,5% SC was used in 4-5 ml/kg norm, then seed germinability showed 85-91,5%, while Selest Top 31,2% SC preparation was applied in 5-6 ml/kg norm this indication was 93,3-91,6%, in Gerkules 6% WSS preparation application in 3-4-5 ml/kg amount the germinability made 90-86,6-36%.

In the result of application of microbiological preparations – Kuklam-1, Kuklam-2 in 1-1,4 ml/kg norm, Trihodermine – 1 g/kg norm, Sporangine – 5 ml/kg norm the seed germinability reached to 91-95% by the 20th day and sprouts germinability accelerated for 4-5 days too.

According to obtained data and on the base of abovementioned experiments we can say that it is expedient to use seed-treating preparations before sowing the seeds of melon and water-melon crops.

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