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ISSN (Online): 2455-7838

SJIF Impact Factor : 6.093

EPRA International Journal of

Research & Development (IJRD)

Monthly Peer Reviewed & Indexed
International Online Journal

Volume: 4, Issue:5, May 2019



Published By
EPRA Publishing

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THE IMPLEMENTATION OF INTEGRATED SYSTEM OF PROTECTION OF MELON-GROWING CULTURE

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ABSTRACT

The article presents data on the use of biological and chemical methods to combat fungal diseases of melon growing culture in the condition of Karakalpakstan. So, in the control of root rot, in particular with fusarium, biological preparation Trichodermin WP was used. Biological efficacy of biological products Bist SC and Trichodermin WP account for more than 70%.

Against the causative agents of powdery mildew, the fungicide Previkur SL 72,2 WS was used. The effect of the preparation was studied at 2 norms of consumption – 1,0 and 1,5 kg/ha. The maximum efficacy of the chemical in the consumption rate of 1,0 kg / ha was noted in 15 days and was 90,8%. While at a consumption rate of 1,5 kg/ha, the maximum efficiency was observed in 15 days and was 91,5%.

KEYWORDS: *melons, fungus diseases, root rot, fusarium, powdery mildew, biological product, fungicide, biological effectiveness, methods of protection.*

INTRODUCTION

Agriculture produces basic food products, as well as raw materials for food and other industries. The task of farming is not only to create a crop, but also to protect plants from pathogens and pests. Annual protection measures on agricultural and ornamental crops from harmful organisms is becoming increasingly important. Thus, according to the FAO, up to 1/4 of agricultural products obtained by man is lost due to the development of harmful organisms [6].

Plant protection from diseases is an important part of the technological process of growing plants and the main production task, which is expressed in the elimination or reduction of crop losses. This task can be formulated as carrying out complex protective measures to reduce product losses and reduce the harmful effects on plants [1].

Melon –vegetable culture occupies a significant place in the area of cultivation in the condition of Karakalpakstan and are in great demand among the population.

MATERIALS AND METHODS

Since 2011 we have been studying melon culture diseases in the condition of Karakalpakstan. During our

surveys, the following diseases were observed: fusarium and root rot, spot and powdery mildew. The main and most spread diseases of melon growing are root rot, wilt, fungal cover - powdery mildew and canker - spot. Having studied the harmfulness of fungal diseases of melon culture on the farms of the republic, it was stated that developing during the whole vegetative period, fungal diseases affected all vegetative organs of plants and caused great damage to agricultural crops.

One of the issues we've been facing was the approbation of protection system for the crops of melon-growing from the development of their diseases and several specific measures were applied, particularly the application of the *Trichoderma lignorum* Harz fungus as pathogen antagonist of soil rotting to combat fusarium disease, seed dressing measures, the use of specific fungicides and their application norms.

RESULTS AND DISCUSSION

Having studied the harmfulness of fungal diseases of melon culture on the farms of the republic, it was stated that developing during the whole vegetative period, fungal diseases affected all vegetative organs of plants and caused great damage to agricultural crops.

Root rot, in particular, Fusarium disease is currently regarded as one of the most dangerous diseases of vegetable (melon) crops in the condition of Uzbekistan [1, 5, 6]. The pathogens of Fusarium wilt - fungus genus *Fusarium*, common everywhere, widespread in Uzbekistan too, infests a wide range of nutritive plants [1, 6].

The data are given in Table 1 on the frequency of disease occurrence and development for various types of diseases.

In the presented table it is shown that the most common diseases on melon culture in Karakalpakstan are fusarium wilt and powdery mildew. So, on watermelon Fusarium is marked by 19,6% of fungal damage, and powdery mildew – 17,5%.

It should be noted that in the case of combatting root rot, we used biological preparations - *Bist SC* and *Trichodermin WP*, but since the purpose of this material is to use chemical preparations, we've presented the results of the powdery mildew control.

Table 1
Damaging description of pathogens of various types of diseases on melon –growing crops in the condition of Karakalpakstan, (%)

Crops		Fusarium	Verticillium	Downy mildew	Powdery mildew	Alternaria	Cladosporium
Watermelon	%	19,6	1,3	9,3	17,5	10,0	8,8
	number of isolates, pcs	293	19	139	261	150	131
Melon	%	13,3	0,73	10,9	17,4	9,5	8,0
	number of isolates, pcs	199	11	163	260	142	120

As an applicable fungicide for powdery mildew control, we used the fungicide *Previkur SL 72,2 WS* to combat powdery mildew and spot. For comparison, Saprol 20% c.e. was used (Tables 2 and 3).

Before testing the preparation *Previkur SL 72,2 WS*, powdery mildew was detected on watermelon leaves with an intensive development of 6,25-6,75% foliage damage.

During our surveys of crops, we identified pathogens of root rot (fusarium) *Fusarium oxysporum* Schl. f. sp. *melonis* Sn. et Hans, watermelon wilt - *F.*

oxysporum Schlecht. f. sp. *niveum* (E.F.Smith) Sn. et Hans, root rot and wilt of shoots *Fusarium solani* (Mart.) App. et wr. f. sp. *cucurbitae* Sn. et Hans.

Combatting diseases of crops is a complex of agrotechnical, chemical, biological and other measures. In the present, much attention is paid to safe methods.

Therefore, we used in our work biological preparations *Bist SC* and *Trichodermin MP*. In the result of the investigation, it was noted that crop damage was observed in the range of 57,0-61,0%.

Table 2
Biological efficacy of Bist SC and Trichodermin WP against fusarium and root rot. (Karakalpakstan, Kegeyli district, farm "Ainazar Baba")

Preparations	Biological efficiency,%					
	15 days		30 days		45 days	
	watermelon	melon	watermelon	melon	watermelon	melon
Bist SC	77,3	77,7	75,6	76,8	62,7	63,7
Trichodermin WP	74,8	75,2	68,9	73,5	53,3	53,3

*- SC-Suspension concentrate, WP – wettable powder

Table 3
Biological efficacy of fungicide Previkur SL 72,2 WS against powdery mildew of watermelon (Production experience, 24.07.2017, Karakalpakstan, Kegeyli district, farm "Ainazar Baba")

№	Experience variants, consumption norm of fungicides	Biological efficacy of fungicides, %		
		after 15 days of p.e	after 30 days of p.e	after 45 days of p.e
1	Previkur SL 72,2% WS, 1,0 kg/ha	90,8	89,5	84,6
2	Previkur SL 72,2% WS, 1,5 kg/ha	91,5	91,0	85,5
3	Saprol 20% EC. (standard) 1 l/ha	89,8	88,0	79,2
4	Control (without process)	-	-	-

*- WS-Water solution, EC - Emulsifiable concentrate

Biological efficacy of application of biological preparations *Bist SC* and *Trichodermin WP* makes more than 70%. It is apparent that the biopreparation *Bist SC* worked slightly better than *Trichodermin WP*. So, during 15 days, *Bist*'s biological efficiency was higher, as in the case of watermelon and melon culture (Table 2). Efficiency lasts up to 30 days.

In the conclusion we can say that pesticides are more effective, but biological preparations can restrain the development of the diseases after their spread.

From the data given in Table 3 it is obvious that the biological efficacy of the preparation *Previkur SL 72,2 WS* was studied at 2 consumption norms – 1,0 and 1,5 kg/ha. The maximum efficacy of the preparation was observed in the consumption norm of 1,0 kg/ha within 15 days and it made 90,8%. While in the consumption norm of 1,5 kg/ha, the maximum efficiency was observed within 15 as 91,5%, but in 30 days it slightly reduced to 91,0% (Table 3).

A similar pattern was observed in preparation *Saprol, 20% EC*, where in 15 days the biological efficacy showed slightly higher indication compared to *Previkur SL 72,2 WS* in consumption norm of 1,0 kg/ha but with lower dose of 1,5 kg/ha of *Previkur SL 72,2 WS*. In general, the biological effectiveness of the preparation under testing was higher compared to other preparation, and the best consumption norm showed 1,5 kg/ha – 91,5% within 15 days.

CONCLUSION

Having studied the harmfulness of fungal diseases of melon culture on the farms of the republic, it was stated that developing during the whole vegetative period, fungal diseases affected all vegetative organs of plants and caused great damage to agricultural crops.

As an applicable fungicide for powdery mildew control, we used the fungicide *Previkur SL 72,2 WS* to combat powdery mildew and spot. For comparison, *Saprol 20% EC* was used.

Biological efficacy of the application of biological preparations *Bist SC* and *Trichodermin WP* made up more than 70%.

The biological effectiveness of the *Previkur SL 72,2 WS* preparation under testing was higher compared to other preparation, and the best consumption norm showed 1,5 kg/ha – 91,5% within 15 days.

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