



# Alternariosis Disease on Potato and Biological Effectiveness of Chemicals

**Kholdorov Mirkhalil  
Urazbekovich**

Candidate of Biological Sciences, Senior researcher,  
Research Institute of vegetable, melon crops and potato, Tashkent  
region, Uzbekistan

## ABSTRACT

The article presents the results of research on the efficacy of fungicides against *Alternaria solani*, on potato. The preparations Pilartep 34,5% concentrate suspension, Ridomil plyus 72% suspension concentrate, Bio Mentazol 50% suspension concentrate, Previkur extra TGB 72,2% water-soluble concentrate, Kurzat P wetting powder were studied for biological efficiency.

## Keywords:

Potato, fungicide, infestation, diseases, chemical control, plant, efficiency, yield, alternariosis, variant, reference, control.

## Introduction

According to monitoring data conducted in recent years 2018-2021, the disease of alternariosis (*Alternaria*) is observed to cause strong damage to potato crops. The first signs of an alternative disease appear on the leaves of the plant at the time of flowering of the growing period, and on the body of the lower leaf are dressing fine, wet chlorotic spots. As a result of the growth and development of diseases, spots appear on the gums, which increase in size, spots appear on the gums in the form of small strips of round, coranticosteroid or brown color.

On the lower side of the Leaf is a brown color or dressing of buds consisting of coniferous conifers and cones of olive tones.

The meeting on alternative Cassation in cabbage, potatoes and tomatoes in the carrots grown in the conditions of our republic A.M.Mominov., V.I. Pessov [1] and others have made known.

According to the data of B.A.Khasanov [2; 3], the disease of alternariosis in vegetable crops is common, there is an alternative alternative to tomatoes, *Alternaria solani* in

potatoes, *Alternaria radicina* in carrots, *Alternaria brassicola* in white cabbage, orange stain in onions *Alternaria porri* in melons, the pesticide with *Alternaria cumerinum* in melons is reported.

According to the studies of J. Rotem and J. Reichert [4], the disease mainly spreads rapidly in vegetable crops in areas with high rainfall, high humidity and temperature (24-29°C).

*Alternaria* disease has a negative effect on the quality of vegetable crops. In the studies of K.M. Konyaeva and others [5], 30-60% of potatoes in the European part of the Russian Federation, 40-50% in the researches of Shert A.F., Macnab A.A. [6] in the Far East. yield loss was noted.

*Alternaria* disease is widespread in Europe, North America, and Asian countries, causing severe damage to tomato plants and it was found that 20-40% of the crop can be lost [7].

The genus *Alternaria* was previously included in the class Hyphomycetes, family Dematiaceae, in immature fungi. According to the currently accepted systematics, it is

considered an anamorph of the order Pleosporaceae, class Pleosporomycetidae, class Dothiomycetes [3].

Alternaria species, which cause Alternaria disease, have spread strongly in

recent years in almost all agricultural crops, including potato crops, in the conditions of our Republic. Research on the study of this disease and the development of effective control measures has not been carried out sufficiently.



Figure -1. Symptoms of Alternaria disease on potatoes.

**The purpose of the study.** In 2020-2021, it was aimed to determine the spread and damage of Alternaria solani disease in potato crops and to study the effectiveness of fungicides against the disease.

## Materials And Methods

**Method of identifying diseases.** The spread of disease in a certain area of potato crops was determined using the following formula:

$$P = \frac{100 \cdot n}{N}$$

*P* - spread of disease, %

*N* - total number of plants counted;

*n* - the number of diseased plants in the sample. 294 / 5 000

Monitoring of the appearance of diseases and their development is carried out during budding and flowering. In this case, 10 plants were controlled from every 40 meters of the field, the degree of disease is determined by the percentage of diseased parts of the plant on a 4-point scale or percentage.

- 0 - score - the plant is healthy;
- 1 - score - 10% infected plant;
- 2 - score - 11-25% infected plant;
- 3 - score - 26-50% infected plant, some

parts are strongly infected.

- 4 - score - more than 50% of plants are infected, there is a possibility of plant death.

**Research options.** Fungicides approved in the Republic of Uzbekistan in the experiment:

1. Pilartep 34,5% concentrate suspension (tebukanzol 230 g/l + pyraclostrobin 115 g/l) - 0,75 l/ha.

2. Ordan 73,1% wetting powder (chlorokis medi 689 g/kg + tsimoxanil 42 g/kg) - 2,5 kg/ha.

3. Ridomil plus 72% concentrate suspension (mankotseb 640 g/kg + metalaxyl M 80 g/kg) - 2,5 kg/ha.

4. Bio Mentazol 50% concentrate suspension (slorothalonil 50% SC) - 2,5 l/ha.

5. Previkur extra TGB 72,2% water-soluble concentrate (propamocarb hydrochloride 72,2 water-soluble concentrate) - 1,5 l/ha.

6. Kurzat R wetting powder as a template (chlorokis medi+tsimoksanil) - 2,5 kg/ha.

Spraying of drugs was carried out with the help of K-90 motor hand sprayer with the consumption of 300 l/ha of working liquid. The experiment and its efficiency calculation were

carried out based on the method of the State Chemical Commission in 2004, and the efficiency was calculated using Abbot's formula [8].

## Results

The experiments were carried out on the Pskom potato variety. *Alternaria solani* (*Alternaria solani*) disease in potato plants started to produce small, chlorotic spots on the leaves at the stage of budding and flowering. The spots gradually progressed to round dark liver or brown spots. The disease began to develop spots on the upper leaves and stems from the lower leaves. On the third of May and the first ten days of June, brown, olive-colored dust began to appear on top of the spots formed during the flowering period of the potato plant. Line-shaped spots on the stems are connected to each other, 10-13 cm long spots began to form in the lower, middle and upper parts of the stem.

In the experimental field, potatoes with *Alternaria* disease were treated with fungicides when 3-4 points 26-50% started to develop.

The data obtained showed that Pilartep from fungicides against alternariasis was used in potato cultivation in the amount of consumption from 34,5% concentrate suspension - 0,75 l/ha, Ordan 73,1% wetting powder -2,5 kg/ha and Previkur ekstra TGB 72,2% water-soluble concentrate - 1,5 l/ha. In the processed variants, the degree of lesions with the disease was found to be equal to 0,2-0,21 points in 10-15 th accounting days, while the effectiveness of 93,3-94,2% compared to the control was achieved, there was a decrease in efficiency toadorklik 72,5-75,0% by 20 days (Table 1).

Tried fungicides Ridomil plus 72% concentrate suspension - 2,5 kg/ha, Bio Mentazol 50% concentrate suspensio - 2,5 l/ha against *Alternaria* disease, the degree of damage in the 10-15th day of calculation is equal to 0,25-0,3 points. and 91,6-92,3% efficiency compared to the control was achieved, and by the 20th day -70,0% efficiency reduction was confirmed in the conducted experiments.

**Table 1**

**Biological effectiveness of fungicides against *Alternaria* disease in potatoes (field experience, working fluid consumption 600 l/ha, May 2020-2021)**

№	Options	Consumption rate of drugs l/kg/ha	The average level of damage before spraying the drug, score	Average damage after treatment, score			
				day 5	10th day	15th day	20th day
1.	Standard	-	2,1	2,5	3,0	3,5	4,0
2.	Pilartep 34,5% concentrate suspension	0,75	2,1	0,32	0,2	0,21	1,1
3.	Ordan 73,1% wetting powder	2,5	2,0	0,31	0,2	0,2	1,1
4	Ridomil plus 72% concentrate suspension	2,5	2,0	0,33	0,23	0,3	1,2
5.	Bio Mentazol 50% concentrate suspensio	2,5	2,0	0,34	0,25	0,3	1,2
6.	Previkur extra TGB 72,2% water-soluble concentrate	1,5	2,1	0,32	0,22	0,22	1,0
7.	Kurzat R wetting powder as a template	2,5	2,1	0,35	0,3	0,4	1,4

Efficacy relative to control, %							
1.	Standard	-	2,1	0	0	0	0
2.	Pilartep 34,5% concentrate suspension	0,75	2,1	87,2	93,3	94,0	72,5
3	Ordan 73,1% wetting powder	2,5	2,0	87,6	93,3	94,2	72,5
4.	Ridomil plus 72% concentrate suspension	2,5	2,0	86,8	92,3	91,4	70,0
5	Bio Mentazol 50% concentrate suspensio	2,5	2,0	86,4	91,6	91,4	70,0
6	Previkur extra TGB 72,2% water-soluble concentrate	1,5	2,1	87,2	93,3	93,7	75,0
7.	Kurzat R wetting powder as a template	2,5	2,1	86,0	90,0	88,0	65,0

Kurzat R wetting powder used as a template - in the variant used in the amount of consumption of 2,5 kg/ha, the degree of damage to the alternarizga disease in 10-15 days was equal to 0,3-0,4 points, and 90,0-88,0% efficiency was achieved compared to the control (Table 1).

### Conclusions

In production conditions, in the period of the onset of alternaria disease in the fields planted with potatoes, with prophylactic fungicides Pilartep 34,5% concentrate suspension - 0,75 l/ha, Ordan 73,1% wetting powder - 2,5 kg/ha or Previkur extra TGB 72,2% water-soluble concentrate - 1,5 l/ha, when used in the consumption amount, high efficiency is achieved.

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