



Development and Damage of Rust Mite (*Aculops Lycopersici* Masee) on Tomato Plant

Mamatov K. Sh.

B.f.n.

Abstract: In the article, damage to the vegetative and generative organs of the plant by the rust mite has a significant effect on productivity. At the same time, the stronger and stronger the plant is, the more resistant it is to damage, the phenological indicators of plants affected by the rust mite: growth even if agrotechnical measures are carried out uniformly, all indicators of development and yield are significantly different from the control, and the average fruit weight is 51.2%, pod shedding is 48%, plant flower shedding is 47%, unripe fruit 38.9% decrease in spillage, 65.6% decrease in ripe fruit spillage, and 58.7% decrease in the amount of deformed fruit was confirmed as a result of observations.

Keywords: Rust mite, plant, vegetative, generative organs, infestation, productivity, fruits, Avicena cultivar, tomato, flowering, tillering, fruiting.

Introduction: Damage to the vegetative and generative parts of the plant by the rust mite has a significant effect on productivity. At the same time, the stronger and stronger the plant is, the more resistant it is to damage [2].

The rust mite is a plant pest (oligophagous) belonging to the family of Ituzumidae and settles in groups on the top and back of the tomato plant leaves, as well as on the fruits. It also damages the plant stem. The affected stem appears covered with a shiny, brownish layer. One of the main symptoms that appear as a result of the damage is the formation of yellow-yellow spots on the leaves and a shiny-brown layer on the stem. The damaged stem becomes thinner and vertical cracks are observed. A heavily infected plant lags in development and most cases die. In the area affected by rust mites, the yield of the crop is up to 70-80%, sometimes the crop can be completely lost. This situation is visible in tomatoes planted in the open field and in greenhouse conditions because the pest develops well in greenhouses and open fields under favorable conditions [1].

It should be noted that there are more complicated aspects of determining the duration of the anti-rust mite measures. First, since this pest is very small (100-160 μ m), it cannot be seen by the naked eye when it gets on the plant, even if it is present in large numbers. Secondly, it is natural that the dewy, reddish-brown layer that appears as a result of its feeding can be confused with the symptoms of diseases in tomatoes and lead to wrong conclusions. Therefore, combing planted tomato seedlings It is necessary to regularly observe from the beginning of the stage until the harvest is ripe. It is necessary to use a mirror (loupe) that magnifies at least 20-30 times. To determine whether there are more or fewer rust mites, i.e., the quantity, the number of mites is accurately calculated under binoculars by taking samples from the fallen leaves of the plant body, and based on this, control measures are determined [3].

Experimental results: During our experiments, entomological boxes of different shapes and sizes were used to study the damage of various phytophages. Different materials were used to cover the boxes: gauze, mesh with small holes, etc. The plant was grown in specially made sacks, covered



with gauze or fine netting to prevent it from being damaged by another pest, and the damage caused by the pest was studied in this plant.

In 2018-2020, we studied the damage of tomatoes by rust mites in different periods and the effect on the yield of the plant in the 0.12 ha area allocated on the farm "Sevara brand style" in Qibray district, in the tomato variety "Avitsena". Magnifiers with 20x magnification were used to observe the development of the mite. Signs of acarinosis (damage) were observed every 10 days. It was observed that the mites living on the leaves and crops of the plant formed very large colonies on the back and front of the leaf (Fig. 1).

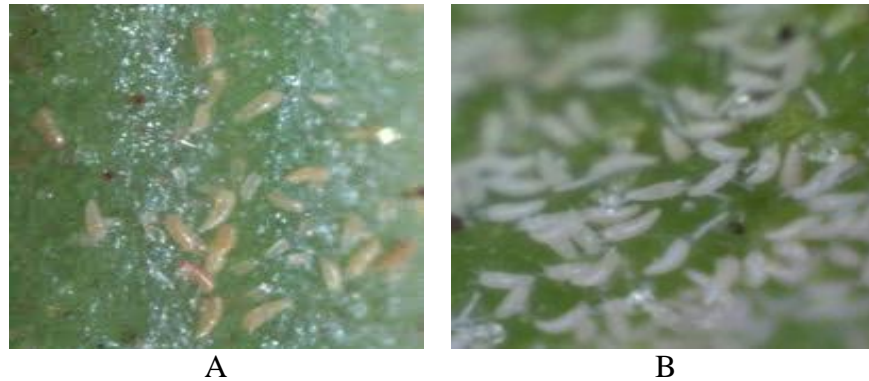


Figure 1. Development of the rust mite on a plant leaf A- the back of the leaf, He got a B.

Acarinosis gradually began to spread from the lower layer of the plant to the upper layer. Yellow and light-colored shiny spots appeared on the leaves, then the leaves became necrotic and fell off. Shiny streaks appeared on the stems. In these plants, it was observed to build up and shed flowers.

Plants infected with the rust mite stopped growing and were 10-40 cm behind the control. During the flowering period, the fruits of the affected plant crumbled and the plant completely withered. Infected plants developed more during the fruiting period.

One of the main symptoms of tomato rust mite infestation is yellow spots on the leaves and a shiny reddish-brown layer on the stem. Uneven spots appear on the damaged stem (Fig. 2).



Figure 2. Plants and fruits infected with tomato rust mite (a), healthy fruits (b) – control.

In our experiments, the experiments on the damage caused by the rust mite to tomato productivity were carried out in 3 repetitions. Observation and calculations were carried out according to the method of Sh.T. Khadjayev [4]. Researches were carried out artificially infesting tomatoes with rust mites in the periods of budding, flowering, fruiting, and ripening, and continuous counting was carried out. In this case, it was found that the amount of lost yield is 2-3 times higher in plants damaged in the initial period of vegetation compared to those damaged in the last periods of plant development.

The results of the conducted research (2018-2020 average) are presented in the table. In this case, it was observed that the amount of yield of an infected bush during the pruning period was



reduced to 1850 grams compared to the control. It was found that if the plant is damaged during the flowering stage, 1565 g of the tomato crop will be lost per bush. It was found that a third of the crop dies in the fruiting stage, that is, 1076 grams of yield is reduced, and finally, if tomatoes are damaged by the rust mite during fruit ripening, the average yield of 621 grams per plant is lost. Therefore, it was determined as a result of the experiments that if tomatoes are damaged by rust mite in the initial period of the growing season, the yield is more lost, and if it is damaged in the later periods (fruiting and fruit ripening), the yield is less.

Table 1. Effects of rust mite infestation of tomato on yield at different growth periods

(*"Avicenna variety" 2018-2020.*)

Cycles of plant development	Average yield from 1 tomato bush, kg		Lost relative to control yield, gr
	Control (pest free)	Experience	
Shonalash Lost relative to control yield, gr Lost relative to control yield, gr	3,750	1,900	1,850
Flowering	3,750	2,185	1,565
Fruit bearing	3,750	2,674	1,076
Fruit ripening	3,750	3,129	0,621

The results of the phenological parameters observed in this experiment are presented in Table 1. As can be seen from there, when tomatoes were infected during the flowering period, their development was delayed by 14 days before the first harvest, and the fruits could not develop well and turned red prematurely. Here: the yield of one tomato plant (2,185 kg) was 1.1 kg less than that of an uninfected plant (3,750 kg).

As can be seen from this table, the phenological parameters of plants infected with rust mite: although the agrotechnical measures were carried out uniformly, all indicators of growth, development, and yield were significantly different from those of the control.

Including the average fruit weight by 51.2%, pod shedding by 48%, plant flower shedding by 47%, unripe fruit shedding by 38.9%, ripe fruit shedding by, by 65.6%, and the amount of deformed fruit decreased by 58.7% (Table 2).

Table 2. Rust mite damage to tomatoes

(Vegetation experiment, 2018-2020yy variety Avitsena)

№	Indicators	Control	Experience	Difference
1.	The developmental period of the plant	110	90	-20
2.	(from germination to ripening), days	3,75	1,8	-1,6
3.	Yield from 1 plant, kg	0	5,0	-5,0
4.	3 degree of development, score	115,0	63,8	-51,2
5.	Average fruit weight, g.	12,0	60,0	-48,0
6.	Shona spillage,%	13,0	60,0	-47,0
7.	Flower shedding,%	1,2	40,1	-38,9
8.	Unripe fruit shedding, %	0,5	66,1	-65,6
9.	Ripe fruit shedding, %	0,2	58,9	-58,7

Conclusion: Thus, according to the above information, the earlier the tomato plant is affected by the rust mite, the stronger the reduction in yield from the tomato plant, and various morphological



and anatomical changes occur in the plants, such as yellowing of leaves, necrosis of tissues, numerous shedding of fruit buds, and shiny brown spots on the stem. were formed, they were equally cracked and other cases were observed.

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