

INFLUENCE OF THE SUBSTANCES CONTROLLING THE PLANT GROWTH ON THE SEED DEVELOPMENT OF “SUPERINA F1” SORT OF CUCUMBER

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ABSTRACT

Annotation

Choosing the dates of sowing cucumber seeds correctly can result in preventing a number of diseases including powdery mildew and false mildew diseases. Powdery mildew and false mildew in cucumber are widely proliferation in green houses and fields of Uzbekistan and other Central Asian countries.

KEY WORDS: *Sphaerotheca fuliginea f. cucumidis*, *Erysiphe cichoracearum f. cucurbitacearum*, leaf, stem, pathogen, disease, powdery mildew, conidia, chinbarg, scheme.

INTRODUCTION

In the world, the role and importance of agrarian sphere in supplying the population's needs is increasing day by day. For instance, providing the population with agricultural products economically by applying the present resources and opportunities, increasing further productivity and profit, application of scientific achievements and updated approaches are considered to be important. Food insufficiency is supposed for future i.e. during the period of globalization the world statistics supposes that up to 2050 the number of population will increase to 9,1 billion and that the field for agricultural plants will decrease to 40-45 %. Along with this, establishing healthy consumption correctly which supplies daily requirements for gourds plays special role.

Cucumber (*Cucumis sativus* L.) is an annual plant which belongs to Cucurbitaceae family. By content 100 g of cucumber contains 96 g of water, 0.6 g of protein, 0.1 g of oil, 2.2 g of carbonate hydrate, 0.03 mg of vitamin V1, 0.02 mg vitamin V2, 0.3 mg niacin, 12 mg vitamin C, 12 mg calcium, 0.3 mg iron, 15 mg manganese and 24 mg phosphorus. Besides this, 100 g of product has 12 kilocalories. The peculiar odor of cucumber is the result of essential oils (10 mg in 1 kg of cucumber), the invigorating taste is the result of organic acids (16-68 mg% of dry substances), this plays special role for the human health.

AIM OF THE RESEARCH

Among gourds all types of cucumber gets diseased with powdery mildew. It is caused by ascomycete obligate parasite fungi, mainly *Sphaerotheca fuliginea f. cucumidis*, and in fewer cases (in mountains) by *Erysiphe cichoracearum f. cucurbitacearum*.

In cucumber powdery mildew is widely proliferation in greenhouses and open areas in Uzbekistan and other Central Asian countries. On both sides of the leaves there appears white, yellowish-brown or reddish-grey thin mold layer and later (at the end of the season) there appear black dots- cleistothecium develop on them; leaves get yellow then become brown and dry up. Mold is sometimes met in the plant stem and leaf branches and seldom on the fruits. In greenhouses the powdery mildew harms plants since their seed-leaf phase.

Pathogen conidia are proliferation with wind among plants. Favorable temperature for their growth is 25-27°C, and the humidity should compose 50-90%, however the fungi may harm not moist but dry leaves even the temperature is 15-25°C and the humidity is 20%. In plants which are less irrigated the disease intensifies. Hidden period of the disease in greenhouses composes 3-4 days and fungi give offspring every 6 days.

Pathogen hibernates in the plant remnants and weeds with their cleistothecium (comfrey – *Symphytum sp.*). In spring ascospore ripened in their saclike structures known as ascus harm the plants primarily. There is no information on which propagule (mycelium, cleistothecium) the fungi hibernate with. Powdery mildew may decrease the cucumber harvest up to 20-30% in the field and up to 50-70% in greenhouses.

In gourd plants the downy mildew is caused by an oomycete fungicide- *Perenoplasmopara cubensis* (*Pseudoperenospora cubensis*).

All gourds have tendency to the disease, but the disease mostly harms cucumbers and melons widely.

On impaired leaves there appear multi-angled whitish spots among tiny vessels on the leaves, later they become yellow or brown and the leaves become variegated. The spots amalgamate and become brown or dark. On the spots of the dorsal side mild whitish or grey mold layer forms. If the moisture is high then this layer becomes grey, dark red or violet color. The impaired leaves usually get dry. Most of the strongly impaired leaves fall and in the result of it the crop from cucumber decreases.

The disease usually is proliferation by rain drops and wind and the clothes of workers or tools. High moisture and relatively low temperature is considered to be favorably for the disease.

It is recommended to preventing these fungicide diseases by choosing the dates of seed sowing due to territorial climatic conditions. A number of factors can be good examples for this. First of all the population should be provided with this product continuously. Secondly, taking into consideration the duration of the period of pathogen development which causes the disease and climatic condition which is observed during the growth period of cucumber plant is very important.

The aim of our investigation consists of correct choosing the dates of seed sowing of “superina F1” sort of cucumber (Table 1) on the farm of **Khayrinso-Mutabarkhon** in Pakhtaabad district and determining the date choice on powdery mildew, downy mildew and productivity of the crop.

Sort sample

For growing “Superina F1” cucumber sort in open areas

Table 1

Sort Name	Ripening	First Crop, Days	Average Weight of the Fruit	Surface of the Fruit	Productivity, T/Ha	Getting Diseased
Superrina F1	Mid ripening	40	110-112	smooth	47-48	tolerant

METHODS OF INVESTIGATION

Before sowing cucumber seeds, it is recommended to make the seeds swell in the solution of such substances as sodium humate (50 mg/l), Nitrolin (50 mg/l), Roslyn (50 mg/l) and Oxyhumate (80 mg/l) which control the plant growth for 12-18

hours as they will give high productivity (Table 2). These substances influence on fast budding of the seeds and growth and development of branches favorably. Besides this, in increasing tolerance to some diseases, it is advised to spray 4-6 g of TMTD preparation on 1 kg seed. Before sowing them we dried the seeds a bit so that to supply their friability.

SOWING DATES AND SCHEME OF CUCUMBER SEEDS

Choosing the favorable sowing dates correctly depends on the soil and air temperature. The seeds should be sowed only when the soil temperature is 10-12 °C and air temperature is 15 °C high, otherwise the seeds will not bud and get rot.

The fact that there are numerous cold days in our Republic (220-280 days) gives an opportunity to sow them during the whole period of growth. In order to supply the population with fresh cucumber continuously 4-6kg of cucumber seed is sown in each hectare of land from April 15 till July 15.

KHAYRINSO-MUTABARKHON

Farms in Pakhtaabad district were chosen in order to carry out an experiment and Superina F1 sort of cucumber was chosen and sown as a repeated plant on the 11th of June in 4 versions and 4 repetitions in double rows in a ribbon shaped method after preparing the seeds. The interspace between furrows is 140 cm, the space between rows is 70 and between plants is 40 cm in 3-4 cm depth.

Effect of the substances controlling the growth and development of plants on “Superina F1” sort of cucumber

Table 2

No.	Experiment Versions	The Height of Growing Period, cm			Number of Leaves	
		15.VI	1.VII	15.VII	15.VI	1.VII
1	Control	12.2	19.3	27.5	3.2	4.6
2	Sodium humate(50 mg/l)	21.3	35.6	44.8	4.4	6.9
3	Nitrolin (50 mg/l)	26.4	42.3	51.5	4.3	8.3
4	Roslin (50 mg/l)	23.1	37.9	46.3	4.2	7.1

We have witnessed in the experiment that if cucumber seeds swell in the solution with Nitrolin (50 mg/l) for 12-18 hours before sowing, they will give rich crop.

CONSIDERING THE LEVEL OF PROLIFERATION AND DEVELOPMENT OF CUCUMBER DISEASES

Manifestation and development of diseases was observed constantly. The parts impaired by the disease and with pathogenic and peculiar signs were analyzed with the help of plant pathology method.

Proliferation of the disease was determined and calculated by the following formula by counting the impaired and healthy plant numbers(Hohryakov and others., 1984):

$$R = a* 100: N,$$

Here: *R* –disease proliferation, %;*a* –number of impaired plants;

N –total number of calculated plants (healthy and impaired).

Disease proliferation was calculated by the following formula:

$$R = \frac{\sum ab}{N \cdot K} * 100: (NK),$$

Here: R –level of disease development, %; $\sum ab$ –sum of the amount found by calculating the number of impaired plants (a) to the level of their relative impairment (b); N –total number of calculated plants (healthy and impaired); K –the highest score of impairment level in calculation scale.

Levels of disease development was determined by watching and assuming the impaired field of plants the means of special scales (Hohryakov and others., 1984):

CONCLUSIONS

In conclusion, we can say that the best way of preventing powdery mildew in cucumber is to follow the agro techniques of sowing (sowing scheme, temperature and moisture regimen) and rotation sowing strictly. Also, it is important to sow the cucumber sorts tolerant to this disease and follow the sowing dates strictly. It is recommended to eliminate all the plant remnants left in the soil and to cultivate (plug) the land deeply in autumn. Moreover, applying the substances which control the growth and development of seeds before sowing and planting the plants to the planned field after they have bud in the soil are considered to be favorable solutions to the problem.

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