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# System of Measures to Be Taken Against Diseases of Tomato Crop in Greenhouses

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**Annotation:** When choosing varieties of tomatoes and other cruciferous vegetables for cultivation in open and protected areas, it is advisable to pay special attention to those that are resistant to the diseases most common in this area. The introduction of resistant varieties increases yields and allows you to reduce the cost of protective measures.

**Keywords:** pathogen, disease agent, tomato, seed, protective measures, fungus, virus, infection, disinfection.

## INTRODUCTION.

Special attention should be paid to seeds. Seeds should be collected only from healthy fields and fruits. It is forbidden to transport seeds from areas with bacterial canker to healthy areas. Careful control is carried out when preparing seeds for planting, that is, fruit fragments and other impurities are removed, as they can be a source of infection.

To eliminate viruses that can be transmitted by seeds, they are disinfected in 20% hydrochloric acid for 30 minutes. For this, the seeds are placed in gauze bags (2/3 of the volume) and the hydrochloric acid solution is prepared in such a way that the volume of the 20% solution should be 3-4 times greater than the volume of the seeds. After soaking the seeds in the solution, they are washed in running water for 10-15 minutes and dried. Tomato seeds are treated with Vitavax 200 FF against fungal and bacterial diseases. The treatment is carried out 3-4 months before planting. In closed areas, protective measures are especially required. They include the following: disinfection of the interior of the protected area after harvesting crops and plant residues, disinfection of soil, soil cultivation tools, containers and equipment, preventive, agrotechnical and protective measures during the growth and development of seedlings and adult crop plants, and compliance with quarantine measures to limit the entry or exit of harmful organisms into the protected area.

After the last harvest, the protected area building is thoroughly repaired (glass is replaced in broken places, cracks are sealed with ointments) and the first disinfection against harmful organisms is carried out. For this, an aqueous solution of formalin is sprayed together with insecticide and acaricide. Taking into account the existing harmful organisms, other combinations of preparations can also be used. The working fluid consumption is 1 l per 1 $m^2$. The temperature of the greenhouse during spraying should not be lower than $15^0$C. Workers performing spraying must wear gas masks. After disinfection is completed, the greenhouse is tightly closed for 2 days and nights, then ventilated until the smell of formalin disappears completely.

After the primary disinfection, all the roots in the greenhouse are dug up and a thorough examination is carried out to identify the tumor-forming nematodes. The area where the nematodes are noted is demarcated. First, the nematode focus is treated with ammonium nitrate together with the roots. Then the roots are collected in polyethylene bags and burned. The soil in this area is removed up to the drainage layer. The resulting pit is filled with formalin solution (10 l per 1 $m^2$) and immediately filled with peat mixture, watered abundantly and covered with polyethylene film for 2 days. First, plant residues are removed from healthy areas, and then from areas affected by nematodes. When collecting plant residues, weeds are also removed from walkways, under heating pipes and other areas, then wires are wrapped and disinfected with a gas burner.

The windows and structures inside the greenhouse are disinfected with formalin with the addition of karbofos. After completing these works, repeated disinfection (with the same preparations as in the first one) is carried out. Non-corrosive coated and film greenhouses are disinfected with fumigants after they are covered with film. A barrier is created at the entrance to the greenhouses for disinfecting shoes and wheels of mechanisms, for this purpose, a layer of wood shavings, half of which is table salt or soaked in a formalin solution, is placed in this place. Soil-working equipment, containers and utensils are also thoroughly disinfected. The utensils can also be disinfected by dipping them in cold lime. After the above operations are completed, the soil is disinfected thermally or chemically. It is recommended to replace thermal treatment with chemical treatment once every 3-4 years.

Thermal treatment is effective against all pathogens in the soil. Before disinfection, the soil is moistened (up to 45%) and plowed to a depth of 25-30 cm without turning over, which ensures excellent steam penetration. The soil under the supports for the wall, radiator, heating pipes is also chopped, leaving a distance of 40 cm, and scattered throughout the greenhouse. Then a pipe or rubber hose is pulled along the soil surface and a grate is pressed into their outlet. The surface of the soil in the field is covered with a heat-resistant film and the edges are pressed with sandbags weighing 5-8 kg (1 m long, 10-12 cm in diameter). A manometer is installed to monitor the steam pressure under the film. Remotely controlled GSM-100 thermometers are installed to determine the soil temperature, that is, its sensor is buried to a depth of 30 cm. Steam is supplied until the temperature at a depth of 30-35 cm of the soil reaches $80^0$C. The steam pressure should not be lower than 5 mm of the water column, and the temperature should be 110-$115^0$C. The duration of steaming should be from 3 to 8 hours (depending on the presence of nematodes). After that, the steam is stopped, but the film is opened after 3-4 hours. After the steaming is completed, the unsteamed soil of the central aisle is steamed with steam in a rubber hose or under a film.

Steaming should be organized in such a way that pathogens are not reintroduced into the steamed area. To do this, rubber or special shoe covers are disinfected (in a solution of table salt against root knot nematodes, then in 5% copper sulfate against other pathogens). These covers are placed around the steamed film, which is put on when the film is moved to another place. Hands are washed thoroughly with soap, and the covers are disinfected again after the film is moved to another place. After steaming, the greenhouse temperature is maintained at 20-$22^0$C, and seedlings are planted after 2-3 weeks.

Protective measures should be especially strict in the nursery section, where the area of

greenhouse complexes does not exceed 8% of the total area, as well as in the greenhouse section, which is provided with a powerful underground heating system and sufficient lighting. It is recommended to grow seedlings in nutrient cubes or peat-humus pots prepared on the basis of a disinfected soil mixture. Transferring seedlings from one section to another is allowed only after a thorough examination for pathogens. Seedlings are inspected at least 3 times a week. Seedlings with signs of viral diseases are destroyed. Seedlings heavily damaged by other diseases and pests are also destroyed.

Greenhouses require a certain temperature (20-24$^0$C during the day and 16-18$^0$C at night) and soil moisture (70-80% of full moisture capacity). Until flowering, irrigation is carried out every 5-7 days at a rate of 8-10 l/m$^2$. From the beginning of fruit set to the beginning of ripening, irrigation is carried out every 3-4 days. The relative humidity of the air in the greenhouse should be 60-70%.

When detecting septoria and other diseases, plants are sprayed with a 0,4% suspension of 80% polycarbazide or 1% Bordeaux liquid. The interval between sprayings should be 10-15 days. When the harvest period approaches, treatment with Bordeaux liquid is stopped 15 days in advance, and other preparations 20 days in advance.

To establish healthy crops in open areas, only healthy seedlings are planted. Contact preparations are sprayed against insects - carriers of viruses. Against leaf spotting, as well as fruit rot, treatment is carried out with a 0,4% suspension of 80% zineb or 1% Bordo. The first treatment is carried out 8-10 days after planting the seedlings, the next one every 15-20 days. Treatment is stopped 20 days before harvesting.

To increase the resistance of plants to diseases, agrotechnical requirements are strictly observed. After harvesting, the area is cleared of all plant residues and deeply plowed. To reduce the reservoir of pathogens in the soil, the recommended crop rotation scheme for this region is followed and weeds are regularly controlled. It is strictly forbidden to bring seeds from affected areas. Quarantine measures are always observed.

**CONCLUSION.** Only healthy fruits are taken for transportation and storage. When picking fruits, care is taken to ensure that they are not mechanically damaged. Before placing the fruits in storage, they are cleaned of all impurities, and the storage room is disinfected with chlorinated lime. Maintaining the temperature and relative humidity of the storage room at the required values during storage increases the shelf life of the fruits. Fruits that have begun to rot are immediately destroyed.

## FOYDALANILGAN ADABIYOTLAR RO’YXATI

1. Билай В.И. Фузарий. – Киев: АНУ, 1955. – С. 400-441.
2. Дудка И.А., Вассер С.П., Элланская А.А., Коваль Э.З. и др. Методы экспериментальной микологии // Справочник под. ред. В.И.Билай. – Киев: Наукова Думка, 1982. – 550 с.
3. Гербаневская Е.В. Фузариозное увядание дынь // Бахчеводство Средней Азии. – М., 1959. – 14 с.
4. Головин П.Н. Мучнисторосяные грибы, паразитирующие на культурных растениях. – М. – Л.: – Изд. АНСССР, 1960. – С. 267.
5. Hasanov B.A., Ochilov R.O., Gulmurodov R.A., “Sabzavot, kartoshka hamda poliz ekinlarining kasalliklari va ularga qarshi kurash”. “VORIS-NASHRIYOT” Toshkent-2009
6. Sheraliyev A.Sh., Sattarova R.K., Rahimov U.X. «Qishloq xo‘jalik fitopatologiyasi» Toshkent -2008
7. O‘zbekiston Respublikasida ishlatish uchun ruxsat etilgan o‘simliklarni himoya qilish vositalari. Toshkent, 2022

8. Xo’jaev Sh.T. Insektitsidlar, akaritsidlar, biologik faol moddalar va fungitsidlar. – Toshkent, 2004-74 b. (O‘zb.)
9. Халмуминова Г. К., Камилов Ш. Г., Аллаяров Н. Ж. Возбудители черной гнили моркови //Вестник Российского университета кооперации. – 2014. – №. 2 (16). – С. 137-140.
10. Kulmuminovna, Khalmuminova Gulchehra, and Saidolimova Dilnura Ulugbek Kizi. "The Occurrence of Fungi from the Genus Alternaria Nees Ex Wallr." *Greenhouse Conditions of Uzbekistan When Growing Tomatoes and Cucumbers. Texas Journal of Agriculture and Biological Sciences* 13 (2023): 47-50.
11. Khalmuminova, Gulchehra, Sodik Botirov, and Bahrullo Goibov. "Analysis of pathogenic characteristics of fungi causing alternariosis disease in vegetable crops." *E3S Web of Conferences*. Vol. 452. EDP Sciences, 2023.
12. Kulmuminovna, K. G., K. M. Kushakovna, and K. F. Yusupzhanovna. "The efficacy of seed protectants against alternariosis disease of vegetable crops." *EPRA International Journal of Research & Development (IJRD)* (2020): 218-221.