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Daucus Carota L. Biological Features of the Excitant Fungi Specie

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Abstract

This article describes (*Daucus carota* L.) those types of fungi's biological and ecological features which bring damage to carrots. Research material source is taken in Karasai district of the Almaty region's Kaynar settlement's vegetable warehouse. Here is a list of the fungi's species which affect the quality of the vegetables and belongs to the fungi species such as *Alternaria radicina*, *Fusarium avenaceum*, *Penicillium cyclopium*, *Sclerotinia sclerotiorum* relative found in the types of groups such as *Alternaria*, *Fusarium*, *Penicillium* and *Sclerotinia*. Morphological criteria were defined as a result of this experimental research. Also their Damaging properties and stability to fungicides were investigated. Currently, agriculture's one of the main directions is a stable supply of agricultural products to population. According to the UN Food and Agriculture Organization's census the harmful organisms reduce agricultural products by 30 percent annually. There are the most common types of diseases caused by fungi widely spread among these harmful products. Nowadays clarification and the establishment of strategic measures to combat the biological characteristics of disease-causing fungi are found as the key issues.

Keywords: Conidia, *Daucus carota L*, Fungi, Morphology, Pure Culture

1. Introduction

A plant's disease is a very complex pathological process. The causative agent of the disease in plants is the main role of phytopathogenic fungi. Currently, imperfect fungi species featuring the biological and ecological characteristics of a large number of studies carried out in different regions[1].

Carrots (*Daucus carota L.*) white-rot fungus disease is one of the most dangerous diseases. Its danger consists in quick spreading rotting all warehouses carrots root plants. Other types of fungi that cause the disease are not as dangerous as the previous one mentioned above.

D. A. Stock studied fungal diseases of carrot seeds in the regions of Uzbekistan[2]. L. D. Kazenas[3] studied black rot of carrots, *(Alternaria radicina* Meier, Drechsler and E. D. Eddy) white rot and white powder diseases *(Erysiphe umbelliferarum* DB. F. Dauci Jacz). *M. L.* Parker and his coauthors[4] examined a range of carrot sclerotiniosis ascospores which spread in the air by test plates.

F. B. Hannibal[5] in his treatise titled "Monitoring of blight crops and identification of fungi of the genus Alternaria", described the types of fungi that give rise to diseases such as blight and carrot macrosporiosis. *Alternaria dauci* (JG Kuhn) Groves and Skolko (1944) described the early damage and wilting leaves of carrots,

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generating diseases such as brown spot or macrosporiosis. They also called blight disease, which generates *A. radicina* disease.

In case when root heavily exposed to macrosporiosis, carotene and sugar content is reduced by 20-40 % in root crops[6], according to some reports by 40-60 %[7]. During mechanical harvesting because of damage to the stem (tops), due to the fact that many parts of the root remain under the soil, the yield can be decreased[8].

Y. K. Han and his colleagues[9] described Korean carrot Fusarium withering disease pathogen *Fusarium oxysporum* Schlecht. Conidia to describe the features of a straight line, is divided into ten isolates.

Carrots grown in China expose to dry rot disease pathogen in the types of fungi *Fusarium oxysporum* and *F. solani* (Mart.) Sacc. Led research and used 3 isolates in the research[10].

2. Materials and Methods

Vegetable warehouse source locality: Karasai district of Almaty region in the spring *Daucus carota* L. Damaged root plants and seeds were selected, and they have been thoroughly studied in the laboratory of the Department of Biology by V. I. Semenov's biological method the fungal species biodiversity have been defined. Also morphological features of fungi have been defined by N. A. Naumov's method[11] and by M. A. Litvinov's method[12].

To conduct the study, damaged carrots root plant's fungi conidia were planted in Capek's nutrient environment and thus a pure seed was obtained.

Microscopic analysis used MICROS AUSTRIA CHAMBERS 519 CU 5 OTCMOS video installation MCX100, microscope eyepiece EW10X/20 lens PLAN 40x/0.65 and scanning (JSM-6510LA ANALYTICAL SCANNING ELECTRON MICROSCOPE) microscopes.

Certain types were exposed to fungicides' strains and their property of stability was studied. For this purpose they have been put into Capek's nutrient environment and left there for 30 minutes. Become subject to the point at which it was frozen in the nutrient environment of the agar 3, the surface of the agar plant pure culture strains with vaccination. Pits filled with the test fungicides and left the thermostat to 25°C for 5 days. Fungi properties stability by fungicides is assessed by the size around the net area. If the growth area with a diameter of 15 mm it shows a low sensitivity, 16-25 mm show the average sensitivity and 25 mm show high sensitivity.

3. Results and Discussion

Daucus carota root plants *Alternaria, Fusarium, Penicillium, Sclerotinia* relative types of damage.

Black rot disease. The disease pathogen *Alternaria radicina* MD et E. conidia sequence, the length and breadth curtains, 32-35 x 19-95 μm. All spread in root

Table 1. *Daucus carota* plant *Macrosporium carotae* isolated from features of the damage to the conidium

Vegetable crops varieties, sprout		**Vegetable crops growing description** **The level of damage, the size of the conidia formed, μ.** **(14-day, 25-28°C)**
Licopersicon esculentum Mill.	Isolated from seedling leaf	Damage intensive, high density conidia mature. Conidia size 1-2 cells 11,2-19x9-14,8; 3-7 cells 26-38,5x15-26
	The lessons learned from the seedling	Inoculum yellowed around, there exists a scattered conidia
	A member of the underground vegetative sprouting	Damage vessel conidia which is more mature
	Members of the vegetative sprouting from the surface of the soil	Yellowed leaves, around inoculum, conidia on mature leaves
Capsicum annuum L.	Isolated from seedling leaf	Intensive which Damaged inoculum's extreme mycelium Conidia become conidiophores. Conidia size 1-2 cells 15.5-26x10-13.5; 3-5 cells 19-30x9.8-15.5
	The lessons learned from the seedling	Inoculum around the high level of damage
	A member of the underground vegetative sprouting	The root of the net inoculums formed is more conidia
	Members of the vegetative sprouting from the surface of the soil	The leaves are discolored, led by forming a bouquet of conidia

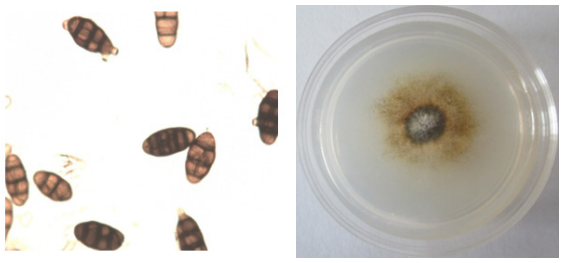
Note: (with lens40x/0.65, and multiplication ratio EW 10x/20).

plant's black spot disease. Spot size starts from a small dot; the spread is rounded Figure 1 (a). The disease appears in the form of wet node on carrot leaves, the carrot's leaves become yellowish; the leaves tips become rotten. *Alternaria radicina* damaged leaves are not as dangerous as alternariosis. Disease which affects the root plants spread mainly when the root plants are stored in warehouses. *Alternaria radicina* spores of built-in horizontal curtains, 40-60 x 17-26 µm. Conidia shape is elliptical Figure 1 (b).

(a) (b)

Figure 1. (a) *Daucus carota* L. black rot disease appearance; (b) *Alternaria radicina* conidia.

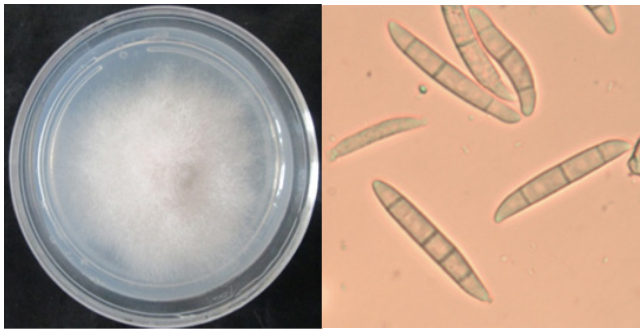
Brown spot disease. The disease pathogen *Macrosporium carotae* Ellis and Langl. The young plants are subjected to disease very fast. And mature root plants damage exposed to the disease during their formation. Leaf, class, root plants damaged. Large circular brown spots appear on the leaves. Root plants are of diameter of 1.5 cm and a light-brown spots are formed. Wet weather, the spots are packed in brown. Pathogens optimal development of the species at a temperature of 20-25 °C, relative humidity 80-85 %. *Macrosporium carotae*-conidia brown color, is divided into several cells[14], the cell membranes of relief Figure 2 (b). Conidia 3-4 cells 20-27, 42 x 12-13, 8 µm, 5-7 cells 27, 4-44 x 14-15, 4-25 µm. Clean seed brown, black and white, fluffy mycelium Figure 2 (a).



(a) (b)

Figure 2. *Macrosporium carotae* conidia and pure culture.

Other vegetables isolated from the shoots to grow and some types of tumors are members of the vegetative N. N. Vasilevsky (1927) are a small piece of the net crop (inoculum) from the bottom of the leaf 14, 7 from the bottom of artificial environment damage. They were monitored by the moisture-holding chambers in 3 days, and then left in the laboratory conditions.



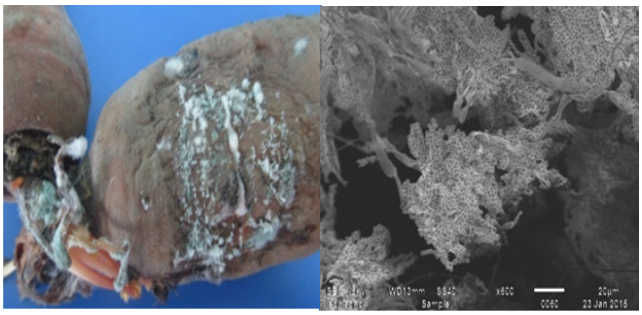
(a) (b)

Figure 3. *Fusarium avenaceum* (a)pure culture, (b) conidia.

Dry rot. The disease pathogen *Fusarium avenaceum* (Fr.) Sacc. This disease is usually associated with a leaf and was seen in root plants. Damaged fruit becomes dry, light red-brownish color. Rot will dry the damaged section of the development. Moisture produces a light pink color mycelium[15]. The rot starts at the base of the root plants, and then to other parts of the switch. The incidence of the pathogen in the soil, the plant will meet with members of the underground. Closing of straw warehoused in the leaves of a disease pathogen species mycelium, Conidia passed root plants damaged. There is damage to the 7-20 °C temperature range. At 0°C and dry to reduce the risk of disease. Dry, must be left intact revenue. *Fusarium avenaceum*. Sporodochia and pinnotes macroconidia mycelia fluffy white or filamentary, elliptical or fold, and sometimes the vertical pass, is divided into several cells, the bulk of pink, yellow, orange Figure 3 (a), is a brick-red color. Sometimes fluffy mycelium is small, ellipsoid, lancet-shaped or spindle-shaped cell formed conidia 0-3 Figure 3 (b). Macroconidia: 3 cells 30-60 x 3-4 µm; 4 cells 38-75 x 3-5 µm; 5 cells 33-85 x 3-4 µm. Stroma is yellow, ochre (of ochre color).

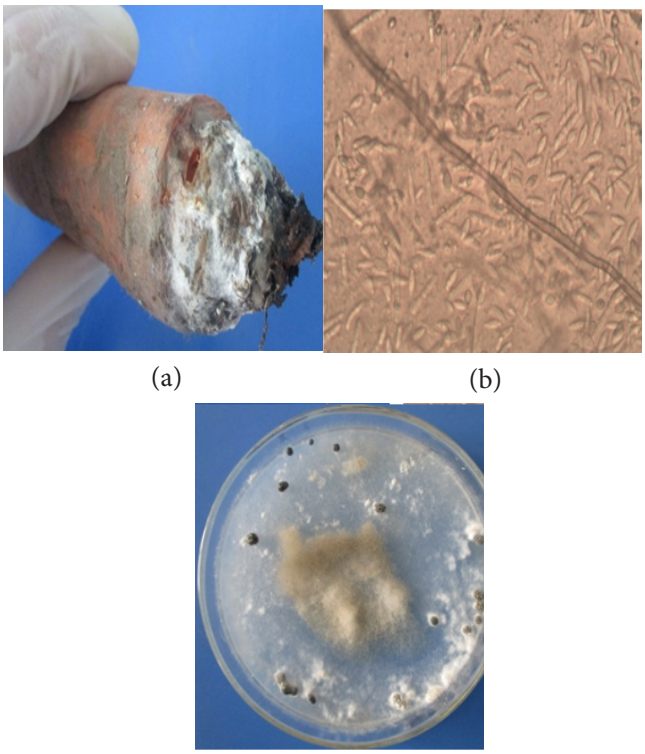
Green mold disease. Excitant is the disease *Penicillium cyclopium* Westling. Colony is of dark blue-green color and powdery, fine-grained appearance Figure 4 (a). Conidia's

sprig is bumpy and ball-shaped, with a diameter of 3.5-4 microns, with a few processes, but sometimes it can be like a ball-shaped and ellipsoid Figure 4 (b).



(a) (b)

Figure 4. *Penicillium cyclopium* (a) Root plants appearance, (b) The conidia.



(a) (b) (c)

Figure 5. (a) Sclerotiniosis manifestation of the disease, (b) Sclerotinia sclerotiorum conidia, (c) Pure culture.

White rot (sclerotiniosis). Basically it is a carrot plant. The disease pathogen Fungi - *Sclerotinia sclerotiorum* Lib. Root plants as a warehouse for storage deposit mycelium, black fruit bodies (sclerotium) will be a closed form Figure 5 (a). The disease also leads to aging of leaves. Wet and cold weather conditions during the sclerotium grow in the soil. Conidia agent of the disease can be spread over root plant wind and rain. Foliage spreads quickly throughout all started in the bottom of the leaves. Damaged leaves will be brown-black color and covers the white mycelium that, sometime later, fungi, black spots were formed in the transition to peace. Initially, in the case of damage to crops is less intensively observed and damage during storage. *Sclerotinia sclerotiorum* sclerotium wrong or egg-shaped, white and then turns black and starts first, with a diameter of 1-3 cm, can create apothecium Figure 5 (b).

Fungicides protect the vegetables with the most effective use. They follow the development of the disease, all the vegetation or the next one or two decade and aware of weather changes. Chemicals can be effectively used to prevent disease. If developed to the degree of infection epiphytotics 10-15 days after the waiting period. To do this, the majority of fungicides 20-30 days are enough. During this period, fungicides, plant tissue becomes something completely disintegrated (Figure 6).

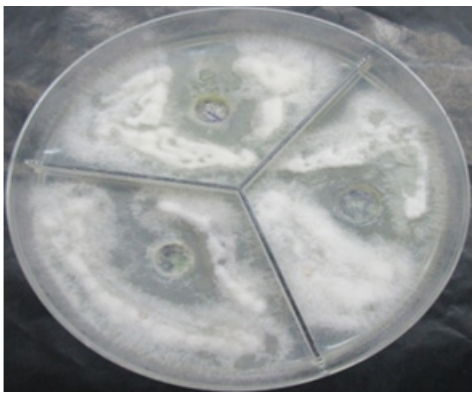


Figure 6. *Fusarium avenaceum* fungus' growth inhibition zone.

Systemic fungicide into the tissues of the plant for 7-8 hours. Fungicides fungi conidian chemicals that can destroy or inhibit the development of mycelia. Fungicides can be protected by chemical plants. *Fusarium avenaceum, Penicillium cyclopium, Macrosporium carotae* controlled by the effect of the fungi types of fungicides. Colloidal sulphur, Media chloric copper oxide, fundasol fungicides used.

Some fungicides resistances of strains of fungi are shown in Table 2.

Fungi resistance to a number of species of fungicide *Fusarium avenaceum* fundasol (18-20 mm), colloidal sulphur (17-19 mm), average, chloric copper oxide (15-16 mm) mild sensitivity. *Penicillium cyclopium* fundasol (16-18 mm), the average sensitivity (Table 2).

Table 2. Some fungicides resistance of strains of fungi

Species of fungi	Growth inhibition zone on Capek's nutrient, mm	
Fusarium avenaceum	Colloidal sulphur	17-19
	Chloric copper oxide	15-16
	Fundasol	18-20
Penicillium cyclopium	Colloidal sulphur	0
	Chloric copper oxide	0
	Fundasol	16-18
Macrosporium carotae	Colloidal sulphur	0
	Chloric copper oxide	0
	Fundasol	0

4. Conclusion

Alternaria radicina, Fusarium avenaceum, Penicillium cyclopium, Sclerotinia sclerotiorum were separated from carrots stored in warehouses. *Alternaria radicina, Macrosporium carotae* mycelia's black-and-brown-colored colonies were formed in Capek nutrient environment. *Fusarium avenaceum* bright pink (Pink) create a colony of color, is more macroconidia were formed. *Sclerotinia sclerotiorum* bead-shaped dew in the form of circular clusters was formed. Carrots microscopic fungi root plant can be damaged as a result of development, their nutritional value is destroyed, that is it becomes inedible. The influences of fungi were studied including *Fusarium avenaceum* which tolerated all fungicide substances.

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