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ВЫДЕЛЕНИЕ И ИЗУЧЕНИЕ ШТАММОВ ТРИХОДЕРМЫ ДЛЯ ИСПОЛЬЗОВАНИЯ В ЗАЩИТЕ РАСТЕНИЙ

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The development of the organic agriculture all over the world and in Belarus has shown the importance of studying and introducing the biological methods of controlling plant diseases during last 10–15 years. This work aims to study various microorganisms that can form the basis of modern plant protection products without damaging the environment and human health.

40 strains of fungi were extracted from several soil types, the fruiting bodies of some fungi and wood connected with agrosystem of Belarus. In general, the study showed that local species of fungi Trichoderma can be defined for the later use as an alternative to pesticides in the local agrosystem.

Keywords: mushrooms, strains, soil, wood, diseases, isolates.

Mushrooms are a vast group of organisms, the number of species of which according to Hawksword can reach 1.5 million. The genus Trichoderma is currently one of the most studied. Trichoderma species are producers of enzymes (cellulases, chitinases, pectinases, xylanases, serine-dependent proteinases, etc.) used in pulp and paper and food industries, in production of detergents, in production of alcohol, in recycling waste containing cellulose into glucose, in production of feed additives and in textile industry. Medications based on antibiotics, toxins, and fungal enzymes of this genus are made for biological control of diseases and stimulation of plant growth. Trichoderma is also used for biological soil cleaning and composting. Other properties of Trichoderma spp are also known. Thus, Trichoderma species that affect commercially grown mushrooms and damage building structures have been identified. They can cause allergies and deep mycoses in people

with reduced immunity. Representatives of the genus Trichoderma can be found in almost all soils. They are considered at least partially responsible for the effect of biological control of phytopathogens in suppressive soils, where crops and trees are not exposed to pathogen influence and mycotoxin release into the environment. The ability of Trichoderma metabolites to suppress insect vital activity was found. Currently, mycologists studying Trichoderma face a number of questions: the systematic position of the species, adequate identification methods, the construction of a natural phylogenetic tree, geographical spread, diversity and identification of the ability to antagonistic activity to phytopathogens among all species of this genus, the presence in nature of new species that can still be found, etc. (Alimova F., 2005).

The purpose of this research is to study the spread of Trichoderma fungi in agricultural and urban areas of various origins, to find potential sources of Trichoderma emission, and to create a collection of Trichoderma strains of various origins.

To achieve this goal, we planned to solve the next tasks:

1) to select samples of soil and other materials to isolate the Trichoderma;

2) to separate fungi from selected materials and isolate Trichoderma samples;

3) to select homogeneous Trichoderma morphotypes to create a collection of isolates;

4) to study isolates according to biological medium complex of morphological features;

5) study the growth rate of the collection isolates using various carbon sources;

6) to evaluate the antagonistic activity of trichoderma isolates from the working collection in relation to a number of plant pathogens;

7) to identify producers of siderophores in the collection of trichoderma isolates;

8) to assess the resistance of Trichoderma isolates to some fungicidal preparations;

9) to study the ability of Trichoderma isolates to grow at 37 °C;

10) to characterize the diversity of the collected collection of trichoderma isolates according to the complex of the studied traits and to identify the most promising for use in plant growing.

The work was carried out during 2019/2021. A number of standard microbiological methods were used for this work: isolation and cultivation of fungi on various biological media, including selective media (Czapek medium, Czapek medium with CMC), microscopy, and morphological study of fungi. The growth of fungal mycelium was also evaluated.

As a result, from the selected materials, we have identified fast-growing strains of fungi of the genus Trichoderma, that in the future could be used in production conditions.

References

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ФЛОРА, ПРОИЗРАСТАЮЩАЯ НА ПРАВОМ БЕРЕГУ РЕКИ ПРИПЯТЬ В ПРЕДЕЛАХ ГОРОДА МОЗЫРЯ

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Водные и прибрежно-водные растения являются одним из важнейших компонентов водных экосистем. Вместе с фитопланктоном они участвуют в трофическом цикле, обеспечивая продукцию различных звеньев пищевой цепи. Растения водоемов служат пищей для животных самого разного систематического положения: моллюсков, ракообразных, насекомых, рыб, птиц и млекопитающих [1]. Водные растения развиваются главным образом в литорали и сублиторали, образуя сплошную или прерывистую полосу различной ширины вдоль берегов. По условиям произрастания выделяются четыпе группы растительных форма-