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CHANGES IN THE COMPOSITION OF SOIL MYCOBIOTA DUE TO THE APPLICATION OF HERBICIDES

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----------SUMMARY----------

The article provides data on the composition of soil micromycetes isolated after the use of herbicides Kotoran 80% (1.2 kg/ha) on cotton crops and fusilade super 12.5% (2 l/ha) on vegetable crops in the conditions of the Tashkent region. 56 species of micromycetes from 3 divisions, 3 classes, 5 orders, 6 families, 23 genera were identified.

As a result, when comparing the composition of soil mycobiota with the composition of soil micromycetes against the background of the use of herbicides, it can be noted that a significant difference is noticeable - the qualitative and quantitative composition of micromycetes after the use of herbicides is depleted and less diverse.

KEY WORDS: *herbicides, treatment, fungi.* ----------

INTRODUCTION

Modern agriculture is a multi-component system, the individual elements of which are interconnected with each other and the natural environment. One of the main ways to intensify agriculture at the present stage of agricultural development is its chemicalization. In this connection, the use of chemicals – pesticides, which play the role of a strong environmental factor, is expanding. They affect not only organisms harmful to human economic activity, but also other related objects that live in a given agrophytocenosis. As a result, pesticides have become an active factor influencing both the formation of the biocenosis and its functioning.

Soil microbiota is an active component of agrocenosis, which is involved in maintaining homeostosis in the soil. V.V. Dokuchaev (1954) wrote that there is a natural genetic connection between soil, plants and microorganisms, because soil microflora takes part in the formation and regulation of almost all agronomically valuable soil properties.

In the specialized literature there are many publications on the interaction of pesticides with soil microbiota (Lunev, 1992, Kruglov, 1984, Ksenofontova, 2004, etc.). However, the available data are contradictory. Thus, there is an opinion that there are no significant changes in the influence of herbicides on the existing microflora (Arefyeva, 2003, Zakharov, 2003). Some researchers have noted stimulation of the activity of microorganisms under the influence of pesticides (Jrossband , 1974, Ksenofontova, 2004).

However, most authors note a qualitative and quantitative change in the species composition of the original biota (Mishustin, 1964, Toshmatova, 1974, Dzhugeli, 1982, Babajanov, 1983, Nikulnikov et al., 2002, Tillyakhodzhaeva, 2006, etc.).

Herbicides are chemicals used to kill unwanted vegetation. Most herbicides used to control weeds end up in the soil. Therefore, soil is the main natural depot for herbicides, the place of their interaction with soil microorganisms. As a result of their use, the biological activity of the soil may change. The effects of herbicides on soil biota are direct and indirect, indirect.

Direct action is expressed in bactericidal, fungicidal, algaecidal and protistocidal effects. It usually appears immediately after administration of the drug. The nature and degree of manifestation depend on many factors: chemical properties of the drug, doses, pH - soil environment, humidity, temperature, etc. (Mishustin, 1964, Jrossbard , 1976, Kruglov, 1979, 1984).

The indirect effect of herbicides is associated with changes in soil cultivation technology and the redistribution of plant residues in it (Lunev, 1982).

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It is known that soil micromycetes, in particular cellulose-degrading fungi, are active components of agrocenosis. And in connection with the changes occurring in the soil, under the influence of the use of herbicides, the study of the patterns of formation of the structure of soil mycobiota during the redistribution of available plant residues seems very interesting to us.

The main objective of our entire study was to study the activity of cellulose-degrading fungi, in particular fungi of the river. *Trichoderma* Pers . ex Fr. _ , where one of the tasks was to identify active strains of cellulose-decomposing micromycetes from the soil. Before the start of the study, there was an assumption that with an increase in the amount of plant residues in the soil, a quantitative and qualitative increase in soil cellulose-degrading fungi was possible.

Based on all of the above, one of the tasks was to identify the soil mycobiota against the background of the action of herbicides: Kotoran 80% c.e. (1.2 kg/ha) on cotton crops and Fusilade super 12.5% c.e. (2 l/ha) on vegetable crops in the conditions of the Tashkent region. Soil samples were taken in May, 14 days after application of the preparations, and in September, at the end of the growing season.

As a result, in soil samples against the background of the use of herbicides, 55 species of micromycetes from 3 divisions, 3 classes, 5 orders, 6 families, 23 genera were identified, and without the background of herbicides - 81 species from 33 genera (Table 1).

Table 1

Composition of Soil Micromycetes with and without the use of Herbicides

Department	Order	Family	Genus	Number of Species	
				Against the background of herbicides	No herbicide background
Zygomycota	Mucorales	Mucoraceae	Mucor	3	3
			Rhizopus	1	2
		Thamnidiaceae	Thamnidium	1	1
Ascomycota	Eurotiales	Gymnoascaceae	Gymnoascus	-	1
		Thermoascaceae	Thermoascus	-	1
	Sphaeriales	Melanosporaceae	Chaetomium	2	4
			Microascus	-	1
Deuteromycota	Hyphomycetales	Moniliaceae	Oospora	1	1
			Cephalosporium	3	4
			Acremonium	1	2
			Trichoderma	1	3
			Gliocladium	-	2
			Sporotrichum	-	2
			Arthrobotrys	-	1
			Paecilomyces	1	1
			Aspergillus	9	12
			Penicillium	14	16
			Botrytis	1	1
			Sporotrichum	1	2
			Verticilium	-	1
		Dematiaceae	Hormiscium	1	1
			papularia	1	1
			Torula	-	1
			Stachybotrus	2	1
			Humicola	-	1
			Cladosporium	2	4
			Drechslera	1	1
			Curvularia	1	1
			Alternaria	2	2
			Stemphylium	1	1
		Tuberculariaceae	Fusarium	4	5
	Agonomycetales		Rhizoctonia	1	1
3	5	8	3 3	5 5	81

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As can be seen from the table, the composition of fungi against the background of the use of herbicides is most richly represented by imperfect fungi (49 species). The predominant genera are: *Penicillium* (14), *Aspergillus* (9), then come *Fusarium* (4) and mucor mushrooms. Mucor fungi are represented by the genera *Mucor* (4) and *Rhizopus* (1). Ascomycetes are represented only by the river. *Chaetomium* (2). All species belong to the group of micromycetes commonly found in soil. From r. *Trichoderma* Only 1 species has been identified.

When comparing the composition of soil mycobiota with the composition of soil micromycetes against the background of herbicide use, it can be noted that the qualitative and quantitative composition of micromycetes is less diverse. There is a depletion of the species diversity of fungi, which indicates the influence of herbicides - kotoran and fusilade on the volume of mycobiota. Data on the suppression of fungal development by kotoran p . *Penisillium* , *Aspergillus* and *Trichoderma* are given by I. Toshmatova (1974), Yu. Babadzhanov (1983).

A similar study was carried out on the same fields in September, at the end of the growing season. As a result, we can say that after 5 months, the composition of micromycetes increased to 71 species, due to soil saprotrophs (marsupials - 8 and hyphal micromycetes - 20 species), although Penicillium species remained *prevalent* (16), *Aspergillus* (12), the proportion of which has increased. The representation of river species has also increased. *Trichoderma* (3), *Chaetomium* (4) and *Fusarium* (5).

The inhibitory effect of herbicides on soil microflora was noted by M.G. Dzhugeli (1982), M.I.Lunev (1992), I.Toshmatova (1974), Yu.Babadzhanov (1983) , N.Tilyakhodzhaeva (2006) , etc. Also , many authors confirm the restoration of the richness of the microbiota after a certain time (Kruglov, 1984, Toshmatova, 1974, Babajanov 1983, etc.).

As a result of all of the above, we can conclude that the assumption that with an increase in the amount of plant residues in the soil after the use of a herbicide, the number of cellulose-decomposing fungi will increase was not confirmed.

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