THE DETERMINATION OF ALLELOPATHIC EFFECT OF THE COMPOST MADE FROM MUSHROOMS CULTIVATION SUBSTRATUM, ON FIGHTING THE MAIN HERBAGE AND FUNGUS FROM SUNFLOWER FIELDS

DETERMINAREA EFECTULUI ALELOPATIC AL COMPOSTULUI PROVENIT DIN SUBSTRATUL DE CULTIVARE AL CIUPERCILOR, ASUPRA COMBATERII PRINCIPALELOR BURUIENI ŞI AGENȚI FITOPATOGENI DIN CULTURA DE FLOAREA-SOARELUI

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Abstract. *Modern agriculture requires new technologies, more productive, more efficient from the point of view of environment protection. That's why plant's auto protection, using allelopathic substances is one of the most important way to reduce costs, resources and to improve the quality of our environment. Results prove that in some specifical conditions plants have the ability to make this allelopathic substances, and this way, to reduce the attack of pests.*

Rezumat. *Lupta împotriva diferiților dăunători a fost una dintre preocupările principale ale fermierului, deoarece este bine cunoscut faptul că aceştia pot provoca pagube de până la 100%, pagube care se pot întinde pe mai mulți ani. În ultima perioadă se vorbeşte tot mai intens de combaterea integrată a buruienilor, agenților fitopatogeni, dăunătorilor, iar din cadrul acestui sistem se deosebeşte combaterea pe cale biologică.*

Capacitatea plantelor de a se autoproteja este cunoscută din cele mai vechi timpuri, însă numai cercetările recente demonstrează o parte din mecanismele care acționează în această privință.

O serie de cercetători au demonstrat deja capacitatea florii-soarelui de a secreta ergoni. Noi ne propunem, să arătăm că în anumite condiții (fertilizare organică), floarea-soarelui îşi poate spori această capacitate şi poate lupta eficient împotriva factorilor de stres biotic.

The plants ability for self protection it is known from the eldest times, but only recent research are able to explain the mechanisms which are involved here.

Several researchers have been proven the sunflower capacity to secrete ergoni. Our purpose is to prove that in some conditions (organic fertilization), sunflower may increase its function and it can fight efficiently against biotic stress factors.

MATERIALS AND MEANS OF RESEARCH

The experiment has been developed in Agro chemistry's experimental field, of University of Agricultural Sciences and Veterinary Medicine "Ion Ionescu de la Brad" Iaşi, Ezareni farm. We used three organic fertilization variants (0 t/ha – unfertilized, 20 t/ha şi 30 t/ha), at sunflower crop, using as organic fertilizer (compost) the substratum used for cultivate mushroom *Agaricus bisporus* (white mushroom of garbage). After Agrochemical determination on compost, reveled this characteristics: at a humidity of 40% we have 8-9 nitrogen kg/t, 120 kg organic carbon /t compost, 10-11 kg phosphorus/t compost and 10-12 kg potassium/t compost.

We have determined the intensity, frequency and attack point of main plant's pests *Sclerotinia sclerotiorum, Botrytis cinerea, Plasmopara helianthi* and also the attack per cent (% fro square meter) of main harmful herbs: one year monocot.: *Avena fatua,* evergreen monocot.: *Cynodon dactylon* and *Sorghum halepense*, one year dicot.: *Amaranthus retroflexus*, evergreen dicot.: *Cirsium arvense*.

The determinations were made during the firs sunflower vegetation stage, when the plant is highly sensitive to harmful herbs, during the bloom stage and at physiological maturity of sunflower crop, using direct field observations and statistics.

RESULTS AND DISCUSSIONS

Attack level has been calculated for each pest agent, multiplying attack intensity with frequency and divide the result to 100. The dates are included in table no. 1.

Tabele 1

Pest agents attack depending on organic fertilization, at sunflower crop

Pest agent		0 t/ha - Unfertilized	20 t/ha	30 t/ha
Sclerotinia sclerotiorum	I%	9,7	8,3	8,4
	F%	5,5	6,1	5,8
	A.L.	**0,5**	**0,5**	**0,5**
Botrytis cinerea	I%	12.5	13,9	13,7
	F%	15,7	13,7	14,2
	A.L.	**2,0**	**1,9**	**1,9**
Plasmopara helianthi	I%	33,2	31,1	30,9
	F%	37.5	36,3	35.9
	A.L.	**12,5**	**11,3**	**11,1**

It can easily be observed the fact that the attack level on every variants is low. Obvious odds are registered only for Plasmopara attack level (odds from unfertilized variant for 10%), this attack falls down.

To determine the harmful herb's attack level were count each plant species from a square meter, in 5 variations, on each variant. By calculating the average, we obtained the next results (table 2).

Tabelul 2

Harmful herb's attack level depending on organic fertilization, at sunflower crop

Harmful herbs		0 t/ha - Unfertilized	20 t/ha	30 t/ha
One year monocot.				
Avena fatua	No.	2	9	7
Evergreen monocot.				
Cynodon dactylon	No.	3	2	3
Sorghum halepense	No.	6	3	5
One year dicot.				
Amaranthus retroflexus	No.	6	0	2
Evergreen dicot.				
Cirsium arvense	No.	15	3	5
Total	No.	**32**	**17**	**22**

Thus, towards the organic unfertilized variant, harmful herb's attack on 20 t compost/ha fertilization variant has been reduced with 53% and on 30 t compost/ha variant with 31%.

Harmful herb's distribution is changing depending on compost spreading. Thus, at unfertilized variant, the domination is for one year and evergreen dicot., in 60% proportion and monocot. herbs, only 34%. From this ones, *Cirsium arvense* have the highest proportion 47%, flowed by *Sorghum halepense* 19%, *Amaranthus retroflexus* 19%, etc.

To 20 t compost/ha fertilization variant, the proportions are changing and so, one year monocot. Are winning 53%, evergreen ones 29% and evergreen dicot. 18%. It is obvious that the attack rate of *Cirsium* and *Sorghum* is falling, especially at 20 t compost/ha fertilization variant.

All this dates prove the fact that it is possible the existence of some allelophatic substance, which can be obtained by the sunflower plant's roots, by soil useful micro flora, helped by the compost used as organical fertilizer, or by reason of previous plant cultivated, or by reason of all this facts.

CONCLUSIONS

It is well known the fact that sunflower has the capacity to generate ergoni, coline category substances, which plays an important role in plants self protection.

We can see that the attack of plant pests and harmful herbs is falling, one of the explication is probably the using of compost.

The *Plasmopara Helianthi* attack is reduced with 10% towards unfertilized variant.

The harmful herbs number is falling while we use the organic material.

The most important odds is at 20 compost/ha variant.

Using the compost induce the variability ratio of monocot. and dicot. harmful herbs.

This dates indicate the probable presence of allelopathic substance.

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