THE INFLUENCE OF THE CHEMICAL TREATMENTS OF THE SEEDS REGARDING THE FREQUENCY OF THE DISEASES AND OF THE PESTS AT THE WINTER WHEAT IN THE WEST PLAIN

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Abstract

The destruction of the diseases and of the pests from the wheat culture means to establish some complex measures that start with the necessary realization of the seed treatment then followed by treatments at the warning period or, if needed, during the vegetation period according to the wether conditions which can favorize the apparition of certain diseases and pests.

In order to increase the efficiency of the treatment it is recommended to use the two active substance fungicides and the use of insect-fungicides in case in which the sowing takes place after other straw cereals.

The protection of the autumn wheat culture starts with treating the seeds and the young plantlets up to 30 days since the sowing a period in which the plants are the most vulnerable.

Key words: fungicides, cryptogamic diseases, pathogen agents, pests.

INTRODUCTION

In order to reduce the attack of the pathogen agents and of the pests from the wheat culture it is necessary to apply an integrated destruction system which, together with the agricultural and technical meaures shows a great importance with its chemical treatments applied to the seed and in the vegetation period. (I.Oancea 2005).

The emplacement of the wheat cultures has got a great influence on the attack level of the pathogens that can be transmitted through the seed (the common smut, the ember, the fusariosis) and on the pests (the humpbacked cockroach, the cereals' bed bug, the wire worm). Thus it is necessary to avoid the emplacement of of the wheat after straw cerealsthat had had a highe degree of infection with pathogen agents and with the above mentioned pests. In order to avoid some infestations the crop rotation is recommended in which the wheat follows after vegetables as an efficient means of preventing the attack of disease and pests.

MATERIAL AND METHOD

For the study of the wheat seeds' treatment a lot of research has been done in the time period 2010 – 2011 at the Les farmland in Bihor county.

The wheat seeds have been trated with the following fungicides:

1. Vitavax 200FF(200 g/l carboxina + 200 g/l thiuram (dimetyl-dithiocarbamate)
2. Dividend MU 30FS(30 g/l difenoconazole)
3. Kinto Duo(60 g/l prochloraz + 20 g/l triticonazoe)
4. Orius 60FS(250 g/l tebuconazole)
5. Yunta quatro 373,4 FS(166,7 g/l clothianidin + 166,7 g/l imidacloprid + 33,3 g/l prothioconazole + 6,7g/l tebuconazole) which is an insect – fungicide.

Beside the treated wheat lots we also had a type of non – treated wheat which was considered a witness.

Due to the infections produced by the pathogen agebts and by the pests two main moments can be noticed at the culture plants: the attack and the damage. (Bucurean Elena, 1999).

The attack can be presented value presented through the frquency of the attack produced by the diseases and the pests as follows:

$F\% = n \times 100/N$

Where n – the number of attacked plants

N-total number of plants

The damage produced by the attack of the pathogen agents and of the pests is represented by the production losses registered in comparison with the witness variant.

For the study of the frequency of the pests'attack on the autumn wheat, the following fungicides have been used:

1. Vitavax 200FF(200 g/l carboxina + 200 g/l thiuram (dimetyl-dithiocarbamate)
2. Dividend MU 30FS(30 g/l difenoconazole) and the following insect fungicides
3. Yunta 246 FS (233 g/l imidacloprid + 13 g/l tebuconazole)
4. Yunta quatro373,4 FS (166,7 g/l clothianidin + 166,7 g/l imidacloprid + 33,3 g/l prothioconazole + 6,7g/l tebuconazole), and a variant of non treated wheat condsidered a witness.

RESULTS AND DISCUSSIONS

The influence of the fungicide treatment of the seeds upon the diseases, at the autumn wheat

By treating the wheat seeds with fungicides it has been noticed that there is a reduced attack of the pathogen agents produced by *Tilletia* (smut) (F%) from 0 -0.9% in comparison with 2,4% in the case of the non treated variant, a higher attack in the case of the pathogen agents produced by *Septoria* and of 5.4% in the case of the non treated variant and a limitation of the attack to 2,8% in case the seeds were treated with Vitavax 200 FF up to 0,4% in the case the seeds were treated with Yunta quatro 373,4 FS – Mt and with *Fusarium* (fusariosis) (table 1). It is noticed that in the case of the non treated variant the attack of the fusarium is in reduced limits of 2.9% and of 0.2 – 1.8% in the case of the seeds treated with fungicides this fact being due to the favorable culture year 2011 which having in view the weather conditions temperature and humidity) have encouraged the development of the plants and have reduced the development of the diseases.

Table 1

The frequency of the criptogramic disease attack at the autumn wheat seeds treated with insect – fungicides

Crt. No.	Variant	Dose kg/l/t	Density of plants /m^2	Attacked plants /m^2			Frequency of attackc %			Production kg/ha	Differences
				Septoria	Fusarium	Tilletia	Septoria	Fusarium	Tilletia		
1	Non treated-**Mt**	-	405	22	12	10	5.4	2.9	2.4	5050	-
2	Vitavax 200 FF	2	426	12	8	4	2.8	1.8	0.9	5440	+390
3	Dividend MU 30 FS	1	435	10	4	2	2.2	0.9	0.4	5630	+580
4	Kinto Duo	1	452	6	3	0	0.6	0.6	0	5960	+910
5	Orius 60 FS	0,5	460	8	4	3	1.7	0.8	0.6	5820	+770
6	Yunta quatro 373,4 FS	1,5	473	2	1	0	0.4	0.2	0	6200	+1150

The obtained wheat production presents significant negative differences in comparison with the witness from 240kg/hectare in the case

of the variant treated with Kinto Duo to 1150 kg/hectare in the case of the non treated variant.

The maximum wheat production was obtained in case the seed was treated with the insect fungicide called yunta quatro 373,4 FS – the witness variant of 6200 kg/hectare.

The influence of the insect fungicide seed treatment upon the pests, at the autumn wheat.

The wheat treatment with fungicides and with insect fungicides emphasizes the favorable and absolutely necessary effect of the treatment before sowing in comparison with the non treated variant of the seeds in order to obtain high productions in conditions of economic efficiencies. (table 2).

The frequency of the pests attack is high in the case of the Eurygaster species for the non treated variant reaching 5,1% and for the variants treated with fungicides (Vitavax 200 Ff, Dividend MU 30 FS) it is between 0,7% - 1,2% and in the case of insect – fungicides the frequency of the attack is of 0.4-0.2%.

For the *Agriotes* and *Zabrus tenebrioides* species a reduced frquency of the attack is noticed (3.8-4.3%) for the non treated variants a slightly higher level in the case of the variants treated with fungicides (0.7-1.9%) and in the case of using the insect-fungicides the level of the attack is reduced from 0.4% in the case of using Yunta 246 FS up to 0% in the case of using Yunta quatro 373,4 FS which contains four active substances with contact and systemic features.

Table2

The frequency of the pests attack at the autumn wheat seeds treated with insect - fungicides

Crt. no.	Variant	Dose kg/l/t	Density of plants/m^2	Attacked plants /m^2			Frequency of attack %			Production kg/ha	Differences
				Agriotes spp.	Eurygaster spp.	Zabrus tenebrioides	Agriotes spp.	Eurygaster spp.	Zabrus tenebrioides		
1	Non treated - **Mt**	-	390	17	20	15	4.3	5.1	3.8	4750	-
2	Vitavax 200 FF	2	415	5	6	8	1.2	1.4	1.9	4910	+160
3	Dividend MU 30 FS	1	422	3	4	6	0.7	0.9	1.4	5160	+410
4	Yunta 246 FS	2	435	2	2	1	0.4	0.4	0.2	5650	+900
5	Yunta quatro 373,4 FS	1,5	452	0	1	0	0	0.2	0	5950	+1200

The obtained in the case of treating the seeds with insect fungicides are significant in comparison with the Non treated witness variant. When the seeds were treated with fungicides there is a production increase from 160 - 410 kg/hectare and in the case the seeds are treated with insec fungicides the production increase reaches 900-1200 kg/hectare.

The production differences are noticed in the case of the same class of insect fungicides thus there is a difference of extra 300 kg/hectare at yuinta quatro 373,4 FS this being due to its composition of four active elements which have got a large spectrum of action on the attack of the pests and of the pathogen agents..

From these data it comes out that it is necessary to treat the seeds with fungicides and where there is the case of a crop rotation with straw cereals after another straw cereal the insecticide treatment of the seeds is a must. The protection of the autumn culture starts with treating the seeds which shall protect the seed anf the young plantlet up to 30 days from the sowing moment, period in which the plants are the most vulnarable in fron tof the pathogen attacks found on the surface of the seeds as well as in the ground. The most important diseases controlled by the seed treatment are: Common smut*(Tilletis sp.*), Fusariosis(*Fusarium spp.*), Septoriosis(*Septorium spp*), Flying and dressed up smuts (*Ustilago spp*), Leaves'tearing(*Pyrenophora spp*).

CONCLUSIONS

The seed treatment represents a major importance in obtaining huge and high quality productions free of pests and of pathogen agents.

In order to achieve these aims it is necessary to treat the autumn wheat seeds against the diseases by choosing large destruction spectrum fungicides like the following products: Dividend MU 30 FS which contains two active substances with different chemical and physical features complementary in their efficiency for a long term control of the different seed or ground catching diseases like the fusariosis, the common smut, the septoriosis.

In case of soils infested with pesta it is necessary to use insect fungicides like Yunta 246 FS(it contains two active substances) or Yunta quatro 373,4 FS- (which has in its composition 4 active substances with contact and systemic features and which has a long term protection effect shown even from the beginning, since the seeds' germination period, leading to a more vigorous growth of the plantlets in their early development stages and which then continues according to the local conditions until after being united.

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