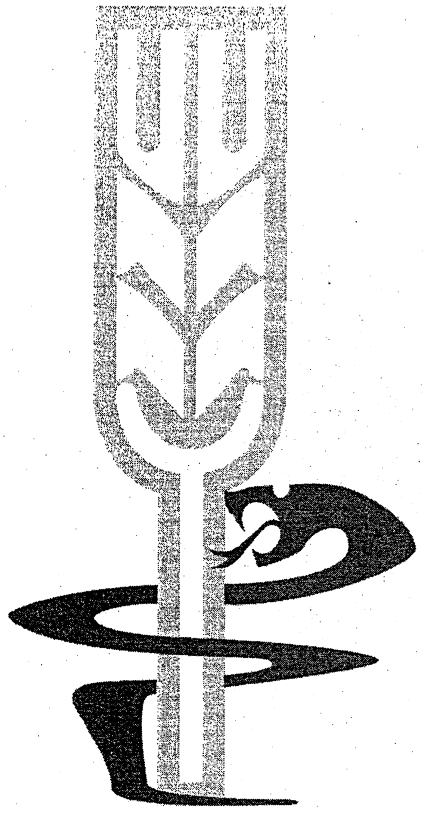
70th Anniversary of Plant Protection Institute
and Annual Balkan Week of Plant Health

BOOK OF ABSTRACTS



Plant Protection Institute
May 28 - 31, 2006
Kostinbrod, Bulgaria

Under the Auspice of
the Minister of Agriculture and Foresty - Nihat KABIL

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Mame Disrupmion Pheromones in IPM and Their Role in Control of *Lobesia botrana* Schiff. in Viney Ards in Macedonia

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Poster

The main point of the new concepts of the Plant Protection in last decade are conservation of the environmental and biodiversity, efficient control of the pests and production of the food with low inputs of the synthetic pesticides. Reduction of the chemical pest control is possible only with accompanied with altemative methods of pest control with positive role to the benefitials, food quality and safety. One of the most appropriate methods is biological control, used [oz many years, mainly [oz the insects and later for the other pests. Development of the insects pheromones and other semiochemicals is one of the most perspective way which has opened up new possibilities for reduction of the synthetic pesticides, mainly insecticides.

Insects pheromones are. compounds for insects signalization and communication used as a insect lure and for monitoring or mating disruption (autoconfusion). The pheromones are species-specific with strong effects to the target pest and have low influence and toxicity to environmental, mammals, birds and other benefitials. Pheromones have no residues on food, no health problems due to human consumption and have several hundred times less residues than synthetic pesticides.

In 2005 for the first time we used mating disruption pheromones [oz control of European Grape moth Lobesia botrana Schiff. in vineyards in Macedonia. *L. botrana* is economic important pest and their control is regularly consisting of application of the synthetic insecticides. The application of the mating disruption pheromones has shown positive results. The population of the *L. botrana* can successful been controlled with MD pheromones, but in some cases this method should be accompanied with insecticides. We succeed to control *L. botrana* in 2005 in experimental trials in Macedonia with MD pheromones and 2 insecticidal treatments.

Application of Chemicals in Protection of Crops in R. Macedonia With Special Reference to Tobacco Production

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Poster

Chemicals are frequently used in protection of tobacco and other cultural crops. Statistical data reveal that in a long-term period of 25 years, the consumption of chemicals by the farming companies and co-operatives has a tendency of decreasing. Thus, from the total amount of 2.584 tons of chemicals consumed in the first investigated year - 1979, it fell down to 222 tons in 2003, which is almost 12 times lower.

A questionnaire which included about 300 individual tobacco farmers revealed that 95% of them used some product for tobacco protection during the whole process of growing, of which 42% apply chemicals in the soil during the phase of seedling production, 21% make preventive protection and 74% protect transplanted tobacco when necessary.

Data from the long-term investigations (1979-2003) and results of the poll (2005) are presented in this paper.

Key words: chemicals, statistical data, consumption, tobacco production, cultivated area

APPLICATION OF CHEMICALS IN PROTECTION OF CROPS IN R. MACEDONIA WITH SPECIAL REFERENCE TO TOBACCO PRODUCTION

*T. Miceski, B. Gveroska, B. Jovanoski, M. Smokvoski**

Tobacco Institute-Prilep

Abstract

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INTRODUCTION

The occurrence of various diseases, weeds, pests and insects imposes the need of continuous use of chemicals for crop protection, like fungicides, herbicides and insecticides.

Statistical data related to their consumption by agricultural companies and cooperations in Macedonia, in a period of 25 years, reveal a tendency of decreasing. Thus, from 3000 tons of annual consumption in 1980 and 1981, it fell to below 250 tons in 2002 and 2003, i.e. 12 times lower.

A part of these chemicals was used in protection of tobacco crop, which can be attacked by a great number of disease agents.

Tobacco crop could be attacked by over 46 agents (Mickoski, 1984; Taskoski ,1999, Gveroska, 2005). It can be also attacked by various pests (Todorovski, 1969; Vasilev, 1984; Jovanoski,1999), among which the most widely distributed are:*Thrips tabaci Lind, Myzus persicae Sulz., Heliothis armigera Hbn, Epithrix hirtipennis Mels,* etc.

In order to prevent the attacks of disease causing agents and to secure proper nutrition of crops for increasing their yield, quality and financial effect, 95% of the farmers use some protection of tobacco.

The aim of our work was to estimate the total consumption of chemicals in disease control and to get relevant data concerning the extent and mode of tobacco protection in seedbeds and in field.

Information and statistical data obtained by the farmers included in our investigations are presented in this paper.

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MATERIALS AND METHOD

Reports of the Statistical Bureau of R. Macedonia were used as a source of information on the total consumption of chemicals in the country. To obtain information on the application of chemicals by the farmers, we used the questionnaire made for this purpose, consisted of seven questions and several answers offered for each question. Separate investigation was performed during the summer in 2005, in tobacco producing regions on the eastern, southern and south-western part of Macedonia. The poll was made by the method of randomized choice.

The data obtained were processed by the use of analytical, mathematical-statistical and comparative methods.

RESULTS AND DISCUSSIONS
-Consumption of protective products-

Consumption of products for crop protection in the Republic of Macedonia for a long-term period of 25 years (1979 - 2003) was estimated by statistical processing of the obtained data (Table 1, Figure 1).

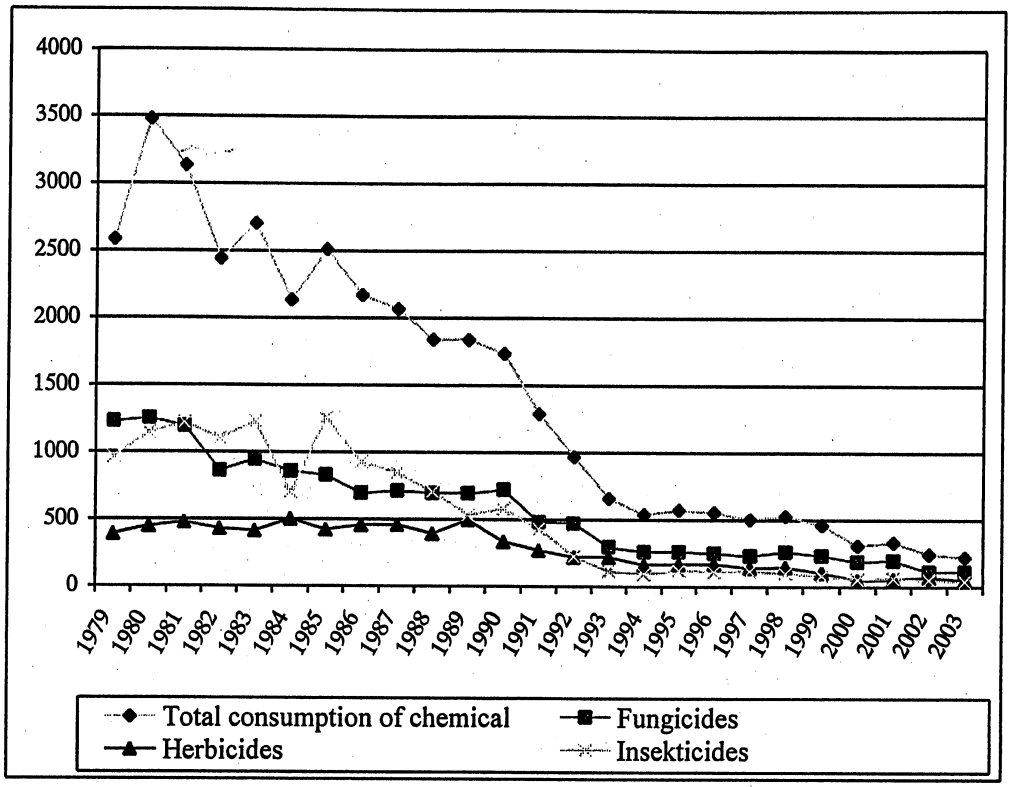
Tab.1 Trends in consumption of chemicals for plant protection in agricultural enterprises and agricultural cooperatives in R. Macedonia

in tons

Years	Total	Fungicides	Herbicides	Insecticides
1979	2.584	1.228	389	967
1980	3.479	1.253	448	1.144
1981	3.137	1.197	478	1.223
1982	2.445	863	430	1.105
1983	2.706	945	416	1.229
1984	2.135	862	503	700
1985	2.513	829	425	1.259
1986	2.173	696	457	927
1987	2.068	712	460	849
1988	1.841	698	395	708
1989	1.840	695	500	535
1990	1.738	720	336	580
1991	1.290	484	271	430
1992	970	473	223	227
1993	659	294	223	115
1994	540	260	165	93
1995	573	262	169	122
1996	556	251	172	112
1997	506	231	143	118
1998	529	262	149	103
1999	462	234	107	84
2000	308	189	50	57
2001	333	200	59	66
2002	245	113	73	54
2003	222	116	52	42

Surce: Statistical Yearbooks of the Republic of Macedonia 1980-2004\\

Graph.1. Trends in consumption of chemicals for plant protection in agricultural enterprises and agricultural cooperatives in R. Macedonia (in tons)



As could be seen from the Table, the consumption of these products in Macedonia (1979-2003) shows a tendency of decreasing both in total and separately by each fungicide, herbicide and insecticide.

There are several reasons for such a dramatic decrease:

- reduced economic activity (reduced use of agricultural areas) in Macedonia and their inadequate adaptation in the period of transition, bankruptcy processes that has been held and liquidation of the agricultural companies and cooperations;
- the increased effectiveness of the active ingredients, their concentration, formulation and application rate in unit area;
- following the intentions in the European Union and global policy of environment protection, by application of products with selective effect and reduced toxicity for humans and environment, etc.

APPLICATION OF CHEMICALS FOR CROP PROTECTION BY MACEDONIAN FARMERS -

Tobacco growers are aware that protection of seedlings and of transplanted tobacco from weeds, diseases and harmful insects is of particular importance for production of good quality tobacco raw. They also know that it should be performed timely and with ecologically acceptable products.

Beside agrotechnical and hygienic measures in the control of weeds, diseases and pests, tobacco growers also apply chemical products.

The most popular and frequently applied chemicals among the farmers are the following: Devrinol WP-50, Galex, Stomp 33E, Bonalan EC, Fusilade super and Grasipan.

Results of the investigations on the use of pesticides in tobacco protection applied by the farmers in Macedonia are presented in Tables 2, 3, 4 and 5 and Figures 2, 3, 4 and 5.

Table.-2 Protection with chemicals in seedbed and field production of tobacco

Answers	Percentage
Yes	95 %
No	5%

Graph. 2- Protection with chemicals in seedbed and field production of tobacco

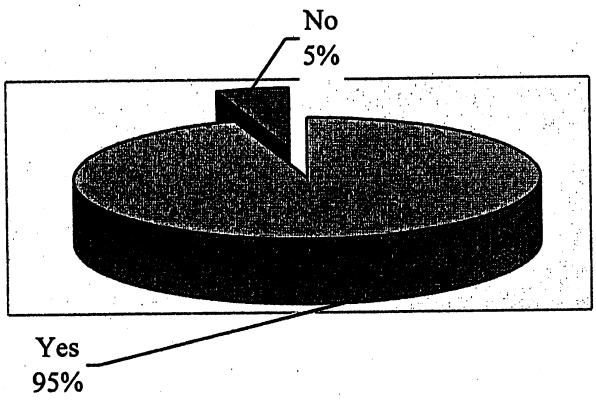


Table 3- Seedling protection during the growing period

Answers	Percentage
Preventively	56 %
When necessary	39%
No	5%

Graph.3- Seedling protection during the growing period

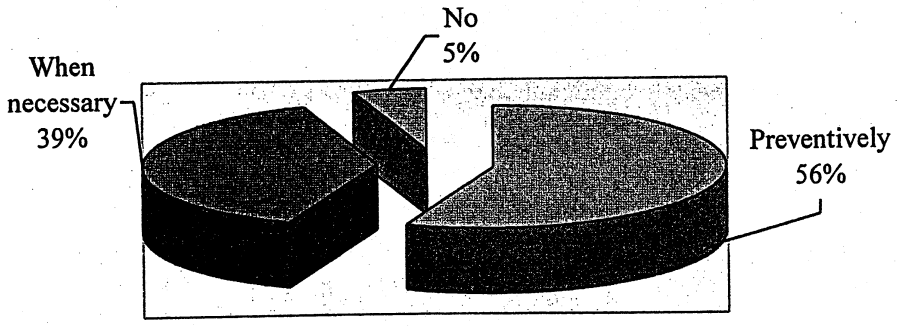
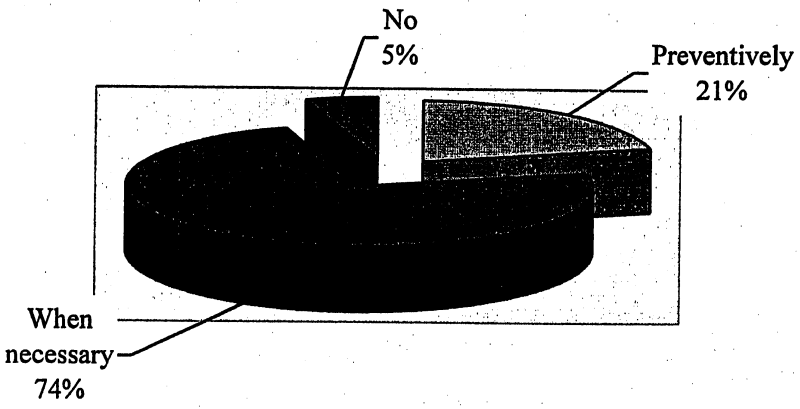


Table.4- Protection of transplanted tobacco

Answers	Percentage
Preventively	21 %
When necessary	74%
No	5%

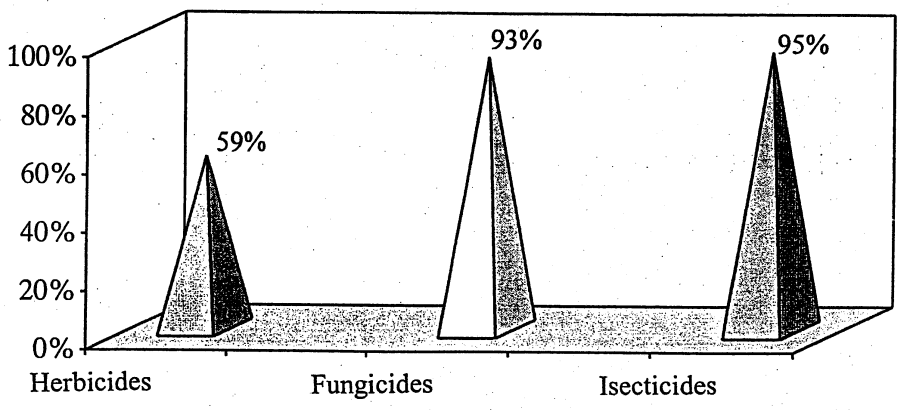
Graph.4- Protection of transplanted tobacco



Graph.5- The most frequently applied pesticides in tobacco protection

Used chemicals	Percentage of use
Herbicides	59 %
Fungicides	93%
Insekticides	95%

Graph.5- The most frequently applied pesticides in tobacco protection



CONCLUSION

Investigations reveal that consumption of chemicals (fungicides, herbicides, insecticides) used for plant protection by agricultural companies and cooperations in Macedonia during the period of 25 years succesively decreases from year to year.

Thus, while in the first years of the analyzed period (1980 and 1981) 3000 tons were consumed in protection of crops, in the final investigated years (2002 and 2003) this figure fell to only 250 tons, which is 12 times lower.

Based on the results obtained from the questionnaire, the following conclusions can be drawn:

- 95% of investigated farmers apply some kind of tobacco protection, viewed from the aspect of tobacco growing process as a whole;
- 56% of them apply preventive measures and 39% protect the seedbeds when necessary;
- 59% of the farmers apply herbicides, 93% - fungicides and 95% - insecticides.

It can be stated generally that the individual tobacco growers apply suitable products for protection of tobacco.

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