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# **Z A Š T I T A B I L J A**

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FREQUENCA AND VIRULENCE OF PHISIOLOGIC RACES OF  
*ERYSIPHE GRAMINIS* f. sp. *TRITICI* IN SOUTHEASTERN  
YUGOSLAVIA IN 1978—1982

by

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Summary

In 1978—1982, from the powdery mildew specimens collected in Vojvodina, Serbia, Macedonia, Montenegro and Bosnia and Hercegovina 780 isolates were studied.

Forty four races were identified, most of which have been isolated in previous investigations. Only the races 48, 61, 64, 71, 74 and 84 were found to be the new ones.

Two races: 27 and 64 appeared continuously each year, while the others only occasionally, i. e. in some of the years.

On the basis of virulence factors, all the races are clasified in six groups, the last one with the races 47, 61, 71 and 84 being the most virulent.

INHERITANCE OF RESISTANCE TO *Puccinia recondita* F. SP.  
*tritici* FROM THE FOUR BASIC SOURCES OF RESISTANCES

by

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S u m m a r y

We conducted a program of crossing between resistant wheat lines that had been developed earlier at the Institute of Field and Vegetable Crops in Novi Sad and new intensive wheat varieties and lines. The resistance to the examined agent of leaf rust draws origin from the varieties Gabo 56, Lee, Purdue Composite, and Warrior-Agent. It had been transferred to some NS wheat lines in an earlier crossing program.

The usefulness of these resistant lines in hybridization programs depends on their capacity transferring resistance genes.

Our experiment showed that the examined lines do possess genetic resistance to *Puccinia recondita*. Their  $F_2$  progenies segregated to one and three pairs of resistance genes.

It was concluded that the lines can be used in breeding for resistance to the pathogen as well as that these lines provide different genetic bases for that character.

EFFICIENCY OF SOME FUNGICIDES IN CONTROLLING LEAF STRIPE  
(*DRECHSLERA GRAMINEA*) AND NET BLOTCH (*D. TERES*) OF  
WINTER BARLEY

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S u m m a r y

Leaf stripe (*D. graminea*) is a widespread and serious disease of winter barley in Yugoslavia. It appears nearly every year causing large damages in fields, in which untreated winter barley seed is sown. However, a relatively high incidence of leaf stripe has also been observed in many crops following the introduction of Quinolate-V-4 x (carboxin and Cu-oxin) for seed disinfection. A high incidence of net blotch (*D. teres*) is also registered in some years, causing premature ripening of winter barley.

The efficiency of different fungicides in controlling these diseases was studied under laboratory, glasshouse and field condition. Most of the tested fungicides, applied as seed disinfectants, tended to decrease seed germination on filter paper. However, the emergence of plants was much better by testing treated seed in pots with soil under glasshouse condition (tab. 1.).

Large differences in the efficiency of the tested fungicides against leaf stripe, were found in the field trial. Best results were obtained with Rovral TS flow (iprodione + carbendazim), with both of the applied doses. Good control of the disease was also achieved by treating seed with imazalil — based fungicides. The seed yield of barley was increased when the intensity of disease attack was reduced (tab. 2.). Two foliar treatments of winter barley with tilt (propikonazol) had no effect on the leaf stripe incidence (tab. 3.). It proves that barley seed is the most important source of infection by *D. graminea*.

There was no effect of seed treatment with different fungicides on the development of net blotch, which appeared at the end of the growth period (tab. 4.). Two foliar treatments, using tilt, slightly decreased the infection by *D. teres* and increased the yield of barley seed.

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EFFECTIVENESS OF THE FUNGICIDES RIDOMIL Z-58, RIDOMIL Z-72, RIDOMIL Mz-58 AND RIDOMIL Mz-72 IN CONTROL OF *PERONOSPORA TABACINA* ON PLANTED TOBACCO

by

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S u m m a r y

In the course of 1981, 1982 and 1983, the effect of four systemic fungicides Ridomil Z-58, Ridomil Z-72, Ridomil Mz-58, and Ridomil Mz-72 was investigated upon the tobacco pathogen *Peronospora tabacina* Adam.

The trial were done on the trial field of the Tobacco Institute in Prilep, on a planted tobacco of the Prilep variety. The contact fungicide Antracol 70 was applied as a standard, and the untreated plots were used as a control.

All the four systemic fungicides have appeared to be very effective in the control of PTA. Three treatments secure almost complete protection of tobacco plant from the parasite. The first treatment is carried out 20 days after tobacco planting, and the other two a time interval of 14 days one from another.

Beside the fungicides effect upon the pathogen, their effect upon the yield, quality and chemical content of tobacco was also investigated.

The above mentioned fungicides have improved the tobacco yield for 27—32%. The average price and the percent of high class tobacco were also increased.

According to the effect of the fungicides upon the chemical content of tobacco, a suitable effect could be observed upon the content of some chemical components which affect the tobacco quality.

diteljima i izbora zdravih biljaka na polju kroz pet generacija samooplodnje dobijene su nove sublinije paprike koje su po krupnoći ploda, debljini perikarpa i težini ploda na nivou ili čak superiornije od njih.

— Postoje veliki izgledi da su u neke od ovih linija, posebno u liniju 12, inkorporisani geni otpornosti prema virusu mozaika krastavca.

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### REACTION OF SOME SUBLINES OF INTERSPECIES HYBRIDS OF PEPPER TO CUCUMBER MOSAIC VIRUS

by

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#### Summary

On the base of the results of investigation and obtained dates, the following conclusions can be drawn:

— From progenies of interspecies hibridization (*C. annuum* × *C. chinense*) × *C. pendulum* through 4 backcross generations with recurrent parents and choise of healthy plants in the field, and after that through five generations of selfpollination new sublines of pepper have been obtained. These sublines by dimensions of fruit, thickness of pericarp and average weight of fruit, are on level or even more superior than recurrent parents.

— There are great chances that in some of these lines, specially in line 12 have been incorporated genes of resistance to Cucumber mosaic virus.

INVESTIGATIONS OF THE SIDE EFFECTS OF DICHLORVOS  
ON PURE CULTURE OF *ASPERGILLUS FLAVUS*, *PENICILLIUM*  
*CYCLOPIUM* AND *FUSARIUM GRAMINEARUM*

by

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Summary

Some data of north American authors state that dichlorvos has an inhibiting effect on the mycotoxin development by some funguses. The data on the influence of this insecticide on the growth of funguses is poor, somewhat contradictory and dealing with species not very important in Yugoslavia.

The purpose of our investigations was to establish the effect of dichlorvos on the growth of three species of moulds which are very abundant on stored corn in Yugoslavia: *Aspergillus flavus*, *Penicillium cyclopium* and *Fusarium graminearum*. In our trials we have used Nuvan 7 containing 7% of dichlorvos. The dosage rates of Nuvan 7 used in these trials were corresponding to the concentrations of dichlorvos in the air of 4,25 to 34 ppm, and in the first trial 68 ppm.

Dichlorvos used in the concentration of 34 ppm has inhibited the growth of *A. flavus* 25%, *P. cyclopium* 21% and *F. graminearum* 50%, comparing with the untreated control. An expressed inhibition of pigmentation and of sporulation (except by *F. graminearum*) was registered also.

In trials with a formulation of Nuvan 7 without the active ingredient, i. e. dichlorvos, we have proved that the mentioned inhibiting effect is due to dichlorvos and not to an other component of Nuvan 7.

Our investigation have proved that dichlorvos has a mycostatic and not mycocidal effect, as the growth of fungus colonies has continued after the disappearance of dichlorvos.

## PHYTOPARASITIC NEMATODES ON SUNFLOWER IN SR SERBIA

by

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## Summary

The report deals with the occurrence and distribution of parasitic nematodes on sunflower in SR Serbia.

Special emphasis is placed on symptoms of damages, namely on pathogenic changes as affected by the infection intensity, both on individual plants and on the whole crop in the field, caused by the following nematodes: *Ditylenchus dipsaci* (Kühn) Filipjev, *Pratylenchus* spp. and *Meloidogyne incognita* Chitwood.

CONTRIBUTION TO THE KNOWLEDGE OF THE POPULATION  
DENSITY OF *ELATERIDAE* LARVAE ON THE FIELDS AFTER  
WHEAT GROWING IN THE REGION OF SOMBOR (1979—1983)

by

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Summary

Larvae *Elateridae* belong to the group of the most important pests on row crops in the northeastern part of Yugoslavia. They are included in the programme of the pronosis-report service. In the region of north-west Bačka with its centre in Sombor, which covers 192,000 hectares arable land, investigations of *Elateridae* were made each year on about 6,000—7,000 hectares on chernozem and meadow black earth. For this purpose was used the method of the soil inspection. In the course of five years were collected materials from 513 fields after wheat growing, on which were dug out 18,476 soil samples of 0,25 m<sup>2</sup> each.

The number of wireworms on the fields after wheat growing in the region of Sombor during the period from 1979—1983 moved from 4,6/m<sup>2</sup> up to 9,1/m<sup>2</sup>, with an average number of 7,0/m<sup>2</sup>.

On 42,5% of inspected fields were found 1—5 wireworms per 1 m<sup>2</sup>, whereas on 28,7% fields 5—10 wireworms per m<sup>2</sup> were found.

*Agriotes ustulatus* Schall. dominated in the whole population with 73,47%, but *Adrastus* sp. was also represented with 23,19%.

On the fields where sugar beet had been grown and after the chemical control of the pests in spring, an average of 1,4 wireworms was found per m<sup>2</sup> during 5 years investigation.

The population of *Elateridae* larvae appears again regardless to the passed period when wheat is grown on the same field 2, 3 or 4 years after the treatment.

Although the forecasting of appearance of earth pests offers the basis for the rational chemical control of the pests, it proved to be necessary to treat 99,8% of fields for sugar beet growing.

New complex methods of pest control (agrotechnical-biological) have to be introduced because the number of wireworms is permanently rising even beside the constant chemical treatment.

THE LIFE-CYCLE OF THE SUMMER FRUIT TORTRIX MOTH,  
*ADOXOPHYES ORANA* F. v. R. (LEPIDOPTERA, TORTRICIDAE)  
IN WESTERN SERBIA

by

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Summary

The flight dynamics of *Adoxophyes orana* F. v. R. moths, the duration of embryo development, larval and pupal development, overwintering sites of larvae and the number of generations in a year were monitored in the regions of Čačak (localities Čačak, Ljubić and Zdravljak) and Valjevo (locality Popučke) over the 1981—1983 period.

Summer fruit tortrix moth has been an economically important pest of apples and pears in the Čačak region since 1970. The population density of this tortricid was on the increase up to 1976, and so was the degree of damage it caused, but since then up to 1983 it has been on the mild decline.

The emergence of the first generation moth in the area under observation occurs in the second half of May and lasts till early July. The emergence lasts 27—50 days, averaging 37.5 days. The emergence of the second generation moths begins most often at the end of July and in early August and lasts till mid-September. The emergence lasts

38—62 days, the average flight duration being 48.4 days. The maximum moth emergence was assessed in mid-August.

The onset of oviposition period in the females of the first generation was assessed in the second part of May and in the second generation females from mid-July till early August. Embryo development in the field conditions averages 8.9 days.

The activity of the overwintering larvae was resumed in the first half of April. The first generation larvae appear in the first part of June and second generation ones in late July and early August. The larvae become established in the shelters made by binding the leaves, leaves and fruits or between the fruits that are in contact. Under field conditions, the life cycle of larvae lasts 32.2—37.0 days.

The transformation of overwintering larvae into pupal stage took place in the first part of May, and of the first generation larvae from late June till early August. The pupal stage lasts on the average 8.9 days in the field conditions.

Summer fruit tortricid overwinters in the third larval instar, although in some cases the second-instar, and exceptionally the fourth instar larvae can also enter the overwintering period. They overwinter in the folds of the bark of branches and twigs, under the bud scales, under the overgrowth of fruiting spurs (on pears), in the crotches of branches and twigs, in cracks in the bark, under the callus formed by pruning and in the densely woven silken cocoon. The larvae enter overwintering period in the first half of October.

In the climatic conditions of Western Serbia, *A. orana* moths develop two generations in a year.

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GAINING RESISTANCE OF *PANONYCHUS ULMI* KOCH.  
(*TETRANYCHIDAE*) TO PROPARGITE

by

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S u m m a r y

In this investigation susceptibility of *P. ulmi* — C (from Canada), Z (from Zemun) and C (from Čačak) populations — to Propargite after repeated selections lasting several years on apple was studied in natural conditions.

The results of investigation have shown that a five-year application of Propargite exerted some influence on the change of susceptibility parametres.

C population parametres of susceptibility (LD-50 = 800 mg/l, LD = 1350 mg/l,  $b = 2,8$ , DR = 1,43) reveal that the degree of resistance has increased by 1,43 thus confirming that susceptibility was of a heterogeneous nature. Susceptibility parametres of Z (LD-50 = 630 mg/l, LD-95 = 1350 mg/l,  $b = 4,25$ , DR = 1,13) and C (LD-50 = 650 mg/l, LD-95 = 1180 mg/l,  $b = 4,2$ , DR = 1,16) populations show that regression lines denoting these populations had an increased slope ( $b$ ) and a somewhat higher degree of resistance, indicating that resistance of these populations has also become of a heterogeneous nature.

Acknowledgement

We express our gratitude to Professor Dr D.H.C. Herne from the Research Station, Vineland — Canada, for the assistance offered to us in mastering the methodology and enabling us to achieve a part of results of this investigation on *P. ulmi*. S and C populations susceptibility to Propargite in his Institute.

GAINING RESISTANCE OF *P. ULMI* KOCH. (*Tetranychidae*)  
TO CYHEXATIN

by

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## S u m m a r y

In this study susceptibility of *P. ulmi* Koch. — **C** (from Canada), **Z** (from Zemun) and **Č** (from Čačak) populations to cyhexatin was investigated after a several year's application of this acaricide in protection of apple against mites.

The results of investigation have shown that the application of Cichexatin during a five year period with one treatment per year in *P. ulmi*. **C** population did not affect creation of resistant strains. **C** population parametres of susceptibility (LD-50 = 233 mg/l, LD-95 = 406 mg/l, inclination of regression line (b) = 3.85 and resistance degree (RD) = 1.08) indicate that this population has remained homogeneously susceptible.

The application of cyhexatin during the period lasting 7 years with two treatments per year in *P. ulmi*. **Z** population showed no influence upon gaining of resistance. Parametres of susceptibility of *P. ulmi* **Z** population (LD-50 = 223 mg/l, LD-95 = 406 mg/l, b = 3.75, RD = 1.03) reveal that this population has become heterogeneously susceptible.

The long-term application of cyhexatin in the system of rotation with other acaricides for treating *P. ulmi*. **Č** population on apple also did not promote creation of resistant populations. Parametres of susceptibility of *P. ulmi* **Č** population (LD-50 = 210 mg/l, LD-95 = 353 mg/l, b = 4.0, RD = 1.000) also indicate that this population has become heterogeneously susceptible.

**Acknowledgement**

We express our gratitude to Professor Dr. D. C. Herne from the Research Station Vineland — Canada, for the assistance offered to us in mastering the methodology and enabling us to achieve a part of results of this investigation on *P. ulmi*. **S** and **C** populations susceptibility to Cyhexsatin in his Institute.

Od ukupnog broja lutaka na proleće izletelo je imaga od 0,84% 1975. do 1,12% 1977. godine. Ova tahina u našim uslovima uglavnom prezimljava u stadijumu larve u drugom stupnju razvika u gusenicama plamenca.

— Broj larava *L. thompsoni* u parazitiranim gusenicama kukuruznog plamenca, kreće se od 1 do 5. U najvećem broju slučajeva je samo jedna larva (od 62,22% 1975. do 79,36% 1977. godine). Ređe su dve larve (najviše 1975. godine, 26,66%), dok je prisustvo većeg broja larava izraženo u malom broju slučajeva.

— Broj larvi *L. thompsoni* koje su završile razviće, odnosno broj izletelih imaga ovog parazita iz jedne gusenice kukuruznog plamenca, varirao je od 1,11 1977. do 1,23 1975. godine.

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- (Primljeno 19. 11. 1984)

### SOME BIOLOGICAL PROPERTIES OF *LYDELLE THOMPSONI* HRT. (DIPTERA, TACHINIDAE) — AN IMPORTANT PARASITE OF THE EUROPEAN CORN BORER

by

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#### Summary

In the present paper is studied the role of the parasite *Lydella thompsoni* Hrt., in the reduction of the European Corn Borer population in the region of Bačka Palanka. Further, there have been ascertained the state of development of this tachin in the course of the winter

period, the possibility of its hibernation in the stage of pupa under climatic conditions prevailing in the continental part of our country, as well as the numbers of its larvae and the influence of competition in parasitized caterpillars of the European Corn Borer.

The results have shown that in the period 1974—77, approximately one third of the population of the European Corn Borer has been exterminated by different biotic and abiotic factors. Among them, the parasites of the caterpillars played a primary part in the reduction of numbers of this lepidoptera. Among the parasites, *L. thompsoni* takes an important place, because they were in all the years the dominant species and reduced the European Corn Borer population from 13.10 p.c. in 1976 to 24.70 p.c. in 1975. The population of this pest in the course of the winter period was chiefly in the larval stage (from 95.38 p.c. in 1976 to 98.04 p.c. in 1975). A considerably less important part of the population of this useful insect was in the course of this period in the stage of pupa (the highest percentage in 1976: 4.62 p.c.). Considering the fact that the generations of *L. thompsoni* are not separated from one another, but mutually intertwined, the emergence of imagos lasts until the temperature becomes lower. In the mentioned period the smaller part of the parasite population only has flown out until the low temperatures have taken place, and they interrupted this process (from 18.26 p.c. in 1977 to 26.60 p.c. in 1976). The cocoons, too, contained mostly formed imagos, which did not emerge owing to the arrival of low temperatures.

The tachin *L. thompsoni* in the stage of pupa can hardly hibernate under the climatic conditions prevailing in the continental part of our country. It hibernates in the larval stage in the second development phase in the caterpillars of the European Corn Borer. In most cases *L. thompsoni* parasitizes the European Corn Borer caterpillars by a single larva (from 62.22 p.c. in 1975 to 79.36 p.c. in 1977). A comparatively high percentage of the existence of two larvae of the parasite, was especially in 1975 (26.66 p.c.). Where as the presence of several larvae of this parasite in a single caterpillar (up to 5) manifested itself in a few cases only. However, the number of larvae of *L. thompsoni* having concluded their development, resp. the number of emerged imagos of this parasite was only a little more than one and varied from 1.11 in 1977 to 1.23 in 1975, which indicates that with this tachin is expressed the competition for food and space.

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*PHYTOPHTHORA NICOTIANAE* (BREA DE HAAN) TUCKER VAR. *NICOTIANAE*  
WATERHOUSE, NOUVEAU PARASITE DU TABAC EN YOUGOSLAVIE

par

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## Résumé

Le parasite, provoquant le «pied noir» («black shunk») du tabac, a été constaté pour la première fois en Yougoslavie aux environs de Titograd, en 1983. Le cultivar «Visoki hercegovac», le plus répandu dans cette région ces dernières années, s'est montré sensible. Dans les conditions d'irrigation, pratiquées presque régulièrement pour ce cultivar, le nombre des plantes attaquées variait de 40 à 100%. La période des infections le plus nombreuses se situe vers le milieu ou à la fin de l'été.

Le champignon attaque tout d'abord la zone du collet des plantes, provoquant nécrose des tissus, qui s'étend vers le haut de la tige; la conséquence en est le jaunissement des feuilles, ensuite le flétrissement et à la fin leur dessèchement.

En culture sur gélose aux pommes de terre, il se développe un micélium blanc, duveté aux bords presque réguliers. Dans une culture jeune, les hyphes sont faiblement ramifiées, devenant coralliforme par la suite. Cinq jours après l'insémination, à 24°C, de nombreux sporanges se développent. Ils sont citriformes, pyriformes, ovoïdes ou de forme irrégulière, mesurant 39,6—66 × 29,7—42,9  $\mu$  en moyenne. La température optimale pour le développement du champignon est située entre 24°C et 28°C. L'accroissement le plus vite se réalise sur gélose à pommes de terre et à l'avoine, ensuite au moût de bière et aux prunes, le plus lent étant sur la gélose aux pommes.