UDK 632.9

YU ISSN 0372 – 7866

INSTITUT ZA ZAŠTITU BILJA I ŽIVOTNU SREDINU – BEOGRAD
INSTITUTE FOR PLANT PROTECTION AND ENVIRONMENT – BELGRADE

ZAŠTITA BILJA
PLANT PROTECTION

VOL. 43 (4), No 202, 1992.

Zaštita bilja, Vol 43(4), br. 202: 235 – 308 (1992), Beograd

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Original scientific papers

THE INTERNATIONAL PROGRAM WHEAT VARIETIES (IWWPMP*) RESISTANCE TO THE POWDERY MILDEW CAUSING AGENT

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Summary

IWWPMP (International Winter Wheat Powdery Mildew Program) is being conducted over a long period of time and our team is involved in it for over two decades. In the last couple of years, the Coordinator of this program has been Dr. Stevan Leath from the North Carolina State University, U.S.A. The attached paper discloses the 1990-1992 results obtained in the localities of Kragujevac and Novi Sad.

Our investigations revealed that not all the varieties included in this program are resistant to Powdery Mildew. In the three years of our investigations (1990-1992) at the two localities (Kragujevac and Novi Sad), the number of resistant and the number of susceptible varieties has been approximately the same.

We established the different reactions of individual genotypes that varied from year to year and from one locality to another, and that were caused by specific ecological conditions and virulence of the parasite population.

Effectiveness of the individual Pm resistance genes was not satisfactory.

The isogenic line CI 14189 with Pm 7 gene was resistant in 1990 but susceptible in the other two years. Amigo (Pm9) and Coker 983 (Pm 5 + Pm 6) varieties demonstrated a good resistance. In addition to them the resistance was also demonstrated by the following genotypes: GA 83125-C3-1, GA 821066-1-7-2-1, GA 85323-C15-2, GA 83213-13-1-5, GA 83228-4-4-2, GA 841465-2-1-1-3, GA 841465-2-1-1-4, GA 84034-1-4-3-1. VA 85-52-24, VA 85-54-290, VA 90-52-82, VA 90-52-49, VA 90-52-93, TX 88D3592, MD 80127-33, MD 81128-49, MD 81179-15, MD 81220-44, 862982, SC 870087, SC 880258, SC 880831, FR 89.5, FR 89.14, FR 89.16, FR 90.8, FR 91.6, FR 91.16, CH 75108, CH 75448 and others.

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(Primljeno 1. 04. 1993.)

TRITICALE REACTION TO SOME PROMINENT PARASITES

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Summary

The wheat-rye atopoliploid Triticale has a number of positive characteristics among which is its resistance to diseases. This research has been aimed to investigating and determining reaction of the various Triticale genotypes in our agro-ecological conditions.

The tests were done in 1989 at the Center of Small Grains Research in Kragujevac. We tested the resistance of the mature plants of 18 Triticale genotypes to the following parasites: *Erysiphe graminis tritici, Puccinia recondita tritici, Puccinia graminis tritici, Septoria* spp. and *Fusarium* spp. Testing to the obligatory parasites was done in conditions of artificial inoculation with prevalent genotypes in, so called, *„rust and powdery mildew nurseries"*.

The obtained results showed that Triticale is more resistant to more diseases that wheat. France 12 variety is the only one that demonstrated high sensitivity. The other two (Mexico 1 and Mexico 10) are medium-sensitive and the rest varied from „very resistant" to „the resistant".

There were genotypes resistant and the genotypes sensitive to *Puccinia recondita tritici* and *Puccinia graminis tritici*. We have found that Triticale is less resistant to the causers of leaf rust and leaf spot that to the powdery mildew. In some genotypes we recorded the necrotic spots in infected parts which further indicates that they incorporate the genes carrying a hypersensitive form of the resistance. A complex resistance to the powdery mildew, leaf and stalk rust was found in Triticale 4, Triticle 18, Mexico 3, Lasko, France 17, Kg 58, Kg 156 and S 344. As far as the leaf spot is concerned we recorded both the resistant and the sensitive genotypes. „Very resistant" genotypes were Mexico 10, France 17, S 344 and Rus 3, while „the resistant" were Triticale 4, Mexico 3, Lasko, France 4, Kg 58, AD 664, AD 666 and others. There were no genotypes immune to *Fusarium* spp.

All of the above indicate that the new donors of the genes resistant to the parasites of Fusarium genus will have to be found.

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(Primljeno 1. 03. 1993.)

OCCURRENCE OF VIRUS INFECTIONS IN STRAWBERRY FIELDS IN SERBIA

by

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Summary

Trials were conducted on the occurence of virus infections in strawberries at several localities in Serbia and the identification of causal viruses.

Indexing strawberries on different indicator clones and identification via transmission by aphid *Chaetosiphon fragaepholii* Cockerell showed that commercial cultivars were most frequently infected by the strawberry mottle virus. Strawberry crinkle virus was detected in collection orchard of the Fruit and Grape Research Centre in Čačak on cultivars Wadenswill 8, Belrubi and Vesper. Nepo viruses were not detected in any of the cultivars studied.

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(Primljeno 1. 03. 1993.)

EXPERIMENTAL TRANSMISSION OF PLUM POX (SHARKA) VIRUS (PPV) BY APRICOT AND PEACH SEED

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Summary

Seed transmission of plum pox virus (sharka) was tested in vineyard peach and apricot cv. Kecskemeter Rose (collected in Subotica and Čačak) from 1985 to 1987.

ELISA technique failed to detect virus presence in peach seeds, whereas a high proportion of mature seeds of apricot was found to be infected (29% Subotica, 37% Čačak). After germination of apricot seed, PPV was not detected by ELISA either in cotyledons or in germs. The virus was localized in the seed coat.

The PPV strains present in Čačak and Subotica are not transmissile by apricot and peach seed.

TESTING THE FUNGICIDES TOXICITY ON *PYRENOPHORA GRAMINEA* FUNGUS MYCELIUM

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Summary

This paper presents the results of testing toxicity of 28 fungicides on the growth of *Pyrenophora graminea* fungus mycelium. These fungicides belong to different chemical groups, as follows: carbamate-benzimidazoles, di-thio-carbamates-EDBC, di-thio-carbamates-tiuramil, phtalmides, di-carboxy-imides, anilides, pyrimidines, guandines, quinoilines, imazalyles, triazoles, benzene derivatives and the organic mercury compounds.

The testing was done in laboratory conditions by Leroux and Grdt (1972) method.

The results obtained show the growth of *Pyrenophora graminea* mycelium at different level of fungicides concentration as related to the time, 5, 10, 15, 20 and 25 days after over-sowing, and the interdependence is expressed by coefficient of the multiple linear regression and the standard error (Snedecor and Cochram, 1967).

We determined the fungicide concentrations lethal for mycelium growth. Such concentrations range is very wide, and it varies from 1.6 mg/kg (carboxyne + Cu – 8 – hydroxi – quinilate) to 25000 mg/kg (carbendazime). According to the lethal dosages the fungicides can be classified in three groups: 1) very toxic (up to 100 mg/kg), 2) medium toxic (from 200-800 mg/kg) and 3) low toxic (over 1500 mg/kg).

The first group includes: carboxyne + Cu – 8 – hydroxi – quinolate (1.5 mg/kg), imazalyle (6.2 mg/kg), metoxi-ethyl-mercury-acetate (10 mg/kg), triadimenol + phuberidazol + imazalyle, nuarimyl, TCMTB (100 mg/kg).

The second group includes: phlutriaphol (200 mg/kg), triadimenol, nuarimyl + imazalyle, carboxyne, carboxyne + TMTD. TMTD, iprodione + carbendazime, guazatin-acetate, guazatin-triacetate, phlutriaphol + thia-bendazol + etrimol, mankozeb and maneb (800 mg/kg).

Finally, the third group includes etrimol and captan (1600 mg/kg), phuberidazol, iprodione (3200 mg/kg) and carabendazime (over 25000 mg/kg).

In formulations with more active matters, we determined the level of certain compounds effect on the *P. graminea* mycelium. The results showed that the basic carriers of the effects are the following active matters and their combinations: imazalyle, carboxyne + Cu – 8 – hydroxi-quinolate, carboxyne + TMTD, iprodione + carbendazime, phlutriaphol + thiabendazol + etrimol, TCMTB, mankozeb, maneb and metoxiethyl – mercury – acetate.

If the lethal dosages and application quantities of the tested fungicides are connected (Table 4) we can make the choice of fungicides which will, in production conditions, demonstrate the appropriate efficiency.

The obtained results have shown that some combinations of the individual active matters demonstrated a synergistic effect, like in the case of the iprodione + carbendazime and carboxyne + Cu – 8 – hydroxi – quinolate, and the antagonistic effect in the nuarimyl + imazalyle combination.

AMITRAZ EFFECTS ON *PSYLLA PYRI L.*

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Summary

Amitraz is recommended for control of *P. pyri* in summer since the higher temperatures enhance its activity. Due to the weaker effects of IGR insecticides (di-phlubenzurone and others), Amitraz has recently been used in the spring as well, but with various success. With all this in mind, we aimed our research to the field experiments that would help us determine the adulticide and larvicide activity of Amitraz on high density *P. pyri* in the spring-time weather conditions.

The experiment was set up in the pear orchard of 180 ha in Sremska Mitrovica region on the abundant variety Bela di Djuno. The pear shoots had from 10-14 leaves with the fruits pointed toward the top of the tree.

Treatments:

1. Amitraz (Mitac 20EC; concentration 0.4%). Mitac 20 EC is manufactured by Shering, Berlin.

2. Amitraz (Mitac 20 EC; concentrtation 0.3%) + Cipermetrine (Ripcord 20 EC; concentration 0.02%) Ripcord 20 EC is made by Shell, London.

3. Amitraz (Mitac 20 EC; concentration 0.3%) + acrinatrine (Rufast + 15 EC; concentration 0.04%).

4. Amitraz (Mitac 20 EC; concentration 0.3%) + di-phluorobenzurone (DuDim SC 48; concentration 0.02). DuDim SC 48 is made by Duphar, Netherlands.

5. Acrinatrine (Rufast 15 EC; concentration 0.04%). Rufast 15 EC is manufactured by Uclaf, France.

6. Control group.

The experimental plots were 0.3 ha per each treatment. The time of spraying was: a) May 15 and May 29, 1992 for the treatments number 3,4 and 6, and b) May 29, 1992 for the treatments number 2 and 5. We used the atomizer „Morava" with 1500 l of water/ha. Activity of the insecticides was determined by following methods:

a) the visual inspection of 25 top shoots per treatment;

b) 50 beatings in the entomological catcher.

Certain number of the *P. pyri* imagos was collected with the exhaustor for determination of the sexes relation, the number of non-skeletal (green), skeletal (dark) and the transit forms of imagos.

Evaluation of the Amitraz activity was done prior to the treatment (T + O); on the 7th and 14th day after the first spraying and, on the 7th and the 14th day after the second spraying.

In the time from May 15 to May 31, 1992 when we conducted two sprayings, the average daily temperature was 18°C, with highs of 22.4°C, and the lows ar 11.1°C.

The lowest night temperature was 8.1°C. The total precipitation was 9.1 mm, meaning there were no conditions for the honeydew rinsing.

Prior to the spraying, the experiment included between 227 and 431 imagos in 50 beatings with all the shoots of the control group attacked. The level of *P. pyri* F_1 population was many times above the threshold for spraying (50 imagos in 100 beatings and 20% of the attacked shoots). The structuree of *P. pyri* population in the control group was heterogeneous: 431 imagos (21.6%); 1481 eggs (74.3%); 75 larvae L 1-3 (3.7%); and 6 larvae L 4-5 (0.3%) – Tables 1 and 2. The pressure

of the increasing *P. pyri* population was taken only by the amitraz + diphlubenzurone combination (Table 1, 5 and 6) after two sprayings, Amitraz alone and in combination with other insecticdes was able to bear it. In combinations of Amitraz with pyretroids we recorded the decrease of imagos density 7 days after spraying, but it was followed by the quick renewal of population shortly after. In all the treatments the two sprayings increased the adulticide activity to above 93.02% (Table 1). In applying Amitraz alone or in combinations, we found there were more females (3.2 to 6.2 times more) than males (Table 4).

The larvicide activity of Amitraz alone or in combinations has been above 93.74%. Pyretroid (acrinatrine) showed the low larvicide activity (8.83%) (Table 5 and 6) after one spraying.

LSD test showed the statistically significant differences between the adulticide and larvicide activity of insecticides on *P. pyri* as compared to the control group. Amitraz and the Amitraz combinations with other insecticides showed no significant differences (Table 2 and 7).

The honey mildew secterion has been dependent on larvicidal activity. Amitraz causes a quick leak of the honey mildew and fast drying, so in applying Amnitraz alone or in combinations, the occurrence of sooty mould has been significantly reduced (Table 8) or absent (amitraz + diphlubenzurone).

Based on the disclosed results, it can be concluded that the Amitraz may be used in control of *P. pyri* F_1 in the spring in higher concentrations with 2 sprayings or in combination with diphlubenzurone.

Zaštita bilja, Vol. 43 (4), br. 202: 293 – 298 (1992), Beograd

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UDC: 595.78 : 632.7
AGRIS: H10
Original scientific paper

BEMBECIA PAVICEVICI Toševski, 1989 – BIONOMICS AND FEMALE DESCRIPTION (LEPIDOPTERA, SESIIDAE)

Abstract: Description of female and bionomics of *B. pavicevici* and designation of *Sesia uroceriformis* deposited in TMB (Hungarian Natural History Museum – Budapest) are presented.

Key words: Lepidoptera, Seisiidae, Bembecia pavicevici, female description, bionomics, *Coronilla emerus, Fabaceae, Bemecia uroceriformis,* taxonomy.

Introduction

In the last four years thanks to application of synthetic pheromone as an accessory method in collecting the clearwing moths, several new species in fauna of Europe from the genus *Bembecia* Hübner, 1989 were described (Laštuvka, 1989a; Toševski, 1989; Toševski, 1991; Špatenka, 1992). *B. pavicevici* Toševski, 1989 was described on the basis of 21 males collected on pheromones from two sites in Macedonia: village Konsko (18 km north-east from Gevgelia) and Katlanovo (near Skopje). In mid-August of 1990, one female of *B. pavicevici* resting on *Coronilla emerus (Fabaceae)* was collected in proximity of Konsko. At the beginning of June 1992, the infested roots with mature larvae in small plant of *Coronilla emerus* were collected at the same locality. In late July, 1 female and 4 males of *B. pavicevici* and 1 female and 1 male of *B. uroceriformis* (Treitschke, 1834) emerged from this material. Until now the female bionomics and distribution of this species were unknown.

Materials examinated:

B. pavicevici: 1 female, 14. 08. 1990., Konsko, Gevgelia, South Macedonia, lgt. I. Toševski; 1. female, 4 males, ex 1., ex *Coronilla emerus (Fabaceae),* emerged from 22-28. 07. 1992., and more than 200 males collected on pheromone trap during July of 1990, 1991 and 1992 from the mentioned locality, all lgt. and coll. Toševski; 6 males, 10-27.07.1990, Udovo, D. Kapija, Macedonia; 4 males; 10.07.1990, Grackao, Macedonia; 13 males, 15-22.07.1990., Asprovalta, Greece; 1 male, 19.07.1990, Gravia, Greece; 4 males, 18-19.07.1990., Amfissa (Eleonasi-Varioni, 1200 m.), Greece; 3 males, 3-5.08.1989., Brač Isl.; 2 males, 6.08.1989., Žrnevica (Split), Dalmatia – All lgt. and coll. Toševski; 6 males, 10.08.1989., Hvar Ins., Dalmatia, lgt. and coll. Špatenka (Praha, Chechoslovakia).