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Scientific papers

Preliminary communication

RESULTS OF INVESTIGATIONS OF HEALTH CONDITIONS OF GYPSY MOTH (*PORTHETRIA DISPAR* L.) IN ACACIA FOREST »BAGREMARA«

by

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Summary

Health conditions of the gypsy moth (*Porthetria dispar* L.) from acacia forest, so called »Bagremara« near the town Bačka Palanka, was examined in the five years period (1978—1982). The data collected showed that:

Gypsy moth is present in the mentioned acacia forest several decades already. Population density was different from year to year (graf. 1). Even during the highest population density (1978) severe defoliation was not found.

By microscopic examinations it was found that gypsy moth in all development stages suffers from nosematosis provoked by *Nosema serbica* W. and nuclear polyhedrosis virus disease (baculovirus).

Average percentage of gypsy moth caterpillars died with symptoms of nosematosis was higher in case when caterpillars were fed on oak leaves (37,93%). In the contrary caterpillars fed on acacia leaves died from the same disease in lower percentage (27,48%). Percentage of the dead pupae derived from the caterpillars fed on oak leaves was 8,00%, while on those fed on acacia leaves was 3,96%. Exception was only 1982 year when mortality of the caterpillars with symptoms of nosematosis was some higher on the acacia.

The appearance of nosematosis and polyhedrosis during the examination period has been of quite opposite direction. Beginning with 1978, i. e. from the year of the highest population density of gypsy moth, nosematosis in larvae has been decreasing, and the virosis, gradually increasing, although in a milder form (graf. 2).

Gypsy moth caterpillars died from the one or the other disease, but in rare cases from both diseases (mixed infection). Caterpillars fed on acacia leaves died from mixed infection in a lower percentage then from virosis, but when fed on oak leaves they died from mixed infection and virosis in near equal numbers.

Gypsy moth caterpillars fed on oak leaves died from nosematosis in a greater number then from virosis and mixed infection (graf. 2) but when fed on acacia leaves the relation between mortality agents was somewhat different. Two years after the highest density population of the gypsy moth most intensive dying was from virosis, while from nosematosis and mixed infection death rate was considerably lower (graf. 2). The pupae derived from the caterpillars fed on acacia leaves 1,67% died with symptoms of polyhedrosis and those fed on oak leaves in

0,22%. This indicate that acacia leaves has positive influence on the developing of polyhedrosis in the caterpillars and later in the pupae of the gypsy moth.

Several years data shown that 27,68% of the caterpillars reached the stage of moth when fed on acacia leaves, but on oak leaves 49,58% of them reached stage of moth.

All moths in these experiments at the end of their life were examined and the spores of *N. serbica* were found in female and male which had normal appearance. In average in 18,84% of moths emerged from caterpillars fed on acacia leaves *N. serbica* were found, while in those emerged from caterpillars fed on oak leaves *N. serbica* spores were present in 43,16%. This data shown that oak leaves as the most suitable food for gypsy moth was also favourable for the development of *N. serbica.*

Nosematosis and polyhedrosis in gypsy moth from »Bagremara« forest together with other causing agents (parasites and others) grouped under other causes in tables, in the period of examination brought to permanent reduction of the gypsy moth population density mostly in the developed caterpillars. These factors contributed to the prevention of defolation in the forest.

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(Primljeno 17. 11. 1983)

THE RESULTS OF THE RESEARCH WORK CONCERNING THE SPREADING OF GRAPE MOTHS (*Lobesia botrana* Den. et Schiff. and *Eupoecilia ambiguella* Hb.) BY MEANS OF PHEROMONES IN SLOVENIA

by

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Summary

The following paper deals with a four years research work in the field of spreading the two species of grape moths through the pheromone traps and the corresponding pheromones in eleven locations in all vineyards regions of Slovenia (northwestern Yugoslavia). It has been established that both species i.e. *Lobesia botrana* Den. et Sciff. and *Eupoecilia ambiguella* Hb. are appearing in all vineyards throughout Slovenia. The average ratio between the two species calculated on the bases of the number of moths which were captured in the period of four years indicates the tendency of the prevalence of *Lobesia botrana* in the eastern parts of Slovenia; in the central regions both species are, more or less, evenly represnted while in the south-west (the vineyards in the Littoral) the species *Eupoecilia ambiguella* prevails to a greater extent.

Along with the illustrated tendency within the prevalence of one or the other species, the appearance of both species can be expected in the majority of vineyards in Slovenia during the individual years while the intensity of the appearance of one or the other species depends on the ecological factors, in the first place, on weather conditions.

The differences in the ratio between the species of moths captured with the pheromone traps in two Maribor vineyards within the distance of 2 kms from one another does not necessarely signify the presence of one or the other species in the individual vineyards in extensive regions.

With the analysis of caterpillars found in the grapes near the pheromone traps and through the comparison of the ratio within the species of the captured moths with the ratio of caterpillars it has been stated that these two ratios are often the same or they may even be completely different. Due to a large number of the captured moths with the pheromone traps in the vineyards, there is not always a larger appearance of caterpillars or this appearance may even be completely or it may appear in a neighbouring vineyard. Thus, it is proved that the afore mentioned conclusions concerning the capture of moths on one place does not mean the presence of the individual species in some vineyards of the whole region. This also proves that it can or it may not exist the correlation between the intensity of moths capture and the later attack of the caterpillars when a small number of the pheromone traps is used. Within such a distribution of the pheromone traps even a negative prognosis is not reliable what is, from the viewpoint of the warning service, of the utmost significance.

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(Primljeno 24. 03. 1983)

RESULTS OF THE EXPERIMENT IN CONTROLLING THE LEAF ROLLER (*PANDEMIS HEPARANA* DEN ET SCHIFF.) IN FIELD CONDITION

by

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Summary

In one of the orchards in the locality of Irig, size 45 ha, has been observed the overpopulation of *P. heparana*, whereas *A. orana* was just present. In order to investigate the possibilities of controlling there were laid two tests:

a) **Control of the spring generation.** For this purpose we used the following preparations:

1. Thuricide HP in conc. 0.1%*(B. thurinigiensis)*. Manufacturer Sandoz, USA.
2. Cymbush 10 in conc. 0.03% and 0.05% (cipemetrin). Manufacturer ICI, Great Britain.
3. Decis EC 25 in conc. 0.03% (deltametrin). Manufacturer Procida, France.
4. Sumicombi in conc. 0.075% (fenvalerat + fenitrotion). Manufacturer Sumitomo, Japan.
5. Cybolt in conc. 0.03% and 0.05% (flucitrinat). Manufacturer Cyanamid, USA.

The test was laid on April 13 when in the emergence case 94.5% of caterpillars in diapause were activated. Each treatment resp. con-

centration was applied on 1 ha. We used the preparations by means of the atomizer, type »Morava« and 1500 l/ha of water.

b) **Control of the summer generation.** For this test we used the following preparations: Cymbush 10 in conc. 0.05%, Decis EC 25 in conc. 0.03% and Cybolt in conc. 0.05%. The test was laid on June 18 at the time when the caterpillars begin to hatch or 24 days after the beginning of the flight of moths, ascertained by means of pheromones.

We followed the development of *P. heparana* by utilizing the following methods: visual survey, beating method, pheromones and rearing of caterpillars in the laboratory.

The efficacy of insecticides was determined by means of 3 methods:

a) survey of 60 shoots, chosen at random,
b) for determining of the »knock down« effect we used 10 foils in each treatment, which we laid under the trees,
c) by counting the caterpillars in the catcher after 100 beatings.

The efficacy of insecticides was evaluated in two periods:

a) 7 days after the test had been set
b) at the end of the development of caterpillars.

By a single treatment, but made at the optimum time, following results have been achieved:

Thuricide TM, under the conditions of low temperatures from 5.0 to 10.2°C at the time when the test was set for the control of the overwintering generation, achieved the efficacy of 44.58% only (Tab. 1).

Cymbush 10 and Decis E 25 achieved, in the control of overwintering and summer generations, the efficacy of 89.9 to 93.80% (Tab. 1 and 2).

Sumicombi and Cybolt had a less marked initial toxicity then Cymbush 10 and Decis EC 25.

There exists a high degree of correlation between the results we achieved by means of all of the three mentioned methods and this shows the validity of these methods.

POPULATION DYNAMICS OF RED FRUIT MITE *PANONYCHUS ULMI* (KOCH) ON DIFERENT APPLE VARIETIES

by

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Summary

Different susceptibility to damadge by European red mite *Panonychus ulmi* (Koch) of 6 apple varieties was analysed.

Mean number of active mites, and mean number of all developmental stages was counted and population dynamics of *P. ulmi* (Koch) was studied in apple orchard in 1981.

Tolerant number of mites per leaf was found. High population level was reached in August, except for Jonatan variety. Differences in mean number of mites per leaf between Red Delicious and all other varieties was found.

Mean numbers of mites varied widely between each variety, but differences were not consistent.

A CONTRIBUTION TO THE INVESTIGATION OF MAIZE SEED PROTECTION FROM *HELMINTHOSPORIUM CARBONUM* BY FUNGICIDE APPLICATION

by

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Summary

The efficiency of the effect of fungicides for seed treatment (Radotiram WP, Lekinol 15, Captan 50, Dithane S-60, Benlate 50) in *H. carbonum* control was investigated under laboratory conditions. This pathogen species was chosen because it is an important maize parasite but insufficiently studied.

The trial for this investigation consisted of several treatments: a — untreated seed; b — seed inoculated with the pure culture of *H. carbonum;* c — seed treated with individual fungicides; d — seed treated with fungicides and then inoculated with *H. carbonum;* and e — seed inoculated with *H. carbonum* and then treated with fungicides. In all treatments germination of seed, growth of seedlings up to the 3-leaf stage and, weight of seedling dry mass was observed. The method developed by Molot et Simone (7) was used for plant growing.

The results of investigation of fungicide effect for the protection of maize seed against *H. carbonum* show.

— Seed treatment with fungicides (c) increases germination by 3.5 to 5.5%.

— Level of germination of seed which was first treated with fungicides and then inoculated with *H. carbonum* (d) was within the limits of check (a).

— Germination of seed which was first inoculated with *H. carbonum* and then treated with fungicides (e) was 2.0 to 7.5% lower than check (a) but 6.0 to 11.5% higher than inoculated and untreated seed (b).

— Applied fungicides had an efficient effect on seedling growth up to 3-leaf stage.

— Seedlings that developed from seed that was only treated with fungicides (c) had higher growth than check plants (a).

— In the treatment where seed, after having been treated with fungicides, was inoculated with *H. carbonum* (d) fungicides inhibited fungus development, so seedling growth was on the check level (a).

— Seed treatment after inoculation with *H. carbonum* (e) did not completely eliminate the harmful effects of the pathogen, because seedling growth was lower than check plants (a) but considerably higher than seedlings developed from inoculated seed (b).

Efficiency of effect of fungicides for seed protection also affected weight of seedling dry mass of underground and overground part of the seedlings.

— Of all the investigated fungicides for the protection of seed from *H. carbonum*, the highest efficiency was shown by Radotiram WP, which in all treatments inhibited fungus development. All the same time, germination, growth and weight of seedling dry mass was higher or comparable to the level of check plants (a).

— Coefficients of correlation show that most fungicides had approximately the same degree of efficiency for the investigated factors.

On the whole, the results of this investigation show that the applied fungicides were efficient in protection of seed and young seedlings from harmful effects of *H. carbonum*.

SUSCEPTIBILITY OF SOME SOYBEAN VARIETIES TO WHITE MOLD *(Sclerotinia sclerotiorum)*

by

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Summary

Resistance of 200 different soybean varieties to *Sclerotinia sclerotiorum* under natural condition of infection was studied in field trials in 1979. Also in filed trials in 1981. was examed resistance of 26 widespread varieties in Vojvodina, using artificial infection by sclerotia of fungus In 1981 year 26 varieties were tested in glasshouse under artificial conditions of inoculation, using micelium of *Sclerotinia sclerotiorum.*

According to the results obtained it is concluded that the large differences in susceptibility were observed among the examined soybean varieties of 00 group of maturity were the most resistant. The varieties of 0 and I groups of maturity, depended on the distribution of rainfalls, were or very high infected, in 1979, or healthy in 1981, where they escaped infection. The varieties of II groupe of maturity were the most susceptible.

In glasshouse, under artificial conditions of inoculation, all examined soybean varieties were more or less susceptible to *S. sclerotiorum.* In these examinations the most susceptible varieties were Evans, Wells, Amsoy, NS-kasna and Harosoy 63. The most resistant varieties were Fiskeby, Wabash, Maple presto, Aesne and Renville.

tab. 1 vidi se da je utvrđena na 65% pregledanih iglica. Po rasporedu napada na izbojcima ove i druge gljive jasno se uočava da ona prva inficira zelene zdrave iglice (Sl. 3b), a tek tada slijedi napad druge vrste. K tomu zaražene zelene iglice su blijede boje i u određenom stadiju odumiranja, a na njima nije utvrđena ni jedna druga gljiva, pa se blijeđenje i odumiranje iglica može pripisati samo djelovanju ove vrste gljive. Još možemo napomenuti da se ona mnogo češće susreće na piniji nego na alepskom boru.

Na kraju možemo reći da ne stoji činjenica da je gljiva *T. halepensis* na iglicama pinije prisutna samo kao saprofit kako to navodi Biraghi (1955), već da ima izvesno i parazitsko značenje kako na piniji tako i na alepskom boru. Svakako će trebati još mnogo rada da je dobro proučimo i upoznamo njeno značenje kao parazita.

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(Primljeno 24. 03. 1983.)

OCCURENCE OF FUNGUS *THYRIOPSIS HALEPENSIS* (Cooke) Theiss. and Syd. ON NEEDLES OF *PINES PINEA* and *P. HALEPENSIS*

by

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Summary

This paper reports the finding place and some characteristics of Ascomycet fungus *T. halepensis* found out on needles of *Pinus pinea* and *P. halepensis*. A. description of the fungus is presented, the both, ascogenous and conidial stage described, and the time of its appearance as well as the disease's symptoms.

In order to demonstrate the parasitism of this fungus about 7.700 needles of *P. pinea* were examined. The presence of *T. halepensis* was detected on 65% of examined needles. It was established that the green one year old needles were at first attacked by *T. halepensis* and later by *Elytroderma torres — juanii*.

The investigations carried out have demonstrated that in Dalmatia region *T. halepensis* is widespread and important pathogen on needles of both pine species, *P. pinea* and *P. halepensis*.

STUDY OF PROGNOSIS OF THE FUTURE OF FOREST FIRE-INJURED TREES

by

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Summary

The great fire appeared on March 27th 1973 in Deliblato Sand comprised the surface of 1006,69 hectare has left behind numerous stemp with different damage degrees. According to the degree of damage all stems have been classified into six groups so that in the first are classified the living stems with insignificant injuries of assimilation organs and of the bark, and into the sixth group the dry stems almost completely carbonized. On the samples plots selected afterwards the number of trees belonging to individual categories has been established. Following the development of the trees damaged by the fire and of their colonization by insects and fungi rendered possible productions regarding the future of the trees of various levels of injuries. Prognoses have been made as to wether the trees will survive and whether they will recuperate.

Immediately after the fire the trees whose physiology has been affected more strongly (4th to 6th category) were colonized by insects (conifers) and fungi (broadleaved species). Thus they represent a suitable basis for reproduction thereof. The prognoses for the future of such trees can be considered negativ: it has been recommended such trees be removed immediately the fire. The trees damaged by the fire to a lesser degree (1st to 3rd category) have a chance of survival, providing quick sanitary measures are undertaken in time. On the fire-burnt trees of various forest trees species (*Pinus nigra* Arn., *P. silvestris* L., *Populus* spp., *Betula verrucosa* E.) 27 species of harmful insects and 26 species of fungi have been found.

PESTICIDES — APPLICATION AND RESIDUES IN FOOD

by

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Summary

A short review of the application and reprezentation of particular groups of pesticides in Yugoslavia has been given, as well as the results of measurement of pesticide residues in foodstufs of plant and animal origin from 1977 to 1981. The samples were collected in the retail network from different towns and from different producers.

Pesticide residues were determined by gas-liquid chromatography.

The results showed that pesticide residues from the group of chlorinated hydrocarbons were present in most of the products analyzed. The greatist per cent of contamination was found in foodstufs of animal origin, with residues of one or more pesticides (over 95% samples). In vegetables 85.9% of the samples contained residues, and in fruits 74,4%.

Te amounts of residues found in products of animal origin were much greater than in products of plant origin. A decrease in residue contents was noticed from year to year. The residues occuring most frequently were those α-HCH and lindan, and after that, DDT and its metabolites.

Slične rezultate su dobili Šutić i Ranković (1983) u ispitivanjima nekih sorata šljiva, među kojima sorta Scoldus No. 1 nije mogla biti inficirana ni veštačkim načinom. Iako je u ovoj sorti otkriveno prisustvo virusa hlorotične pegavosti lista jabuke (CLSV), autori ne komentarišu njegov uticaj na zaraze virusom šarke.

U dosadašnjem radu na problemu otpornosti sorata šljiva prema virusu šarke obično je pridavan značaj genetskim činiocima, dok su ostali činioci otpornosti biljaka bili zapostavljeni. U tom pogledu neopravdano su zanemarena istraživanja odnosa pojedinih virusa prema virusu šarke. Ovo kratko saopštenje indicira da ti odnosi mogu biti i antagonistički.

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(Primljeno 15. 12. 1983)

CONTRIBUTION TO THE STUDY OF RESISTANCE OF PLUM CLONES TO SHARKA VIRUS

— Preliminary communication —

by

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Summary

It was investigated the presence of viruses in a clone of Požegača resistant to infection by Sharka virus in nature. It was found, that the plants of this clone infected by apple chlorotic leaf spot virus (CLSV) and prune dwarf virus (PDV), were without Sharka virus, but plants without CLS and PD viruses were infected by Sharka virus.

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(Primljeno 5. 09. 1983)

MORPHOLOGICAL AND CULTURAL PROPERTY *Phytophthora megasperma* (Drechsler) *var. megasperma*, OF THE NEW PATHOGEN ON OIL RAPE IN YUGOSLAVIA

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Summary

On the field of OOUR Ratarstvo Lipovljani in the year 1980 it was noticed that a large number of the plants oil rape (variety Jet neuf) withered. The disease is characterized by a reddish discolaration of the older leaves followed by a sudden wilting of all the older leaves, which fall prostrate to the ground leaving the head or curd exposed. The lower end of the taproot, aften along with the untergrounde part of the stem was rotted and infected plants may be pulled from the soil with little effect. The cortex of the taproott and lateral roots was, saftened and watersoaked usually sloughs off, and remained in the soil when the plant is pulled out. About the upper edge of the diseased part of the root sometimes may be callus formation and adventitious roots sometimes produced. The fungus was isolated by planting tissue fragments taken from the margin of the lesion in selective ABK-malc agar (Cvjetković, 1982). The sporangia were without clearly seen papillae dimensions were 33.5—59.9 μm × 23.0—33.0 μm. Sexual organs appeared in abundance on the root of the host as also on the artifical supstrate. The diameter of the larger oogonia amounted to around 40 μm. Anteridia were in most cases paragyny. On V-8 supstrat 15% amphigynous and 85% paragynous anteridia were formed. Our isolated by its morphological caracteristics comformed to the original description of the *Phytophthora megasperma* Drechs. *var. megasperma.* (Drechsler, 1931).

Acknowledgment

We are most grateful to Miss Jane Stamps Ph D Commonwelth Mycological Institute Kew — London who confirmed our determination of *P. mega sperma var. megasperma.*