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CONTENTS

Scientific papers

- M. Maksimović, Dž. Abazović*
 A contribution to the investigation of synthetic pheromone of European pine shoot moth *Rhyacionia buoliana* Schiffé — — — — 13—14
- A. Serafimovski, Lj. Hadži-Ristova*
 Some characteristics *L.* (Lepidoptera, Notodontidae) under conditions of Skopje and its vicinity — — — — — — — — 25—26
- M. Injac, K. Dulić*
 Following of the activating and control of overwintering caterpillars of summer fruit tortricids (Tortricidae: *Pandemis heparana* Den et Schiff. and *Adoxophyes orana* F. V. R.) — — — — — — — — 36—37
- I. Pireva, B. Ilić*
 Pests in water mills and mills in SAP Kosova — — — — — — — — 44
- R. Petanović*
 Iris flower bud fly-ackandia *servadeii* séguy (Anthomyidae, Diptera) a new species for Yugoslav fauna — — — — — — — — 50
- N. Pagliarini, G. Hrlec*
 Evaluation of some Pesticides for control of stored product mites 56
- A. Marić, J. Balaž*
 Efficiency of some forecasting methods for tomato downy mildew (*Ph. infestans*) under agroecological conditions of Vojvodina — — 65
- B. Jovičević, M. Sultan*
 A study of the resistance of corn breeding material to *Helminthosporium turcicum* Pass — — — — — — — — — — — — — — 72
- M. Arsenijević, S. Jasnić, J. Balaž, M. Petrov*
 Development of *Cytospora cincta* Sacc. as parasite of peach tree in the course of the year — — — — — — — — — — — — — — 83
- D. Živojinović, P. Marinković, D. Sekulić, A. Sigunov*
 Further investigations of the chemical control of weeds in Austrian pine plantations on Deliblato Sands — — — — — — — — — — — — — — 92
- M. Spasić, S. Milijić, R. Petrović*
 Use of herbicides for the weed control in the joint crop of beans and corn — 104
- V. Janjić, B. Sinžar, V. Bogdanović*
 The effect of alachloride, metolachloride and penoxaline of the breathing of the seeds of some weeds — — — — — — — — — — — — — — 110

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A CONTRIBUTION TO THE INVESTIGATION OF SYNTHETIC PHEROMONE OF EUROPEAN PINE SHOOT MOTH *RHYACIONIA BUOLIANA* SCHIFFÉ

by

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S u m m a r y

The synthetic pheromone E-9 dodecenyl acetate (Smith, 1974) has been investigated in two formulations in pine cultures of the SR Bosnia and SR Serbia in 1978 and 1980.

The formulation in polyvinyl chloride (PVC) has been applied according to the proceeding of Daterman (1974) in three-layered polymeric dispensers according to the technology HERCON.

The pine cultures on four areas had different intensity of the shoot moth attack (Tab. 1) and a different course of development as regards the time (Tab. 2). The traps of the »Zoecon« type were set previously to the beginning of the swarming of moth except in the culture on the territory Doboj-Preslica where already about 30 p. c. of males had flown out. The swarming period lasted from 28 to 48 days (Graph 1).

The attack of the parasites of the European Pine Shoot Moth was comparatively small and the greatest amounted to 34.5 p. c. This is one of the causes why the density of the pests population was not diminished to a considerable degree after a year.

The PVC formulation, originating from USA, applied immediately after 1978 in the area Avala — Šuplja stena, gave an average of 90.6 of caught males for each trap (Tab. 4). A somewhat later application in the culture Doboj — Preslica gave 29.8 and a still later one in the area Višegrad — Babina gora 22.5 males. The attractivity diminished on account of the manipulation and transport.

The PVC formulation, elaborated a year earlier (1979) in Yugoslavia and applied to Gornji Podgradci — Kozara had less attractivity than on Avala if compared to the population density of the European Pine Shoot Moth.

From three glues, used in the traps, the best effect gave the American »Stikem special« and then one of the Italian origin, called »Alfa block«.

The formulation of polymeric dispenser Hercon showed an almost equal attractivity (Tab. 4) as had shown the PVC formulation in the region of Višegrad. In the region of Doboj the attractivity was considerably smaller, but the cause could not be established so far.

вањата на штетникот на ова подрачје се вршени во годините 1973, '75, '76 и 1978, при што е констатирано следното:

1. Климатските услови во централна Македонија (Скопје и околината) овозможуваат најнормален тек на развитокот на *C. anastomosis* L. Во тек на една година, таа најчесто има три генерации па во четвртата поминува на зимување. При попогодни услови се развиваат и четири генерации и во петата преага во дијапауза.

2. Во лабораторијски услови постои можност за непрекинат развиток на овој штетник, што директно зависи од квалитетот на исхраната на неговите гусеници. Во овие услови дијапаузата на *C. anastomosis* L. е факултативна.

3. Во централна Македонија, гусениците од *C. anastomosis* L. поминуваат во дијапауза најрано во почетокот на септември месец, кога доаѓа и до двоене на генерациите. Во зависност од траењето на вегетациониот период на тополата, поминувањето во дијапауза станува и при крај на септември; во тек на октомври, па дури и во почетокот на ноември месец. Завршувањето на дијапаузата, т.е. активирањето на гусениците напролет е при крај на март или почеток на април месец, или кога дневните температури се над 18°C.

4. Во услови на јужна Македонија (долниот тек на Вардар), каде владее изразито субмедитеранска клима, вегетациониот период на тополата трае од март до ноември месец. Во ова подрачја се потребни подетални проучавања за целокупниот развиток на *Clostera anastomosis* L.

SOME CHARACTERISTICS IN THE DEVELOPMENT OF *CLOSTERA PYGAERA ANASTOMOSIS* L. (LEPIDOPTERA, NOTODONTIDAE) UNDER CONDITIONS OF SKOPJE AND ITS VICINITY

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S u m m a r y

Clostera anastomosis L. belongs to the species of defoliators which affect a number of cultivars of poplar trees as well as willows.

With the intensive plantation raising of poplars in SR Macedonia, the pest has attracted the attention of the specialists, first of all because of the specific climate conditions in this part of Yugoslavia, i. e. Europe.

In the vicinity of Skopje, during August 1973, overpopulation of *C. anastomosis* L. was registered, which caused defoliation in the poplar plantations in an area of 180 ha. Because of this, studies on the pest were carried out during 1973, 1975, 1976 and 1978, so that following was found out:

1. Climate conditions in the central part of Macedonia (Skopje and its vicinity) offer a normal development of *C. anastomosis* L. During a year it usually produces three generations, with the fourth one going to hibernation. Under more favourable conditions, four generations develop and the fifth one goes to hibernation.

2. Under laboratory conditions, there are possibilities for an interrupted development of the pest, which primarily depends on the quality of feeding of its caterpillars. Under these conditions diapause of *C. anastomosis* L. is facultative.

3. In central Macedonia, caterpillars of *C. anastomosis* L. pass to diapause the earliest in the beginning of September, when splitting of generations takes place. Depending on the vegetation period of the poplar trees, passing to diapause can take place at the end of September, during October and sometimes even at the beginning of November.

The end of the diapause, i. e. activating of caterpillars in Spring takes place at the end of March or beginning of April, or when daily temperatures are above 18°C.

4. Under conditions in the south of Macedonia (the lower course of the Vardar) with typical submediterranean climate, vegetation period of poplars lasts from March to November. For this region more detailed studies would be necessary to see the complete development of *Clostera anastomosis* L.

FOLLOWING OF THE ACTIVATING AND CONTROL OF OVERWINTERING
CATERPILLARS OF SUMMER FRUIT TORTRICIDS (*TORTOCIDAE: PANDEMIS*
HEPARANA DEN ET SCHIIF. AND *ADOXOPHYES ORANA* F. V. R.)

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S u m m a r y

In the course of 1980 the Summer Fruit Tortricids appeared in larger masses on the objects of Peščara. Thus in the orchard Radanovac (40 ha) there were 13 p. c. od damaged fruits of the sort Jonathan at the time of gathering. In order to determine the optimum term of control, we utilized the heliophily of overwintering caterpillars and followed their Activating. For this purpose, we gathered, at the time of pruning 300 branches in each of the orchards Bruk (30 ha) and Radanovac in the locality of Subotica. In both these orchards are represented the sorts Golden and Red Delicious and Jonathan. The tree were 20 years old and are formed as modified oblique palmettes.

The caterpillars wove most frequently winter webs under the dead part of the bark on the places of pruning (Fig. 1). We cut the part of the branch with the web in the length of 2—4 cm and placed them into boxes which had an opening closed with a glass flask. Before the activating of caterpillars, we tied the boxes on the branches in the orchard (Fig. 3). We recorded the coming of caterpillars into the flasks once a day at Zemun, where we had transported the sample from Radanovac and every two hours in the orchard Bruk.

On the basis of the following of the renewal of caterpillars' activity, we determined the term for the control: April 6, when we laid the experiment with following treatments:

1. Check (0.8 ha),
2. Thuricide WP in the concentration of 0.2 p. c. (0,8 ha) Producer is Sandoz USA.
3. Decis EC in conc. 0.05 p. c. (0.8 ha). Producer Procida — France.
4. Gusathion WP in the conc. 0.2 p. (34 ha). Producer Bayer, West Germany.

The caterpillars of Summer Fruit Tortricids overwinter in the second or third stage (Fig. 2). The renewal of activity of these caterpillars in the orchard Bruk took place from March 25 to April 13. Durring this time 76 caterpillars came into the flask, or 26 caterpillars more than we discovered by means of the binocular. The caterpillars emerged between 6 a. m and 4 p. m, and the largest number of them came into the flasks between 10 and 12 a. m. As to the thermic conditions, the caterpillars came into the flask at the temperatures above 7°C (Tab. 1).

The renewal of caterpillars' activity at Zemun began on March 24 and lasted to April 16. During this time there emerged from the webs 140 caterpillars or 68 more than the number of discovered webs. The maximum of the renewal of activity occurred on March 27 (16 caterpillars) and a somewhat greater number was recorded also on April 10 (11 caterpillars) (Tab. 2).

During the evaluation of effectiveness on April 13 we found in the Check on 60 sprouts 334 caterpillars, which represents a heavy attack. In comparison with the Check, Thuricide manifested efficacy of 98.8 p. c., Decis 99.7 p. c. and Gusathion 72.0 p. c. (Tab. 3).

The intensive attack on the sort Jonathan, in the orchard Radanovac, where the experiment has been laid, damaged in the Check 27.05 p. c. of fruits, with Thuricide 2.4 p. c., with Gusathion 13.1 p. c. whereas with Decis there were no damaged fruits.

The caterpillars, which reached the flask at Zemun were reared on the leaves of the root stock M 106. After the emergence of the moths we established that they were *P. heparana* in 81.6 p. c. and *A. Orana* in 18.4 p. c.

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PESTS IN WATER MILLS AND MILLS IN SAP KOSOVA

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S u m m a r y

During the cours of 1979 we controlled mills and water mills in SAP Kosova to determined their faunistic structure Samples of flour were taken from 20 water mills and from 20 mills in 32 lokalities. From each object there were taken three average samples and the total number of samples was 120.

The analized results showed that the fauna in water mills in SAP Kosova in reach and very heterogeneous because there was no insect controll. There was the largest number of Coleoptera, 17 species, Lepidoptera, 3 species, Psocoptera, Hemiptera, Acarina and Anobium punctatum De Ger., Staphilinidae, and Nemeritis canescens Grav. Number of pests in mills is somewhat less then in water mills. Their were also of Coleoptera, 15 species, Lepidoptera, 3 species, Psocoptera, Hemiptera and Acarina.

The results of investigated fauna showed that the water mills and mills are in bad hygenic conditions. As a good indicator for that are the mycofagous species such as: *Ahasverus advena* Waltl., *Enicmus minutus* L., *Typhaca stercorea* L., *Mycetophagus quadriguttatus* Mil.

3. Početak leta imaga je kraj aprila i početak maja meseca. Ženka polaže jaja u cvetne pupoljke. Vrsta prezimljeva u stadijumu lutke, a razviće se nastavlja u proleće naredne godine. Ima jednu generaciju godišnje.

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IRIS FLOWER BUD *FLY-ACKLANDIA SERVADEII* SEGUY
 (ANTHOMYIDAE, DIPTERA) A NEW SPECIES
 FOR YUGOSLAV FAUNA

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Summary

In the period from 1977–1981 Iris flower bud fly was investigated in the locality of Belgrade.

The imago flies by the end of April or the beginning of May. Female lay their eggs in the flower buds where larvae are hatching. Larvae are feeding themselves inside the flower buds completely destroying them.

At the end of June or beginning of July mature larvae leave the Iris plant falling on the earth and transforming into pupa.

This fly hibernates as pupa stadium. It has annually one generation.

EVALUATION OF SOME PESTICIDES FOR CONTROL OF STORED PRODUCT MITES

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S u m m a r y

The effectiveness of some pesticides was tested against one of the most frequent species of stored product mites in Yugoslavia, *Tyrophagus putrescentiae* (Schrank) and its residues in treated grain of wheat. The biological experiment was set according the method developed by D. R. Wilkin and J. A. Hope (1973).

The results of the above experiments shows very residual effect of trans-metacrifos which did not depend on formulation and way of application, and also high efficacy on tested species of mite. The best initial efficiency was achieved by dichlorvos and slightly less with SO formulation of trans-metacrifos, regardless of the applied dosages. However both dosages did not show any difference in efficiency of all formulation of trans-metacrifos against *T. putrescentiae*. Therefore it means that in practice will be sufficient to apply only a lower dosages (5 ppm). Only with EC formulation of trans-metacrifos the initial effect was better in higher concentration.

Acknowledgements

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EFFICIENCY OF SOME FORECASTING METHODS FOR TOMATO DOWNY MILDEW (*PH. INFESTANS*) UNDER AGROECOLOGICAL CONDITIONS OF VOJVODINA

by

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S u m m a r y

Downy mildew is the most important disease of tomato in Yugoslavia. Although the disease appears nearly every year, it causes great losses only in some seasons. Many sprayings are regularly undertaken by farmers in order to protect crops and to avoid risk in tomato production. More economical application of fungicides and efficient control of tomato downy mildew could be achieved by introducing an accurate forecasting method into the practice. Therefore, the aim of this work was to estimate three foreign forecasting methods of downy mildew (Hyre, Skinč, Krasnjanskaja) in tomato production for canning industry (planted by seed).

During five-year period (1976—1980) of investigation, the development of the disease on potato (planted by artificially inoculated and noninoculated tubers) and tomato have been followed from the beginning to the end of vegetation. The meteorologic data (precipitations, temperatures and air humidity) were taken from the nearest meteorological station. The results obtained have been analyzed and summarized in gr. 1. A particular emphasis has been paid to so called »critical periods« (favorable condition for infection) for the disease development according to the methods applied.

The first symptoms and spreading of the disease could be forecasted by using any of the three forecasting methods. It is possible in that way to avoid factors of unexpected disease appearance.

Hyre's method is very simple for application and gives more accurate results in comparison with two others. The authors propose some corrections in this method. There is no reason to analyze unfavorable temperatures (above 25,5° and below 7,2°C) because they have never been limiting factors for disease development in this study. The date of occurrence of the first symptoms of the disease on potato plants grown from inoculated tubers should be taken into account for determination of the first spraying of tomato. During longer periods of favorable weather condition for disease spreading, spraying of tomato crops must be repeated every seven days when protective fungicides are used or every 10—15 days in the case of application of some systemic fungicides.

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A STUDY OF THE RESISTANCE OF CORN BREEDING MATERIAL TO
HELMINTHOSPORIUM TURCICUM PASS.

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Summary

In the period 1975—1979 we examined corn breeding material in order to find effective sources of resistance to *Helminthosporium turcicum*. We examined inbred lines in early generations of selfing (S_1 — S_3) and complete inbred lines to identify the type of resistance. We also started the process of backcrossing in order to incorporate the sources of resistance into the desired breeding material using the lines A 632 Ht, B 37 Ht, NN 14 B, Mo 17 Ht, etc. The sources of infection were B 14, Min. 706, and ROSNLB shm.

We found monogenic and polygenic types of resistance, the former being prevalent. The progenies within and between the inbred lines in early generations of selfing, as well as some domestic lines, had the same level of resistance as 619 Ht.

In conditions of inoculation, the method of selection applied within and between the inbred lines was found to be efficient in eliminating susceptible plants in early generations of selfing. The multiple backcrossing showed its value when developing lines and hybrids resistant to *H. turcicum*.

DEVELOPMENT OF *CYTOSPORA CINCTA* SACC. AS PARASITE OF PEACH TREE IN THE COURSE OF THE YEAR

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Summary

Artificial inoculations of the peach tree with the fungus *C. cincta* Sacc. show that this parasite develops unevenly in the course of the year (Tab. 1 and 2 and Graph. 1 and 2).

Inoculations were effected in the field every month in the course of 1971, 1972 and 1973 on the basic branches of the peach tree, by imposing finer fragments of the fungus colonies under the bark, previously notched and peeled with the knife (Fig. 1).

The most important changes, in form of large cancers and intensive necrosis of phloem and cambium, occur after artificial inoculations, effected in the period from the end of summer and the beginning of the vegetation (Tab. 1 and 2; Graph. 1 and 2).

The inoculations effected in November and December cause largest cancers and the most intensive necrosis of phloem and cambium (Tab. 1 and 2; Graph. 1 and 2).

The fungus develops continuously in the tissue of inoculated branches, from year to year, whereby the intensity of the necrosis of phloem and cambium and consequently also the size of cancers increase and the menace of the parasites becomes more serious.

The spread of the necrosis of the tissue, round the circumference of branches prevents the transportation of water and food through the necrotic ring, causing the dying out of inoculated branches (Fig. 2—5).

The slightest changes are caused by the inoculations effected in the course of spring and in early summer. The injuries on the branches, inoculated at this time, regenerate, owing to the activity of the callus.

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FURTHER INVESTIGATIONS OF THE CHEMICAL CONTROL OF
WEEDS IN AUSTRIAN PINE PLANTATIONS ON
DELIBLATO SANDS

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S u m m a r y

Investigations of the application of herbicides in the Austrian pine plantations in the Deliblato Sand, carried out during 1977 and 1978, were continued in 1979. The experiment plots were placed in the Forest Administration Banatski Karlovac, the locality „Korn“ (compartment 301/1) after the EWRC method.

Results obtained in the 1978 have confirmed high effect of the applied herbicides on the present weeds after the use of the both preparations: Ustinex special (dosages 6 and 12 kg/ha) and the combinations Dowpon WP-85 + Amitrol (dosage 4+4 and 6+6 kg/ha).

At the first evaluation of preparations effects on the weeds, the efficiency coefficient for Ustinex special was 98,3% (lower dosage), respectively 100% (higher dosage), and for the combination Dowpon WP-85 + Amitrol S-50, this coefficient was 98,6% (lower dosage), respectively 100% (higher dosage).

USE OF HERBICIDES FOR THE WEED CONTROL IN THE JOINT CROP OF BEANS AND CORN

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Summary

In the course of 1978 and 1979 the authors carried out the investigation of the efficiency of the chemical weed control in the joint crop of beans and corn. The investigation was made on the farm of the Institute of Agriculture at Zaječar by the usual method of exact experiments in four repetitions. With a view to an efficacious control of represented weed species, there were used the combinations of following herbicides: Eradicane 6 E + Patoran 50 WP, Eradicane 6 E + Afalon 50, Dual 500 EC, Stomp 330 E + Prometrin S-50 and Eradicane 6 E + Basagran.

On the investigated plot there prevailed grassy weeds and the most numerous among them was the species *Echinochloa crus-galli*.

From the examined herbicides better results were shown by those which are applied before the sowing and with the incorporation. This is in a direct relation with poor quantities and unfavourable distribution of rainfall on this area.

The best results in weed control in the investigated years were achieved by the following combinations of herbicides: Eradicane 6 E + Afalon 50; Eradicane 6 E + Patoran 60 WP and Dual 500 EC + Patoran 50 WP, applied and incorporated before the sowing.

The coefficient of efficiency of weed control with these combinations varies from 86.0 to 94.8.

In these combinations was achieved also the greatest yield of beans and corn.

THE EFFECT OF ALACHLORIDE, METALACHLORIDE
AND PENOXALINE ON THE BREATHING OF THE SEEDS
OF SOME WEEDS

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Summary

The effects of chemicals based on alachloride, metalachloride and penoxaline on the oxygen intake during germination of the seeds of *Panicum crus-galli*, *Setaria glauca*, *Amaranthus retroflexus* and *Chenopodium album* have been examined in this paper. There are considerable differences between the seeds of various weeds regarding the vital activity followed by the oxygen intake per same unit of dry mass of the seed and for the same time period. The oxygen intake varied depending on the applied herbicide, the type of weed, as well as the duration of germination.