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(Primljeno 25. 05. 1990.)

STUDY OF DINAMICS OF POPULATION AND DISTRIBUTION OF *APHIS* FABAE SCOP. AND PREDATORS *COCCINELLIDAE*, FROM 1981 TO 1985, ON SUGAR BEET PLANTS IN VOIVODINA

by

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Summary

Aphis fabae belongs to the group of the most important sugar beet pests in Voivodina (the northeastern part of Yugoslavia) which represents the central region for growing this crop. Investigations were done on the terrains under chernozem and chernozem meadow soils and lasted five ears. The check up of the crops was performed from May till the end of September. During five years a total of 154 fields was analyzed. The method of analysis of 100 plants was used.

The black beet aphid was established in average on 83% of all investigated fields under beet. In the individual years from 6 to 19% of plants were attacked in average (most heavily in 1982). The mentioned indicator from May to June shows a rising line and then it falls in July and the minimum appears in August and at the end of summer it rises again. Mass occurrences on sugar beet are noticed at the end of May, especially during June and in some years at the beginning of July. The highest distribution occurs most frequently during June (156 individua per plant in average were recorder on 18th June 1982, which represents the highest density during five analyzed years). Climatic elements (temperature and air humidity) had essential influence on the reproduction of pests.

Among four species of ladybug, very important predators of black beet aphids, as regards the distribution the most outstanding are *Propylea quatuordecimpunctata* and *Coccinella septempunctata (Adonia variegata* and *Hippodamia tredecimpunctata* were also *recorder).* As regards the other predators evidence was made of *Chrysopidae* and *Syrphidae.*

Chemical pest control which is very often unnecessarily performed, should be done on the basis of the data of systemic observation of the dynamics of plant attack and distribution of pests, as well as of their natural enemies (in order to establish possible need for chemical control) by using selective aphicides and agricultural measures of control (early sowing and a complete plant cover attracts less the pests). In this way the reductive role of natural enemies comes to a higher expression.

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(Primljeno 20. 06. 1990.)

CONTRIBUTION TO THE KNOWLEDGE OF *ISOCOLUS JACEAE* (Sch.) *(HYMENOPTERA: CYNIPIDAE)* INFLUENCE ON THE POPULATION DENSITY OF *CENTAUREA SOLSTITIALIS* L. *(ASTERACEA)*

By

B. Manojlović and **I. Toševski**

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Summary

The study deals with the *Isocolus jaceae* (Sch.) influence ~~on~~ to the population density of *Centaurea solstitialis* L., an indigenous weed species, in the vicinity of Belgrade.

The results indicate that *I. jaceae* develops on several plant species ~~from~~ of the Composita *(Centaurea solstitialis* L., *Centaurea phrygia* L., *Centaurea jacea* L., *Centaurea scabiosa* L., *Centaurea maculosa* Lam., *Centaurea salonitana* Vis. and *Carduus acanthoides* L.) family. The imagoes grown on *C. solstitialis* are characterized by prominent parthenogenesis since there were no male imagoes grown in any of the cases.

at least 2 generation of ... appear/occur.

In one year *I. jaceae* has minimum two generations. It hybernates in larval stage inside a gall. After cocooning, a grown wasp drills a hole in the gall's wall and flies out. The female lays individual eggs from the bottom of the head drilling through the involucre leaves tissue. Larvae transfore the stamen into a gall and depending on the flower head development phenophasis lead to complete destruction and die-back of the head or to severe deformation resulting in abnormal development and repening of the seeds.

the locality of

In 1988, dissection of the *C. solstitialis* flower heads, from Novi Belgrade locality, showed that 66% of this weed was attacked by the maximum of 5 larvae. i.e. by the I. jaceae galls (an average of 2,29 larvae). During the following year, 1989, we registered less attacked heads (39%) with lower population density of I. jaceae (average of 2 larvae). The *I. jaceae* galls were mainly formed between the involucre leaves (about 90%), and more seldom next to the embryos.

I. jaceae is proved to show great affinity towards *C. solstitialis*. The results of growing the attacked flower heads of the four weed species that spontaneously grow on the sands on Novi Belgrade locality *(C. solstitials, C. maculosa, C. scabiosa* and *C. acanthoides)* indicated that this useful insect's population density was highest inside the C. solstitialis flower heads.

C.solstitialis ~~has shown~~ appears to be more attractive host plant to *I. jaceae* then *C. acanthoides*. On the experimental field where the above mentioned weed plants had idential conditions for this insect development and attack, we found that. from 1987—1988, the population of I. jaceae was constantly increasing on *C. solstitialis* and that it was the dominant species among on *C. solstitialis* and that it was the dominant among of *I. jaceae* on this weed was increasing, from 0,39 larvae in 1987 to 1,83 larvae in 1989 (with an average of 75% to 87% in the total number of larvae), while in the flower heads of *C. acanthoides*, the population density of this insect increased from 0,04 larvae in the first year of research to 0,08 in 1989 (with only 13% in the total number of registered larvae).

Inside the flower heads of *C. solstitialis* we registered no prominent competition between *I. jaceae* and larvae of *Tephritidae* spp. *(Diptera)*. Through dissection we registered the presence of I. jaceae and more than one species of *Tephrtidae* galls inside the same flower head with normaly developed imagoes.

POPULATION DYNAMICS OF THE EUROPEAN CORN BORER (*OSTRINIA NUBILALIS* Hbn.) IN THE NORTH-WEST OF BAČKA IN THE PERIOD 1979—1988.

by

Živica Radin

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Summary

The dynamics of the flight of Europen Corn Borer (ECB) moths in the region of Sombor, Yugoslavia, was recorded in a 10-year period and the severity of attack of this pest determined. The data were recorded by the light trap. In recent years, especially 1987, attacks became more severe and the number of ECB larvae per infested plant was increasing. It was noted that in years when larger number of moths were caught, the attack was stronger.

The existence of two generations of ECB was found in this region by observation of the dynamics of flight of the moths. In other words, one part of the population included two generations, while the other only one. The flight period of the first generation was characterized by two distinct peaks. The first peak (loth June) was attributed to the first generation of the bivoltine part, whereas the second peak (1st July) to the culmination of univoltine part of the population. The flight of the second generation occurred in August and had its peak in the second decade. The participation of the second generation in the total ECB population was expressed with a significantly greater number of moths, the ration being 15—85% in favour of the second generation.

Data obtained after ten years of investigation showed the total number of moths of ECB, the severity of ECB attacks trapped per year and the degree of damage caused in the cornfields. Strong correlation was found between climatic factors on one, and the density of population and the degree of damaging effects of ECB on the other side, indicated by the Kendall's coefficent W = 0,70.

Strong positive correlation was noted between the sum of the daily degre-days (mean temperature — threshold temperature) in the period June—August and the number of trapped moths, degree of attack and the number of larvae. Air temperature in June, July and August had a direct positive effect on the number of trapped moths, degree of attack and the number of larvae. Air temperature in June, July and August had a direct positive effect on the number of trapped moths, degree of attack and the number of larvae.

The positive correlation of rainfall was also noted, but it was weaker. Namely, total rainfall in the period June—August showed no significant influence on the number of moths, while the effect on degree of attack and number of larvae was very close to be significant r = 0,05%.

The average degree of attack in the ten-year period proved to be 19%, whereas in the last three years it was much greater, 25—30%. Sweet corn suffered the most severe attacks (46%), then late corn hybrids FAO 700 (14—18%) and early corn hybrids FAO 400 (8%).

Significant damages were caused by ECB on other plants too, especially pepper.

The growing number of pests and increasing degree of attacks of ECB demands a complex approach to this matter in other to find the most effective control measures to protect sweet, corn, seed and pepper from significant demages.

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(Primljeno 25. 06. 1990)

COMMON EPITOPES OF VIRUS ANTIGENS CAN BE DESCOVERED BY ELISA

by

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Summary

Cross serological reactions, or antigenic reactions among some viruses plant were proved by ELISA.

A high level of cross serological reactivity was found between PVY and PVA, PVY and PVM, PVY and PPV, JGMV and PVA, SorMV and PVA, SorMV and MDMV, and MDMV and PVA.

Certain degree of cross serological reactivity has been shown between PVY and MDMV, as well as between PVY and SorMV.

Rare antigenic cross reaction has been achieved between PVY and SMV, PVY and JGMV, as well as between PVY and SCMW-A.

According to the obtained results serological cross reaction depands from both antisera, antisera for plate covering as well as antisera conjugated with enzyme. Obtained results also showed that antiserum labeled with enzyme has higher influenze on cross reaction.

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MYCOFLORA ON THE EUPHORBIA COMPLEX IN YUGOSLAVIA*)

In period 1985—1989 important sites of the *Euphorbia* species in Yugoslavia were marked; plant material was collected and transplanted on the trial fields; isolation and determination of the fungi were carried out in order to determine the mycopopulation on leafy spurges and to find possible biocontrol agents.

Introduction

In their native areal, the weeds have a number of natural enemies which provide the weed population balance. The introduction of weeds into the new areal and luck or smal number of natural enemies , caused sudden spread of weeds with undesirable consequences. Good example supports this statement is when species of the genus *Euphorbia*, specially *E. esula* and *E. virgata* W. and K., were introduced from Europe to the North America, where they, due to quick distribution trough pastures and other terrains caused, besides significant economical problems poisoning and death of cattle which fed with these plants (Messersmith & Lim, 1983).

Since during the control, besides to the economical factors, significant attention has been paid to the ecological effects of herbicides and pesticides in general, there is noticeable tendency toward a biological control over particular weed species, i.e. parasite or pest. Besides,

*) This paper is financed under the USA-YU Project No YO-AES-94, JB-101-PP- 511.

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(Primljeno 12. 03. 1990)

THE INFLUENCE OF THE FUSARIOSIS OF THE SPIKE ON WHEAT YIELD AT DIFFERENT NUTRITION

by

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Summary

The influence of artificial infection of wheat cultivars Kragujevčanka 56 and Srbijanka by fungus *Fusarium avenaceum*, in the stage of anthesis, on grain yield and formation of the entire biomass, its distribution between vegetative organs and grain and on number of grains and 1000 kernels mass was investigated in a two year's pot experiment at different mineral nutrition. By investigation there was determined that increase of nitrogen dose and application of phosphorus and potassium influenced positively on yield increase at sound and sick plants. The losses of yield at sick plants, related to sound with corresponding nutrition, did not depend too much to preceding nutrition and ranged in average 66% in Kragujevčanka 56 and 72% in Srbijanka. That suggests that one can not substatially influence on decreasing of losses by nutrition in conditions of high infection potential, favourable temperatures and moisture in time of anthesis. The artificial plant infection influenced on decrease of total dry mass, harvest index, number and 1000 kernels mass, and increase of mass of vegetative organs. The harvested grain yield of infected plants was of very bad quality, so the question arons about the possibility of its usage as human food.

Zaključak

Rezultati istraživanja uzroka sušenja stabala crnog bora na Zlatiboru su pokazali sledeće:

— u procesu sušenja učestvuje više faktora abiotičke i biotičke prirode. Među faktorima abiotičke prirode najveći značaj imaju klimatski faktori, pre svega sušna leta koja su bila u periodu 1984—1986. god. Preterane suše su dovele do fiziološkog slabljenja stabala i njihove predispozicije za pojavu epifitocije *Cenangium ferruginosum* i gradacije potkornjaka. Iz tog razloga sušenje je najviše izraženo na plitkim skeletnim zemljištima na južnim toplim ekspozicijama, a najmanje na smeđim zemljištima na serpentinitu koja se javljaju u donem delu padine ili blagim uvalama;

— među patogenim gljivama u procesu sušenja najveći značaj ima *Cenangium ferruginosum;*

— na fiziološkim oslabelim konstatovane su brojne potkornjačke vrste;

— čišćenje suvih grana, a zatim tretiranje stabala Bakarnim krečom ili Benlatom obezbeđuje 100% zaštitu;

— sva suva, suhovrha ili stabla sa više od 80% suvih grana u kruni treba ukloniti iz kultura. Sve okresane grane, ovrške i drugi ležeći materijal treba sakupiti i istretirati Ksilolinom. Preporučuje se takođe brz izvoz posečenih stabala i postavljanje lovnih stabala u cilju kontrole populacije potkornjaka.

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(Primljeno 22. 02. 1990)

RESULTS OF RESEARCH OF TREE-DYING CAUSES IN AUSTRIAN PINE (*PINUS NIGRA* ARN). PLANTATIONS ON ZLATIBOR WITH THE PROPOSAL OF PROTECTION MEASURES

by

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Summary

Intensive tree dying in Scots pine and Austrian pine plantations on Zlatibor was observed during 1987. The inspection of dead trees proved the presence of *Cenangium ferruginosum* Fr. stromata, and also the presence of bark beetles and other secondary insects. In order to

research the cause of dying, health inspection of all trees was carried out on 5 permanent sample plots, and also a detailed soil investigation was performed. The results of the research show that in the chain of tree dying, there are several factors of abiotic and biotic nature. By all means, one of the factors was a drought during summer months 1985 and 1986, which led to physiologically weakened trees and their predisposition to further attacks of both parisitic fungi of weakened trees and secondary insects. Dying intensity is much more expressed, on shallow skeletal soils. The fact that dead trees had not been removed in time, as well as a lot of material lying on the ground (dry branches, broken and uprooted trees, etc.) lead to further spreading of epiphytic *C. ferruginosum*, as well as to the outbreak of bark beetles.

So as to control further spreading of the infection, experiments of direct protection were set up. From a number of trees (where their terminal shoot was not diseased) all the dry branches were removed and then the trees were treated with Copper lime 25 or Benlate. Further dying of these trees has not been observed. From a number of trees all the dry branches were removed, but they were not treated with fungicides and later on (after 2 years) only at places their dying was observed (less than 10%). As for the control trees (which were not protected), the intensity of dying was progressively continued and after 2 years most trees were colonized by parasites of weakness and xylophagous insects.

In order to control further outbreaks of break beetles, it is recommended that dead trees and trees dying down be felled, piled and treated with Lignosane or Xyloline. Setting up trap trees and their subsequent peeling and treating with Xyloline will also check further outbreaks of bark beetles.

CHARACTERISTICS OF THE COMMUNITY OF FREELIVING NEMATODES IN GREENHOUSES

by

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Summary

The investigations of the characteristics of the nematodes community were made within the period of March, 1980 — February, 1981, by monthly collections of the material.

The results show that in the greenhouse soil there are possibilities of existing of the freeliving nematodes community in the period of the vegetation as well as in period of all the soil treatments necessary for planting of new cultures.

Presence of 58 nematodes species of different systematic groups is ascertained. Specific characteristic of the community is that the group Rhabditida (88,69%) takes the dominant position through its particular species changing successively during the year of the invetsigation (Tab. 3.).

ETHIOLOGICAL STUDY OF IRIS ROT

by

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Summary

From the samples of iris with the simptoms of rot on the basis of leaves, the pathogenous isolates of *Sclerotinia sclerotiorum* (Lib) de Bary were obtained by the isolation on PDA medium. The pathogenicity of isolates was proved by inoculation on iris, carrot and parsley.

On PDA medium at the temperature of 25°C, the fungus develops very quickly, forming thick, snowy mycelium with black, round sclerotia, the most frequent 4—6 mm. large, which are usually form at the edegs of Patri dish. The preesnce of microconidia was also observed in the culture.

The fungus develops mycelium and forms sclerotia on different nutritive media of potato, tomato juice, onions, carrot and malt agar. On malt agar, the fungus develops slowly. The sclerotia are the most numerous on medium of onion and tomato juice. On nutritive media of potato and onion the sclerotia are larger, and on media of tomato juice, carrot and malt agar, sclerotia are more minute.

The temperature optimum for development of mycelium and formation of sclerotia ranged from 22°C to 25°C. At the temperature of 5°C and 30°C, the mycelium develops slowly. In the course of first 14 days after inoculation, sclerotia formed at 15, 22, 25 i 30°C, at the temperature of 10°C the fungs begining formation of sclerotia, while at 5°C sclerotia, not formed, for this period.

The fungs developed mycelium and formed sclerotia in all tested pH value (3,5—9) of medium. The optimum pH value of medium was 5.

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(Primljeno 10 03. 1990)

INVESTIGATION OF »CULTAR« EFFECTS IN AN INTENSIFIED APPLE PRODUCTION

by

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Summary

On the basis of 3-years investigation and obtained results of the »Cultar« effects on the vegetative and generative growth of apple cv. 'Melrose' the following conclusion could be draw:

— The foliar application of »Cultar« in rate D_1 = 1 l/ha/1500 l water with 4-application during vegetation affected the significantly inhibition on Inog growth of shoots.

— »Cultar« stimulatet but and flower initiation, fruit formation and increased yield from 19,40—20 kg/tree.

— Improved fruit quality and storage properties.

— Navedene sorte mogu se koristiti za razne vidove prerade i za ukrštanje u cilju stvaranja otpornijih sorti prema virusu šarke.

— Sorte dinjka i nansijska mirabela preporučuju se i za plantažno gajenje, a ostale za gajenje po okućnicama u određenim područjima.

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RESPONSE OF SOME PLUM CULTIVARS TO SHARKA VIRUS
— Preliminary comunications —

by

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Summary

In the course of last two years the investigations have been made concerning susceptibility of some plum cultivars, spread in some regions of Bosnia and Herzegovina, to Sharka virus. We have investigated 18 cultivars in total. Seven cultivars with weaker Sharka symptoms on leaves and fruits have been isolated. These cultivars are, as follows: Sitnica, Zelenika, Banjalučka bjelica, Klakarska rana, Petrovača, Nansijska mirabela and Dinjka (King Dušn). Out of these separated cultivars the weakest Sharka symptoms were shown by Nansijska mirabela, Banjalučka bjelica, Klakarska rana and Petrovača wich are recommended for crossbreeding in order to obtain cultivars resistant to Sharka virus. In addition, they are recommended for various kinds of processing.