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A CONTRIBUTION TO THE KNOWLEDGE OF HARMFUL MICROFLORA IN WHEAT, CORN, AND SUNFLOWER SEED AND SEEDLINGS

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Summary

A composition of fungal flora and its harmfulness to wheat, corn, and sunflower seed and seedlings were studied in the period from 1974 to 1977.

According to the extent of average infection and frequency, the dominant fungi on wheat seed were: *Alternaria tenuis*, *Fusarium graminearum*, *Acremonia atra*, *Helminthosporium sativum*, *Penicillium* sp.,

Rhizopus nigricans. The dominant fungi on corn seed were: *Fusarium graminearum*, *Fusarium moniliforme*, *Penicillium* sp., *Cephalosporium acremonium*, *Helminthosporium carbonum*, *Nigrospora oryzae*, *Rhizopus nigricans*, and *Alternaria tenuis*. The dominant fungi on sunflower seed were: *Alternaria tenuis*, *Botrytis cinerea*, *Fusarium* spp., *Penicillium glaucum*, *Sclerotinia libertiana*, *Verticillium dahliae*.

The most harmful fungi on wheat seed and seedlings were: *Fusarium graminearum*, *Fusarium nivale*, *Helminthosporium sativum*, on corn seed and seedlings: *Fusarium graminearum*, *Fusarium moniliforme*, *Nigrospora oryzae*, *Helminthosporium carbonum*, on sunflower seed and seedlings: *Sclerotinia libertiana*, *Botrytis cinerea*, and *Verticillium dahliae*.

The fungicides used for the treatment of seed reduced considerably the epiphytous fungal flora but practically had no effect on endophytous fungi.

The method of filter paper was most practical for routine analysing of seed health condition. To identify and study individual seed parasites, it is necessary to apply special method which agree with specific biological characters of the pathogen and the seed of the examined plant species.

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FURTHER INVESTIGATIONS ON PSEUDOMONAS SYRINGAE VAN HALL AS PATHOGEN OF APRICOT IN YUGOSLAVIA)**

Artificial inoculation of apricot tree carried out by *Pseudomonas syringae* once a month through the year, showed uneven development of the pathogen during the vegetation period and the dormant stage. The most extensive necroses were developed in the dormant stage of the apricot causing large canker and die-back („apoplexy”) of the fruit tree.

Apricot trees could also be infected by isolates of the same bacterium originating from herbaceous plants (lucerne and wheat) causing the similar cankerous wounds on branches and trunk.

On the other hand, isolates from apricot tree, lucerne and wheat also caused strong necrotic lesions on wheat ears.

Introduction

The early die-back (or „apoplexy”) of apricot has become a pressing problem in Yugoslavia. Since 1965, when the largescale of decayed of apricots first attracted our attention, until the present day, the percentage of infected plants has continuously increased. The accompanying symptoms can appear in both young and old trees. The first symptoms are usually noticed on the four year old plants.

Investigations of this problem in Yugoslavia indicate that the bacterium *Ps. syringae* plays an important role in the early die-back of apricot (Arsenijević, 1968, 1972).

The isolation and determination of the pathogen was carried out from infected trees where the symptoms of die-back and canker were apparent. Artificial inoculation done in the dormant stage showed the death of both phloem and cambium. On the other hand, in the vegetation period, only the xylem was infected.

***) This report was presented in France (Angers, 2nd—6th April, 1973) at the meeting of Working group on „*Pseudomonas syringae*”.

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INVESTIGATION OF CUCUMBER MOSAIC VIRUS ISOLATES FROM SUGAR BEET PLANTS

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Summary

It was isolated cucumber mosaic virus from naturally infected sugar beet plants with mosaic symptoms, which were found in Semberia (North part of Bosnia and Herzegovina).

Identification was done by differential host plants reaction, investigation of virus stability in sap and serological tests through double diffusion test in agar gel.

Investigation of the reaction of 21 sugar beet cultivars it was found that some were susceptible to infection and some not. On susceptible cultivars CMV cause different types of mosaic and different degrees of mosaic symptoms. Infected plants of cultivar Osječka poly 1 produce 23% less yield than uninfected plants in same conditions.

The field infection of beet plants with CMV is rather rare, but could be important in epidemiology of this virus.

This investigation confirmed that sugar beet is host of CMV in Yugoslavia too.

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INVESTIGATION OF EFFICACY OF SOME HERBICIDES IN PINE
PLANTATIONS ON DELIBLATO SAND

P. Marinković, D. Živojinović, M. Popov, D. Sekulić i A. Sigunov

S u m m a r y

Experiments with chemical control of weeds in pine plantations on Deliblato Sand (Locality »Korn«, compartment 300/1 and 301/1) have been carried out by the authors during 1977 and 1978.

The efficacy of herbicides was appraised using the EWRC method. The following chemicals have been used: Ustinex-special (6 and 12 kg/ha), Dowpon WP-85 (5 and 10 kg/ha) and mixture of Dowpon WP-85 and Amitrol S-50 (4+4 and 6+6 kg/ha) postemergence, as well as Fydulan G (30, 40 and 50 kg/ha) preemergence.

High rate of efficacy, according to the authors, had shown Ustinex-special in both doses. Mixture of Dowpon WP-85 and Amitrol S-50 was also very affective.

Dowpon WP-85 had not been satisfactorily effective against some weed species (*Stenactis annua*, *Cynodon dactylon*, *Cynoglossum officinale* and *Sinapis arvensis*).

Fydulan G, in general, had not been satisfactorily effective.

Relative resistance against all investigated herbicides was found to have *Agropyrum repens*. Investigated herbicides have not exhibited phytotoxic effects on pine (*Pinus nigra* A. R. n.).

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INVESTIGATION OF EFFICACY SOME FUNGICIDES AGAINST *FUSARIUM*
ON CONIFER SEEDLINGS

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Summary

Damage on conifer seedlings in forest nurseries in Bosnia are often caused by *Fusarium* spp. Among these *F. oxysporum* Schlecht. is the commonest species causing damping-off and root-rot. It is considered that first two months after sowing is a critical period. The chemical treatment has been used in controlling the disease. The experiment 'in vitro' showed that Benlate 50 (Benomyl 50) and Ortocide 83 (Captan) are the best and they inhibit growth of micelia of fungus at the rate of 10 ppm. Dithane M45 and Ortocid 50 gave also satisfactory results.

Experiments with scotch seedlings growing in pots showed that 5 gr/m² of Ortocide 83 is sufficient to prevent the disease. However, experiment in field showed that effect of fungicides depend on many factors and some of them are not easy to be controlled. The results varied from year to year. Nevertheless, Benlate 50 and Ortocide 83 seems to be the most recommended.

(Gruys, 1979) mi smatramo da se njeno prisustvo može tolerisati, ali se mora proučiti i odrediti ekonomski tolerantan nivo njene brojnosti.

Zaključak

Na osnovu rezultata praćenja razvoja ZŠV u jabučnjaku u kome se sprovodi upravljanje populacijama glavnih štetočina, mogu se izvući sledeći zaključci:

1. Vreme i period piljenja ZŠV se ne poklapa sa rokovima suzbijanja jabukinog smotavca i lisnih vašiju, što omogućuje njeno širenje.

2. U našim uslovima najintenzivnije je napadnuta sorta Zlatni delišes, a znatno manje Jonatan i Mel roze.

3. Raspored napadnutih stabala u voćnjaku pokazuje da postoji žarište sa naglašenim pravcem širenja usled delovanja vetra.

4. Od 100 pregledanih štitića na stablu, 19% su mužjaci. Štitići mužjaka na plodovima nisu nikada nađeni.

5. U sistemu integralne zaštite ZŠV može biti prisutna do određenog tolerantnog nivoa kao sekundarna štetočina.

(Primljeno 25. 04. 1980)

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OCURRENCE OF THE MUSSEL SCALE (MYTILOCOCCUS = LEPIDOSAPHES ULMI L.) IN THE SYSTEM OF THE CONTROL OF POPULATIONS OF SOME IMPORTANT PESTS OF THE APPLE TREE

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Summary

We followed the development and spread of the mussel scale (MS) in a 0.5 ha large apple orchard, formed as a slanting fan-shaped espalier. Composition of sorts: Golden Delicious, Jonathan and Mel rosé. The apple orchard was 6 years old.

We followed the presence of MS in the orchard by the method of ocular inspection. In the course of winter were checked 100 shoots and during the vegetation period the orchard was inspected every 10 to 15 days. The presence of MS on the fruits has been established by examining 20 fruits from each fruit tree.

The determination of species has been carried out on the basis of morphological characteristics of the pygidium (Balachowsky, Mesnil, 1935). For this purpose have been made permanent preparations, and individual important details in the structure of MS have been photographed by means of the Scanning electronic microscope JEOL JSM — 35 which is kept in the Institute for Physics at Vrnjačka.

In the course of winter inspection we found that in 1978 2 p.c. of fruit trees were attacked by MS. In the course of 1979 MS attacked 13.7 p.c. of fruit trees in spite of four treatments with insecticides by means of which we control the scales (*A. pomi* and *D. plantaginea*) and the codling moth (*L. pomonella*). The attack was the most intensive on the apple sort Golden Delicious and considerably less on Jonathan and Mel rosé. In the apple orchard there is a focus in the group of check, untreated fruit trees and the disposition of other attacked trees points out that MS is spreading chiefly by means of the wind.

On the fruits MS has been most frequently found round the calyx, (Fig. 3) further round the pedicle. There were some fruits on which were found 30 scales, only females. We did not find the scales of males on the fruits, whereas from 100 scales found on the trees 19 p.c. were males. The scales are of bluish colour which comes from parallel semi-circular lines of secretions of dorsal glands (Fig. 4). In the course of winter, owing to the action of precipitations these products are removed and the scales assume a brownish colour. Under the scales is to be found a whitish membrane (Fig. 1). When it is removed there can be seen a dead female and in most cases 20 to 40 elongated eggs (Fig. 2). The scales are stuck on the bark of the tree by their entire ventral part except the tip of the wider part of the scale (Fig. 2c). This opening serves to let pass the copulative organ of the male and as the exit for the hatched larvae. On the chorion of the egg is to be seen the whitish film, secreted by the circumgenital glands at the emergence of eggs from the vulva (Fig. 1). For the feeding MS uses the long sucking beak which is enlarged at the base (Fig. 5).

USE OF THE SCANNING ELECTRONIC MICROSCOPE IN THE
DETERMINATION OF THE MUSSEL SCALE
(MYTILOCOCCUS = LEPIDOSAPHES ULMI L.)

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Summary

In order to examine the possibility of using the scanning technique in the determination of the mussel scale and, probably, of some other scales, we compared this technique with the so far used method of making preparations for the luminous microscopy.

For the standard method, the adult females were taken in the course of August and September and boiled in equal parts of lactic acid and distilled water.

For the scanning electronic microscopy, the adult females were directly put on the stage and thus observed. We used the scanning electronic microscope of the mark JEOL JSM—35.

On the preparations of light microscopö was obtained information about the inner content as well as of morphologic characteristics of the pygidium fringe, serving as the basis for determining the species (Fig. 1).

By means of the scanning technique becomes visible the natural form of the body and thanks to the possibility of magnifying can be discovered the morphological details which formerly could not have been registered. There are clearly to be seen the rudiments of antennae (Fig. 2, a) and the well-marked segmentation between the head and the thorax.

On the dorsal side of the pygidium there appear very clearly the anal opening (Fig. 3, a), as well as the dorsal glands (Fig. 3, b; Fig. 4) and the setae (Fig. 3, c).

On the abdominal side of the pygidium is to be seen the vaginal opening (Fig. 5, a) which is surrounded by five groups of circumgenital glands (Fig. 5, b). The setae are situated at two levels around the pygidium fringes and, observed from the last segment of the abdomen towards the medial lobes, the number of these setae is as follows: 3; 3; 2; 2; 2 and 2. To each of these groups is added a rudimentary seta (Fig. 5, c).

The results show that by the scanning technique are registered the main morphological characteristics of the pygidium, such as the presence or the absence of circumgenital glands, the form of setae and lobes, so that this technique can be used with great dependability in the determination of scales.