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Original scientific paper

APPROACHES AND PROCEDURES FOR EUROPEAN-MEDITERRANEAN ANALYSIS OF POPULATIONS OF PUCCINIA RECONDITA TRITICI*

The new objective in this international pathogenicity survey of *P. recondita tritici* is to provide genetically diverse sources of resistance to leaf rust for use in European - Mediterranean regions, and to search for and document pathogenicity of *P. recondita tritici* cultures useful in differentiating sources of resistance. Emphasis is placed on sources of resistance and their usefulness rather than on description of fungus populations.

The first results presented are related to numerous wheat materials tested in the field and in the seedling stage with selected international cultures of *Puccinia recondita tritici*. For genetic differentiation of numerous resistant wheat materials Boolean modelling with series of mathematical functions was applied. Based on this investigations, twenty genetically different winter wheat sources of resistance and sixteen spring wheat sources were selected for the first European Leaf Rust Nursery (ELRWN).

Key words: wheat, breeding for resistance, leaf rust, agricornus.

Introduction

For many years now, the leaf rust caused by *Puccinia recondita* Rob. ex Desm. f. sp. *tritici* Eriksson has been a great problem in normal wheat production, since it is the most widespread wheat disease in the world.

Long distance dissemination of the rust pathogens is a well-established phenomenon (Dinoor and Levi, 1971; Watson and Butler, 1984; Nagarajan and Singh, 1975; 1990). Wind is a great uncontrolled carrier of inoculum. Uredospores of rust fungi are recognized as international travellers (Nagarajan, 1973; Roelfs, 1985).

This is the reason why the best method of rust pathogen control is a network of international cooperative studies which would cover large epidemiological areas (Bošković, 1976; Bošković and Bošković 1988; Stubbs, 1972; Stubbs et al., 1974). The importance and

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Original scientific paper

GALL MIDGES (DIPTERA, CECIDOMYIIDAE) ON WILD HERBACEOUS PLANTS IN BELGRADE SUBURBIAN AREA

On herbaceous wild plants in the vicinity of Belgrade we recorded 50 gall midges species.

Asphondylia menthae Klf., *Drasineura myosoidis* (Klf.), *D. salviae* (Klf.), *D. sampaina* (Tav.), *Jaapiella cucubali* (Klf.), *Rhoplatomyia artemisiae* (Bouché), *Rh. florum* (Klf.) and *Rh. syngenesiae* (Lw.) have been recorded in Serbia for the first time.

Key words: gall midges, species, hostplants, fauna.

Introduction

The studies of gall midges in Serbia have been connected mainly with harmful species (Tanasijević, 1953; Bjegović, 1957; Simova-Tošić, 1979, 90, 91). Previous years, however, the attention has been paid to the species that develop on spontaneous plants, all in order to find out the host range of harmful species and to check the possibilities of biological control of weeds (Nijveldt, 1969; Simova-Tošić, 1969; Skuhřavá, Skuhřavy, 1973; Janežić, 1982; Pal, 1983).

Material and methods

The material was collected in 1989-1991. from the grass surfaces in Belgrade and its suburban area (Kalemegdan, Košutnjak, Topčider, along the rivers Sava and Danube, Ada Ciganlija, Ada huja and other localities). Whole plants or malformed parts are collected. The material was examined in laboratory for detection of the cecidozoa. The larvae and eclosed adults were fixed in 75% alcohol, and the permanent slides have been prepared by way of „cold maceration” method using Canada balsam as medium.

Results

On wild herbaceous plants in the vicinity of Belgrade we registered 50. gall midge species belonging to the subfamily *Cecidomyiinae*. The recorded species have been listed according to the

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Original scientific paper

THE EFFECT OF LATENT VIRUSES ON THE VEGETATIVE GROWTH OF SOME PLUM CULTIVARS

Studies were conducted on the effect of latent virus infections on the vegetative growth of four plum cultivars, viz. California Blue, Ruth Gerstetter, Čačanska Najbolja and Čačanska Rodna.

Key words: viruses, NRSV, DLPV, CLSV, plum, growth

Introduction

Virus infections can induce various changes in plums. The commonest are those that are manifested on fruits, as is the case with sharka (Jordović and Nikšić, 1957; Jordović and Janda, 1963) or the changes that may result in incompatibility with rootstocks (Bernhard and Dunez, 1971), tree dieback, bark splitting and diverse branch and trunk deformations (Posnette and Ellenberger, 1957; Ranković and Paunović, 1988; Rubina et al., 1986; Zawadzka, 1982).

However, the changes induced by the so-called latent viruses are by far less known, most frequently remaining hidden or hardly noticeable and can be therefore widespread, with a great cumulative effect. They usually lead to variations between clones, which are manifested as stunted and non-uniform tree growth, reduced yields or increased susceptibility to frosts, drought and failures in cultural practices.

The development of the initial virus-free material of plums in Serbia (Ranković and Jordović, 1972; Ranković, 1981) enabled the establishment of trials on the effects of latent viruses on the vegetative growth of major plum cultivars in our varietal range.

Materials and Methods

Four plum cultivars, viz. California Blue, Ruth Gerstetter, Čačanska Najbolja and Čačanska Rodna were used for the experiment. The initial virus-free material of these cultivars was obtained earlier (Ranković and Jordović, 1972; Ranković, 1981).

The trial was planted with 20 trees of each cultivar grafted on seedlings of *Prunus cerasifera* L., ten of them being inoculated during their first year in the nursery. The inoculations were done using the method of

CATERPILLARS NUTRITION AND SEASONAL ACTIVITY OF *SYMIRA DENTINOSA* (Freyer) (*Lepidoptera: Noctuidae*) POPULATION

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Summary

Symira dentinosa (Freyer), a useful insect recorded only at the territory of Macedonia (former Yugoslav Republic) is present both in the lowland and mountainous areas (up to 1.700 m above the sea level) of this region. In the lowland locality of Gevgelia (up to 80 m above the sea level), the oviposition and caterpillars of the first and second stage have been recorded in the first half of April, while the fully grown caterpillars (of the fifth and sixth stage) have been registered in the second half of May and the first decade of June. In the mountainous region of Bistra (1.500 - 1.700 m above the sea level), the egg nests and caterpillars of the first and second stage occur in the second half of June while fully grown caterpillars have been recorded at the end of July and in the first decade of August.

S. dentinosa has only one generation a year. It overwinters in the pupal stage. It lays eggs in an envelope of 60 to 150 on the backside of sterile shoots top leaves or on the backside of flower corollas. Its caterpillars undergo six stages of development and live gregariously through the third or fourth stage.

This species of useful insect is mostly oligophagous since it successfully feeds on the plants of *Euphorbia* L. genus where it completes its development. The most suitable hosts of this insect are: *Euphorbia seguierana*, *E. glareosa*, *E. myrsinites*, *E. virgata* and *E. helioscopia* where its caterpillars develop over an average time of 36-37 days. On *E. cyparissias*, 90% of caterpillars completed the sixth stage over an average time of 39 days while only 40% of them cocooned. In lab conditions, *E. polychroma* and *E. fragifera* have been shown as unsuitable hosts of *S. dentinosa*. On *E. polychroma* only 50% caterpillars reached the sixth stage with 20% that cocooned over an average time of 41-42 days while on *E. fragifera* only one caterpillar completed its development and cocooned successfully.

The *S. dentinosa* caterpillars grown on *Salix babylonica* fed poorly and only one caterpillar (10%) reached the second stage after which it died in absence of nutrition. Individual nibbling of young *S. dentinosa* caterpillars in laboratory conditions have been registered on *E. salicifolia*. We have recorded that the caterpillars fed extremely poor on *Papaver rhoeas*, *Taraxacum officinale*, *Anchus officinale*, *Linum perenne*, *Plantago majus*, *Acer pseudoplatanus*, *Carpinus betulus*, *Betula pendula* and *Rubus idaeus*.

Feeding of partly grown *S. dentinosa* caterpillars of the fourth stage on *E. salicifolia* has been unsuccessful since very few (only 20%) reached the fifth stage and only one reached the sixth stage after which it died due to unsuccessful changing of its envelope. The fourth-stage caterpillars on *S. babylonica* have immediately accepted food and 70% of them reached the fifth stage, 50% entered the sixth stage, while only one of them started cocooning and then died out without reaching the pupal stage. *S. dentinosa* caterpillars of the same age that have been grown on *Salix alba* fed poorly, so only 40% reached the fifth stage after which they soon died with minimal attempts to feed on the host plant.

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EFFECTIVENESS OF THERMAL TREATMENT IN PROTECTING SUNFLOWER SEEDS FROM GRAY ROT PATHOGEN *BOTRYTIS CINEREA*

by

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Summary

We investigated the degree of infection of sunflower seeds from of some Novi Sad hybrids (NSH-68, NSH-55, NSH-33 RM, NSH-26 RM, NSH-15, NSH-100, NSH-17, NSH-26, NSH-Soleado), caused by *Botrytis cinerea*, the pathogen of Gray Rot, and the effectiveness of thermal treatment in protecting sunflower seeds this pathogen.

Based on these investigations and the results obtained, it can be stated that the degree of infection ranged from 5.00% (hybrid NSH-55) to 54.00% (hybrid NSH-Soleado), while the average degree of infection of investigated hybrids with *Botrytis cinerea* was 14.68%.

The effectiveness of thermal treatment of sunflower seeds in warm water at 40° in protecting sunflower seed against *Botrytis cinerea* (hybrid NSH-Soleado) ranged from 0.00% to 3.00%, while the degree of infection of untreated seeds was 54.00%.

The average germination of sunflower seeds at all exposures, from 15 to 25 minutes at water temperature of 40°, increased from 54.00% to 72.54%.

So far none of the fungicides showed similar effects in protecting sunflower seeds from the Gray Rot pathogen *Botrytis cinerea*.

It is important to point out that regulations on seed health control allow up to 2,00% of *Botrytis cinerea*. According to results of this investigation, the seeds infected with *Botrytis cinerea* can be saved in years of large scale epiphytotics by thermal treatment and then marketed. It is also important to emphasize that by combining thermal treatment with fungicide treatment *Botrytis cinerea* can be fully controlled during the time of plant emergence and germination.

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Original scientific paper

OCCURRENCE OF BARLEY YELLOW DWARF VIRUS ON MAIZE GROWN IN THE VOJVODINA PROVINCE IN 1990*

The infection with Barley Yellow Dwarf Virus was proved on many seed crops of maize in 1990. The virus identification is based on symptoms, serological analysis by ELISA test and vectors' transmission.

Key words: BYDV, Maize, Yugoslavia

Introduction

On maize as a natural host plant two viruses have been described in Yugoslavia. Panjan (1960) described for the first time mosaic virus on maize in Yugoslavia. The virus was named Maize Mosaic Virus. Later on, the disease was investigated by different authors and the virus identified as a strain of sugarcane mosaic virus (*SCMV*) (Tošić, 1962; Tošić, 1965), a maize strain of *SCMV* (Štefanec, 1967), Maize Mosaic Virus – European type (Tošić, 1983) and Maize Dwarf Mosaic Virus (*MDMV*) (Tošić and Malak, 1973; Tošić, 1974; Tošić and Ford, 1983; Ivanović, 1990).

The Cucumber Mosaic Virus (*CMV*) was second to be isolated from maize in Yugoslavia (Panjan, 1966).

In last few years, and especially in 1989 and 1990, severe epiphytotic of *MDMV* were registered on maize in Yugoslavia (Tošić *et al.*; 1990., Ivanović *et al.*, 1990). Besides the mosaic symptoms, diseased plants showed severe dwarfing as well as red discoloration and necrosis of leaf tissue. Many plants died before maturity and yield was decreased especially in seed crops. Because of the complexity of the problem, especially regarding the red discoloration of leaves, and the occurrence of barley yellow dwarf virus (*BYDV*) on maize in Yugoslavia (Ford, 1989. loc.

* The paper is presented on the Sixth Conference on Virus Diseases on Gramineae in Europe, Torino (Italy), June 18-21, 1991.

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Original scientific paper

TWO NEW SPECIES OF ERIOPHYID MITES (ACARI: ERIOPHYOIDEA) FROM DURMITOR MOUNTAIN, YUGOSLAVIA

Two new species of eriophyid mites occurring on *Spirea media* Schm. var. *mollis* C. Koch et Bouche and *Arctostaphylos uva-ursi* (L.) Spreng. are described in Yugoslavia from Durmitor mountain: *Phyllocoptes mihajlovici* n. sp. and *Tetra durmitorensis* n. sp.

Key words: Acari, Eriophyoidea, new species, Durmitor, Yugoslavia

Introduction

Two new species of eriophyid mites were described in Yugoslavia from Durmitor mountain: *Phyllocoptes mihajlovici* n.sp. and *Tetra durmitorensis* n.sp.

Type material were deposited at the Department of Entomology, Faculty of Agriculture, University of Belgrade, Yugoslavia.

Phyllocoptes mihajlovici n., sp. (fig. 1)

Female: 178 μm long (range of 10 specimens 161-195), 67 μm wide, 63 μm thick, spindleform, color whitish. Rostrum 33 μm long, rostral seta 6 μm long; chelicerae 28 μm long, bent down. Dorsal shield 50 μm long (46-51), 56 μm wide, with 10 μm long lobe over rostrum, rounded anteriorly, with two admedian lines and two submedian lines on each side; 2nd submedian lines forked posteriorly. Lateral shield edge with a design of two cells. Dorsal tubercles ahead of the rear shield margin, 20 μm apart, with dorsal seta 30 μm long directed up and forewards.

Foreleg 36 μm long, tibia 8 μm long, tarsus 8 μm long, claw 7 μm long unknobbed, featherclaw 7 μm long, 7 rayed. Hindleg 32 μm long, tibia 8 μm long, tarsus 8 μm long, claw 7 μm long unknobbed, featherclaw 7 μm long. Coxae smooth. First forecoxal tubercles 8 mm apart, setae 6 μm long, second forecoxal tubercles 7 μm apart setae 22 μm long. Hindcoxal tubercles 21 μm apart, setae 40 μm long; sternum 5 μm long forked anteriorly.

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INITIAL RECORDINGS OF *DIURAPHIS NOXIA* (MORDVILKO) (*HOMOPTERA: APHIDIDAE*) PRESENCE IN SERBIA

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Summary

In the past ten years *Diuraphis noxia* (Mordvilko, 1914) has had an important economic impact on the cereal production of south Africa and North America where it has only recently been introduced (Aalbersberg et al., 1989; Stoetzel, 1987). In the Southern Europe its presence has been recorded in a very low number (Blackman & Eastop, 1984). The objective of this study was to determine the occurrence of *D. noxia* in the areas producing cereals in Serbia, to estimate its number and its parasitoids. Investigations were carried out on a number of localities in the period 1989-1991. Small grain plots were examined and aphids were collected from the plant parts above the ground.

In south Serbia *D. noxia* has been detected on wheat and barley plots. In both cases the number of aphids was low.

The primary parasitoid *Diaeretiella rapae* (M'Intosh) and the hyperparasitoid *Syrphophagus aphidivorus* (Mayr) were obtained from the aphid.