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CONTENTS

Original scientific papers

SEPTORIA SP. A NEW SUNFLOWER PATHOGEN DISCOVERED IN YUGOSLAVIA

by

M. Arsenijević,
Faculty of Agriculture,
Institute for Plant Protection, Novi Sad
Maria Petrov,
Faculty of Agriculture,
Institute for field and vegetable crops, Novi Sad

Summary

During 1980, and then in 1990, several strains of untill then unknown fungus *Septoria* sp. were isolated. The pathogen originates from sunflower leaves, where small, round, light-grey spots are formed with appearance of pycnida. Pycnidia are small, light-brown, plunged in diseased leaf necrotic tissue. The size of pycnidia from nature ranges from 33,6-75,6 mm. Pycnospores originated from pycnidia formed on the necrotic sunflower tissue are colorless, multi-selled, and slightly curved, getting narrower toward the top; in respect to size and number of septs they manifest an outstanding variability; most frequently they have one, then two and the rarest are those with five septs.

The size of pycnospores from the natural material is from 10,0-50,0 mm x 1,0-3,0 mm, and from the culture has considerably larger dimensions.: 25,0-156,0 x 1,25-2,50 μm with 3-10 septs. On the contrary, *S. helinthi*, originated from the natural material has the following dimensions: Pycnids 65,0-160,0 μm, and pycnospores 26,3-72,5 μm.

On the potato medium the growth of the *Septoria* sp. colonia is relatively slow. The Colonia are leathery and wrinkled, convex in the middle. On the perifery of colonia, mycelium is light-grey, and toward the centre and in supstrate part it is considerably darker. On the colonia the pycnidia are formed, offen grouped in the form of rather big bodies, resembling creations of stroma. In pycnidia pycnospores are formed, manifested in the form of exudat.

By artificial inoculation of sunflower the symptoms of the disease, identical to those noticed in the conditions of spontaneous disease were obtained.

On the basis of symptomatological, morphological, growing and pathogenic characteristics can be concluded that our fungi strains originating from the diseased sunflower leaf, belong to a new species of the genus *Septoria* (*Septoria* sp.) non investigated and non described in literature as sunflower pathogen so far.

This conclusion is also proved by the findings of the International Mycological Institute, Kew, UK/ of February 12, 1992, where two of our representative isalations of *Septoria* sp., and one of *S. helianthi*, isolated form the diseased sunflower leaves, were sent to verification.

Naša iskustva da *A. ricini* može kod određenih genotipova da u značajnoj meri iskompromituje žetvu, ukazuje jasno da se ova istraživanja trebaju nastaviti i intenzivirati.

Zaključak

Na bazi proučavanja uzročnika do sada nepoznate mrke pegavosti lišća ricinusa i trulcži čaura može se zaključiti sledeće:

- Mrku pegavost lišća, propadanje klijanaca i trulež čaura ricinusa kod nas prouzrokuje gljiva *Alternaria ricini*.
- Gljiva *A. ricini* je novi parazit za našu zemlju.
- Za veštačku inokulaciju, u cilju testiranja selekcionog materijala, može se koristiti metoda prskanja suspenzijom micelije i konidija gljive.
- Hemijsko suzbijanje je moguće preparatima na bazi iprodiona.

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ALTERNARIA RICINI A NEW CASTOR BEAN PARASITE IN YUGOSLAVIA

S. Maširević, Marija Petrov and Persa Ćeranić
Faculty of Agriculture,
Institute of Field and Vegetable Crops, Novi Sad

Summary

Alternaria leaf spot occurs in Yugoslavia. *A. ricini* is most obvious towards the end of the rains when it causes extensive necrosis and shedding of lower leaves. Older and lower leaves are more often affected. It also affects capsules and can reduce yields. It can also cause seedling blight. The local practice of saving seed for planting in the folowing year is problably a major source of infection.

Chemical control is normaly uneconomic. Iprodion base fungicide is effective for disease control.

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HETEROPTERA FAUNA ON SOYBEAN IN BAČKA

by
Tatjana Kereši
Faculty of Agriculture, Novi Sad

Summary

Structure and population dynamic of bugs on soybean were investigated on several localities in Bačka (north Yugoslavia) during the period of 1976-77. and 1982-84.

Soybean fields were inspected in 15-20 day intervals, from June to September, using the sweep-net method (5x50 strokes/plot).

The total of 2787 collected individuals belong to 7 families (*Miridae*, *Nabidae*, *Anthocoridae*, *Pentatomidae*, *Scutelleridae*, *Rhopalidae*, *Pyrrhocoridae*). The first two families were the most numerou.

From the 17 registered genera dominant were the *Lygus* and *Nabis*. They formed 90% of the whole *Heteroptera*.

The inspected soybean fields hosted 23 bug species (Tab. 1.). The most represented were *Lygus rugulipennis* Popp. and *Nabis feroides* Rem., followed by *Nabis ferus* L., *N. pseudoferus* Rem., *Trigonotylus ruficornis* Geoffr., *Orius niger* Wolff. and *Adelphocoris lineolatus* Gz.. Most of them are poliphagous phytophages or zoophages.

Phyto-zoophag species of the genus *Lygus* develop second generation on soybean. The first peak of adults occurs at the end of June or at the begining of July, and the second appears in August. The larvae were the most numerous at the first decade of August (Graf. 1).

Zoophag species of the genus *Nabis* develop one generation on soybean. Adults have peak at the end of July, larvae at the end of August.

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Jelena Bošković
Momčilo Bošković
Faculty of Agriculture, Novi Sad

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Original scientific paper

APPLICATION OF THE GENE-FOR-GENE MODELS IN WHEAT HYBRIDS RESISTANT TO PUCCINIA RECONDITA TRITICI

Boolean modeling in gene-for-gene relationship was applied in genetic differentiation of the hybrid wheat lines with two pairs resistance genes and convencional ratios 9:7. The methods of analysis included the infection type data, agricorpus phenotypes which inducate aegricorups, parasite and host genotypes in parasite:host:environment specificity.

From the results obtained, it was clear that inclusion of different environment in the Model would alter the phenotypes ratios, but not genotype ratios.

Key words: *Puccinia recondita tritici*, wheat, aegricorpus, sources of resistance.

Introduction

In international survey for *Puccinia recondita tritici* of wheat, it is essential to found the methods for genetic differentiation of sources of resistance used in this investigations (Bošković and Bošković, 1992; 1992). Since we have had conventional genetic ratios in F2 of the breeding lines from the program of accumulation of resistance genes, Boolen modeling in gene-for-gene relationship was applied in genetic differentiation (Bošković, 1992).

The methods of analysis included the infection type data, aegricorpus phenotypes which indicate aegricorpus, parasite and host genotypes, according to Loegering (Loegering, 1984) and Browder's (Browder, 1985) considerations of the parasite:host:environment specificity.

Materials and methods

The hybrid wheat lines with two pairs of resistance genes from the program of accumulation of genes to *P. recondita tritici* and conventional ratios 9:7 tested with three culture are used. The lines: NS-77/1 x Lr9, NS-26/1 x Lr9, NS-26/2 x Lr19, NS-46/2 x Lr9, NS-94/2 x Lr9, NS-94/4 x Lr19 with the pathogen culture Bg.s.12/89, the lines: NS-66/2 x Lr9, NS-77/1 x Lr9, NS-37/3 x Lr24, NS-94/5 x Lr24 with the pathogen culture

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Dragica Ivanović
Maize Research Institute "Zemun Polje",
Beograd-Zemun

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Original scientific paper

RESISTANCE OF SOME MAIZE INBRED LINES TO MAIZE DWARF MOSAIC VIRUS

Resistance of 153 maize inbred lines to maize dwarf mosaic virus (*MDMV*) was investigated during 1985 and 1986. Tests were done under field conditions of infection. The investigated inbred lines belong to the local (ZP) and introduced material - Lancaster, BSSS and unrelated populations.

Inbred lines derived from the Lancaster population showed the highest level of susceptibility to MDMV. The good resistance was expressed in inbreds of the BSSS population. Obtained results show that the resistance of local inbred lines was higher than the resistance of some introduced inbreds and therefore they could be recommended in maize breeding for resistance to MDMV.

Key words: Maize, maize inbred lines, maize dwarf mosaic virus (*MDMV*), resistance.

Introduction

The aim of any plant breeder is to find out the most suitable balance between yielding capacity and resistance to biotic and abiotic agents (P e n č i ć et al., 1986). Therefore, knowing the resistance of maize breeding material to parasites is a base for developing of resistant hybrids to the late. According to C a n a d y (1991) application of resistant source in maize is used for protection from nine different parasites. Maize dwarf mosaic virus (MDMV) is one of them. Though, this virus has been investigated a lot (T o š i ć, 1965, I v a n o v i ć, 1990), its control has not yet been solved successfully. For that purpose these investigations were performed and their results are presented in this paper.

Materials and Methods

During 1985 and 1986, 153 maize inbred lines were investigated under field conditions of infections with *MDMV*. The trials were set up on experimental plots of the Maize research Institute in Zemun Polje with 20 plants in each four replications. The evaluation was done twice before flowering and once after it, according to disease severity ratings, from 1 to 6, (I v a n o v i ć et al., 1992). The resistance was expressed by the mean

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INVESTIGATIONS ON ENTOMOPATHOGENIC NEMATODES IN VOJVODINA AND POSSIBILITY OF THEIR USE FOR SOME AGRICULTURAL PEST CONTROL

by

Bela Tašoši, R. Sekulić, Tatjana Kereši
Faculti of Agriculture, Novi Sad

S u m m a r y

The autochton fauna of entomopathogenic nematodes (*Heterorhabditidae* and *Steinernematidae*) was examined on several locations in Vojvodina province. On almost all examined localities in Bačka were found entomopathogenic nematodes, which independently of the type of the soil belong to species *Steinernema feltiae* (F i l i p j e v, 1934). On the locality Fruška gora-Stražilovo one, for the science new species from the genus *Steinernema* was found. The strains of *Steinernema feltiae* found in just as much as the new species, occured to a greater mortality extent of *Galleria melonella* L.. The contact digestive effect of *Steinernema anomali* (K o z o d o i, 1984) was also examined on the adults of *Bothynoderes punctiventris* Germ. and it was reached a relatively high efficiency to this stadium, too. The best results (66-100% of mortality) were achieved when at least at the first 24 hours was guaranteed high relative humidity. The influence of some strains of entomopathogenic nematodes on the larvae of *Otiorrhynchus ligustici* L. was examined too, and the highest mortality as well as the initial effect was produced by the species *Steinernema carpocapsae* (W e i s e r, 1955) strain DD-136, which proved the highest degree efficiency with 92% of mortality after 3, and 94% after 6 days.

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MORPHOLOGICAL AND BIOLOGICAL CHARACTERISTICS OF *MONILINIA LAXA* ON SOUR CHERRY

by

R. Garić
Agricultural Research Institute "Srbija",
Fruit and Grape Research Centre, Čačak

S u m m a r y

The hypha of *Monilinia laxa* is a structural vegetative unit which branches developing mycelial colony. The walls of the hypha are 0.15 thick. The hyphae have transverse septa at definite intervals along their length. The septa are formed centripetally. Each septum has an opening trough which hyphal organelles travel. The hyphae are interlinked by anastomosis and grow scorpioidly.

The macroconidia are one-selled, ovoid or lemon-shaped, creamy white. The length and width of macroconidia from sour cherry fruits taken in the Peć locality very from 9.5-20.5 x 6.0-14.0 μm, averaging 14.1 x 9.5 μm. On potato glucose agar (PGA) the values are 10.7-16.2 x 5.5-8.5 , averaging 13.4 x 7.1 μm. The length and width of macroconidia from sour cherry fruits in the Čačak locality very from 8.3-19.7 x 6.3-15.2 μm, averaging 13.8 x 9.1. On PGA the values are 7.6-17.0 x 5.1-8.2 μm, averaging 12.9 x 6.6 μm.

The microconidia are round to slightly pyriform, 2.0-3.0 μm, with a 2-layer, 1 μm thick wall. They arise from microconidiophores which are dichogamously branched hyphae 5-8 μm in size.

The stroma represents a mass of interwoven hyphae.

The colonies in cultures grown on PGA are spherical, with conspicuous wavy edges. The aerial mycelium is creamy white, sparse, with well-defined concetric zones.

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INVESTIGATION ON FUNGUS *RHIZOCTONIA SOLANI* ISOLATIONS FROM THE SOYBEAN SEED

by

Marijana Komnenić
Faculty of Agriculture, Beograd-Zemun

Summary

During the two-year testing period of the 11 soybeen seed varieties from three localities in Serbia, it was proved the occurence of the parasite fungi *Rhizoctonia solani* Kuhn only in the seed of the variety Aura from Zemun-Polje (1989).

It was proved that on the potato-glucose agar medium this isolate forms firstly white, and that brown mycelium of specific smell and brown, small mostly grouped oval sclerotia. The lenght of the hiphae is 36,4-227,3 mm, and the width 7,3-14,5 mm. On the mycelium the monoloid pearform cells of the dimensions 24,5-29,1 x 25,4-50,9 mm are formed. The optimal temperature for mycelium growth is 28°C. It grows more rapidly in dark conditions then at diffuse sunlight. The optimal growth is obtained at pH values of substratum ranging from 4,5-7,0. This isolation manifested high pathogenicity to soybeen seed, causing their small growth and brown-with root and root neck spot.

Based on the investigation of morphological characteristics, some ecological characteristics and symptoms on the infected plants in the pathogenicity check and comparing the obtained results with the literature data, it can be concluded that the isolation of the fungus *R. solani* is in question, isolated from the soybeen in our country for the first time.

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Ivana Vico
Zoran Jakovljević
Mališa Tošić
Faiculty of Agriculture,
Beograd-Zemun

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Original scientific paper

INVESTIGATIONS ON COLLETOTRICHUM COCCODES CONTROL ON POTATO

C. coccodes colony growth was suppresed by the presence of carbendazim, iprodione, triforine and fosetyl-aluminium + folpet in nutrient media. Carbendazim showed the best effecft.

Exposure of infected tubers to suspensions of benomyl, flutriafol and metalaxyl, or to emulsion of fenarimol, or solutions of formaldehyde and mercuric chloride did not affect *C. coccodes* viability nor tuber germability.

Partial control of *C. coccodes* was achieved by watering potato plants with suspension of benomyl or with the mixture of benomyl and fosetyl-aluminium + folpet in weekly or forthnight applications.

Key words: potato, *Colletrichum coccodes*, efect of fungicides, control

Introduction

Colletotrichum coccodes (Wallr.) Huges/syn. *Chaetomium coccodes* Wallr., *Vermicularia atramentaria* Berk. & Br., *Colletotrichum atramentarium* (Berk. & Br.) Tauben/ has been described as a pathogen of a few dozens of plants that belong to thirteen families among which the most important are *Solanaceae*, *Cuccurbitaceae* and *Fabaceae* (M o r d u e, 1967). Some of C. coccodes hosts are hemp (H o f f m a n, 1958), *Solanum capsicastrum*, marrow, cabbage, chrysanthemum, cress, lettuse, white mustard (C h e s t e r s and H o r n b y, 1965), barley (Bot. Dept. Report, Vic. Univ. of Wellington, 1978), carnation (G a m b o a, 1984) strawberry (M a a s and H o w a r d, 1985), velvetleaf (G o t l i e v et al., 1987), 10 weed plant spp. belonging to *Amaranthaceae*, *Chenopodiaceae*, *Poaceae*, *Malvaceae*, *Oxalidaceae*, *Polygonaceae* and *Solanaceae* (R a i d and P e n n y p a c k e r, 1987) and alfalfa (K o c h et al., 1989). Beside these *C. coccodes* was also isolated from Rye-grass-White clover pasture (Mc K e n z i e, 1971). According to the yield loss among all hosts of *C. coccodes* potato suffers the most. C. coccodes attacks tubers, stolons, root and stem base of potato and therefore pathological changes that it causes are described under different names, such as wilt (P a n j a n, 1948, loc. cit. K l i n d i ć i B u t u r o v i ć, 1956, A m a n n, 1961,