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Scientific papers

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Scientific paper

THE ROLE OF RELATIVE HUMIDITY IN HYPERSENTIVE (SHOCK) SYMPTOMS IN SORGHUM INFECTED WITH MAIZE DWARF MOSAIC VIRUS

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Based on the results of these experiments we concluded that:

- The necrotic red stripe disease on MDMV-A infected sorghum plants, in addition to genotype sensitivity, is influenced by plant age, temperature and relative humidity of air;
- Young sorghum plants are more likely to develop necrotic red stripe symptoms than older ones;
- In 100% R.H. necrotic red stripe symptoms appear earlier, they are more severe and develop on a larger number of plants.

Key words: Sorghum, maize dwarf mosaic virus, sorghum red stripe (necrotic red stripe), air relative humidity.

INTRODUCTION

Sorghum red stripe disease (arrossamento striato del sorgo) in Italy was described first in 1938 by Goidanich (Conti, 1983). Later proof showed it was caused by a virus labelled sorghum red stripe virus (Grancini, 1957; Lovisolo, 1957), now known as maize dwarf mosaic virus str. A (MDMV-A) (Tošić and Mijavec, 1991). Similar sorghum diseases caused by MDMV-A, or other potyvirus (es) infectious, to sorghum were reported in Yugoslavia (Lovisolo and Aćimović, 1961), Hawaii (Bergquist and Ishii, 1977), France, Bulgaria, Romania, Australia, Thailand, the Philippines, USA, Mexico, Columbia, Venezuela, South Africa, Israel, Peru, Argentina (Toler, 1985) and in India (Mali and Thakur, 1999).

IDENTIFICATION OF *RHIZOCTONIA* SPP. USING POLYCLONAL ANTISERUM IN EBIA

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Summary

A polyclonal antiserum (As-1) raised against total mycelial antigens of binucleate *Rhizoctonia* AG-I was used in EBIA in order to determine antigenic properties and serological relationship of some binucleate and multinucleate *Rhizoctonia* spp.

After separation by electrophoresis and based on the reactions with antiserum As-1, it has been established that a total of 18 protein fractions show antigenic properties (14.4-94kDa). The number and patterns of protein bands differed in binucleate and multinucleate *Rhizoctonia* isolates and their anastomosis groups (AG). Protein fraction designated as number 8 was common to most of the isolates, but the profiles of the remaining bands pointed out serological differences. The results show that the use of polyclonal antiserums can be helpful in detection of different *Rhizoctonia* spp., but, what is more important, when a polyclonal antiserum is used in EBIA, it is possible to differentiate anastomosis groups of binucleate or multinucleate *Rhizoctonia* spp.

Key words: Rhizoctonia spp., identification, serology, EBIA.

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DISINFECTION OF PEPPER SEED INFECTED WITH TOBACCO MOSAIC VIRUS

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Summary

Seed infection plays an important role in TMV epidemiology in pepper crops. Pepper seed infection with that virus can be external and internal. The internal infection is the reason why some studies of the possible disinfection of pepper seed, infected with TMV, showed different degree of efficiancy.

The investigations were done with seed of two pepper cultivars: Kurtovska kapija (infection 49%, germination 94%), and Somborka (infection 66%, germination 95%).

In order to obtain more reliable methods of disinfection, infected pepper seed was soaked into 5, 10, 15 and 20% concentration of trisodium phosphate solution during 1 to 14 days at 25°C and 10, 20 and 30% concentration of sodium hypohlorite solution for two hours at 25, 35 and 45°C.

Sodium hypohlorite treatments were not effective in virus elimination. Besides, they reduced germination of treated seed.

Trisodium phosphate has already significantly decreased seed infection at a low concentration of 5% after a few days of treatment, while the virus has been completely eliminated at higher concentrations (20%) after ten days with seed of Kurtovska kapija and 12 days with seed of Somborka. Applied treatments of trisodium phosphate did not affect the germination of treated seed, so for disinfection of pepper seed. Therefore, trisodium phosphate in concentration of 15-20% is recommended for pepper seed disinfection. That disinfection should be done at the temperature of 25°C.

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EFFECT OF HARVEST DELAY ON THE INTENSITY OF SOYA BEAN SEED DECAY

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Summary

Three-year field trials have been conducted to assess the effect of harvest delay (after full technological maturity) on the intensity of soya bean seed decay, a disease caused by fungal species from this genus *Diaporthe/Phomopsis*. It has been found that species from this genus cause seed decay as well as latent infection, without visible external symptoms. Seed decay was registered in 1998 and 1999, but not in the year 2000 which was exceptionally dry. Disease intensity was higher in 1998 than in 1999 (Table 3), as a consequence to different weather conditions during soya bean maturation. These trials confirmed that the amount of rainfall, from the beginning of maturation till harvest, is the main factor determining disease intensity. Under the local agroecological conditions, the critical period for the outbreak of infection was the last 10-day period of August, when increased rainfall intensified the disease. According to Table 2, that period was wettest in 1998, causing the most intensive seed decay. The lower rainfall in 1999 brought a corresponding decrease in disease intensity. In the dry year of 2000, the disease was not registered at all.

Delay of harvest after technological maturity tended to intensify the disease (Table 3). Differences in the number of decayed seeds were not statistically significant between the first and second harvest date, but their numbers increased significantly and very significantly in the third and especially in the fourth harvest date, respectively. It ensured that soya bean harvest may be safely delayed for 10 to 15 days and no longer. Otherwise, the rate of damage will increase significantly. The tested soya bean varieties exhibited differences in disease sensitivity. The variety Balkan was more sensitive to the agents of seed decay from the genus *Diaporthe/Phomopsis* than to the other two varieties.

Three species from the genus *Diaporthe/Phomopsis* were isolated from healthy soya bean seeds as follows: *Phomopsis longicolla, Phomopsis sojae* and *Diaporthe phaseolorum* var. *caulivora*. Latent infections were registered in all three years. They were most intensive in 1999, then in 2000 and the least in 1998 (Graph 1c). With harvest delay, the percentage of latent infection has increased. The more prolonged the harvest is, the more increasing the percentage is (Graph

1b). This regularity was particularly pronounced in the case of *P. longicolla*. Considering the intensity of latent infection, the variety Balkan was most sensitive to *P. longicolla* and *D. phaseolorum* var. *caulivora*, and the variety Afrodita to *P. sojae*. The variety Vojvođanka was less sensitive to the parasites from the genus *Diaporthe/Phomopsis*.

P. longicolla was the dominant parasite of soya bean seed in our country (Graph 2). The portion of this species in the total number of infected seeds ranged from 54% in 1998 to more than 80% in 1999 or more than 70% on the 3-year average. The average percentage of *D. phaseolorum* var. *caulivora* was about 21%. The species *P. sojae* was rarest, with the value slightly over 8%.

Key words: soya bean, harvest delay, seed decay, *D. phaseolorum* var. *caulivora*, *P. longicolla*, *P. sojae*.

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