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PHOMOPSIS SP. — A NEW PARASITE IN SUNFLOWER

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Summary

The authors studied *Phomopsis* sp. on sunflower in Yugoslavia in the period 1979–1981 and drew the following conclusions:

1. *Phomopsis* sp. in sunflower was observed for the first time in 1979 in the vicinity of Kikinda. Already in 1980 and 1981 it spread to the major sunflower-growing areas: Vojvodina, northern Serbia, Slavonia, and northeastern Bosnia.

2. In Vojvodina, the number of infected plants was 94,00% in Banat, 50% in Srem, and 20% in Bačka. In Serbia, Croatia (Slavonia), and Bosnia, the percentages of infection were 10%, 1,50%, and 5–10%, respectively.

3. The largest damages were registered in Vojvodina (Banat, southern and central Bačka, eastern Srem) and northern Serbia, resulting from the early occurrence of the disease and the number of infected plants.

4. Disease symptoms were manifested on sunflower leaves and stems in the form of large brownish-gray spots which caused a partial or complete destruction of infected plants. The symptoms were most clearly pronounced on the stem.

5. The parasite produced brownish-black pycnids and two types of spores (A and B conidia) in the spots on infected plants as well as on different substrates in pure culture.

6. Studying the relationship between A and B conidia, it was found that B conidia occurred regularly in pycnids while A conidia occurred irregularly. A and B conidia were mutually exclusive both in naturally infected samples and on different nutritive substrates.

7. In the course of the study, we made 20 *Phomopsis* isolates: 16 from Vojvodina, three from Serbia, and one from Croatia. They had some similarities but also certain differences in the morphological, biological, and ecological requirements for development.

8. With the isolate »Bački Petrovac«, the size of pycnids was (275,80—387,52 × 276,80—366,76) (354,30—337,35) microns in the case of naturally infected material and (256,04—283,70 × 193,76—221,44) (274,37—207,44) microns on potato-dextrose agar.

9. With the same isolate, the size of A conidia was (8,11—13,85 × 2,77—5,54) (10,84—3,75) microns and the size of B conidia was (22,16—27,16 × 1,35—4,15) (25,78—2,45) microns. With the isolate »Novi Sad«, the size of A conidia was (11,08—16,62 × 2,77—5,54) (14,40—4,29) microns and the size of B conidia was (22,16—38,78 × 2,77—6,93) (30,96—4,42) microns.

10. The isolates »Bački Petrovac« and »Novi Sad« were examined for their reaction to different temperatures. For the former isolate, the minimum temperature for development was between 5 and 10°C, the maximum between 30 and 35°C, and the optimum between 25 and 30°C; for the latter isolate, the minimum temperature was 5°C, the maximum 25°C, and the optimum 20°C.

11. Light affected positively the rate of mycelial development and the number of pycnids, A and B conidia, but it did not induce changes in the color of mycelial film.

12. The colonies of both isolates developed well on potato-dextrose agar and pea grain agar; the colonies of isolate »Novi Sad« developed well on carrot agar.

13. Nutritive substrate affected positively the development of pycnids. The maximum number of pycnids was obtained on sterile sunflower leaves and stems and soybean leaves, stems, and pods.

14. The germination of A conidia in a waterdrop started after 6 hours to reach the maximum after 21 hours.

15. The isolate »Bački Petrovac« could perform infection between 25 and 35°C, the isolate »Novi Sad« between 15 and 25°C, with the incubation period of 2—4 and 7—10 days, respectively.

16. The isolates »Bački Petrovac« and »Novi Sad« displayed considerable differences in the biological and ecological requirements for development giving us ample room to conclude that here we deal with two *Phomopsis* species which attack sunflower.

17. *Phomopsis* showed a light degree of pathogenesis on cultivars and hybrids of *H. annuus* and on undetermined varieties of *Helianthus* sp., but was not pathogenic on *H. tuberosus*.

18. The fungus overwintered in a state of pycnides in infected debris of sunflower.

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RESPONSE OF SOME HERBACEOUS AND WOODY PLANTS TO PSEUDOMONAS SYRINGAE VAN HALL ISOLATES OF VARIOUS ORIGIN*

Eight isolates of the *Ps. syringae* group originating from woody plants and thirteen from herbaceous ones used in greenhouse experiments caused necrotic changes and wilting of inoculated broad bean, sudangrass, as well of young shoots of apricot, pear and poplar.

On the apricot trunk inoculated in the field typical cankers appeared.

In both cases the degree in pathogenicity was different.

Introduction

In Yugoslavia during the past eight years (1965—1973) a great number of phytopathogenic bacteria have been isolated from different herbaceous and woody plant species. So far investigations have indicated that these isolated are very similar to the *Ps. syringae* van Hall group (Panić and Arsenijević, 1965, 1966, 1967; Arsenijević and Panić, 1967; Arsenijević, 1968, 1969, 1970; Arsenijević and Klement, 1969).

The taxonomic position of the bacteria belonging to the *Ps. syringae* group has not yet been fully explained, especially the position of isolates obtained from herbaceous plants. Starting from that point we set out check by cross inoculations the reaction of *Ps. syringae* isolates originating from woody plants on the herbaceous ones and vice versa to see whether isolates from herbaceous plants will cause changes in the woody plants.

Pathogenicity being a very important property must be considered when determining the taxonomic position of various isolates belonging to the *Ps. syringae* group. The results are given below.

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

A CONTRIBUTION TO THE STUDY OF RESISTANCE TO
USTILAGO MAYDIS (D. C.) CORDA IN CORN INBRED LINES

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Summary

Corn inbred lines in early generations of selfing and complete inbred lines were examined for the resistance to *Ustilago maydis* in the period 1978—1980. Large differences in susceptibility were observed among the examined generations as well as among the complete inbred lines, both domestic and foreign. Ears and tassels were more susceptible in some lines, stalks and leaves in the other. The localization of the disease (tumors) has a large practical importance for breeding. The results obtained showed that it is possible to select resistant genotypes in early generations of selfing (S_1 — S_3).

Besides the knowledge of the reaction of certain inbred lines to the pathogen, it is also essential to know their reaction in hybrid combinations.

DEPENDENCE OF GRAIN YIELD ON THE DEGREE
OF RESISTANCE OF THE MAIZE TO STALK ROT
(*GIBBERELLA ZEA*, Schw. Tetch)

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Summary

The dependence of grain yield on the degree of resistance of the maize stalk to rot (*Gibberella zea*, Schw. Petch.) was investigated. We used 12 inbred lines of standard grain quality in this investigation. According to the degree of resistance, these inbred lines were classified into three groups: susceptible (S 144, V 158, Polj. 17 V 312a), medium resistant (L 105, C 103, V 312, A 632, A 218) and resistant (Mo 17, R 59, B 14). We used this material in 1978. to make diallel crosses (without reciprocal) to produce F₁ generation seed. The trial was set up in 1980. using the random block design in four replications, 25 plants per replication. Immediately after silking, the stalks were inoculated in middle of the second internode with pure culture (*Gibberella zea*) using the tooth-pick method (Young, 1943). The rating of the degree of resistance of the maize stalk was made at harvesting according to the scale 1—9, 1 = most susceptible and 9 = most resistant (Hooker, Draganć, 1980). To determine the dependence of grain yield on the degree of resistance of the maize stalk to rot (*Gibberella zea*), grain yield based on 14% moisture content was calculated for 64 hybrids. We then used the statistical method of correlation.

According to the results of our investigations, the correlation between grain yield and resistance of the maize stalk to rot was statistically highly reliable. Furthermore, this showed, that it is possible to combine these two traits.

**BIOECOLOGICAL SURVEY OF SCALE INSECTS (HOMOPTERA:
COCCOIDEA) ON CULTURAL FLORA OF BELGRADE****Elga Kozarzhevskaya,**

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S u m m a r y

This paper presents bioecological survey of coccids on ornamental and forest plants in Belgrade and some suburbs. The results are based upon the author's own collection during 1980 and 1981. The identified list of coccids totals 30 species belong 6 families; 6 species are new in Yugoslavie literature. Information on English, German, and Russian names of *Coccoidea* group is given and new names of families and species in Serbian are proposed by authors and Serbian entomologists. Short characteristics of the families on the base of female external morphological features and habitat are presented. Description of each species includes: full scientific name, the most important synonymes, common names in Russian and English and new Serbian names, host plants, external features of the females and habitat and localities in Belgrade. There have been established the most important pests with the annual high rate infestation on some forest and ornamental trees and shrubs, such as *Parthenolecanium corni*, *Pseudaulacaspis pentagona*, *Unaspis euonymi*, *Lepidosaphes ulmi*, *Quadraspidiotus* spp., *Partenolecanium pomeranicum*, *Partenolecanium fletcheri*, *Sphaerolecanium prunastri*. Some other species: *Phenacoccus aceris*, *Eulecanium tilia*, *Pulvinaria betulae*, *Palaeolecanium bituberculatum* — are controlled by parasites and not dangerous for the plants. It is noted on still incomplete knowledge of the Yugoslave coccid fauna and noxious pests for forestry and horticulture. Much additional collection remains to be done with particular attention to the species which are absent in the country and which could easily penetrate during the plant introduction.

INVESTIGATION OF DAMINOSIDE AS REGULATOR OF THE GROWTH OF APPLES

by

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WO »Peščara«, Subotica

Summary

In the period from 1978 to 1981 was investigated the effect of daminoside on the regulation of the growth of apples, colouring, firmness of the flesh, dropping off and stoning of fruits and there were also determined its residues in the fruits.

It has been observed that daminoside manifested its strongest physiological activity on the slowing down the vegetative accretion. As the consequence there of was established the increase of firmness of the flesh of fruits, the improvement of coloration, preventing of the appearance of Jonathan's spots, of the internal breakdown, of the bitter spots as well as of the decayed fruits and the prevention of the premature dropping off of fruits.

Although the object of the present paper was not to establish the influence of daminoside on the alternative fecundity and on the number of formed flower buds, it could be considered that its effect is manifested also by the reduction of alternative fecundity and by the numerical increase of flower buds.

In the present system and method of fruit-tree growing, daminoside should not be used in early phases after the blossoming is over on account of the drastic decrease of accretion and yield. An excessive diminution of the accretion is not desirable, because it can give rise to the disturbance of the normal replacement of the fruitful tree in spite of the forming of an increased number of flower buds.

According to the observations so far made the optimum term for the application to autumn and winter sorts would be 60—80 days before the picking of fruits. The summer apple sorts should not be treated on account of a comparatively short time from the blossoming to the picking and an early application would cause the already described negative occurrences and at the later application there would be a real possibility of daminoside leaving greater residues in the apple fruits than the tolerated 30 ppm.