UDK 632.9

YU ISSN 0372-7866

INSTITUT ZA ZAŠTITU BILJA — BEOGRAD
INSTITUTE FOR PLANT PROTECTION — BEOGRAD

# ZAŠTITA BILJA
## (PLANT PROTECTION)

VOL. 35 (3) BROJ 169 1984. GOD.

Zaštita bilja, Vol. 35 (3), br. 169: 193—296 (1984), Beograd

# CONTENTS

Lonsdale D. (1980): *Nectria* infection of beech bark in relation to infestation by *Cryptococcus fagisuga* Lindiger. Eur. Jour. For. Path., 10, (2/3), 161—168.

Parker E. J. (1974): Beech bark disease. For. Comm., 96, 15 p.

Peace T. R. (1962): Pathology of trees and shrubs.

Perrin R. (1974): Le chancre du hètre. Eur. Jour. For. Path. No 4, 251—253.

Perrin R. (1975): Beech canker: localizing sources of infection and possibilities of control by silvicultural means. Rev. For. Francaise, 27, (6), 430—435.

Perrin R. (1977): Chemical control of beech canker. Rev. For. Francaise, 29 (1), 27—32.

Perrin R. (1978): *Gonatorhodiella higlei*, hiperparasit of *Nectria coccinea* a pathogen of beech.

Perrin R., Vernier F. (1979): Beech canker; influence of locality factors on the seriousnes of the disease. Rev. For. Francaise, 31 (4), 286—297.

Spoulding P., Grant T. J., Ayers T. T. (1936): Investigations of *Nectria* disease in hardwoods of New England. Jour. of Forestry, vol. 34, No 2, 168—179.

Thomsen M., Buchwald N. F., Hauberg P. A. (1949): Angreb of *Cryptococcus fagi, Nectria galligena* og andre paraditer paa bag i Danmark. Forst. Forsog. i Danmark, Vol. 18, No 157, 97—326.

Zycha H. (1951): Das Rindensterben der Buche. Phytopath. Zeitschrift 17, No 4, 444—461.

Zycha H. (1959): Stannd unserer Kenntnis vom Rindensterben der Buche. Algemine Fortzeitschrift, Vol. 14, No 45, 785—789.

*(Primljeno 25. 04. 1984)*

## *NECTRIA DITISSIMA* TUL. — SERIOUS PROBLEM OF BEECH COPICCES STANDS

by

**V. Lazarev**

Faculty of Forestry, Sarajevo

### Summary

Bark necrosis and cankers of beech (*Fagus sylvatica* L.) caused by *Nectria ditissima* Tul. were observed in various types of beech copicces stands. The disease symptoms occurs mainly on branches rarely on stem of younger trees. In our investigations we could not find correlation between non living agens and attack of *N. ditissima.*

In infected area there was no aphids observed in spite of fact that *Cryptococcus magi* Bäer. is said to be in succession with beech bark diseases including *Nectria* cankers. Therefore, we believe that *N. ditissima* is primary causer of beech bark necrosis.

The intensity of attack of the disease dipends on type of beech forest and on inclination. The severe attacks are observed on poor chalkareous soil on steep slopes.

From infected bark the following fungi were isolated: *N. ditissima, Asterosporium asterospermum* (Pars. ex Gray) Hughes, *Libertella faginea* Desm, *Cladosporium* sp. and *Dichaena rugosa* Fries. The interacting mechanism among these fungi is going to be investigated.

Dovas C., Skylakakis G. and Georgopoulos S. G. (1976): The adaptability of benomyl resistant population of *Cercospora beticola* in northern Greece. Phytopathology, 66, 12, 1452—1456.

Ruppel E. G. (1975): Biology of benomyl tolerant strains of *Cercospora beticola* from sugar beet. Phytopathology, 65, 785—789.

Ruppel E. G., Jenkins A. D. and Burth L. M. (1980): Persistance of benomyl tolerant strains of *Cercospora beticola* in the absance of benomyl. Phytopathology, 1980, 70, 25—26.

*(Primljeno 18. 05. 1984)*

## INCREASE IN RESISTANCE OF *CERCOSPORA BETICOLA* TO BENOMIL AND FIRST OCCURENCE OF TOLERANT STRAINS TO FENTIN ACETAT IN YUGOSLAVIA

by

**A. Marić, S. Maširević and Z. Jerković**
Faculty of Agriculture, Novi Sad

### Summary

After the first occurrence of tolerances of *Cercospora beticola* to benomil (1975), a mixture of benomil (benlate) and fentin acetat (brestan 60) had been applied during seven years period (1976—1982) in the control of Cercospora leaf spot of sugar beet in Yugoslavia.

By testing germination of conidia taken from diseased leaves, (samples collected from 50 fields) in the water solutions of different concentrations of benlate, a very high resistance of the parasite to the fungicide has been found. This phenomenon is very widespread because it can be found in every sugar beet field. Conidia of the most samples germinate in 500 higher concentration of benlate in comparison to susceptible population of *C. beticola*. Increase in tolerances of the parasite to brestan was also observed for the first time in the country.

Germination of conidia significantly decreased in water solution of the mixture of benlate and brestan comparing to the higher doses of the single application of these fungicides. A better efficiency of the mixed fungicides could be explained by sinergetic effect.

Similar results have been obtained in two years field trials by the applications of different fungicides and their mixtures in Cercospora leaf spot control. A slight decrease in disease infestation of sugar beet treated by benlate (0,5 kg/ha), shows that in the population of the fungus there are still susceptible strains to this fungicide.

A better disease control has been also obtained by combined application of bitertanol (baycor) with fentin acetate or mancozeb. None of the tested fungicides accedes the efficiency of benomil to the susceptible population of *Cercospora beticola*.

## LITERATURA

Abramoff I. N. (1931): Gribnih bolezni soevih bobov na Dalnem Vostoke. Bolezni i Vrediteli soevih bobov na Dalnem Vostoke 120 pp; Vladivostok, 1931; Rev. Appl. Mycol. 11, 87—89; 1932.

Frandsen N. O. (1953): Ascochyta sojaecola auf Sojabohne in Deutscland. Phytopath. Z. 20: 375—382.

Karata H. (1969): Studies on fungal diseases of soybean in Japan. Natl. Inst. Agr. Sci. (Tokyo) Bull. Ser. C. 12 pp., 1—154.

Ling L. (1948): Host index of the parasitic fungi of Szechwan, China. Plant Dis. Reptr. Suppb. 173— 1—38.

Mikhailenko A. (1965): Diseases of legumes in the Primorsk region. Zašt. Rast. Vredit. Bolez. 10: 41—43.

Novakova-Pfeiferova J. (1958): A new fungus disease of soybeans in our country. Preslia 30: 369 (Abstr.).

*(Primljeno 13. 04. 1984)*

## *ASCOCHYTA SOJAECOLA* ABRAM. — THE NEW PARASITE OF SOYBEAN IN YUGOSLVIA

by

**S. Jasnić**

Faculty of Agriculture,
Institute for Plant Protection, Novi Sad

### Summary

*Ascochyta sojaecola* Abram. was isolated from soybean plants in surrounding of Bečej. The first symptom is the apperance of big circular zonal brown lesions with bright color center. Latter on the stem and pods of diseased plants appeared circular or oval zonal brown lesions (Fig. 1. A, B, D). Numerous dark-brown picnidia formed in the lesions. The diameter of picnidia is between 120 and 230 micrometer. (Fig. 4).

The symptom obtained by artifical inoculation revealed those of natural infection (Fig. 1. C).

The fungus isolated from affected stem of soybean develops dark-grayish-brown clossely appressed mycelium (Fig. 2) with numerous dark-brown spherical pincidia 70 to 160 micrometer in diameter. In culture the fungus produces smaller (2,5—5,0 × 3,8—7,5) micrometer), mainly one-celled cylindrical pycnospores (Fig. 3. A), on the host, however, it produces larger (3,8—6,0 × 7,5—12,5), mainly one-septated (two-celled) pycnospores (Fig. 3. B).

The influence of nutritive medium and temperature on growth and sporulation of fungus are different. The best growth and sporulation was on malt-agar medium (Tab. 1).

The best liner growth was on 25°C. The fungus didn't develop on 32°C (Tab. 2).

## Zaključak

Na osnovu rezultata ispitivanja uticaja starosti na vitalnost konidija i askospora *Pleospora herbarum* (Pers. ex Fr.) Rabenh., može se zaključiti:

Konidije veoma dugo zadržavaju vitalnost. Sposobne su da klijaju do 120 dana starosti. Visok procenat klijavosti ispoljavaju čak i posle 60 dana starosti.

Broj inicijalnih hifa ne zavisi bitnije od starosti konidija, dok se njihov porast sa starošću preko 60 dana značajno smanjuje.

Askospore sa starošću do 6 dana relativno malo i sporo gube vitalnost. Klijavost askospora, broj inicijalnih hifa i njihov porast izrazito se smanjuju posle 9 dana starosti, a nakon 13 dana, prestaje.

## LITERATURA

Borić B. (1982a): Prilog proučavanju uticaja temperature na klijanje spora *Pleospora herbarum* (Pers. ex Fr.) Rabenh. Zaštita bilja, 33 (3), 161: 301—311, Beograd.

Borić B. (1982b): Prilog proučavanju uticaja relativne vlažnosti vazduha na klijanje spora *Pleospora herbarum* (Pers. ex Fr.) Rabenh. Zaštita bilja, 33 (4), 162: 437—443, Beograd.

Borić B. (1984): Uticaj koncentracije vodonikovih jona na klijanje spora *Pleospora herbarum* (Pers. ex Fr.) Rabenh. Zaštita bilja, 35 (1), 167: 75—81, Beograd.

Gäumann E. (1946): Pflanzliche Infektionslehre, Basel.

Gottlieb D. (1978): The germination of fungus spores, Meadowfeld.

Josifović M., Stojanović D. (1969): Novija proučavanja fiziologije razvoja *Polystigma rubrum* (Pers.) D. C. Jugoslovensko voćarstvo, 8: 199—206, Čačak.

Stojanović D. (1972): Prilog proučavanju *Stemphylum sarciniforme* (Car.) Wilt. parazita crvene deteline. Zaštita bilja, 117—118: 101—132, Beograd.

*(Primljeno 20. 07. 1984)*

## INFLUENCE OF AGE ON VITALITY OF *PLEOSPORA HERBARUM* (PERS. EX FR.) RABENH. SPORES

by

**B. Borić**

Institute for Plant Protection, Beograd

## Summary

Within the scope of biological research on *Pleospora herbarum*, the vitality of conidia and ascospores was also investigated. The vitality was determined on the basis of germination of conidia and ascospores and of the number and lenght, i.e. growth of germ tubes.

Conidia and ascospores, of the same age, were placed on dry sterilized microscopical slides and stored in a dark chamber at a temperature of 5°C. Germination of conidia was evaluated at the intervals of 30 days with the germination period lasting 3 and 24 hours at a temperature of

25°C, whereas that of ascospores was investigated at the intervals of 3 days with the germination period lasting 20 hours, also at 25°C.

One-day old conidia were used as the control, while ascospores were exposed to conditions favouring germination immediately after escaping the ascus.

Conidia retain their vitality for a very long period of time. They are able to germinate up to 120 days of age. A high percentage of germability is evident even after 60 days.

The number of germ tubes basically does not depend on the age of conidia, however, their growth dicreases significantly at the age above 60 days.

Ascospores not older than 6 days are characterized by a relatively low and slow loss of vitality. Germability of ascospores and number and growth of germ tubes are markedly reduced after their age of 9 days, and tend to cease completely after 13 days.

# A CONTRIBUTION TO THE STUDY OF LIFE-CYCLE OF SUMMER FRUIT TORTRICID *ADOXOPHYES ORANA* F.v.R. *(LEPIDOPTERA, TORTRICIDAE)*

by

**S. Stamenković**
Fruit Research Institute, Čačak

**T. Stamenković**
Plant Protection Institute, Beograd

## Summary

The occurrence and flight dynamics of *Adoxophyes orana* F.v.R. moths under field and laboratory conditions, time and course of oviposition, shape, size and number of eggs in egg-batches were monitored in the regions of Čačak (localities Čačak, Ljubić and Zdravljak) and Valjevo (locality of Popučke) over the 1975—1979 period.

Summer fruit tortricid was first observed in Yugoslavia near by Sarajevo in 1951. It became economically significant for fruit production in 1970 when an extensive damage was assessed on apples and pears in the area of Western Serbia.

In the spring the moths of the first generation appear in late May and early June, the average flight duration being 41.7 days.

The moths of the second generation appear in the end of July and in early August, the average flight duration being 63.7 days.

The average life-span of adults in the field conditions is 8.4 days for males and 10.0 das for females.

Sex ratio in the beginning of the moth flight is 0.40—0.41%, in the middle of the flight 0.52—0.54% and at the end of the flight 0.61%. In all experimental years the number of females that flew was somewhat higher and sex ratio amounted to 0.5.%

The start of oviposition with the females of the first generation was assessed in the second half of May and in the beginning of June, and with those of the second generation at the end of July and in the beginning of August.

The females lay eggs in the egg-batches on the bront side and the undersides of leaves of pears, plums, apricots, peaches and sweet cherries, on the front side of apple leaves and on the fruits of the above mentioned fruit species. The size of the egg-batch amounts to 2,1—8,9 mm in lenght and 1.8—3.6 m in width. The shape of the egg-batch is usually elliptical (61.5%). Number of eggs per batch ranges 6—230, the average number of eggs per batch being 56.7.

# RESULTS OF INVESTIGATIONS OF THE FLIGHT OF EUROPEAN CORN BORER *(OSTRYNIA NUBILALIS* HBN., *LEP., PYRALIDAE)* AND OF ITS PARASITES

by

**B. Manojlović**
Institute for plant Protection, Beograd

## Summary

There was established the period of flight of the european corn borer moth and of the parasites caterpillars of this pest and analyzed their further development from the point of view of coincidence resp. of synchronization in development in the sence parasite-host.

The results have shown that under conditions prevailing in our country, the flight of the european corn borer moth begins in June, i.e. in the middle of June and ends in the first half of August. Consequently, the flying out of moths of this pest in the course a day is from 8 p.c. in 1974 to 11 p.c. in 1976 in relation to the total number of emerged imagous.

However, the largest number of moths emerged within a short period of time, of 15 to 20 days in all, and our condition this period occurs at the end of June in the first half of July.

Numerical ration between males and females of the corn moth shows that the males are more numerous. In all the years of investigation the sexual index has been in favour of males. It was most expressive in 1976, when it had the value of 0,36 only.

Following the course of emergence of moths of *O. nubilalis* from the surroundings of Bačka Palanka, there were observed following species of parasites of caterpillars of this pest:

a. *Compoplex alkae* Ell.. *(Hym Inhneumonidae)*
b. *Eulophus viridulus* Thoms. *(Hym. Eulophidae)*
c. *Lydella thompsoni* Hrt., *(Diptera, Tachinidae)*
d. *Horogens punctorius* Roman *(Hym. Ichneumonidae)*

Under our conditions the emergence of *C. alkae* and *E. viridulus* unfolds in the course of April and in the first half of May. The emergence of *C. alkae* lasts short, from 18 to 26 days, with the maximum flying out in the course of day from 15 p.c. in 1976 to 23 p.c. in 1975, in relation to the total number of emerged imagous.

The mergence of *L. thompsoni* lasts very long under our conditions (about 2,5 months) and unfolds in the course of the third decade of April, in May, June and even in July. Probably because the emergence is protracted through a longer period of time, there fly out, in the course of day, a small number of imagous (from 9 p.c. on an average in 1975 and 1976 to 12 p.c. in 1974 in relation to the total number of emarged imagous).

The flight of *H. punctorius* takes place, under our condition, in the course of July and is concentrated within a short interval of 15 to 20 days only, with frequent interruptions. The maximum of imagous, caught

in the course of a day, was brom 16 p.c. in 1974 to 22 p.c. in 1975 from the total number of emerged imagous.

In this material, in all the investigation years the most numerous species of parasites was *L. thompsoni* with approximately 80 p.c. of occurence in relation to the total number of parasites. The second place is occupied by *C. alkae,* whereas *H. punctorius* and *E. viridulus* were in all the years small in numbers.

The sexual index of parasites is in favour od fameles, in all the years if investigation. It is the most expressive with the species *C. alkae,* 0.86 in 1975 and with *H. punctorius* 0.82 in 1974. If we compare the time of respective flyings out of european corn borer moth and of the enumrated parasite species, we see that their development is not synchronized to such an extent as would be suited to their mutual in the sence parasite-host. Particularly with *C. alake* and *E. viridulus,* because the flying out there wasps begins even two months before the flight of european corn borer had begun. These means that at the time of flight of these parasites no caterpilars of this pest, suitable for being parasitized, are present in nature and we assume that they develop one or two generations on some other alternative host.

A low degree of synchronization in the development is present also with *L. thompsoni* and european corn borer. But only in the beginning of the flight of this tachin, because it begins sometimes even 40 days before the beginning of european corn borer moths flight. However, towards the middle resp. at the end of the emergence of imagos of parasites, there are to be found in nature european corn borer caterpillars suitable for being parasitized. We consider, therefore, that this tachin has alternative hosts even in our country and that it develops one or two generations in them.

Only with *H. punctorius* and its host european corn borer, we observed complete coincidence in the appearance. For, the beginning of this wasp's blight and hatching of eggs takes place about 15 to 20 days after the beginning of european corn borer moth's flight. This means that at the time of means flight of this wasp in nature are present the europcan corn borer caterpillars suitable for parasitized.

Patch L. (1947): Resistance of a single-crose hybrid strain of field corn to European Corn borer. — J. Econ. Ent. 30, pp. 271—278.

Robinson J. F. (1982): European corn borer: Components of plant resistance and concetracions of 1,4 benzoxazin-3-ones in corn. Iowa State University Ames, Iowa, Dissertations, manuscript, pp. 1—115.

Vukasović P. (1953): Kukuruzni moljac i njegovo suzbijanje. — Zadružna knjiga, Beograd.

*(Primljeno 3. 07. 1984)*

## POSSIBILITY OF SURVIVAL OF EUROPEAN CORN BORER (*OSTRINIA NUBILALIS* HBN., *LEP. PYRALIDAE*) CATERPILLARS ON VARIOUS HOST PLANTS

by

**B. Manojlović**

Institute for Plant Protection, Beograd

### Summary

There were investigated possibilities of survival of the European corn borer caterpillars on eight species of cultured plants and on the same number of plants belonging to spontaneous flora in the period from 1974 to 1977.

The results have shown that all the species of plants do not offer identical conditions for the survival of the European corn borer caterpillars. With some plants the survival of caterpillars is expressed in a very high percentage. On the other hand, individual cultured and weed plants offered limiting conditions for the survival and further development of this pest's caterpillars. For, by depositiong two to three egg clusters (about 40 eggs), immediately before he hatching of caterpillars, a certain number of plants remaibed unattacked.

When egg clusters of the European corn borer were deposited, the greatest numbers of atacked plants and the densest population of this pest has been recorded with hop in 1976 (88.80 p.c. of damaged plants with a population of 369 corn borers calculated per 100 plants), further with hemp and corn in 1975 (with hemp plants 80.35 p.c. of attacked plants with 322 caterpillars per 100 plants and with corn 73.18 p.c. of damaged plants with a population of 260 caterpillars, calculated per 100 plants). A somewhat lower numbers and intensity of this pest's atack have been recorded with these crops in other investigation years. Further, with weed plants: common burdock, particularly in 1975 (with common mugwort 54.66 p.c. of damaged plants with a population of 80 corn borers, calculated per 100 plants and with common burdock 45.50 p.c. of attacked plants with 54 corn borers per 100 plants).

With other cultured and weed plants (sorghum, tomato, red pepper, millet, mule, further stinging nettle, thorn apple, pig weed, common reed, great burdock and barnyard grass) and with the depositing of egg clusters, the number of attacked plants was small with a low population of this pest. The intensity of the attack of the European corn

borer did not exceed with them (with some exceptions) 20 p.c. of damaged plants (millet in 1975 and pig weed in 1976), and the population density was below 20 corn borers calculated per 100 plants. The results have shown the death rate of caterpillars was very high on individual plant species. By depositing egg clusters, immediately before hatching of caterpillars, on each experimental plant, the increased number of this pest in relation to the spontaneous attack was different, unequalized and with some plants very low. The largest number of caterpillars was increased with hemp (calculated per 100 plants from 40 in 1977 to 195 in 1975) corn (from 42 in 1975 to 87 corn borers per 100 plants in 1976) and hop (maximum, 87 corn borers per 100 plants in 1976). Considerably less with common mugwort (calculated per 100 plants from 13 in 1977 to 53 on the same number of plants in 1975) and with common burdock (maximum up to 43 caterpillars calculated per 100 plants).

With other cultured and weed plants, by depositing the egg clusters of the European corn borer, the density of its population in relation to the spontaneous attack, was increased in all the investigation years, by less than 20, calculated per 100 plants.

## Zaključak

Bisclofentazin je specifičan akaricid sa ovicidnim delovanjem na *P. ulmi* Koch. Pored delovanja na jaja deluje i na mlađi larveni stadijum, dok na ostale stadijume ne deluje.

Bisclofentezin može da se koristi za suzbijanje zimskih jaja *P. ulmi* Koch. na jabuci u formulacijama Apollo 50% WP i Apollo 50% SC. Tretiranje zimskih jaja pred piljenjem larvi obezbeđuje uspešnu zaštitu jabuke za oko 104 dana. Ove dve formulacije mogu da se koriste i za suzbijanje letnjih jaja *P. ulmi* Koch. na jabuci, posebno ili u kombinaciji sa Plictranom 25 WP ili nekim drugim akaricidima koji imaju osobine da deluju na pokretne stadijume pregljeva. Ukoliko je niska populacija grinja na jabuci, Apollo 50% WP i Apollo 50% SC može da se primeni posebno, jer obezbeđuje zaštitu jabuke za vremenski period od oko 103 dana. Međutim, ukoliko je populacija visoka, da bi se povećala efikasnost bisclofentezina treba ga primenjivati u kombinaciji sa nekim akaricidom koji deluje na pokretne forme pregljeva.

Zahvaljujući perzistentnosti delovanja na letnja jaja i mlađi larveni stadijum *P. ulmi* Koch., Apollo 50% WP i Apollo 50% SC, primenjen krajem maja i krajem meseca jula obezbeđuje efikasnu zaštitu jabuke do kraja vegetacije i doprinosi smanjivanju intenziteta polaganja zimskih jaja a time i potencijal napada u narednoj godini.

### LITERATURA

Bryan Miss K. M. G., Geering Q. A. and Reid J. (1981): NC 21314, a novel compound for control of phytophagous mites. Proc. 1981. British. Crop. Protection Conference. Post and Diseasse Vol. I: pagee 67—74, England.

Griffiths W., Roca M., De Saint Blanquata (1982): The Control of Panonychus ulmi on Apples in Europe with 3,6-BIS/2'chlorophenyl-1,2,4,5-Tetrazine (NC 21314) Med. Fac. London ww. Rijksuniv. Cent. 47/2, 1982.

## ACTIVITY OF NEW ACARICIDE BISCLOFENTEZIN AGAINST *PANONYCHUS ULMI* KOCH. (*ACARINAE — TETRANYCHIDAE*)

by

**T. Stamenković**

Institute for Plant Protection, Beograd

**S. Stamenković**

Institute for Fruit-Growing, Čačak

**Ž. Pantelić**

AIK "Valjevo" — "Poljoplod", Valjevo

### Summary

The subject of our investigation was the new acaricide, bisclofentezin (formulation Apollo 50% WP and Apollo 50% SC).

Our investigation of acaricidal activity of bisclofentezin against *P. ulmi* Koch. on apple in three localities (Zemun, Valjevo and Čačak) has confirmed that the preparation possesses a marked ovicidal effect. Treat-

ment of winter eggs prior to hatching of larvae of *P. ulmi* Koch. provides a successful apple protection for about 104 days.

Bisclofentezin may be used in formulations of Apollo 50% WP and Apollo 50% SC for control of summer eggs of *P. ulmi* Koch on apple, individually or combined with Plictran 25 WP or any other acaricide effective for movable forms of maggots. In either cases, bisclofentezin provides an efficient apple protection for about 103 days.

Bisclofentezin also effectively acts against younger larvae, whereas to other development stages of *P. ulmi* Koch. it is inactive.

Results obtained in our investigation of bisclofentezin indicate that this acaricide is characterized by a persistent effect at the concentrations applied.

In the course of investigation of bisclofentezin, symptoms of phytotoxic effect were not observed on apple.

# INFLUENCE OF DIFFERENT DOSAGES AND TIME HERBICIDES APPLICATION UPON YIELD OF WINTER WHEAT

by

**M. Dopuđa**

Agricultural and Food Research Institute, Sremska Mitrovica

## Summary

In the intensive agricultural production, the application of herbicides is the only possible method of elliminating the weeds in the wheat.

Nevertheless, the usage of herbicide in the optimal time and minimal quantities reduces wheat yield.

In period of 1980—1982, the exact field experiment with application of herbicide in wheat, was optained. The purpose of this experiment was to proove the influence of different herbicides, dosages and times of application, upon yield of the leading variety of wheat »Novosadska rana 2«. Two of the herbicides, e.g. Monosan S (45% 2,4-D + 5% MCPA), and Monosan combi (38% MCPP + 13,5% 2,4-D) were in the experiments in three different dosage per hectar. Periods of application was in the stage of fall tillering (F stage), and first node of stem visible (I stage).

Both, Monosan S and Monosan combi cause damages of vegetative and generative organs of wheat and reduce the yield.

»Novosadska rana 2« showed less sensitivity and support the herbicides better in second application time (I stage).

Arsenijević M., Balaž J. (1980): Bakterioze boranije i mogućnost njihovog hemijskog suzbijanja. IV jugoslovenski simpozijum o zaštiti bilja, Poreč 8—12 decembra. Glasnik zaštite bilja, br. 11, Zagreb.

Arsenijević M., Balaž J. (1982): Etiološka proučavanja bakteriozne pegavosti boranije. II kongres zaštite bilja Jugoslavije. Vrnjačka Banja, 25—29. X 1982. Glasnik zaštite bilja, br. 9/10, Zagreb.

Arsenijević M., Balaž J. (1983): *Pseudomonas phaseolicola* (Oreolna pegavost lišća i masna pegavost mahuna boranije i pasulja). Priručnik izveštajne i prognozne službe zaštite poljoprivrednih kultura (Kolektiv autora). Savez društava za zaštitu bilja Jugoslavije, Beograd.

Dowson I. W. (1957): Plant Diseases due to Bacteria. Cambridge.

Klement Z. (1970): Bacteriology. In: Methods in Plant Pathology (Király, Z., Z. Klement, F. Solymosy, J. Vörös), Académiai Kiadò, Budapest.

Patel P. N., Walker J. E. (1965): Resistance in Phaseolus to Halo Blight. Phytopathology, Vol. 55, No. 8.

Saettler A. W., Potter H. S. (1970): Chemical Control of Halo Bacterial Blight in Field Beans. Res. Report, Michigan State Univ., 98.

Šutić D., Panić M. (1969): Metode proučavanja fitopatogenih bakterija. Zavod za zaštitu bilja Poljoprivrednog fakulteta i Sekretarijata za poljoprivredu, šumarstvo i vodoprivredu SR Srbije, Beograd.

Tešić Ž. (1946): Uloga bakterija u životu pasulja. Doktorska disertacija, Beograd.

Trigalet A., Bidaud P. (1978): Some aspects of epidemiologic of bean halo blight. Proc. 4th Int. Conf. Plant. Path. Bact., Angers.

Walker J. C., Patel P. N. (1964): Splash Dispersal and Wind as Factors in Epidemiology of Halo of Bean. Phytopath. Vol. 54, No. 2.

Walker J. C., Patel P. N. (1964a): Inheritance of Resistance to Halo Blight of Bean, Phytopathology, Vol. 54, No. 8.

Zaumeyer W. J., Meiners S. P. (1975): Disease resistance in beans. Annual Review of Phytopathology, Vol. 13.

*(Primljeno 15. 01. 1984.)*

## *PSEUDOMONAS PHASEOLICOLA (BURKHOLDER)* DOWSON (*PS. SYRINGAE PV. PHASEOLICOLA / BURKHOLDER)* YOUNG, DYE ET WILKIE AS PARASITS OF STRING BEANS AND BEANS

by

**M. Arsenijević** and **Jelica Balaž**
Faculty of Agriculture, Novi Sad

### Summary

On account of its frequent occurrence in a very high intensity the halolike spottiness of leaves and greasy spottiness of pods has become a serious problem in the successful production of string beans and beans.

Many sorts which have been grown recently manifest such a susceptibility to the parasite that under favourable conditions for its development there takes place a rather intensive withering of leaves and of whole plants, as well as of pods.

From the tissue of thus diseased plants there have been obtained numerous isolates of bacteria colonies of white colour. Their pathogenic character has been proved on various organs of artificially inoculated plants (leaf, pod petiole and stem) by infiltrating the suspension of bacteria by means of a medical syringe or by spraying. In the first case the concentration of the suspension of bacteria amounted to $10^7$ cells/ml, and in the second one to $10^8$ cells/ml.

On the fruits of apricots, sour cherries, cherries and lemons the inoculated puncture by means of a needle, with the use of bacterial suspension of $10^8$ cells/ml did not produce any changes.

The investigated isolates cause a hypersensitive reaction on the leaf of inoculated tobacco plant and fluoresce on the King's B base.

They create the acid without gas from galactose, glucose, mannose, sacharose and glycerin. The bacteria do not dissolve arabinose, lactose, maltose dextrin, starch, esculin, mannit and dulcit. The reaction is not clear on xylose, whereas some isolates dissolve raffinose to a somewhat lower degre, and some other do not use it.

Bacteria do not reduce nitrates to nitrites and do not hydrolyze starch; they create ammonia in a moderate intensity; they do not create hidrogen sulphide nor indole.

On the basis of pathogenic, morphologic, rearing and biochemical characteristics it may be concluded that the studied isolates belong the to bacterium *Pseudomonas phaeolicola* (Burkholder) Dowson, resp. to the pathover *Ps. syringae pv. phaseolicola* (Burholder) Young, Dye et Wilkie.