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## (PLANT PROTECTION)

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*(Primljeno 24. 03. 1983)*

## INVESTIGATIONS ON THE SWEET CHESTNUT BLIGHT

by

**M. Usčuplić**

Faculty of forestry, Sarajevo

### Summary

Investigation on the sweet chestnut blight in Bosnia (Yugoslavia) showed that a progressive epidemic of the disease occurs after felling of the infected trees. New infection of the young sprouts could be observed usually in the second and third year of age. The spred of the disease depended on the number of stumps as they were colonized by the spores of *E. parasitica* soon after felling of the trees.

Effective control of the chestnut blight is achieved by chemical treatment of fresh stumps after the trees were clear felled in infected

area. Among the chemicals that were used in our experiments the best was Creozote. It was important not to cut only individual infected trees as new sprouts will be depressed by surrounding species. It is also recommended to cut the trees during the winter time when temperature is far bellow the minimum for growth of the fungus.

New investigation showed that there are many incompatible strains of *E. parasitica* that vary in speed of growth of their mycelia, their morfological characteristics and production of picnids. Some of them do not cause killing of the infected trees because the wounds were cured by the calus tissue. Artificial infections with various strains of the fungus showed that some isolates were developed within the bark and with no fatal effect. This new characteristic of the disease we observed for first time in 1980 (20 years after the disease was discovered here).

It is likely that hypovirulent strains of the fungus occur here just as in some other countries in Europe.

# NEEDLE DISEASES OF AUSTRIAN PINE (*PINUS NIGRA* Arn.)

by

**D. Karadžić**

Faculty of forestry, Beograd

## Summary

The maximal growth and development of coniferous species requires a well-developed crown, with regularly formed and uninfected assimilative organs. However, in the course of growth, the needles are subject to the attack of a large number of pathogenous organisms which reduce to some extent their physiological activity. There are various factors which cause needle impairing. Old needles die out naturally and arer cast after a number of years. Some insects, such as plant lice, scale-bugs, mites, and so on, can cause early needle cast. Abiotic factors, such as air-pollution, damage due to salinity, high temperatures, drought, winter frost etc., may lead to partial or complete defoliation. But much more frequent and important needle diseases are caused by pathogenous fungi.

In Serbia and Montenegro, the study of the most important *Pinus* diseases has become of current interest lately, keeping in mind the importance of these tree species, which are being increasingly grown in accordance with the long-term program of bare mountainous terrain afforestation.

The following fungi occur most frequently on the needles of Austrian pine cultures: *Dothistroma pini, Naemacyclus niveus* and *Diplodia pinea.* The fungus *Encoelia petrakii* has been recorder recently. The fungi *Alternaria* sp., *Cladosporium herbarum, Epicoccum purpurascens, Botrytis cinerea, Sclerophoma pityophilla, Coniothyrium fuckelii* and *Lophodermium pinastri* are also often isolated out of Austrian pine needles. These fungi do not have great importance, as they occur mainly on cast needles or on the needles previously infected by the fungus *Dothistroma pini.*

# NEW NEEDLE DISEASE OF SCOTS PINE IN BOSNIA CAUSED BY *LOPHODERMELLA SULCIGENA* (Rostr.) Höhn.

by

**V. Lazarev**

Faculty of Forestry, Sarajevo

## Summary

*Lophodermella sulcigena*, the primary of current year's needles, was discovered for first time in Bosnia in 1979. in plantation of Scots pine on mountain Romanija near Sarajevo. The fungus was noted on restricted area and intensity of its attack was sporadic. The attack was noticed on the trees up to 20 year of age.

Disseminaion of ascospores of *L. sulcigena* in this area take place from the middle June to end of Avgust with its peak in July. This period could be dislocated depending on the moisture condition.

On the needles already infested by *L. sulcigena* sometimes could be found *Hendersonia acicola* Tubeuf. The interaction between *L. sulcigena* and *H. acicola* is not yet clear.

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*(Primljeno 27. 07. 1983)*

## STUDIES OF SOME CHARACTERISTICS OF WEED ASSOCIATION IN ALFALFA ON ALLUVIAL DEPOSITS, UNDAMAGED AND DAMAGED BY THE INDUSTRIAL AEROSOL

by

**Ksenija Mijatović**

Institute for Plant Protection, Beograd

### Summary

The author presents the results of investigation of the weediness of established alfalfa fields on alluvial deposits, undamaged and damaged by the industrial aerosol. The studies of the floristic composition and of the phytocenologic characteristics of alfalfa fields were made in the period from 1978 to 1980, in the region of Kraljevo. For the investigations were chosen 4 stationary areas, exposed to different intensity of the influence of polluters (station 1 — very strong influence; station 2 — strong influence; station 3 — weak influence and station 4 — outside the zone of polluter's influence).

There were observed considerable differences as regards the participation of individual plant species, their numerical and covering (areal) values, as well as regards the density of alfalfa's population. They are correlated with the intensity of polluter's action. The most marked changes have been manifested on the station 1, which has become practically lost for agricultural production and grown up with weed plants — *Cynodon dactylon* Pers. and *Agropyrum repens* Beauv.

Composition of biological spectra is the following: station 4: terophytes (T) 47,4%, hemicryptophyts (H) 26,3% and geophyts (G) 26,3%; station 3: T 47,1%, H 29.4% and G 23.5%; station 2: T 28,6%, H 35.7%, G 28.6% and HT 7.1%, and, station 1: T 33.3% and G 66.7%. Presented are also the data concerning the depth of the rhizosphere and agro-ecological indexes for those weed species which are characterized by permanence (permanence degree V).

# OCCURRENCE OF LEAF ROLLERS *PANDEMIS HEPARANA* DEN ET SCHIFF. AND *ADOXOPHYES ORANA* F. V. R. ON THE APPLE TREE

by

**M. Injac**

Institute for Plant Protection, Beograd

## Summary

In the course of the winter survey of the apple orchard, size 45 ha, age 8 years, with a mixed stand of summer and autumn sorts, we found 78 webs of leaf rollers on 60 shoots (Tab. 1).

For the following of the development of *P. heparana* and *A. orana* in the apple orchard, we used the following methods:

— **Emergance case** for recording the activation of hibernating caterpillars.

— **Rearing in the laboratory of caterpillars** which were collected in the orchard.

— **Visual survey.** We surveyed the apple orchard 13 times and in each survey we searched 60 shoots. Before and at gathering time we checked 1000 fruits.

— **Beating method.** We used the entomological cetcher, 64 × 40 cm, with 100 beatings in each survey.

— **Pheromones** of Dutch production for recording the flight of *P. heparana* and *A. orana.*

We put into the emergence case 193 winterwebs. The activation began on March 31 and lasted till April 22 or 23 days in all (Tab. 2). The activation of caterpillars in the interval of time from April 9 to April 19 was checked by low temperatures, which were, at 2 p. m., from 5.0 to 10.2°C.

The development of overwintering caterpillars in the apple orchard (Tab. 1) lasted till the end of May, reaching the highest numbers of 83 on 60 shoots. The caterpillars pierced into the buds (Fig. 1), rolled the leaves (Fig. 2) and at the end of the development (Fig. 3) were feeding also on the whole leaves. In rearing the caterpillars under laboratory conditions (Tab. 3) we obtained 132 moths of *P. heparana* and 2 of *A. orana,* which shows the prevalence of *P. heparana* in the apple orchard.

The chrysalidation of hibernating caterpillars was recorded on May 18. Pupae were found, their lower parts rolled in the leaves, in the thicker grown part of the tree.

The first fligth of moths of *P. heparana* on pheromones began on May 24 (Tab. 4) and lasted till June 10. There has been caught a total of 264 moths. The second flight began on August 21 and lasted till September 10. 68 moths were caught or considerably less than at

the first flight. It is characteristic of *P. heparana* that, between these two flight, individual moths are always recorded on pheromones. At the time of mass flight, it is easy to find in the apple orchard exuviae, sticking out of the rolled leaves (Fig. 4).

The first flight of moths of *A. orana* began on June 1 and lasted till June 20. The second flight began on August 16 and lasted till September 10. In the first flight 41 moths have been caught on the pheromone. The second flight was more numerous (67 moths caught). The flights are separated in time from each other (Tab. 4).

From among the caterpillars, which we had collected in the orchard at the time of the summer generation and which we reared under the laboratory conditions, 70 moths of *P. heparana* and a single moth of *A. orana* flew out (Tab. 5).

The females of *P. heparana* laid the egg masses of greenish colour on the face of the leaf with an average of 85.4 eggs, whereas the egg masses laid by the females of *A. orana* were yellow and contained 51.6 eggs each.

*P. heparana* develops most frequently on that part of the tree where the leaves grow thicker, whereas *A. orana* is photophilous and in most cases is to be found on apical sprouts.

In the course of the summer generation there were found 34 caterpillars on 60 shoots at the most. At the survey of September 2, there were found 1.3% of injured fruits.

In the course of the survey made on December 20 we found 14 living caterpillars in webs (Tab. 1). This shows that the numbers of *P. heparana* were decreasing in 1982.

Somme differences in results which we obtained in the laboratory and in the apple orchard in relation to pheromones where the differences in numbers of *P. heparana* and *A. orana* moths are not so marked, can be explained by the sampling of moths up to the height which can be reached by the hand, i. e. in the zone of development of *P. heparana.*

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*(Primljeno 2. 12. 1982)*

## *COLLETOTRICHUM DEMATIUM* (PERS. EX FR.) GROVE *VAR. TRUNCATA* (SCHW.) ARX. CAUSING THE SOYBEAN ANTRACNOSE IN YUGOSLAVIA

by

**S. Jasnić**

Faculty of Agriculture,
Institute for Plant Protection, Novi Sad

### Summary

*Colletotrichum dematium var. truncata* was isolated from soybean plants in surrounding of Novi Sad. The disease occurs on maturing plants and cause black scattered spots or patches on stem and pods of soybean (Fig. 1). Black area is covered with fruting bodies (acervuli) of fungus.

The fungus isolated from affected stem of soybean develops on synthetic acid medium gray-whitish mycelium with numerous black sclerotia and acervuli. The acervuli are oval to elongate, hemispheric and erumpent with numerous needle-like long and short setae (50—155 × 2,5—5 μm) (Fig. 4). The unicellular, tapered and curved conidia (18,75—23,75 × 3,75—4,25 μm) are formed in acervul in a slimy exudate (Fig. 5). They form dark oval to ellipsoidal appressoria on germ tubes (Fig. 6).

The symptoms obtained by artificial inoculation revealed those of natural infection (Fig. 2).

The influence of nutritive medium and temperature on growth and sporulation of fungus are different. The best growth and sporulation is on synthetic acid medium (Tab. 1). The best linear growth of fungus was on 31°C and sporulation on 25°C (Tab. 2).

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## *SCLEROTINIA SCLEROTIORUM* (LIB.) DE BARY, PARASITE OF SOYBEAN IN S.A.P. VOJVODINA

by

**M. Vidić**

Faculty of Agriculture, Novi Sad

### Summary

It has been observed that some soybean plants wilt and dry in the middle of their vegetative period, i.e., at the stage of flowering. The surface of infected plant parts become es covered with a thick white mycelial film of the parasitic fungus. That conspicuous symptom brought the name to the disease — white rot of soybean.

When isolated on PDA, the fungus formed a colony of thick white aerial mycelia. Eight days after isolation, sclerotinia were observed on the brim of the Petri dish. Those were black corpuscles, spherical or somewhat flattened, with corrugated surface. Having been kept at —3°C for 30 days, the sclerotia moved to greenhouse at 20—22°C developed apothecia which were pale yellow to brown and resembled a goblet, the upper part of which varied in diameter from 1 to 10 mm. The apothecia had the hymenium with asci and paraphyses. The asci

were elongated, cylindrical and slightly bulging towards the tip. Their average size was 119.0 × 8.6 micrometers. The ascospores, forming single rows of eight in the ascus, were single-celled, ellipsoidal, and hyaline. Their size was 12.7 × 7.4 micrometers. Microscopic observations of mycelia showed that the cells of primary hyphae had pronounced granular structure and thin walls.

Judging on the basis of the appearance of the fungus in culture, size, form, and color of sclerotia, apothecia, asci, and ascospores, and comparing our results with those of other authors, we concluded that we isolated the fungus *Sclerotinia sclerotiorum* (Lib.) de Bary.

The pathogens virulence was checked by inoculation methods using sclerotia, mycelia, and ascospores to infect soybean plants. The method of mycelia insertion into wounds opened on the stem was most devastating. The inoculated plants started to wilt in two days and all of them died in five days. Mycelia were capable of infecting unwounded stems. Ascospores infected soybean leaves. Small wet spots would at first occur on the lamina and then spread over the petiole onto the stem. The inoculation with sclerotia in greenhouse caused a low-scale infection of soybean seedlings; we concluded therefrom that sclerotium-formed mycelia are not important in the epidemiology of white rot on soybean.

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*(Primljeno 1. 06. 1982)*

## INVESTIGATION OF STALK RESISTANCE OF MAIZE INBRED LINES AND HYBRIDS TO ROT (*PHAEOCYTOSPORELLA ZEAE* STOUT AND *GIBBERELLA ZEAE* SCHW. PETCH.) UNDER FIELD CONDITIONS AND ARTIFICIAL INOCULATION

by

**M. Draganić**

Maize Research Institute, Beograd — Zemun

### Summary

Stalk rot resistance of 26 maize inbred lines and 21 hybrids to *Phaeocytosporella zeae* and *Gibberella zeae* was investigated in this work.

The test material was planted on the experiment field of the Maize Research Institute in Zemun Polje. Twenty plants per row were planted of each inbred line and hybrid. Immediately, after silking, stalks were inoculated in the middle of the second internode with isolate of *Phaeocytosporella zeae* from Zemun Polje and *Gibberella zeae* from Dimitrovgrad using the tooth-pick method (Young, 1943).

The disease rating was performed at harvesting according to the scale 1 = most resistant and 5 = most susceptible, (H o o k e r, 1957). The disease index was calculated (0 = healthy plant, 100 = totaly idseased plant) according to McKeeny's formula (1923).

It was found that stalk rot resistance of inbred lines and hybrids to *Gibberella zeae* was superior to the raction of the same material to *Phaeocytosporella zeae*. *Phaeocytosporella zeae* could be a more destructive pathogen than *Gibberella zeae*. These conclusions relate only to the investigated isolates.

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*(Primljeno 25. 06. 1983)*

## THE EFFECT OF VIRUS INFECTION ON GROWTH AND FRUIT BEARING OF SOME CULTIVATED PLANTS

by

**G. Delibašić**

Faculty of Agriculture, Beograd — Zemun

### Summary

Lucerne mosaic virus and cucumber mosaic virus appear on a number of cultivated plants causing considerable damages by reducing the income and the quality of the plant produce. The effect of separate and combined infections on growth, blossom and fruit bearing has been investigated on the following plants: *Phaseolus vulgaris* var. Topcrop, *Capsicum annuum, Nicotiana tabacum* var. Samsun, *Chenopodium amaranticolor* and *Chenopodium quinoa*. It was established that bean plants of the variety Toporop infected by LMV have a retarded growth, they blossom but form a scarce number of pods; the same plants infected by CMV have a considerably retarded growth, do not blossom and do not form pods; infected by a combination of LMV+CMV these plants have a retarded growth too, do not blossom and do not form pods. Plants belonging to *C. annuum, Ch. amaranticolor* and *Ch. quinoa* infected by the same viruses behave similarly, rarely blossom and scarcely bear fruits. Tobacco showed completely different reactions and those plants infected by LMV have a considerably retarded growth, blossom less and form less seeds compared to those plants infected by CMV.

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*(Primljeno 1. 04. 1983)*

## *BRUCHOPHAGUS SOPHORAE* CROSBY + CROSBY *(CHALCIDOIDEA: EURYTOMIDAE)* A NEW SPECIES FOR YUGOSLAV FAUNA

— Preliminary communication —

by

**Lj. Mihajlović**

Faculty of Forestry, Beograd

### Summary

On sophora (*Sophora japonica* L.), the following insect species have been so far recorded in Yugoslavia: *Pseudaulacaspis pentagona* Targ. Tozz. (*Homoptera: Coccoidea*), *Adoxophyes orana* F. v. R. (*Lepidoptera: Tortricidae*) and *Hyphantria cunea* Drury (*Lepidoptera: Arctiidae*). Beside the above mentioned, the species *Bruchophagus sophorae* Crosby + Crosby (*Hymenoptera: Eurytomidae*) has been also found in sophora seeds on many sites in Serbia. This species has been so far known only in its country of origin — China and, based on one finding, in Hungary.

In Serbia, *B. sophorae* is a monophagous and univoltine species. Wasps swarm from begining of June to begining of September. The females lay their eggs in immature seeds of green fruit, and the larvae develop till the end of vegetation, when they are adult and they get through the winter in mature seeds. Only one larva of *B. sophorae* can develop in each seed. They are transformed into pupae in May, and then in about three weeks the new generation of wasps appears.

The populations of this insect are very numerous on some sites, so that it is a dangerous pest for *Sophora japonica* seed. The maximum

percentage of damaged seed amounted to 97.86%. Otherwise, the percentage varied from site to site and ranged from 2.88 to 97.86%. Its most frequented amount was between 50 — 70%.

Natural enemies of this pest insect have not been found, and in literature there are no data about reducers of its populations.

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# *PARECTOPA ROBINIELLA* CLEMENS — A NEW NEARCTIC INSECT PEST IN YUGOSLAVIA

— Preliminary communication —

by

**Jasminka Igrc** and **M. Maceljski**

Faculty of Agricultural Sciences
Institute for Plant Protection, Zagreb

## Summary

A new leaf miner — *Parectopa robiniella* Clemens (*Lepidoptera, Gracilariidae*) — of North American origin was found in Yugoslavia as a pest of the black locust tree and some first observations of this insect are presented.