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INFLUENCE OF THE ATTACK OF BUGS *LYGUS RUGULIPENNIS*
POPP. (*HETEROPTERA, MIRIDAE*) ON THE QUALITATIVE
PROPERTIES OF SUNFLOWER

by

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S u m m a r y

Bugs belong to the important sunflower pests in Vojvodina (the north-eastern part of Yugoslavia) among which the dominant one is *Lygus rugulipennis* Popp. Investigation lasted 4 years. Seed samples were collected from 162 sunflower fields in total. From each field 200 seeds were separated and an average sample was made of them.

The reduction of oil content in the seed attacked by bugs was higher if the degree of attack was heavier. The relative reduction of oil content in relation to the unattacked seed variant was 5% for slightly attacked seed, then 8% for medium and 17% for heavily attacked seed. Significant differences among all investigated variants in tests were found out. Bugs reduced on an the seed yield on an average by about 3% (or 80 kg/ha), namely the yield of row oil for nearly 30 kg/ha.

The quality of sunflower seed decreased with the increase of the acid number caused by the attack of bugs. The relative increase of acid number in relation to the undamaged sunflower was on an average 5 times higher for slightly damaged seed, 8 times for mean and 21 times for heavily damaged seed.

The germination ability of the sunflower for seed production is reduced due to the attack of bugs. The relative decrease of the percent of germinated plants was in comparison to the seeds of undamaged variants 10% for slight, 23% for mean and 60% for heavily damaged seed.

On the basis of the results obtained by investigating the harmful effect of the attack of bugs on quantitative and qualitative properties of sunflower, it can be concluded that chemical control of sunflower for seed production would be economically justified.

EFFICIENCY OF SOME INSECTICIDES IN CONTROLLING ALFALFA FLOWER-BUD MIDGES (*CONTARINIA MEDICAGINIS* KIEFF.)

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Summary

The experiment was conducted in the region of Vršac with the alfalfa crop from the second cut to be kept for seed production. The following insecticides were applied: Bancol WP at rates of 500, 750 and 1000 g/ha, Cymbush 10 in the amount of 800 ml/ha and Zolone liquid at a rate of 2 l/ha. Each treatment was investigated on an area covering one hectare with the use of water amounting to 300 l/ha applied by a tractor spraying machine. The efficiency of the first treatment performed on July 5 was evaluated on July 22, 1985, whereas that of the second treatment dated July 22 was evaluated on August 27 and September 14, 1985. Evaluation of the efficiency was based on the method of representative samples 33 × 33 cm in size, i. e. 10 per treatment at a distance of 30 steps. On these areas *C. medicaginis* and *D. ignorata* midges were counted. The method of cutting was also employed in order to determine the distribution of imagos of harmful *Cecidomidae* as well as of other pests and beneficial insects. On August 22, seed pods were harvested and weighed, and on September 14 the alfalfa crop was combined and seed weight measured by treatments.

Prior to first treatment alfalfa was at the stage of cluster formation without flowering. The number of *Cecidomidae* imagos determined in daytime was low. However, on the occasion of evaluation of first treatment, 774 *C. medicaginis* midges were found in the control per 10 representative samples, indicating that the number of imagos during the period from first application to the check-up was high. In the treatments on the same areas, the number of *C. medicaginis* midges ranged between 127 and 519 (Tab. 1). In 100 beatings a small number of *Cecidomidae* imagos was found, whereas the number of *C. medicaginis* midges varied from 42 to 198 (Tab. 2).

Evaluation of the two treatments shows that in the control pods weighed 200 g on a 10-sample basis, whereas the quantity in the treatment with Bancol was lower, indicating that this chemical does not affect imagos of alfalfa flower-bud midges. On the other hand, some results reveal that Bancol is possibly contributing to earlier ripening of alfalfa pods. The crops treated with Zolone liquid and Cymbush yielded 395 and 445 grams, respectively. These results were confirmed after combining. The highest efficiency was obtained with Cymbush yielding 317 kg, followed by Zolone liquid — 260 kg/ha, whilst Bancol revealed no efficiency in relation to the control where the yield amounted to 88 kg/ha (Tab. 3).

POSSIBILITY OF SYSTEMIC SOIL INSECTICIDE APPLICATION
AGAINST SUGAR BEET SEEDLING WEEVILS
(*BOTHYNODERES PUNCTIVENTRIS*)

by

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S y m m a r y

Effective control of sugar beet weevils can be obtained with systemic soil applied insecticides in sowing-time. Good effectiveness was obtained especially with volatile soil insecticides which fumigant effect can significantly reduce the weevil population.

In three years field trials were made in order to test various formulations of soil insecticides in sowing-time. Seed pelleting material (coated sugar beet seeds) had been treated with insecticides, while granular and liquid soil insecticides were applied in bands. The first set of insects followed by evaluations was made 20—25 days after sowing when the seedlings were at cotyledon stage, whereas the second took place 35—40 days sowing. An artificial infestation was caused by insects under isolated cages.

After the first evaluation among the granular insecticides good effectiveness was obtained with terbufos and forat while those with carbofuran was weaker. Applied as liquids (terbufos, carbosulfan, carbofuran and oxamyl) showed good results. Very good effectiveness in coated sugar beet seeds treatment was obtained with terbufos, carbofuran, carbosulfan and oxamyl. The effect of furathiocarb in the applied dose proved insufficient. Phytotoxic effects were noted on seeds treated with terbufos which manifested in slower germination. The same effect was obtained with liquid carbofuran in band application. Other varieties showed no phytotoxic effects. After the second evaluation very good killing effect was obtained with terbufos and then forat, carbofuran, carbosulfan, while oxamyl and furathiocarb on seed had not satisfactory residual effect 40 days after application.

Seeds treatment with insecticides proved very effective in sugar beet weevils control giving results close to those obtained with soil insecticides, granular or liquid, in band application. Most of the tested insecticides had a negative influence on the biological characteristics of the treated seeds and further improvement of the formulations is necessary to eliminate phytotoxic effects.

Laboratory tests showed that most of the applied insecticides had good systemic effect. Insecticides based on carbamates in liquid and ST formulations cause paralysis with the pests 4 hours after poison consumption. They take less feed, but the killing effect could be noticed somewhat later. The period of the pests paralysis was rather short with organophosphoric insecticides, especially terbufos, and death followed rather quickly. Phorate showed the weakest effectiveness. In-

secticides for seed treatment and the liquid formulation had a much quicker effect than the granulates.

Application of each of the three formulations of the insecticides mentioned here proved useful and justified in sugar beet weevil control. The problem could not be solved during one season but a repeated action, year after year, would reduce the weevil population so the damage would be less and the crop in first months after germination saved.

GESCHLECHTLICHES STADIUM UND PERIODE DES
AUSSCHLEUDERNS DER ASCOSPoren BEI *BLUMERIELLA JAAPII*
(REHM) V. ARX AN KIRSCHENBLÄTTERN IN SLOWENIEN

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Zusammenfassung

In der Abhandlung wurde anhand mehrerer Proben infizierter Kirschenblättern aus verschiedenen Lokalitäten Sloweniens die Apothecien bzw. Ascosporenbildung beim Pilz *Blumeriella jaapii* (Rehm) v. Arx festgestellt. Hiermit wurde für grösseres Gebiet Sloweniens die Bildung des geschlechtlichen Stadiums beim Pilz, die für Ljubljana von Arsenijević et al. (1982) ermittelt wurde, bestätigt.

Der Pilz hat in den Bedingungen von Ljubljana ($\varphi = 46^{\circ}29'$, $\lambda = 14^{\circ}29'$ Meereshöhe 295,25 m) im Frühjahr 1983 Ascosporen in der Zeit von 14. Mai bis 29 Juni ausgeschleudert. Täglich wurden durchschnittlich je mm^2 12,8 bis 40,7 (Maximum 97,5, Minimum 1,5) Ascosporen ausgeschleudert. Auf das Ausschleudern haben Niederschläge grossen Einfluss. Zum ersten Ausschleudern kam es erst nach sechstägigen ununterbrochenen Regen. Pro Tag des Ausschleuderns fiel durchschnittlich von 5,5 bis 9,0 (Minimum 0,0, Maximum 30,9) mm Regen. Die durchschnittliche mittlere Tagestemperatur in der Periode des Ausschleuderns reichte von 14,6 bis 17,6°C (Minimum 11°C, Maximum 23,2°C).

Anhand obiger Angaben ist wenigstens rahmenmässig möglich die Zeit des Ausschleuderns der Ascosporen und hiermit ist auch die Möglichkeit gegeben primäre Infektionen in Slowenien zu prognostizieren.

SOME WEED SPECIES AS A TEST OF THE PATHOGENIC CHARACTER OF PHYTOPATHOGENIC PSEUDOMONADS

I. REACTION OF BLAKC NEGHT-SHADE (*SOLANUM NIGRUM* (L.) MILL.)

by

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Summary

The solanaceous plants (*Solanum nigrum*) produced from seeds in the glasshouse were used as a test for quick checking of pathogenic character of phytopathogenic bacteria. The inoculation of plants was effected by means of the medical syringe infiltrating the suspension in concentration of 10^7 cells/ml of various bacteria belonging to the genus *Pseudomonas*: *Ps. syringae* pv. *syringae*, *Ps. s.* pv. *morsprunorum*, *Ps. s.* pv. *lachrymans*, *Ps. s.* pv. *phaseolicola*, *Ps. syringae* pv. *tomato*, *Ps. s.* pv. *savastanoi*, *Ps. s.* pv. *glycinea*, *Ps. s.* pv. *mori*, *Ps. s.* pv. *psi*, *Ps. caeryophylli*, *Ps. viridiflava* and other bacteria. As check were used the saprophytic isolates of bacterium *Ps. fluorescens* and water.

It appears that the first changes take place after 8—10 hours already, and a typical necrosis in form of hypersensitive reactions after 18—24 hours from the infiltration of bacteria. The saprophytic bacteria and water do not cause visible changes. Consequently, the plant *Solanum nigrum* as a weed species can be successfully used, both in laboratory and in glasshouse, as a suitable test for rapid demonstration of pathogenic character of bacteria belonging to the genus *Pseudomonas*.

**RHIZOCTONIA SOLANI Kühn. THE PARASITE
OF SOYBEANS IN YUGOSLAVIA**

by

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Rhizoctonia solani Kühn. causes root and stem rot and damping off of soybean seedlings in Yugoslavia. Typical symptoms appear on the stem base and older roots as elongated, elliptical reddish-brown sunken lesions with dark brown margins. When the lesions girdle the stem the plants wilt and die (Fig. 1a, b and c.).

On potato dextrose agar fungus forms white cobwebby mycelium, which became subsequently bright to dark brown. Aerial hyphae of mycelium are thick and constricted at the point of union with mother hyphae. Mature hyphae usually branch at right angles. The dimensions of these hyphae are 32,5—245,0 x 7,5—15,0 micrometers. (Fig. 3. a.). The hyphae may produce simple or branched chains of monilioid cells, which are barrel-shaped, pariform, spherical or irregular with length from 25 to 50 micrometers and width from 17 to 30 micrometers (Fig. 3, b and c.). Sclerotia are spherical or irregular brown to black, consisting of compact masses of monilioid cells (Fig. 3. d and e.).

The symptoms obtained by artificial inoculation revealed those of natural infection (Fig. 2. a, b and c.).

The influence of nutritive medium and temperature on growth of fungus are different. The fungus grew well on all nutritive medium, except Lilly Barnett medium (Fig. 4.). The best linear growth of fungus was between 21°C. and 29°C. (Fig. 5.).

MYCOFLORA OF THE BARK OF DEAD GRAPE SHOOTS

by

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Summary

In the period from 1978 to 1980 there were made investigations of the mycoflora of the bark of diseased dead grape shoots. There were represented 13 sorts from 8 localities having different ecological conditions.

There were examined 1877 withered grape shoots, the majority of which manifested the symptoms of excoriosis, further the symptoms of bleaching, and considerably less other symptoms or without visible changes on the bark.

On such grape shoots were established 28 fungi species, the most represented of which were: *Phomopsis viticola* Sacc., *Botryosphaeria obtusa* (Schw.) Shoemaker, *Guignardia baccae* (Cav.) Jacz., *Phoma herbarum* West., *Guignardia bidwellii* (Ellis) viala et Ravaz. *Phoma vitis* Bonord.

Phomopsis viticola was established in all of 8 localities, *Phoma vitis* in four of them, *Phoma herbarum* in three, *Guignardia bidwellii* in three, *Guignardia baccae* in three and *Botryosphaeria obtusa* in two localities.

Phomopsis viticola was observed on 11 sorts, *Phoma herbarum* on 7, *Phoma vitis* on 5, *Botryosphaeria obtusa* on 5, *Guignardia bidwellii* on 4 and *Guignardia baccae* on 4 sorts.

On the vine shoots with the symptoms of excoriosis were observed: *Phomopsis viticola*, *Phoma herbarum*, *Guignardia baccae*, *Phoma vitis* and *Botryosphaeria obtusa*.

On the grape shoots with the symptoms of the bleaching of the bark were recorded; *Phomopsis viticola*, *Botryosphaeria obtusa*, *Guignardia baccae* and *G. bidwellii*

The dominant species is *Phomopsis viticola*. In most cases it was observed, as the only pathogen, rarely mixed with other species. *Botryosphaeria obtusa* appears both as the only pathogen and in the mixture, whereas all the other species generally appear in the mixture.

INFLUENCE OF THE AGE OF *CLEISTOTHECIA ERYSIPIHE GRAMINIS* DC. EX MÉRAT F. SP. TRITICI EM. MARCHAL ON THE MORPHOLOGIC PROPERTIES AND VITALITY OF ASCOSPORES

by

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Summary

For the investigation of the influence of the age of cleistothecia, asci and ascospores, of the dynamics of the opening of cleistothecia, vitality of ascospores and of the contents of oil in them werw used cleistothecia from 1970, 1973, 1976, 1979 and 1982, which were kept at 4°C. The aim of investigation was to establish for how long a time can be kept various genotypes of the causers of powdery mildew of wheat by cleistothecia, for it is rather difficult to keep them by conidia.

The investigations have shown that the size of cleistothecia, asci and ascospores did not essentially change with their age. However, the opening of cleistothecia and vitality of ascospores depended on their age. The youngest cleistothecia, those from 1982, opened in the highest percentage (81%). Cleistothecia old 10 and 13 years did not open. The greatest vitality was manifested by the youngest ascospores, from they caused the disease with 68.7 p.c. of plants. In addition, the oil contents was the highest in them.

The results of these investigations have shown that various genotypes of *Erysiphe graminis tritici* can be successfully kept by cleistothecia at the temperature od 4°C for at longest 10 years, and this is of a great importance for the selection of wheat for specifica resistance.

**PROPERTY A STRAIN OF *TOBACCO MOSAIC VIRUS* FROM
SOYBEAN IN YUGOSLAVIA**

by

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Summary

Soybean plants showing veinclearing and mild mosaic symptoms were observed in late July 1983 in a single field in southwestern Yugoslavia in the Province of Kosova near the town Prishtina. The symptoms were caused by tobacco mosaic virus. This was stated on the bases of biological, morfological, serological and certain physiochemical properties of the isolate. The isolate was designated TMV—S. It differs from common TMV, cowpea strain and bean strain of TMV. In the sucrose density gradient centrifugation TMV—S sedimented into 4 bands. This virus particles occur in plant infected sap in different lengths. Because of differences in the host range, in antigenicity and the population of heterogeneous particles in leaf cells this is a new strain of TMV.

CYST-FORMING NEMATODES IN THE ARABLE LAND OF SLOVENIA

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Summary

In the year 1985 the study of how the cyst-forming nematodes of the *Heteroderidae* family were spread in Slovenia was continued. Soil samples were taken on 841 ha arable land in various regions of Slovenia. After laboratory treatment more than 2600 cysts were extracted from the samples. Lemon shaped cysts were determined on the basis of parameters. The majority of extracted cysts belonged to the species *Heterodera trifolii*. It represents the most spread species in Slovenia appearing in districts where red clover, beans, pea, vetch, crimson clover and lucerne are grown (the areas of Komenda, Kranj, Ljutomer, Maribor, Murska Sobota, Naklo, Stična and Škofja Loka). The second most spread species in Slovenia is *Heterodera galeopsidis* followed by *H. cruciferae*, *H. göttingiana*, *H. carotae*, *H. humuli*, *Punctodera punctata* and *H. schachtii*. There were 69 cysts extracted which belong to the genus *Globodera* but among these cysts not one of them belonged to the species *Golobodera pallida* or *G. rostochiensis*. The majority of cysts belonging to the different species were extracted from the soil of smaller land owners in the area of Komenda, Kranj, Naklo-Stična and Škofja Loka.