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THE EFFECT OF POWDERY MILDEW AND LEAF RUST ON THE YIELD OF SOME WHEAT VARIETIES

by

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Summary

In the field trials twenty winter wheat varieties have been tested to discover the effect of powdery mildew and leaf rust on the yield.

According to the results obtained, the varieties are classified in the four different groups.

In the first one the effect of the parasites on the yield was completely expressed. (Table 1).

On the varieties in second group there was no effect on the yield (Table 2).

The third group of foreign varieties, having a character of general resistance, gave a yield on the same level as control plots (Table 3).

The effect of powdery midew on yield of the varities with a partial resistance to leaf rust, in the forth group, was more pronounced than the effect of leaf rust (Table 4).

**EFFECT OF DIFFERENT NITROGEN DOSES ON THE INCIDENCE
OF STALK ROT, LENGTH AND THICKNESS OF BOTTOM
INTERNODES IN CORN**

by

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S u m m a r y

Our study showed that certain cultural practices may affect considerably the incidence of stalk rot in corn.

In the course of 1975, 1976, and 1977 we studied the effect of nine nitrogen doses on the incidence of stalk rot, grain and vegetative mass yields, and length and thickness of bottom internodes in corn hybrid NSSC-70. Small-plot trials were conducted at Rimski Šančevi near Novi Sad.

Increased nitrogen doses enhanced the incidence of stalk rot. However, the intensity of the disease varied from year to year. Significant increases in grain yield were registered to the dose of 110 kg N/ha. With further increases to 270 kg N/ha, the yields remained at the same level or even were slightly reduced. Vegetative mass yield as related with nitrogen doses varied significantly in the experimental years. In 1976, when the incidence of stalk rot was the highest, the increases in nitrogen brought significant reductions in vegetative mass. The length and thickness of bottom internodes were not largely affected by different doses of nitrogen.

BEITRAG ZUR UNTERSUCHUNG DER PATHOGENITÄT DER
ISOLATE VON *FUSARIUM MONILIFORME* VAR. *SUBGLUTINANS*
WR. ET REINK. ALS ERREGER DER MAISKRANKHEITEN NACH
AUFBEWAHRUNG BEI VERSCHIEDENEN
AUFBEWAHRUNGSARTEN

von

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Z u s a m m e n f a s s u n g

Im Jahre 1980 wurde der Einfluss verschiedener Aufbewahrungsarten auf die Pathogenität der Isolate von *Fusarium moniliforme* var. *subglutinans* im Laboratorium untersucht; in den Jahren 1981 und 1982 aber auch ihre Virulenz gegenüber einigen Maishybriden im Feldversuch, nach zweijähriger Aufbewahrung im Kühlschrank. Aufbewahrung bei niedrigen Temperaturen und hoher relativer Luftfeuchtigkeit verringerte am stärksten die Pathogenität der Isolate. Diese erhielt sich am besten nach Aufbewahrung bei Raumtemperatur (20°C) und bei rel. Luftfeuchtigkeit von 53%. Diese Art ist technisch nicht geeignet wegen morphologischer Veränderungen des Pilzes und wegen Gefahr der Kontaminierung. Deshalb entscheidet man sich lieber für Aufbewahrung im Kühlschrank, wonach sich die Pathogenität durchschnittlich um 46% verringerte.

Lyophilisierung scheint eine sehr anziehende Aufbewahrungsmethode zu sein. (Kontaminierung ist ausgeschlossen, mögliche lange Dauer der Aufbewahrung). Sie war aber in unserem Versuchen nicht günstig, da sich hierbei die Pathogenität der Isolate des Pilzes sehr verringerte, einige überlebten aber diese Aufbewahrungsart überhaupt nicht. Pilzisolat mit höchsten Befallsindex bewahrte auch nach zwei Jahren genetisch fixierte Virulenz für Befall der Maisstengel und Maiskolben.

— Hi-kvadrat vrednost (X^2 O 9,82**) potvrđuje hipotezu o jednakosti stvarne reakcije F_1 hibrida sa izračunatom ili teoretskom otpornošću F_1 hibrida, kao i to da je formula $TOF_1 = 3P_1 + P_2/4$ prikladna za izračunavanje, odnosno predviđanje otpornosti stabla kukuruza prema truleži *Gibberella zeae*, na osnovu stepena otpornosti roditeljskih komponentata.

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PREDICTION OF MAIZE RESISTANCE TO STALK ROT (*GIBBERELLA ZEA*) BASED ON THE DEGREE OF RESISTANCE OF PARENT COMPONENTS

by

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Summary

In this work the resistance of the stalk of maize inbred lines and hybrids to stalk rot *Gibberella zeae* and the prediction of the resistance of F_1 based on the degree of resistance of parent components was investigated.

As basic material, 12 inbred lines of standard grain quality were chosen. Diallel crosses were made in 1978 to produce seed of F_1 hybrids.

Variety trials, separately for inbred lines and hybrids were conducted in 1980 using the random block design in 4 replications, 25 plants per replication for parents and the F_1 generation.

Immediately after silking, the stalks were inoculated in the middle of the second internode with isolate of *Gibberella zeae* from Dimtrovgrad using the tooth-pick method (Young, 1943).

The disease rating was made at harvesting according to the scale: 1 = most susceptible, 9 = most resistant, Hooker and Draganić (1980).

The prediction of the resistance of the maize stalk was made on the basis of 33 hybrid combinations and their parents. Their degree of resistance represented the actual resistance, while the theoretic resistance of F_1 hybrids was calculated based on the degree of resistance of parents according to the formula $TOF_1 = 3P_1 + P_2/4$ where, TOF_1 is the theoretic or calculated resistance of F_1 hybrids, P_1 the parent with a higher degree of resistance, P_2 the parent with the lower degree of resistance, 3 coefficient.

The testing of the equality between the actual and theoretic resistance was made using the X^2 test (X square test) with $n-1$ degrees of freedom.

According to the results of the investigation the X square value ($X^2 = 9.82^{**}$) confirmed the hypothesis on the equality of the actual resistance of F_1 hybrids and the calculated or theoretic resistance of F_1 hybrids and the calculated or theoretic resistance of F_1 hybrids, and also that the formula $TOF_1 = 3P_1 + P_2/4$ is adequate for the calculation, i. e. prediction of the resistance of the maize stalk to rot *Gibberella zeae* based on the degree of resistance of parent components.

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DIAPORTHE PHASEOLORUM (CKE. ET ELL.) SACC. VAR.
CAULIVORA ATHOW ET CALDWELL THE NEW PARASITE
OF SOYBEAN IN YUGOSLAVIA

by

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S u m m a r y

Diaporthe phaseolorum (Cke. et Ell.) Sacc. var. *caulivora* Athow et Caldwell was isolated from soybean plants in surrounding of Novi Sad. Disease is first observed during the second half of the growing season on the flowering plants. The first symptom is the appearance of small elongated redish-brown lesions on lower part of the stem. The lesions rapidly enlarges and became dark brown to black. When the lesions girdle the stem the plants were killed (Fig. 1.a).

The fungus isolated from affected stem of soybean develops white closely appressed mycelium on potato dextrose agar and Czapek medium, with numerous black stroma (Fig. 4).

On potato dextrose agar the fungus forms black perithecia with spherical body embedded in nutrient medium and with long protruding beak (Fig. 2.A, C). The dimensions of the body of perithecia are 170—450 × 180—500 μm and the dimensions of the beak are 320—1500 × 60—130 μm at the base and 35—60 μm at the tip. The eight-spored asci are elongate, 22,5—35,0 × 5,0—8,7 μm (Fig. 3. A). Ascospores are elongate-ellipsoidal, two-celled, biguttulate in each cell and 8,7—12,0 × 2,5—3,7 μm (Fig. 3. A).

On Czapek medium perithecia and pycnidia were produced. The pycnidia were of the *Phomopsis* type and were black and round (Fig. 3. C). The diameter of pycnidia ranged from 170 to 230 μm. The A-conidia form in the pycnidia. The conidia were ellipsoidal, nonseptate and contained two guttulae per spore (Fig. 3. B). They measured 6,25—10,0 ×

× 2,5—3,75 μm. The writers have not observed the production of stylospores also known as B-conidia.

The symptoms obtained by artificial inoculation revealed those of natural infection (Fig. B, C).

The influence of nutritive medium and temperature on growth and sporulation of fungus are different. The best growth is on potato dextrose agar (Tab. 1).

The best linear growth and sporulation was on 25°C. The fungus didn't develop on 2° and 36°C. (Tab. 2).

ANTHRACNOSE OF ALFALFA CAUSED BY
COLLETOTRICHUM TRIFOLII
BAIN AND ESSARY

by

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S u m m a r y

Anthracnose lately became very significant problem in alfalfa production in Vojvodina.

One of the most serious diseases contributing to the poor persistence of alfalfa is anthracnose or *Colletotrichum* crown rot. Two species of *Colletotrichum* are associated with typical symptom on alfalfa stem and crown:

G. destructivum O'Gara and *C. trifolii* Bain and Essary. The latter one appeared to be more pathogenic. Our isolate of *C. trifolii* belongs to the race 1 according to the reaction provoked on differential alfalfa cultivars. Cultural characters and behaviour on different media: Czapek's, acid synthetic, 2% malt and potato glucose agar varried greatly.

The fungus poor hyaline areal and submerged mycelium on Czapek's and acid synthetic medium. Acervuli and spores were most abundantly formed on latter one already on the third day at temperature range from 24—29°C. The best radial growth and abundant areal mycelium and color formation was on 2% MA, although on PGA they were nearly as good as on MA.

Optimum growth on all media occured between 24° and 29°C with minimum and maximum temperatures for growth at 5°C and 34°C, respectively, and sporulation at 28°C.

The sclerotia formation followed the same tendency, but were predominantly formed on 2% MA and PGA.

Germination of conidia in distilled water occured between 5—29°C, with maximum of appressoria formation at 20°C and hyphae initials at 26°C.

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SENSITIVITY OF SOME STONE FRUIT SPECIES TO SHARKA (PLUM POX VIRUS) DISEASE

by

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Summary

There was investigated the resistance of 19 plum cultivars, 10 peach cultivars and 4 apricot cultivars to plum pox virus disease.

On the base of obtained results, first of all the intensity of sharka symptoms on fruits, the investigated cultivars were classified into four groups:

Very sensitive: Požegača (P.74.2), Tuleu Gras, Tuleu Gras 372 and Tuleu Timpuriu.

Sensitive: Borsum, Čačanska rodna, Čačanski šećer, Early Rivers No 1, French Prune P.707 Thermo and Peche No 5.

Tolerant: Čačanska rana, Čačanska leptica, Čačanska najbolja, Edra Jelta Afisca, Hybride Christof No 1, Large Sugar Prune and Mirabelca Jaune de Plovdiv.

Completely resistant: Jelta boutil Covidna and Scoldus No 1.

The investigated peach cultivars, (Tab. 2), did not show any sign of sensitivity to local strain of plum pox virus. The infection was realized only on two cultivars but without any disease symptom. Beside of that, the virus in them did not cause systemic infection, but it remained localized closely to the site of inoculation.

Of all investigated apricot cultivar, (Tab. 3), cv. Orias Kajszi was very sensitive, and cvs. A 1342 and Genci Magiar kajszi were sensitive. Hybrid Banaesa 33/13 was resistant to infection.

FURTHER INVESTIGATIONS OF *PRUNUS SPINOSA* L.
AS HOST PLANT FOR SHARKA VIRUS IN NATURE

by

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S u m m a r y

The investigations represent the continuation of the former investigations of *Prunus spinosa* infectiveness by sharka Virus around Sarajevo.

The investigations showed that this largely spread plant was infected in much higher percentage than it was known before.

It was determined that *P. spinosa* plants with larger and smaller leaves were infected.

Also, latent infections were determined with many trees. Symptoms are apparent, according to the present knowledge, only on leaves and are best visible in the first half of vegetation.

Sharka Virus of the black thorn is most easily transmitted to the Požegača seedling by the method of chip budding.

THE USE OF THE ENZYME-LINKED IMMUNOSORBENT ASSAY (ELISA) IN THE DIAGNOSTICS OF APPLE VIRUSES

by

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Summary

The reliability of ELISA technique for the detection of latent apple viruses, viz. apple chlorotic leaf spot (*CLSV*) and apple stem grooving virus (*SGV*) was assessed.

More than 40 apple cultivars grafted on different vegetative rootstocks and on seedlings were tested, and comparative tests were performed for the suitability of various test samples: bark, leaf buds, leaves, petals and fruits.

The results showed that *CLSV* could be detected with great reliability by ELISA in all the apple organs tested, whereas *SGV* was detected successfully only in petals and newly-developed leaf buds.

The presence of *CLSV* was proved in all the commercial apple cultivars that are being grafted in our country as a standard material. This virus was not present only in some indigenous cultivars and in one cultivar of foreign origin, grafted on seedlings.

Stem grooving virus occurs very rarely in commercial apple cultivars, and it was detected only in some less known cultivars in collection orchards, as follows: Astrachan Large, James Grieve, Jonathan Red (Alexandra), Megumi and Red Grieve Neuman.

The work also includes testing of the suitability of various buffers and antioxidants for the extraction of samples. In addition to the standard 2% and 1% polyvinylpyrrolidone, good results were also obtained with 0.1% 2-mercaptoethanol.

NEEDLE DISEASES OF SCOTS PINE (*PINUS SILVESTRIS* L.)

by

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Summary

Until recently needle cast of scots pine was thought to be caused by *Lophodermium pinastri*. However, new observation showed that at least 4 fungi are responsible in earlier lost of needles. These are: *Lophodermium seditiosum*, *L. pinastri*, *Lophodermella sulcigena* and *Naemacyclus* sp. There are differences among them regarding their ecology, life cycle and virulency.

L. seditiosum infects primary and secondary needles of age of a few months and only occasionally older (2—3 years). In case of heavy infection daying of young plants in nurseries could occur.

L. pinastri infects only older primary needles and 2—3 years old secondary needles. Very occasionally it could colonize 1-year old needles previously having been affected by some other agents. This fungus never cause daying of plants but only physiological depression or some lose in increase.

L. sulcigena is a primary parasite of young needles (needles from current vegetation old only a few weeks) in pine plantation. We did not find any plant daying but reduction in its growth is noticable.

Naemacyclus sp. although very common seems to be of no importance as it is usually formed on secondary needles 2—3 years old.

The succession of these fungus that colonize secondary needles of scots pine in plantation is: *L. sulcigena* — *L. seditiosum* — *L. pinastri* — *Naemacyclus* sp. (tab. 2.).

Critical infection period of 3 important species is different: *L. seditiosum* occurs from middle avgust to october; *L. pinastri* from may to july and *L. sulcigena* from middle june to middle july. (graf. 1.).

Control of the disease could be succesful only is plants are treated by fungicides during the critical periods.

A CONTRIBUTION TO THE REARING OF *MAMESTRA BRASSICAE* L.
(LEP. NOCTUIDAE) WITH TWO KINDS OF SEMI-SYNTHETIC FOOD

by

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Summary

In the Institute for Plant Protection of Belgrade is being developed a method of biological control of the cabbage moth (*Mamestra brassicae* L.) by the use of Baculovirus, in the form of the preparation Virusin MB (Injac, Burgerjon, 1980; Bues, Poitout, Injac, Burgerjon 1981). The multiplication of viruses can be effected by the method of cell culture, which is more expensive and less yielding, so that as the other possibility is pointed out the multiplying in the host itself. It is important therefore to find a solution for the rearing of the insect host which would make possible the production of the virus preparation.

In this paper, we reared *M. brassicae* on two kinds of semi-synthetic food, 4 generations on each. Our results have shown:

— Embryonal development of eggs obtained from moths fed on both kinds of food, at the temperature of 25°C, lasted 4 days.

— Caterpillars fed on the *food I* concluded the development in a shorter time (\bar{x} = 24 days) than those fed on the *food II* (\bar{x} = 26 days).

— Pupae fed on the *food I* weighed more and on an average lived shorter at this stage (00—16.7—16.8 days) than those fed on the *food II* (00—18.0; 00—19.4 days).

— Moths reared on the *food I* had a greater realized fertility, they lived and laid eggs longer than those fed on the *food II* (Tab. 1).

The total duration of the development from the oviposition to the emergence was 44.8 days on the *food I* and 48.7 days on the *food II*. However, the development counted from the oviposition to the end of life of moth was 57.1 days on the *food I* and 56.5 days on the *food II*. This means that the moths from the *food I*, through the feeding of caterpillars acquired a better physiological condition and therefore were more fertile and lived longer.

On both nutritions substrata *M. brassicae* is reared with success only if fresh food is repeatedly added to caterpillars and if an appropriate environment is secured to them where they can cocoon. By rearing the caterpillars under such conditions when the food is not changed and without the substratum which they can pierce into, mortality of 32% is caused in the prae-pupal stage.

Under the conditions of group rearing there occur changes in the population. Thus, in the rearing box has been observed the change of sexual index and of the weight of pupae. Where there were most caterpillars, the number of males was greater than that of females and with the reduction of the population density, this ratio became inverse. Also, the weight of pupae increased with the reduction of the number of caterpillars. Under such rearing conditions, with *M. brassicae* appears the cannibalism.

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(Primljeno 30. 12. 1982)

FORECASTING OF OCCURANCE OF NOCTUIDAE ON SUGAR BEET IN THE REGION OF SOMBOR AS A STARTING POINT FOR RATIONAL CONTROL (1979 — 1982)

by

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Summary

Noctuidae belong to the group of most significant sugar beet pests, especially on the fields covered with dense and rich crops. They are included in the programme of the prognosis-report service in Vojvodina, so that long-term and short-term prognosis of their occurrence are elaborated and the signal for pest control is reported.

From the economic point of view, the most important is *Barathra brassicae* L. followed by *Mamestra oleracea* L. and *Autographa gamma* L. The trends of density of population and intensity of attack were recorded in last few years on the fields under sugar beet in the region of north-west Backa with centre in Sombor, where this crop covers about 10.000 to 12.000 hectares to meet the needs of two sugar factories.

This group of *Noctuidae* attacks every year with variable severity. Damage is mainly caused by caterpillars of the second generation. In 1979 the increased number of *B. brassicae* moths compared with the other two kinds resulted in a severe attack and caused considerable damage. Wide action of caterpillar control had to be undertaken on the great majority of fields under sugar beet. In the next three years the number of *B. brassicae* moths caught in light traps has dropped. It was reflected in the intensity of attack. 1980 eight per cent of sugar beet fields was treated, but in 1981 and 1982 only three per cent of the fields. The treated fields were located near the river Danube or in the irrigated area where the microclimatic conditions were favourable for these pests.

With *B. brassicae* the second generation is more numerous reaching the maximum of moth swarming in July and in August in the next year, by turns.

The both generations of *Mamestra oleracea* have approximately the same population, so that the first generation is more numerous in one year and the second in the other, as a rule.

The moth fly of *A. gamma* depends to a great extent from rainfall, so that in year with a rainy summer (1980) and 1982) the largest number of these moths was caught, although their caterpillars were not harmful from the economic point of view. The maximum of moth swarming appears in July or August, but the generations can not be clearly differentiated one from the other.

For the sake of long-term prognosis the population of wintering chrysalis has been determined on the fields after sugar beet growing. The number of chrysalis has dropped from 4,2/m² in 1979 to 0,7/m² in 1981, while a slight increase was realized in 1982 making 0,9/m². A few focuses have been found with a larger population (12/m²) where a severe attack of these pests has to be expected in the following year.

EFFECTIVENESS OF ENTOMOPHAGOUS IN REDUCTION OF NOXIOUS COCCID POPULATION (*HOMOPTERA: COCCOIDEA*)

by

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Summary

In various regions of Yugoslavia urban green plantations have a wide number of effective entomophagous capable to a considerable extent to reduce reproduction of pests.

In Belgrade and its suburbs quantity of coccids actively reduce, such species as: Mulberry Scale — *Pseudaulacaspis pentagona* (till 87%) on many plants by parasites *Encarsia berlesei* and *Aphytis ? proclia* and in some places together with predator *Exochomus quadripustulatus*; Tilia Pseudoscale — *Eulecanium tiliae* (till 75%) on *Acer*, *Carpinus* and *Tilia* by parasites *Metaphycus melanostomatus*, *Metaphycus* sp. and *Blastotrix sericea*; Acer mealybug — *Phenacoccus aceris* on *Fraxinus excelsior* by parasite *Aphycus apicalis*; Betula Cottony Scale — *Pulvinaria betulae* on *Carpinus betulus* by parasites *Metaphycus* spp. and *Leucopis silesiaca*. The high annual population dynamics of two pseudoscales — *Physokermes piceae* and *P. hemicryphus* on *Picea abies* actively control by predator *Brachytarsus nebulosus* (till 65%) in forest park near Vuchedol; by such parasites as *Coccophagus lycimnia* and *Microterys lunatus* (till 90%) in Žabljak on Black Mountain; by parasite *Pseudorhopus testaceus* (till 40%), which is new for Yugoslavian fauna, and by predator *B. nebulosus* (till 20%) in New Belgrade.

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INVESTIGATIONS ON THE PROBLEM OF SLUGS AND SNAILS AND THEIR CONTROL ON VEGETABLES

by

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Summary

The damages caused by slugs and snails are reported from all parts of Yugoslavia but only a few mention the species and other data about this nuisible animals. Also some data reports an unsatisfactory action of different molluscicides.

The most nuisible slugs and snails in Yugoslavia belong to the genuses *Deroceras*, *Milax*, *Arion*, *Helix*, and the authors has found damages caused by *Oxychilus* sp. and *Zonitoides* sp. too.

In our trials to control slugs on vegetables the following facts were established:

— carbaryl has a satisfactory action against slugs, but combined with metaldehyd the action was even better,

— it is possible that some other insecticides, such as fenitrothion, could be used against slugs also,

— baits made in factories can be replaced by wet wheat which start to fermentate,

— the application of baits in small heaps can substitute the broadcast application, and in some occasions a band treatment around the plot can give good protection also,

— no differencies between the efficiency of used molluscicides was obserwed between *Arion rufus* and *Milax gagates*.

These trials showed that it is possible to protect vegetables from slugs by use of molluscicides in spite of some opposite opinions.