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VORKOMMEN PARTENOGENETISCHER ARTEN DER GATTUNG
OTIORRHYNCHUS IN JUGOSLAWIEN

Z. Kovačević

Zusammenfassung

In diesem kurzen Aufsatz weist der Autor, auf Grund der Arbeiten einiger finnischer und österreichischer Entomologen, auf eine sehr interessante genetische Erscheinung hin, die bei gewissen Schädlingen als Veränderung der genetischen Anlage zum Ausdruck kommt. Diese Veränderungen erscheinen bei Insekten gewisser geographischer Regionen als Auswirkung klimatischer Verhältnisse.

Eine sehr interessante Erscheinung im genetischen Polymorphismus und in der Evolution ist das Auftreten der Parthenogenese bei diesen Insekten.

Wegen der sehr ungünstigen Verhältnisse während der Eiszeit wurde die Insektenfauna des borealen Gebietes in Nord- und Mittel-Europa in jene Teilen vernichtet wo die Arten nicht die Fähigkeiten hatten nach grösseren Entfernungen und in wärmere Gebiete zu überwandern. Einige Arten und Populationen haben aber während der Eiszeit in gewissen Gebieten, in den sogenannten »massifs de refuge«, Zuflucht finden können. Wegen der genannten ungünstigen klimatischen Verhältnisse während der Eiszeit, sind die Männchen einiger Arten ums Leben gekommen und verschwunden, die Weibchen haben sich aber am Leben erhalten können und wurden durch Parthenogenese zum Eierlegen befähigt. Bei solchen Weibchen finden wir eine polyploide Chromosomen-Zahl, und zwar 33, 44, 55 und sogar 66 Chromosome. Ausserdem ist bei diesen Weibchen das »Receptaculum seminis« erhalten geblieben. Solche Weibchen stellen im Grunde genommen eine Uebergangsform in der Entwicklung dar. Bei denselben Arten kann eine Veränderung des Sexualindex festgestellt werden, da bei ihnen in einigen Gebieten des Verbreitungsareals gewöhnlich nur Weibchen aufgefunden werden, in anderen Gebieten Männchen in geringerer Zahl, nie aber in der Beziehung 1:1.

Von den 235 bei uns festgestellten Arten der Gattung *Otiorrhynchus*, wurden, nach Suolamainen (1954) und Jahn (1941), 17 Arten als partenogenetisch oder polyploidisch erkannt. Es handelt sich um folgende Arten: *azaleae* Penecke, *chalceus* Strl., *niger* F., *auricomus* Germ., *gemmatus* Scop., *salicis* Ström. und *ligustici* L., bei welchen triploide und diploide Rassen bekannt sind.

O. (Arammichus) ligustici L. weist diploide, triploide und tetraploide Rassen auf.

O. scaber L., *foraminosus* Boh., *peridix* Ol., *alpicola* Boh., *singularis* L. *chrysocomus* Germ., *ovatus* L. und *pauxillus* Rosh sind triploid und *O. (Dorymerus) antracinus* pentaploid.

Aus diesem Verzeichniss geht hervor, dass von den angeführten 17 Arten, 16 in ihren Eiern 33 Chromosome aufweisen; 8 Arten davon haben

aber auch diploide oder bisexuelle Rassen und eine noch dazu 44 Chromosome (*O. scaber*). Es giebt aber auch eine Art mit 55 Chromosomen (*O. anthracinus*). Auf Grund dieser Angaben kann geschlossen werden, dass die Chromosomen — Zahl bei den Arten der Gattung *Otiorrhynchus* sehr veränderlich sein kann und dass bei diesen Insekten parthenogenetische Formen in verschiedenen Gebiete auftreten können. Aus dem Angeführten kommen Entomologen, die sich mit genetischen Fragen befassen, zu der Meinung, dass es sich um Veränderungen handelt die im Laufe der Evolution auftreten. Diese Veränderungen nicht nicht beständig, sondern veränderlich und können unter gewissen Einflüssen entstehen.

Bei unseren biologischen Untersuchungen haben wir nicht die Möglichkeit gehabt, uns mit der Frage der Aenderung der Chromosomen-Zahl im Laufe der Entwicklung zu befassen, sondern haben eine besondere Aufmerksamkeit dem Sexualindex beim Massenauftreten der schädlichen Insekten gewidmet. Bei diesen Beobachtungen haben wir beim Massenauftreten der Schädlinge sehr grosse Unterschiede im Sexualindex bei zwei nacheinander folgenden Populationen festgestellt. Zum Beispiel beim Massenauftreten in Weinbergen von *O. ligustici*, *lavandus* und *alutaceus*, wie auch bei anderen Schädlingen (Schwammspinner, Heuschrecken usw.). Bei den genannten Arten dauerte eine Gradation nur ein Jahr und kam dann zum Stillstand.

Wir kommen somit zum Schluss dass jede wissenschaftliche Untersuchung der Biologie und des Massenauftretens eines Schädlings viele Fragen aufwirft, welchen wir aber früher keine besondere Aufmerksamkeit schenkten. Eine dieser Fragen sind die parthenogenetischen Formen der *Otiorrhynchus*-Arten in unserem Lande.

RESULTS OF STUDIES OF THE DEGREE OF INFESTATION OF INDIVIDUAL PARTS OF LARGE FIELDS UNDER SUNFLOWER BY THE PLANT LOUSE *BRACHYCAUDUS HELICHRYSI* KALT. (HOMOPTERA, APHIDIDAE)

by

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S u m m a r y

Brachycaudus helichrysi belongs to the group of the most important pests on sunflower in the northeastern part of Yugoslavia. In the course of three years were carried out, on 9 fields, investigations of the dynamics of horizontal distribution of this aphid on large plots under sunflower. The analysis of plants was effected in four places of each field, to wit: in the very border zone, at the distance of 50, 100 and 200 m from the border of the plot.

The degree of the attack of *B. helichrysi* decreases from the border towards the middle of the field. In the second half of May, for six fields under sunflower, taken together for 1975 and 1976, there were established on the average the following infestations: 77 p. c. of attacked plants on the edge of the fields, 57 p. c. at the distance of 50 m, 38 p. c. at 100 m and 23 p. c. at 200 m in the interior of the plot. There was observed a highly significant difference as to the spread and intensity of the attack of this pest on sunflower plants, between the border zone of the crop up to 50 m and the zone of the crop at the distance of 100—200 m from the edge of the field.

Systematic following of the dynamics of occurrence of *B. helichrysi* on the fields under sunflower, with a view to establishing the first occurrence and further spread of this aphid offers the basis for the timely and rational chemical control of the pest. The following of the pest ought to begin in the first decade of May. On large plots of the public sector the treatments are most economical only on the crops of the border zone, about 50 to 75 m wide.

3. Lisna galica crne ribizle prezimljava u stadijumu odrasle larve u beličastom svilastom kokonu u zemlji na dubini između 0,5—4 cm ispod žbuna ribizle. Početak leta imaga je u drugoj polovini aprila za prvu zimujuću, a u drugoj polovini avgusta za poslednju generaciju. Ima 3—4 generacije godišnje.

4. Štete od lisne galice crne ribizle u starim zasadima u lokalitetu Berovo iznose od 80—90%, a u lokalitetu Valjevo 40—50% oštećenih letorasta. U rasadničkoj proizvodnji ove štete mogu biti i znatno veće.

5. Od zaštitnih mera povoljne rezultate daju agrotehničke mere borbe kao što su: kultiviranje zemljišta posle odlaska larvi na prezimljavanje ili pre eklozije imaga zimujuće generacije. Ako je u zemljištu prisutno 6—7 kokona ili 20% oštećenih mladara hemijska zaštita obavlja se pre ili nakon berbe. Koriste se hemijski preparati sa kontaktnim i utrobnim dejstvom.

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CONTRIBUTION TO THE KNOWLEDGE OF THE BLACK CURRANT LEAF MIDGE *DASYNEURA TETENSI* RÜBSAAMEN (DIPTERA, CECIDOMYIDAE)

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Summary

In the period from 1977 to 1981 investigations concerning the black currant leaf midge — *Dasyneura tetensi* RübSaamen in the localities Berovo (Macedonia), Brus, Valjevo and Čačak (Serbia) were carried out. Some moment having greater biological significance for *Dasyneura tetensi* were followed periodically during the whole year in fields as well as in the laboratory.

The black currant leaf midge hibernates in the stadium of a grown up larva in a white silky cocoon in the soil at a depth of 0,5—4 cm

under the black currant bush. The first flight of midges appearing in the second half of April from the hibernating generation and the second half of August for the last generation. It has 3—4 generation annually. The females are sexually mature and after copulation they lay their eggs on the upper leaves of the young shoots. The embryonic development last for about 7 days.

The larvae of this species damage the non-developed upper leaves of the black currant shoots in the fields and green-houses. The hatched larvae feed and stay allive between the folds of the young leaf, while at the spot where the larva feeds, the leaf tissue dries and fades. The number of larvae on one leaf amounts to approximately 15—40. Damage due to the black currant leaf midge in the locality of Berovo amount to 80—90%, while in the locality of Valjevo this percentage amounts to 40—50% damaged shoots. These damage may be even greater in nurseries.

Agrotechnical protective measures giving positive results are soil cultivation following the departure of larvae for hibernation or prior to imagos flight of the hibernating generation. Chemical protection is carried out before or after vintage. Chemicals used have either direct od digestive effects.

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RESULTS OF LABORATORY INVESTIGATIONS OF THE OVICIDAL EFFECT OF DIFLUBENZURON ON EGGS OF DIFFERENT AGE OF LEAF MINERS OF APPLE *LEUCOPTERA SCITELLA* ZELL. AND *LITHOCOLLETIS BLANCARDELLA* F.

M. Injac

Summary

The cocoons of *L. scitella* Zell. and the leaves with hibernating pupae of *L. blancardella* F. were collected in the locality of Subotica. They were put into two separate cardboard boxes. These had on the upper side an opening 3 cm in diameter, which was stoppered with a glass flask of the same diameter. The boxes were held in the air-conditioned chamber under the conditions of temperature of 27—28°C, of 60—70 p. c. of relative humidity and of permanent lighting. After having arrived in the flasks, the months were transferred into particular boxes in which had been stretched the bases of apple M 106 with 9—10 developed leaves.

Diffubenzuron was used in the form of the preparation Dimilin WP 25 Duphar, Netherlands in concentrations of 0.1 p. c. and 0.06 p. c. The preparation was distributed by means of a hand sprayer.

There were laid two tests: the first one consisting in the treatment with Dimilin WP 25 in the concentration of 0.1 p. c. of *L. scitella* Zell. and *L. blancardella* F. before the oviposition and when 5 days old eggs of these miners are treated. The second test was made only with the eggs of *L. scitella* Zell. and Dimilin WP 25 was used in the concentration of 0.06 p. c. Treatments: when the insecticide was used before the oviposition, then when the eggs were 0—24 (Fig. 1), 24—48 and 96—120 hours old. A special treatment was the spraying of 1—3 mm large mines of *L. scitella* Zell.

The results of the tests have shown that Dimilin WP 25 in the concentration of 0.1 p. c., when the leaves were treated before the oviposition of *L. blancardella* F. and *L. scitella* Zell. had taken place, produced a 100 p. c. ovicidal effect. In the eggs of *L. scitella* Zell. were observed caterpillars, which did not succeed in hatching (Fig. 1B, 1).

When the same concentration was applied to the 96—120 hours old eggs of *L. blancardella* F. and *L. scitella* Zell. the hatching was recorded in 46—48.3 p. c. of cases, but the caterpillars perished in the first stage.

In the experiment with the use of Dimilin WP 25 in the concentration of 0.06 p. c. before the oviposition or when the eggs were 0—24, 24—48 and 96—120 hours old, the caterpillars hatched. However, when the treatment was effected before the oviposition and when the eggs were 0—24 hours old, all the caterpillars perished in the first stage, when the size of mines was 3 mm (Fig 2). In the treatment when the eggs were 24—48 hours old, from a total of 70 resp. 113 hatched caterpillars, there survived and concluded their evolution 2 resp. 7 caterpillars.

When the treatment was effected on *L. scitella* Zell. 1—3 mm large mines with Dimilin WP 25 in the concentration of 0.06 p. c., no caterpillar perished (Fig. 3).

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CONTRIBUTION TO THE STUDY OF MAIZE RESISTANCE TO OSTRINIA
NUBILALIS Hbn. AND GIBBERELLA ZEAЕ (Schw.) Petch.

by

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Summary

The resistance of maize to the European corn borer and pathogens of stalk and ear rot was investigated during 1978 and 1979 in 11 inbred lines (1 early, 3 medium early and 7 late maturing) under ecological conditions of Zemun Polje.

The trials were set up in three treatments: artificial infestation with egg broods of the European corn borer, artificial inoculation of the stalk and ear with *Gibberella zeae* and protection of plants with insecticides. Basic agronomic traits of plants were estimated and recorded, ratings taken on the resistance of plants to both agents and the plants dissected.

It was found on the basis of trial results that the inbred line B14 expressed the highest resistance. Ratings of resistance to the European corn borer based on leaf damage ranged from 3.9 for inbred Polj 17 to 7.8 for S 144, while on the basis of damages to the whole plant, ratings ranged from 2.2 for A 632 to 5.3 for Polj 17. Stalk disease index ranged from 37.5% for B 14 to 78.5% for V 158. Ear disease index ranged from 20.8% for L 105 to 58.0% for Polj 17.

SOME NEW POSSIBILITIES OF FIGHTING LEAF MINERS

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Summary

A dominant sort of miners *Cemiosstoma scitella* — appeared in the apple orchards of north-east Croatia in the last few years, namely in 1978, 1979 and 1980. This miner is specially dangerous in the years with favourable weather conditions (rare precipitations, high temperatures etc). The incidence of miner was predicted by following up the biology of development of a dominant sort of miner. The time of fighting was determined by following the stages of development. Following up the miner population in relation to the presence of their natural enemies, i. e. parasites from the *Eulophidae* family, the time of their incidence was determined. In all the years of observation, the parasites were found to be caterpillars of the third and fourth generation, and only rarely those of the first and second generation. Miner fighting should be done by insecticides with selective action but when we have to use other insecticides they can be safely used only against the first generation without causing great harm to the natural enemies.

The first term of treatment was at the moment of egg laying and the second was when the mines appeared.

Piretroids, diklorfos, metilazinfos and diflubenzuron were used for test fighting. The results of the treatment, i. e. effectiveness of insecticide testing ranged from 60% to 95% when mines were first detected.

By treatment at egg stage with an insecticide like diflubenzuron better results were achieved and the effectiveness in that period was up to 100%.

The examination of caterpillars and the determination of parasitism with other methods did not show a remarkable presence of entomophagi.

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PESTICIDE RESIDUES AND THE CONTENTS OF HEAVY METALS IN DRIED HOP CONES, BARLEY WATER AND BEER

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Summary

In the course of three years' investigations (1976—1979) were examined the residues of chlorinated hydrocarbons, organophosphoric insecticides, dithiocarbamates, dipyridile and triazine, as well as heavy metals — components of anorganic-organic fungicides (zinc, copper, manganese, tin) and common contaminators of the life environment (lead and arsenic) in dried hop cones, barley, water and beer.

In the investigated samples were not found the isomers of HCH, aldrine, endrine, heptachlorine and endosulfan, in the same way were not found the organophosphoric insecticides, dithiocarbamates, dipyridiles and triazines, pesticides which were comprised by the programme of protection.

In the cones was found lindane 13.20 $\mu\text{g}/\text{kg}$ on an average, total DDT 22.0 $\mu\text{g}/\text{kg}$ on an average and heptachlorinepoxide 0.67 $\mu\text{g}/\text{kg}$ on an average. The content of copper amounted to 415 $\mu\text{g}/\text{kg}$ on an average, of zinc 271 $\mu\text{g}/\text{kg}$, of manganese 164 $\mu\text{g}/\text{kg}$, of lead 1.0 $\mu\text{g}/\text{kg}$ of tin 6.8 $\mu\text{g}/\text{kg}$ and of arsenic 0.001 $\mu\text{g}/\text{kg}$ on an average. In barley was found lindane 2.86 $\mu\text{g}/\text{kg}$ on an average, total DDT 0.10 $\mu\text{g}/\text{kg}$ and heptachlorinepoxide 0.01 $\mu\text{g}/\text{kg}$ on an average and dieldrine 0.06 $\mu\text{g}/\text{kg}$. The contents of copper was 2.47 $\mu\text{g}/\text{kg}$, of zinc 24.2 $\mu\text{g}/\text{kg}$ on an average of manganese 18.4 $\mu\text{g}/\text{kg}$, lead, tin and arsenic were not found.

In water lindans was found 0.94 $\mu\text{g}/\text{kg}$ on an average, total DDT 0.12 $\mu\text{g}/\text{L}$, dieldrine from 0.00—0.001 $\mu\text{g}/\text{L}$. The contents of copper amounted to 0.041 $\mu\text{g}/\text{L}$ on an average, of zinc 0.066 $\mu\text{g}/\text{L}$ of manganese 0.132 $\mu\text{g}/\text{L}$. lead and tin were not found and arsenic in quantities less than 0.001 $\mu\text{g}/\text{L}$.

In beer were found 0.52 $\mu\text{g}/\text{L}$ of lindane on an average and 0.09 $\mu\text{g}/\text{L}$ of total DDT. The contents of copper amounted to 0.110 $\mu\text{g}/\text{kg}$, of zinc 0.115 $\mu\text{g}/\text{kg}$, of manganese 0.261 $\mu\text{g}/\text{kg}$, of lead 0.060 $\mu\text{g}/\text{kg}$, tin was not found and arsenic 0.01 $\mu\text{g}/\text{L}$.

The amounts found of pesticide residues and the contents of heavy metals are in conformity with literature data and correspond to the Regulation on Maximum Tolerated Quantities of pesticides in victuals resp. to the Regulation on foreign substances in water and alcoholic drinks.

NEW DATA ABOUT SUGAR-BEET NEMATODE — HETERODERA
SCHACHTII SCHMIDT

by
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S u m m a r y

In the course of four years (1976 y. to 1979 y.) about 5000 soil samples taken out from 5000 hectares in Croatia were examined against sugar-beet nematodes. *Heterodera schachtii* Schmidt. This pest is rather distributed in the examined fields. In the some fields of a great combine PIK »Vukovar« even heavy infestation was discovered. In the years 1978 and 1979 soil samples taken out from 1741 ha were examined. Sugar-beet nematode was found in 948 ha. Depending on the investigation level the producer of sugar-beet (PIK »Vukovar«) was advised about the number of years in which he should not grow host-crops in order the decrease the eehwormpopulation.

Iz svega iznetog može se zaključiti da izolat »Niška šipka« predstavlja poseban soj virusa mozaika duvana. Izolat »Niška šipka« se razlikuje od tipičnog soja virusa mozaika duvana po simptomima na test biljkama i serološkim reakcijama, a od virusa mozaika paradajza po simptomima na duvanu var. Samsun i Wvite Burley.

Za izolat »Niška šipka«, kao poseban soj virusa mozaika duvana, predlaže se naziv »nekrotični soj ljute papričice«.

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CONTRIBUTION TO THE STUDY OF SOME TOBACCO MOSAIC VIRUS ISOLATES FROM PEPPER

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S u m m a r y

The relationship of tobacco mosaic virus (TMV) isolates »Niška šipka« and »Sremska Mitrovica«, obtained from diseased pepper plants, to the TMV type strain (»Prilep« isolate) and tomato mosaic virus (ToMV) was studied. The relationship among these TMV isolates and strains was studied on the base of reaction of some test plants as well as on the base of serological analysis.

Isolate »Niška šipka« caused local lesions on *Nicotiana glutinosa*, mild mosaic on *N. tabacum* var Samsun, and local lesions and mosaic on *N. tabacum* var White Burley.

Isolate »Sremska Mitrovica« caused local lesions on *Nicotiana glutinosa*, mosaic and weak deformation on both tobacco varieties.

ToMV isolate caused local lesions on *N. glutinosa* as well as on *N. tabacum* var. White Burley, and mosaic on *N. tabacum* var. Samsun.

Isolate »Prilep« — type strain of TMV, caused local lesions on *N. glutinosa*, mosaic and deformation on *N. tabacum* var. Samsun, and mosaic and weak deformation on *N. tabacum* var. White Burley.

Antiserum prepared against isolate »Niška šipka«, saturated with healthy tobacco juice, reacted positively with all studied TMV isolates or strains. But, after cross absorption with TMV type strain antigen that antiserum reacted positively with its homologous antigen as well as with ToMV antigen.

On the base of obtained results it can be concluded that »Niška šipka« isolate can be considered as a specific strain of TMV. »Hote pepper necrotic« strain is proposed name for this TMV strain.

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ETIOLOGICAL INVESTIGATIONS OF THE BACTERIAL SPECK
AND ROT OF TOMATO

by

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Summary

Etiological studies of the speck and rot of tomato in Yugoslavia corroborated the hypothesis on the nature of this phenomenon as bacteriosis.

From the diseased samples were separated in the course of 1974 and 1975 a large number of bacterial isolates, six of which were chosen

for further investigations, to wit: Pt-71 and Pt-43 originating from the diseased leaf, Pt-68 and Pt-64 from the leaf petiole, Pt-69 from the fruit stem and Pt-50 was isolated from the tomato fruit.

All these isolates cause a hypersensitive reaction on the tobacco leaf and the necrosis of the tomato and paprika leaves inoculated with the infiltration of bacterial suspension by syringe.

On the tomato fruit, inoculated by pricking, five first isolates (Pt-71, Pt-69, Pt-68, Pt-64 and Pt-43) cause the appearance of small dark-brown, almost black spots of the scab type (Fig. 3, left), and on the paprika fruit are manifested local necroses round the puncture, at first or brown, and afterwards dark, almost black colour, which makes the impression of the defensive reaction (Fig. 5).

The isolate Pt-50 causes on the tomato and paprika fruits the creation of watersoaked brown spots, of the rot type, the spread and merging of which leads to the complete desorganization and decay of the former (Fig. 3—5).

The inoculation of tomato plants by spraying with the first five isolates results in the appearance of tiny black spots on the leaves with a marked chlorotic halo (Fig. 2), whereas the isolate Pt-50 causes no changes. None of the six investigated isolates caused the changes on the paprika leaves, inoculated by spraying.

On the leaf, spatule and stalk of the Sudan grass, inoculated by pricking, the isolate Pt-50 caused the greatest changes, in form of large, brown spots in the beginning and the leaf withering and strong necrosis of the stem five days later (Fig. 6).

The remaining five isolates caused a less intensive necrosis of the tissue round the puncture, in form of brown, tiny spots which did not spread. None of the six isolates caused changes on the Sudan grass inoculated by spraying.

With all inoculations, by spraying and by puncturing, the concentration of the bacterial suspensions amounted to 10^8 cells/ml, and with the infiltration of tobacco, paprika and tomato leaves 10^7 cells/ml.

On the nutritive media (NAS), the isolate Pt-50 forms round, yellowish colonies, of level surface and edges, hardly convex profile and of granular structure.

The colonies of other five isolates are of pearl-white colour, roundish and shining; of flat surface and edges, of convex profile and of fibrous structure.

Bacteria of all six investigated isolates are rod-shaped with rounded ends, asporogenous and gramnegative. All the isolates liquefy gelatin and produce ammonia; do not produce hydrogen sulphide nor indole and do not hydrolyze starch, whereas only the isolate Pt-50 reduce nitrate to nitrite.

This isolate in the milk medium cause peptonization and the other isolates peptonization and alkalization.

The isolate Pt-50 manifests a stronger creation of acid, without gas, as early as in the first weak of development, on the media with

galactose, glucose, xylose, mannose, glycerin and mannite. On the media containing arabinose and lactose, the creation of the acid is poor, it occurs only in the fourth, resp. third week of development, and it could be considered as negative.

This isolate does not dissociate maltose, saccharose, dextrin, raffinose, starch, esculin and dulcitol.

The other five isolates (Pt-71, Pt-69, Pt-68, Pt-64, Pt-43) strong acids were produced in first week from galactose, glucose, xylose, mannose, saccharose, glycerine and mannite. On arabinose, lactose, dextrin, starch, esculin and dulcitol no acid was formed.

Pt-43 and Pt-64 do not dissociate raffinose, and Pt-71, Pt-69 and Pt-68 meltose. These last three isolates cause in the third and fourth week changes on raffinose and the first two isolate on maltose.

Taking into consideration the achieved results, as regards pathogenic, cultivating and biochemical properties of the investigated bacteria, the conclusion may be drawn that all of the six investigated isolates are the representatives of the genus *Pseudomonas*. Consequently, the isolates Pt-71, Pt-69, Pt-68, Pt-64 and Pt-43 belong to the bacterium *Ps. tomato* (Okabe), i. e. to the pathovar of the species *Ps. syringae* — *Ps. syringae* pv. *tomato* (Okabe, 1933) comb. nov. (Young, J. M. et al., 1978).

The isolate Pt-50 manifests the greatest analogies with the bacterium described previously as *Ps. syringae* var. *capsici* (Orsini) Klement. As far as we know, this »variety« has not been known up to now as a tomato parasite, and the data concerning its discovery on the paprika (Klement, Z., 1956) are rather meager.

However, such taxonomic belonging of its is controversial since recently (Young, J. M., et al., 1978) and to all probability it will undergo the proposed changes.

THE EFFECT OF SOME FUNGICIDES ON THE FERMENTATION OF MUST

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S u m m a r y

Great importance is attached today to disease control on grape-vine especially of grey mould using varied fungicides. Some of these products have a big influence on fermentation. In our experiments we followed the intensity of fermentation of must produced from grapes treated with one of these fungicides: Ronilan, Rovral, Sumilex and Mycodifol. It was confirmed that Rovral, Ronilan and Sumilex did not stop the fermentation whils the Mycodifol did. The percent of alcohol in wine produced from bunches treated with Mycodifol was the last. There was no specific difference between the three fungicides and control must. The residues of fungicides in must and wine were estimmated by gas-liquid chromatography which affirmed that the residues were below the permitted tolerance.

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VERTICICLADIELLA PROCERA KENDRICK CAUSAL ORGANISM OF EASTERN WHITE PINE WILTING IN CONIFERS CULTURE

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Summary

The wilting of Eastern white pine (*Pinus strobus* L.) is new registered disease in conifers cultures. In the course of investigation it was obtained that this disease has been occurred on sites with bad soil drainage and unsuitable water-air regime. From the wilting trees it was isolated and determined *Verticicladiella procera* Kendrick on most investigated localities. This organism is the new fungus species found in Croatia. The pathogenicity of *Verticicladiella procera* was tested and confirmed in inoculation experiments on Eastern white pine two-year old seedlings.