

# FAUNA CVRČAKA KAO VEKTORI FITOPLAZME VINOVE LOZE NA PODRUČJU ISTRE

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## FAUNA CVRČAKA KAO VEKTORI FITOPLAZME VINOVE LOZE NA PODRUČJU ISTRE

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### SAŽETAK

U uzgoju loze fauna cvrčaka predstavlja značajnu skupinu insekata. Od vektora fitoplazmi loze značajni su insekti koji se hrane iz floemskog tkiva biljaka kao što su cikade iz porodica: Cicadelidae, Coccidae, Fulgoridae i Psyllidae, a fitoplazme prenose na perzistentan način. Tijekom 2005. i 2006. godine u vinogradima Istre obavljena su istraživanja faune cvrčaka, florističkog sastava korova i biljaka domaćina fitoplazmi vinove loze. Istraživanja su obavljena na 11 lokacija u 10 vinograda. Sakupljanje cvrčaka obavljeno je entomološkom mrežom, pomoću žutih ljepljivih ploča, metodom udaraca i ekshaustorom. Sakupljeni cvrčci determinirani su pomoću binokulara i ključeva za determinaciju vrsta, dok je nazočnost fitoplazmi BN i FD utvrđivana pomoću molekularnih analiza (PCR, RFLP). Popis i determinacija florističkog sastava korova obavljao se neposredno u istraživanim vinogradima pomoću ključeva za determinaciju vrsta. Uzorci biljnog materijala za analizu PCR metodom uzimani su na temelju vizualnog pregleda i tipičnih simptoma koje izazivaju fitoplazme. Determinacija cvrčaka i molekularne analize obavljane su u Italiji u Istituto Sperimentale per la Viticoltura – Conegliano. Tijekom istraživanja sakupljena su 243 uzorka insekata. Od navedenog broja u 207 uzoraka utvrđene su cikade iz 40 rodova. Popisom florističkog sastava korova utvrđeno je 105 vrsta iz 36 porodica. U navedeni popis uvrštene su i vrste *Corylus avellana* L i *Clematis vitalba* L, vrste koje su pokazivale znakove oboljenja fitoplazmi i nalazile su se neposredno uz istraživane vinograde. Nad istima je obavljena analiza na prisutnost fitoplazmi FD i BN. Molekularna istraživanja PCR metodom na prisustvo fitoplazmi FD i BN obavljena su nad 34 uzorka insekata i 22 biljna uzorka. Od navedenih uzoraka niti jedan uzorak insekata nije bio pozitivan na FD i BN. U lišću vinove loze sorte malvazija iz vinograda u Novigradu i Starićima utvrđena je fitoplazma BN. U uzorku lišća *C. vitalba* na lokaciji Barat utvrđena je fitoplazma FD – tip C. Rezultati provedenih istraživanja ukazuju da su u vinogradima Istre prisutne vrste cvrčaka koje su poznati vektori fitoplazmi vinove loze. Njihovo prisustvo u vinogradima Istre predstavlja potencijalnu opasnost u širenju fitoplazmi s obzirom da je BN pronađen na lozi, a FD na korovskoj vrsti *C. vitalba*.

Ključne riječi: fauna cikada, fitoplazme, PCR

## THE CICADA FAUNA AS PHYTOPLASMA VECTORS IN ISTRIAN VINEYARDS

Doctoral thesis

### SUMMARY

The cicada fauna represents a considerable group of insects in vine-growing. Phytoplasma vine vectors insects are significant. They are fed from the phloem tissues of plants like cicadas from the families Cicadelidae, Coccidae, Fulgoridae and Psyllidae. Their phytoplasma is transmitted in a persistent way. Researches on cicada fauna, on the floristic structure of weeds and host plants of vine phytoplasma were done in 2005 and 2006 in Istrian vineyards. The research was being done in 10 vineyards on 11 localities. Cicade collecting was done with an entomological net by means of yellow sticky plates using an exhaustor and a method of clonting. The collected cicadas were identified by means of binoculars and keys to identify species while the presence of phytoplasmas BN and Fd was defined by means of molecular analysis (PCR, RFLP). Listing and identifying the floristic structure of weeds were being done in the explored vineyards by means of keys to identify species. Samples of plant materials were taken for the analysis using PCR method by checking visually the typical symptoms caused by phytoplasma. Cicadas identifying and molecular analyses were being done at the Viticulture Institute for Research in Conegliano – Italy. During the researches, 243 insect samples were collected. Of the above mentioned number cicadas of 40 genus were identified in 207 samples. On the list of the floristic structure of Weeds 105 species of 36 families were identified. *Corylus avellana* L and *Clematis vitalba* L species were included in this list. These species showed signs of phytoplasma disease and they were found near the explored vineyards. These two species were analysed on the presence for FD and BN phytoplasmas. The PCR method used in the molecular research on the presence of Fd and BN phytoplasmas was done on 34 insect samples and 22 plant samples. None of the mentioned sample was positive for FD and BN. The phytoplasma BN was found in the vine leaves of the Malvazija sort in the vineyards in Novigrad and Starići. The phytoplasma FD – type C was identified in the leaves sample of *Clematis vitalba* L in the Barat locality. The results of the researches conducted show that cicada species known as phytoplasma vine vectors are present in Istrian vineyards. The presence of these cicada species found in Istrian vineyards represent a potential danger for phytoplasma spreading, considering that the FD was found on the weed species of *Clematis vitalba* L.

Key-words: cicada fauna, phytoplasma, PCR

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