TAGUNGSBEITRÄGE ANLÄSSLICH DES 4. EUROPEAN BOIS NOIR WORKSHOP 9.-11. MÄRZ, 2016, KLOSTERNEUBURG ÖSTERREICH

PROCEEDINGS OF THE 4TH EUROPEAN BOIS NOIR WORKSHOP 9-11 MARCH 2016, KLOSTERNEUBURG, AUSTRIA

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organized by

Reinhard Eder, Monika Riedle-Bauer, Franz G. Rosner
(Federal College and Research Institute for Viticulture and Pomology, Austria)

PREVALENCE OF STOLBUR PHYTOPLASMA IN LEAFHOPPERS AND PLANTHOPPERS COLLECTED IN VINEYARD, CORN AND POTATO FIELDS AND THEIR SURROUNDINGS IN SWITZERLAND.

Valeria Trivellone[1], Mauro Jermini[1], Jelena Jović[2], Tatjana Cvrković[2], Miljana Jakovljević[2], Andrea Kosovac[2], Oliver Krstić[2], Ivo Toševski[2,3] and Milana Mitrović[2]

[1]Agroscope Changins-Wädenswil ACW, A Ramél 18, 6593 Cadenazzo, Switzerland
[2]Institute for Plant Protection and Environment, Department of Plant Pests, Banatska 33 11080 Zemun, Serbia
[3]CABI Europe - Switzerland, 1 Rue des Grillons, 2800 Delémont, Switzerland

The stolbur phytoplasma ('*Candidatus* Phytoplasma solani', 16SrXII-A subgroup) has a broad host-plant range, including various economically and environmentally important herbaceous and woody plants. A large number of host plants, insect vectors and several independent epidemiological cycles have been reported for stolbur phytoplasma in diverse agroecosystems (Maixner, 2011). In Swiss vineyards, stolbur phytoplasma still can cause grapevine yellows disease (Bois noir, BN) outbreaks. However, the interplay of the phytoplasma, its original host plants, insect vectors and vines is still poorly investigated (Kessler et al., 2011). Potato stolbur was recorded in Switzerland, but it is sporadic, whereas Maize Redness (MR) disease has not yet been reported, however data on insect-vectors and epidemiology of each diseases are still limited or completely unknown.

The main objectives of the present study were to: 1- determine species composition of planthoppers and leafhoppers in three agroecosystems (corn, potato and vineyard); 2- identify potential vectors of stolbur phytoplasma by means of molecular analyses on insects; 3- obtain a geographic map for prevalence of stolbur phytoplasma infected insects in Switzerland.

In the frame of an international joint research project between Switzerland and Serbia, two field samplings were carried out in 2014 and 2015 and planthoppers and leafhoppers specimens were collected in corn, potato and vineyard fields in Switzerland.

The insects were collected from 68 sampling sites in Southern and North-Western Switzerland, and the major crop-growing areas have been selected from 7 out of 26 Cantons: Jura, Neuchatel, Vaud, Geneva, Valais, Bern and Tessin. Overall, 30 vineyards, 28 corn and 10 potato fields were sampled.

In 2014, a preliminary survey was carried out and 10 sites were sampled: 6 vineyards and 4 corn fields. In 2015, an extensive survey was carried out, and 58 sites were inspected: 24 vineyards, 24 corn and 10 potato fields. Leafhoppers and planthoppers were collected from the third week of June to the end of July (one sampling per site) using sweep net and mouth-aspirator directly from crops and the weeds in the surrounding of fields.

All specimens were identified and stored in 96% ethanol. Nomenclature follows Holzinger et al. (2003) and Ribaut (1936, 1952).

For each agroecosystem, Auchenorrhyncha community composition was analysed in terms of number of species and individuals, and the relationship between species mean abundance and species occurrence was examined.

More than 2'000 specimens were collected and they belong to about 90 species encompassed in the families: Cicadellidae (64), Delphacidae (12), Aphrophoridae (4), Cixiidae (3), Issidae (2), Cercopidae

(1), Membracidae (1), Flatidae (1) and Dictyopharidae (1).

The results confirmed the presence of known and potential vectors of stolbur phytoplasma in the investigated areas in Switzerland. Faunistic analysis of Auchenorrhyncha demonstrated that species composition is affected by agroecosystem type and biogeographical region. Knowing the most important species for each agroecosystem, their host plants and where they occur around the crop-growing area is of great importance for their management. With this information, it is possible to design specific strategies and therefore prevent transmission of the phytoplasmas.

Molecular analyses of genomic sequencing of phytoplasma isolates are ongoing.

ACKNOWLEDGEMENTS

We thank the Swiss National Science Foundation for financial support of this study through the SCOPES grant IZ73Z0_152414.

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