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CANDIDATUS PHYTOPLASMA ASTERIS AND METCALFA PRUINOSA (SAY, 1830): COMMON HOSTS

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Abstract

Metcalfa pruinosa (Say, 1830) is a new invasive pest of Humulus lupulus L., which infests 130 plant species in Kyiv. In addition, it is a vector of Candidatus Phytoplasma asteris, which infects H. lupulus. Given the above, we reviewed and compared the literature on the hosts of M. pruinosa in Kyiv and Ca. P. asteris generally. As a result, we found 13 of their shared plant hosts: Acer negundo L., Citrus limon (L.) Osbeck, Corylus avellana L., Fraxinus excelsior L., H. lupulus, Musa acuminata Colla, Prunus cerasus L., Prunus domestica L., Rosa canina L., Sonchus oleraceus L., Tilia cordata Mill., Trifolium pratense L., Vitis vinifera L. In further study, the incidence of Ca. P. asteris infection in these hosts must be assessed.

Keywords: *Metcalfa pruinosa, Candidatus Phytoplasma asteris, Kyiv, host.*

Metcalfa pruinosa (Say, 1830), known as the citrus flatid planthopper, is an invasive polyphagous sap-sucking insect spreading rapidly through Ukraine. In previous studies, we showed that the citrus flatid planthopper is present in all districts of Kyiv and infests 130 plant species. We also revealed that *M. pruinosa* most frequently damages *Humulus lupulus* L., *Juglans regia* L., and species of the genus *Acer* L. [1]. The leaves and stems of *H. lupulus*, infested by the citrus flatid planthopper, were contaminated with a whitish, sticky, woolly coating, and its leaves exhibited interveinal chlorosis and necrosis, as well as chlorotic and necrotic spots. In addition, *M. pruinosa* excreted honeydew, predisposing the appearance of sooty mould [2]. However, the harm caused by *M. pruinosa* to hop plants is not limited to the above. The citrus flatid planthopper was also a vector of *Candidatus Phytoplasma asteris* (aster yellows phytoplasma, group 16SrI-B), one of the hosts of which is *H. lupulus* [3, 4]. Therefore, this study aims to select hosts of *M. pruinosa* in Kyiv, which *Ca. P. asteris* can infect to reveal all the vector-host-pathogen interactions. To do this, we searched for data on infection by *Ca. P. asteris* for each of the 130 species infected by *M. pruinosa* in Kyiv. As a result, we found 12 species, excluding *H. lupulus*, which are shared hosts of *Ca. P. asteris* and *M. pruinosa*. Table 1 presents these hosts and the symptoms of *Ca. P. asteris* infection they show.

Table 1. Common hosts of *Candidatus Phytoplasma asteris* and *Metcalfa pruinosa* (Say, 1830) (Kyiv population)

Host	**Symptoms of *Ca. P. asteris* infection**	**Reference**
Acer negundo L.	LC, LM, LN, LRe, SD, SI, SP	5
Citrus limon (L.) Osbeck	LC, LY	6
Corylus avellana L.	LC	7
Fraxinus excelsior L.	LM, LRo, SP	8
Musa acuminata Colla	SP	9
Prunus cerasus L.	LC, LSR, SI	10
Prunus domestica L.	ABG, LSR, SI, SP	11
Rosa canina L.	LC, SD	12
Sonchus oleraceus L.	FV, LC, LRe, PH, SI, SP	13
Tilia cordata Mill.	LC, LRol, LBP	14
Trifolium pratense L.	PH, FV, SP	15
Vitis vinifera L.	LS, LRe	16

Notes: shortened internodes (SI); axillary bud growth (ABG); flower virescence (FV); late bud proliferation (LBP); leaf chlorosis (LC); leaf malformation (LM); leaf necrosis (LN); leaf reddening (LRe); leaf rolling (LRol); leaf rosetting (LRo); leaf size reducing (LSR); phyllody (PH); shoot dieback (SD); shoot proliferation (SP); vein yellowing (VY).

In conclusion, we found 13 plant species, including *H. lupulus*, that are infested by *M. pruinosa* in Kyiv and can be infected by *Ca. P. asteris*. In further research, the incidence of *Ca. P. asteris* infection among them should be assessed.

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Ключові слова: *Metcalfa pruinosa, Candidatus Phytoplasma asteris, Київ, хазяїн.*

Анотація
Metcalfa pruinosa (Say, 1830) - новий інвазивний шкідник Humulus lupulus L., який заселяє 130 видів рослин у Києві. Крім того, він є переносником Candidatus Phytoplasma asteris, який інфікує H. lupulus. З огляду на це, ми проаналізували та порівняли літературні дані щодо хазяїв M. pruinosa у Києві та Ca. P. asteris загалом. В результаті ми виявили 13 їхніх спільних рослин-хазяїв: Acer negundo L., Citrus limon (L.) Osbeck, Corylus avellana L., Fraxinus excelsior L., H. lupulus, Musa acuminata Colla, Prunus cerasus L., Prunus domestica L., Rosa canina L., Sonchus oleraceus L., Tilia cordata Mill., Trifolium pratense L., Vitis vinifera L. У подальших дослідженнях слід оцінити інфікованість цих хазяїв Ca. P. asteris.