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Notes

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Arbuscular mycorrhizal fungi colonization of *Helianthus tuberosus* (L.) in its native and non-native range

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The majority of vascular plant species are associated with a special group of soil fungi known as arbuscular mycorrhizal fungi (AMF) in their natural habitats. These AMF symbioses are essential components in different terrestrial ecosystems, however, increasing number of publications suggest that reduced mycorrhizal associations may also benefit invaders in a competitive environment.

In this study, we investigated AMF colonization of *H. tuberosus* both in its native range in North-America and in the non-native range in Europe, and thereby got closer to clarifying its role in plant invasion.

To acquire information about AMF colonization of *H. tuberosus* and interaction of AMF colonization and *H. tuberosus* coverage, we collected *H. tuberosus* root samples (1) from plots where the coverage of *H. tuberosus* was lower than 50%, and (2) from plots where the coverage of the studied plant was higher than 50%, both in native (64 samples) and non-native (56 samples) range. Root samples were stained in aniline-blue (30 minutes) and fixed in 40% lactic acid (30 minutes) for light microscopic examination.

Our study revealed that all collected roots of *H. tuberosus* were AMF colonized both in native and non-native ranges, which was verified by the presence of hyphae, vesicles and arbuscules. The AMF colonization of *H. tuberosus* was different between the native and the non-native ranges, the intensity of the mycorrhizal colonization and arbuscule abundance in the root system being significantly higher in North America. However, we did not detect any differences between the two continents in the frequency of mycorrhiza in the root system.

In conclusion, we provided evidence on AMF colonization of *H. tuberosus* both in the native and non-native ranges. The detected differences in colonization between the two continents suggest that AMF could play an important role in plant invasion.

Keywords: Jerusalem artichoke, mycorrhiza, plant invasion

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