

Detection of *European mountain ash ringspot-associated virus* in rowan trees in Great Britain

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ABSTRACT

Virus-like symptoms in rowan (*Sorbus aucuparia*, European mountain ash) such as leaf mottling and chlorotic ringspots have been reported for more than 50 years in Europe (Robel et al., 2013). These symptoms could be associated with *European mountain ash ringspot-associated virus* (EMARaV) a multipartite (-)ssRNA virus representing the type-species of the newly established genus *Emaravirus* (Mühlbach & Mielke-Ehret, 2011). Symptoms have also been described in mountain ash in Great Britain, but EMARaV has never been confirmed in the country. In this study symptomatic trees were observed in the uplands of Scotland. Rowan trees are associated with the native Caledonian pinewoods and are most abundant on the mountain and coastal fringes of the Northwest. Because of their robustness, this species is an important founder that fundamentally contributes to the biodiversity of woods (Raspe et al., 2000).

In July 2011 chlorotic spots, ringspots, oak leaf line pattern, and mottling were observed in leaves of 23 mountain ash trees growing in different geographic regions of Scotland. Symptomatic trees were found in urban areas (Dunvegan, Inverness, Killin, Lawers) as well as in the countryside, growing as roadside trees (Eilean Donan Castle, Killiecrankie, Loch Tummel), as understory in the woods (Corrieshalloch Gorge, Falls of Bruar), or in mountainous regions at higher altitudes (hills around Kinlochleven, Ullapool Hill). Symptom-bearing leaves of *S. aucuparia* were collected in 4 different locations of the coastal north-western Highlands and investigated by RT-PCR applying specific primer pairs targeting all for viral RNAs. Fragments of the expected size (300 bp, RNA2; 204 bp, RNA3) were amplified from 5 out of 6 analysed samples while RNA4 was detectable in 2 samples and the vRNA1 fragment was amplified only from total RNA extracts of symptomatic rowan leaflets originating from Kinlochleven. Sequencing of obtained PCR fragments confirmed the presence of the virus in diseased rowans in the Highlands of Scotland. In a neighbour-joining phylogenetic tree generated from the partial RNA2 encoding the putative glycoprotein precursor of EMARaV, sequence variants obtained from Scottish trees formed a distinct cluster.

References

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