Variation in Phenotype for Resistance to Phytophthora ramorum in a Range of Species and Cultivars of the Genus Viburnum

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To date it is well established that the ornamental plant Viburnum plicatum var. tomentosum cv. ‘Mariesii’ and other Viburnum species or cultivars are highly susceptible to Phytophthora ramorum. What is not known is whether all cultivars in the genus Viburnum are equally susceptible, whether they are field- or container grown. The objective of our research was to evaluate 9 species of field-grown Viburnum including V. burkwoodii, V. dentatum, V. lantana, V. opulus, V. plicatum, V. lentago, V. nudum, V. sargentii, and V. trilobium for a total of 23 cultivars for resistance to P. ramorum in detached leaf tests. Foliage of Viburnum was obtained from Carlton Plants nursery on September 20, 2004. Detached leaves were wound-inoculated with 6 mm agar plugs of 1-week old colonies of P. ramorum using strains 4123 (isolated from Rhododendron macrophyllum, predominant US genotype of mating type A2) and 03-74-D12-A (isolated of V. plicatum var. tomentosum ‘Mariesii’ European genotype of mating type A1) grown on dilute V-8 agar. While two mycelial agar plugs were used to inoculate one side of a leaf, a control plug of the same medium was inoculated on the other side of the leaf. Leaves were incubated in moist chambers at 20º C for 8 days before measurements were taken. Lesion area was determined as the percentage of infected leaf area of the total leaf area using the Assess program (APS, St. Paul, MN). We obtained significant differences for levels of resistance based on percentages of leaf areas affected (P < 0.001) and no significant differences for isolates and interactions between isolates and cultivars. The percentages of lesion areas affected ranged from 95% (cvs. V. burkwoodii cv. unkown, V. plicatum var. tomentosum cv. Mariesii, and V. trilobium cvs. Alfredo and Bailey), to intermediate responses between 25-90% (cvs. V. burkwoodii cv. Mohawk, V. lantana cv. Mohican, V. opulus cvs. Compacta and Hanum, V. lentago cv. unkown, V. sargentii cv. Onandaga, V. trilobium cv. Redwing) to less than 15% infection (V. dentatum cvs. Autumn Jazz, Blue Muffin, Chicago Lustre, and Burgundy; V. opulus cv. Sterile, V. plicatum cv. Newport, Popcorn, Shasta, and Shoshon; V. nudum cv. Winterthur, V. trilobium cv. Wentworth). Our data indicate that there is a considerable range of resistance phenotypes in the genus Viburnum from high susceptibility to resistance.