

NEMATODE BEHAVIOR IN RELATION TO GRAPE ROOTS IN DUAL CULTURE. Zheng, Liang¹, H. Ferris¹, and M.A. Walker². ¹ Department of Entomology and Nematology, University of California, Davis, CA 95616; and ² Department of Viticulture and Enology, University of California, Davis, CA 95616. We examined various techniques for dual culture of grapes and nematodes, including different methods of surface sterilizing nematodes and plant tissues, different media concentrations and rates of hormone amendment. We also compared culture of tissues derived from plant nodes and petioles, and incubation under conditions of light and dark. We monitored the behavior and productivity of *Pratylenchus vulnus* and *Meloidogyne incognita* in relation to grape rootstock selections with differing levels of resistance. Roots emerging from stem nodes developed more rapidly than those from petioles. In media amended with 0.54mM/mL NAA (α -Naphthaleneacetic Acid), bud development occurred 2-5 days earlier, and roots were double the size of those in unamended controls. There were no observable negative effects of hormone concentration on the nematodes. Culture in light promoted plant growth and longevity of the dual culture system; in the dark, leaves lost turgor and roots died. Under such conditions, the migratory endoparasites *P. vulnus* root tissues while eggs of *M. incognita* were vacuolated and many were dead. Differing concentrations of salts in MS (Murashige & Skoog Basal Medium with vitamins), SM (Shoot Medium plus NAA), and NN (Nitsch & Nitsch Basal Medium with vitamins) had a little effect on survival of Meeting Abstracts 501 *P. vulnus* or *M. incognita*. Plant growth rate differed with agar concentrations with bud development slower at concentrations > 5g/L. At concentrations >8g/L some nematodes had difficulty penetrating the media and eventually died. Most *P. vulnus* and *M. incognita* J2s entered tissues behind the root tip within 24 hours. Throughout the observation period there were always some *P. vulnus* individuals outside the root, either because they never entered or because they had entered and then exited. After about 2 months, large numbers of *P. vulnus* vacated the deteriorating roots. The rate of exit of *P. vulnus* from roots was greater from roots resistant to *Meloidogyne* and *Xiphinema* than from roots of susceptible cultivars. Fewer *Meloidogyne* J2 entered roots of resistant UCD-GRN1 than susceptible cv Colombard within the same time period. While the nematodes developed and produced eggs on cv Colombard, none developed beyond the J3 stage on the resistant genotype.

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