Evaluation of strawberry cultivars for susceptibility to northern root-knot nematode

E. Barriga-Hernandez, S. S. Hewavitharana, A. T. Ploeg and G. J. Holmes

The Cal Poly Strawberry Center diagnostic service has detected northern root-knot nematode (N-RKN; *Meloidogyne hapla*) every year since 2022 in samples from Santa Maria and Oxnard strawberry growing districts. Although N-RKN has not previously been considered a prevalent soilborne pathogen, its repeated detection raises concern since it is known to reduce plant vigor, damage roots, and contribute to plant stunting across its host range. The objective of this study is to evaluate the resistance level to N-RKN in ten public/private strawberry cultivars: 'Adelanto', BG 10.3169, 'Cabrillo', 'Fortaleza', 'Fronteras', 'Golden Gate', 'Monterey', 'Royal Royce', 'San Andreas', and 'Surfline'. This project assessed plant weight and the number of N-RKN eggs per gram of root tissue in response to N-RKN inoculation under greenhouse conditions. Each cultivar was grown in 2-liter pots containing 90% sand:10% peat moss substrate and was randomly assigned to either a non-treated control or an inoculation treatment of 20 N-RKN eggs g^{-1} of soil. After a 5-month growth period, plant weight between treated and untreated controls was compared within cultivars, and significant differences were observed for 'Adelanto' and 'BG 10.3169' (Fig. 1). N-RKN reproduction measured in eggs per gram of root tissue varied amongst cultivars, but differences were not statistically significant (Fig. 2). On average, nematode reproduction was highest in 'San Andreas' and lowest in 'Surfline' (seven-fold lower than 'San Andreas').

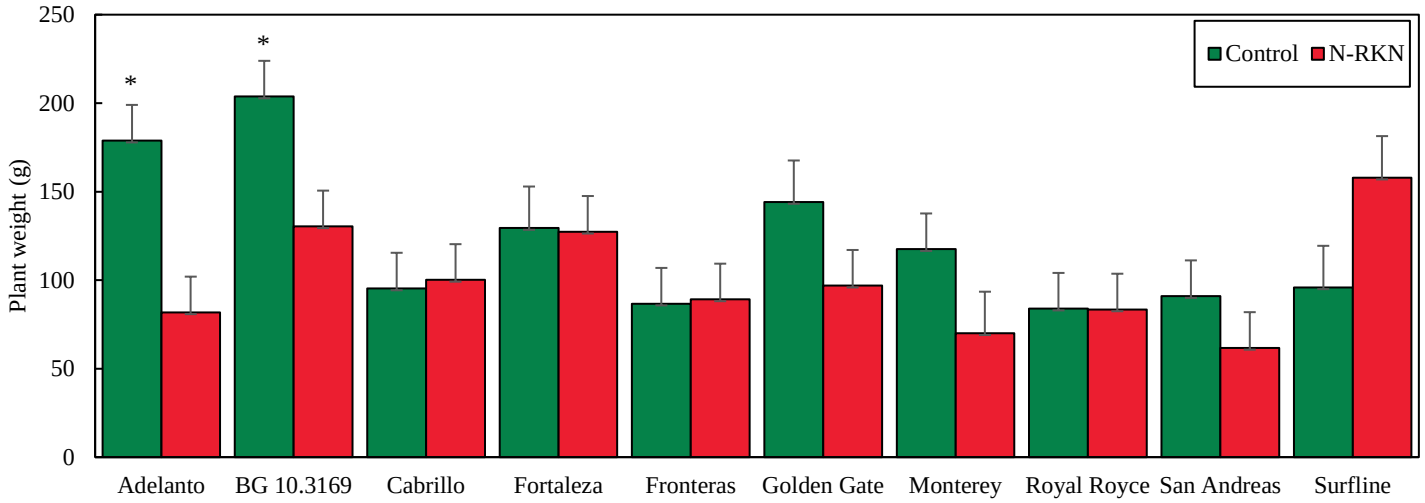


Figure 1. Plant weight response of ten public and private strawberry cultivars to *Meloidogyne hapla* inoculation and a non-inoculated control. Bars represent mean plant weight in grams ± standard error from a randomized complete block design. Asterisks indicate significant differences between non-inoculated control and *M. hapla* inoculated plants within a cultivar based on LS Means Student's *t* comparisons test. Interaction between cultivar and treatment was significant ($P = 0.0316$).

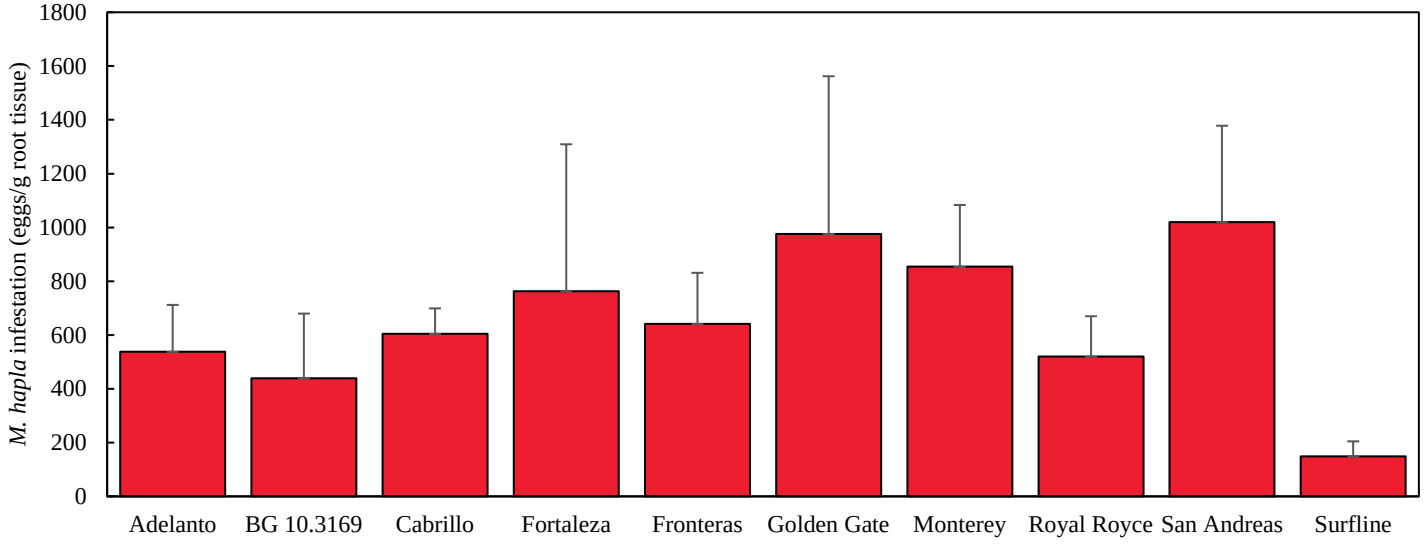


Figure 2. Reproduction of *Meloidogyne hapla* on strawberry **(**eggs/g root tissue) in ten strawberry cultivars five months after inoculation. Bars represent means ± standard error. No eggs were recovered from non-inoculated control plants. Cultivar differences were not statistically significant based on analysis of variance using log-transformed eggs per gram of root ($P = 0.1811$).