

Supplementary Figures

The effects of cucumber mosaic virus and its 2a and 2b proteins on interactions of tomato plants with the aphid vectors *Myzus persicae* and *Macrosiphum euphorbiae*

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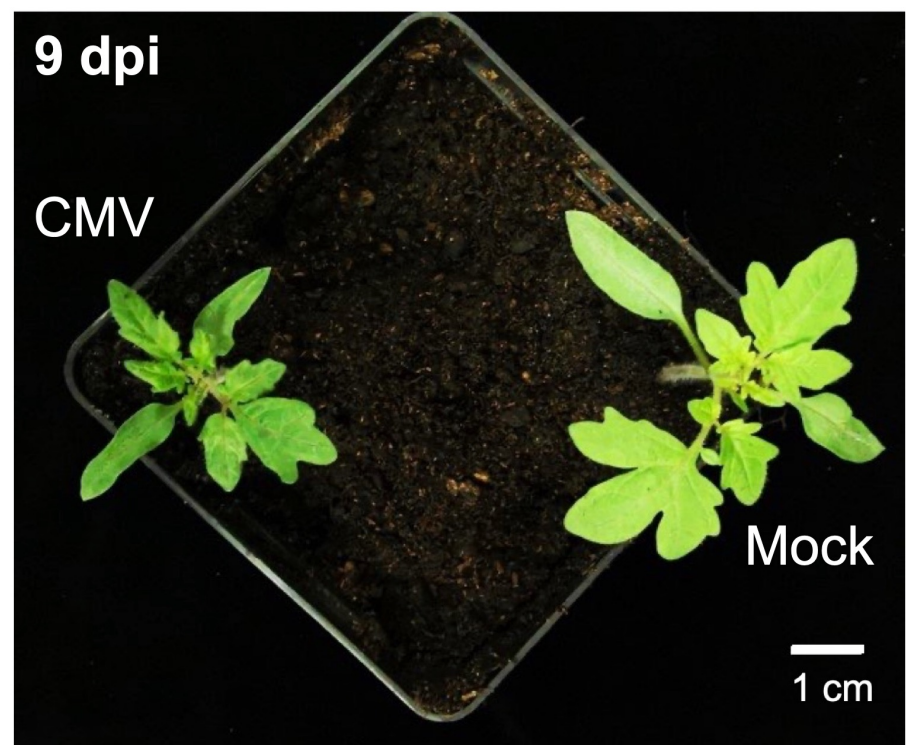
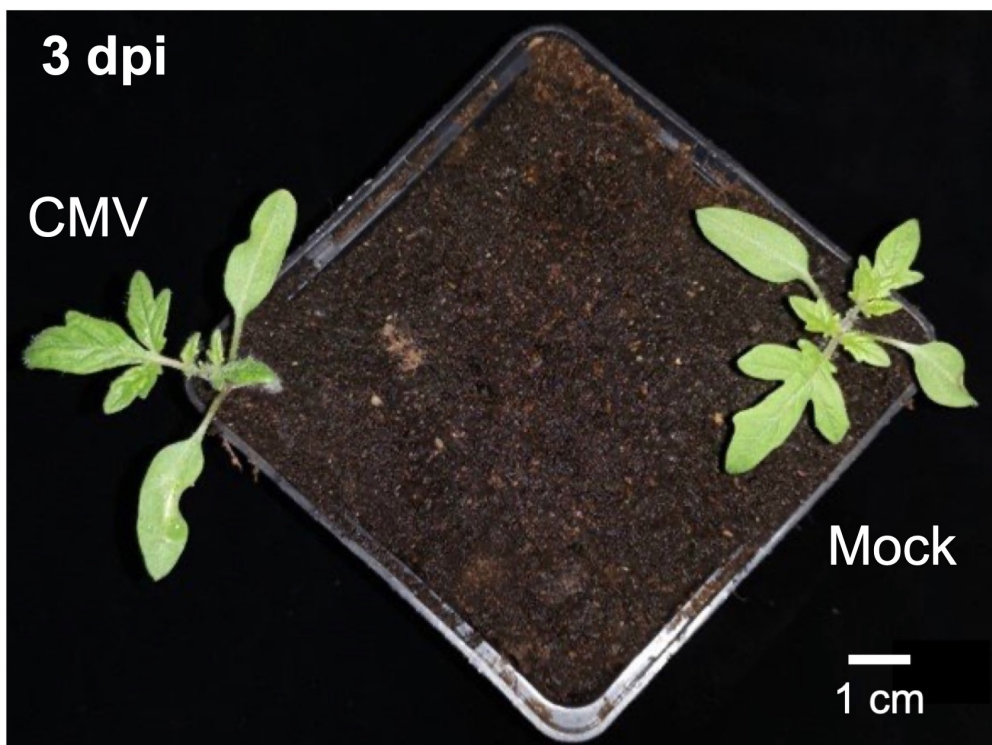
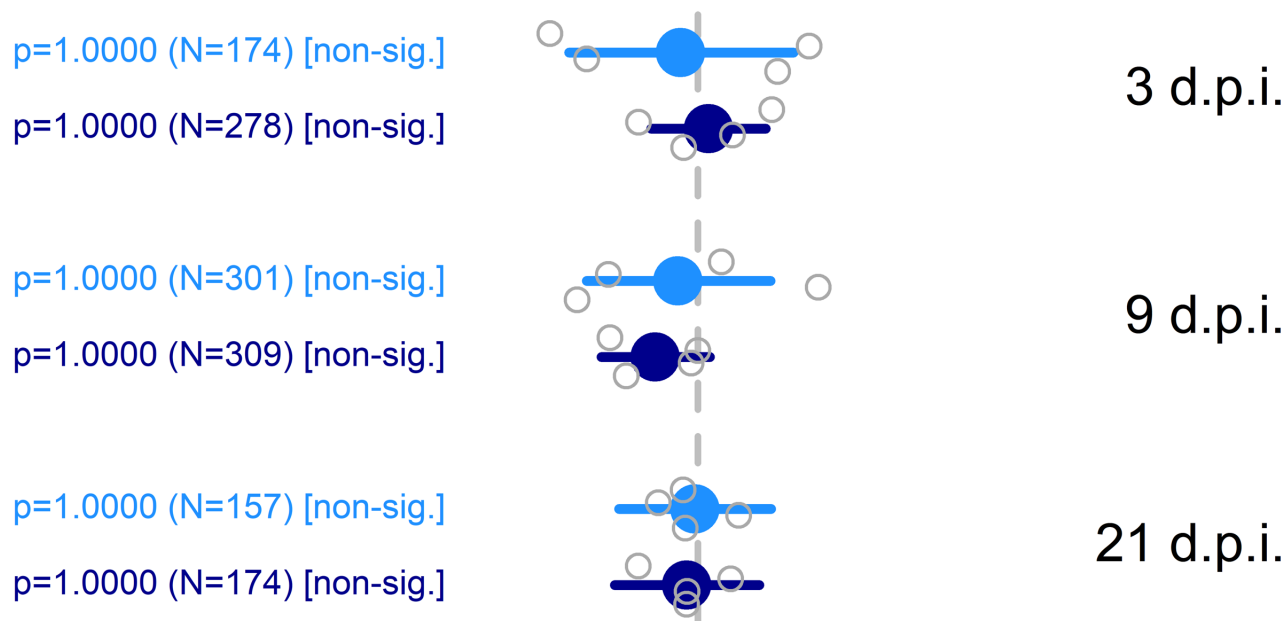


Figure S1. The typical appearance of tomato plants following mock-inoculation (Mock) or inoculation with the Fny strain of cucumber mosaic virus (CMV) strain Fny on cotyledons. Plants were inoculated or mock-inoculated on the cotyledons and photographed at 3, 9 or 21 days post-inoculation (dpi). Systemic infection with CMV was confirmed by ELISA using tissues from non-inoculated true leaves.

Myzus persicae



Macrosiphum euphorbiae

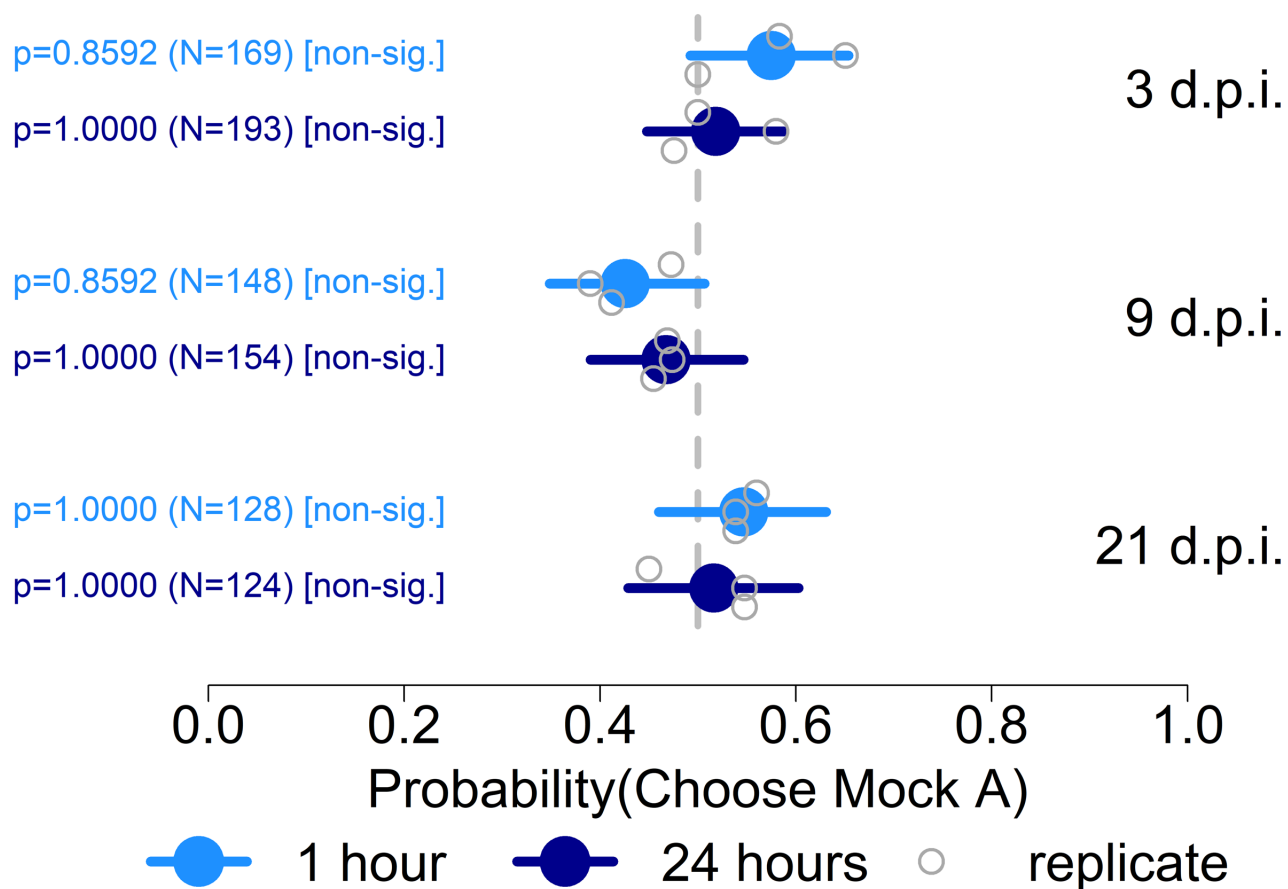


Figure S2 Mock-inoculated tomato plant data for Figure 1 carried out to control for any additional stimuli or biases in the experimental set-up. In these experiments aphids were presented with two mock-inoculated plants (designated plant A and plant B). The x-axis shows the range of the 95% credible interval of the probability of settlement of aphids (*Myzus persicae* or *Macrosiphum euphorbiae*) on infected plants at 1 and 24 h after aphid release, with values for each independent experiment (replicate). The total number of aphids (N) investigated for each comparison is indicated and statistical significance or non-significance determined using binomial tests. Experiments were done at 3, 9, and 21 days following mock inoculation (in parallel with genuinely infected plants: data in Figure 1). The vertical grey dotted lines indicate a probability of 0.5 of settlement on infected versus mock-inoculated plants, i.e., no settlement preference.

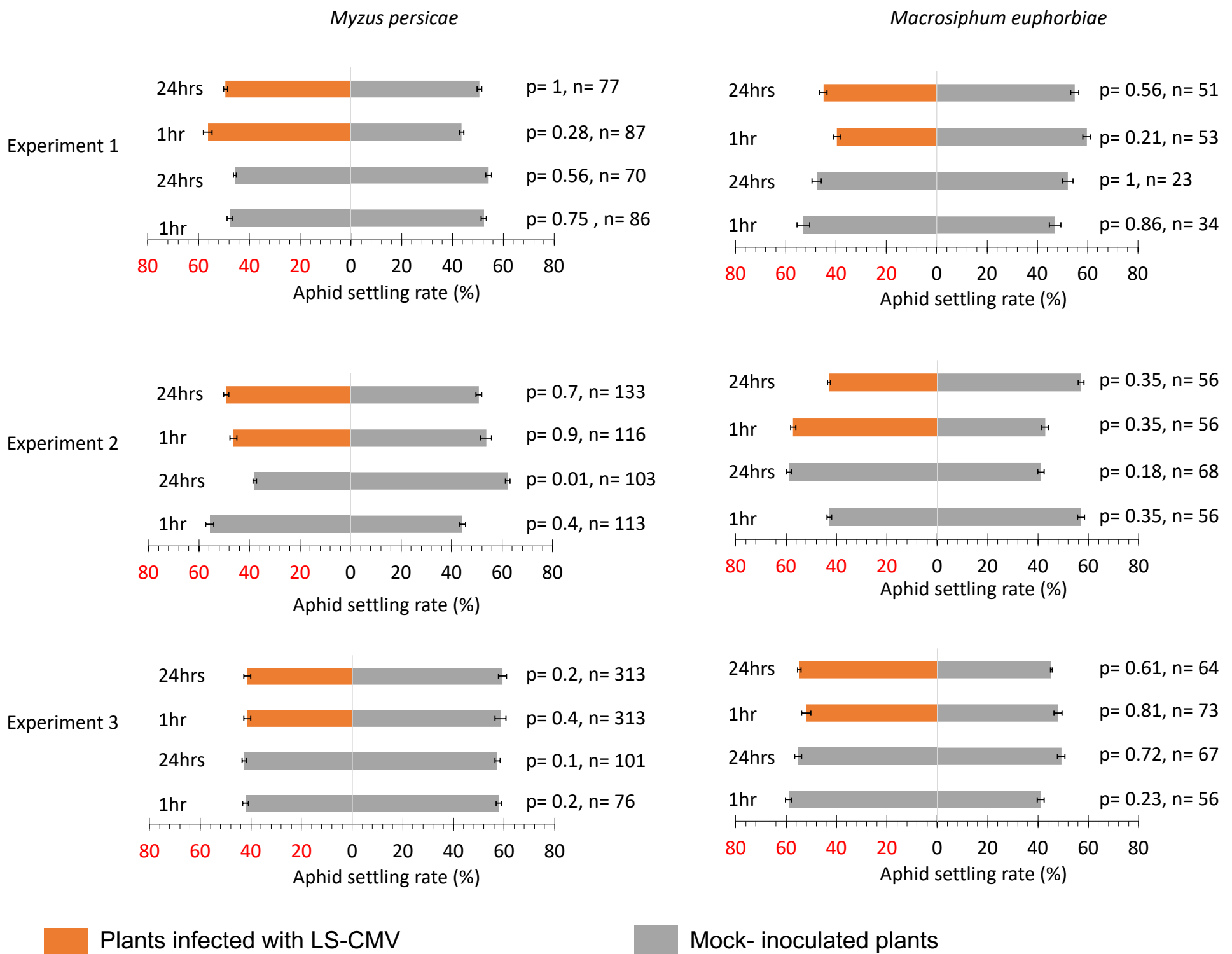
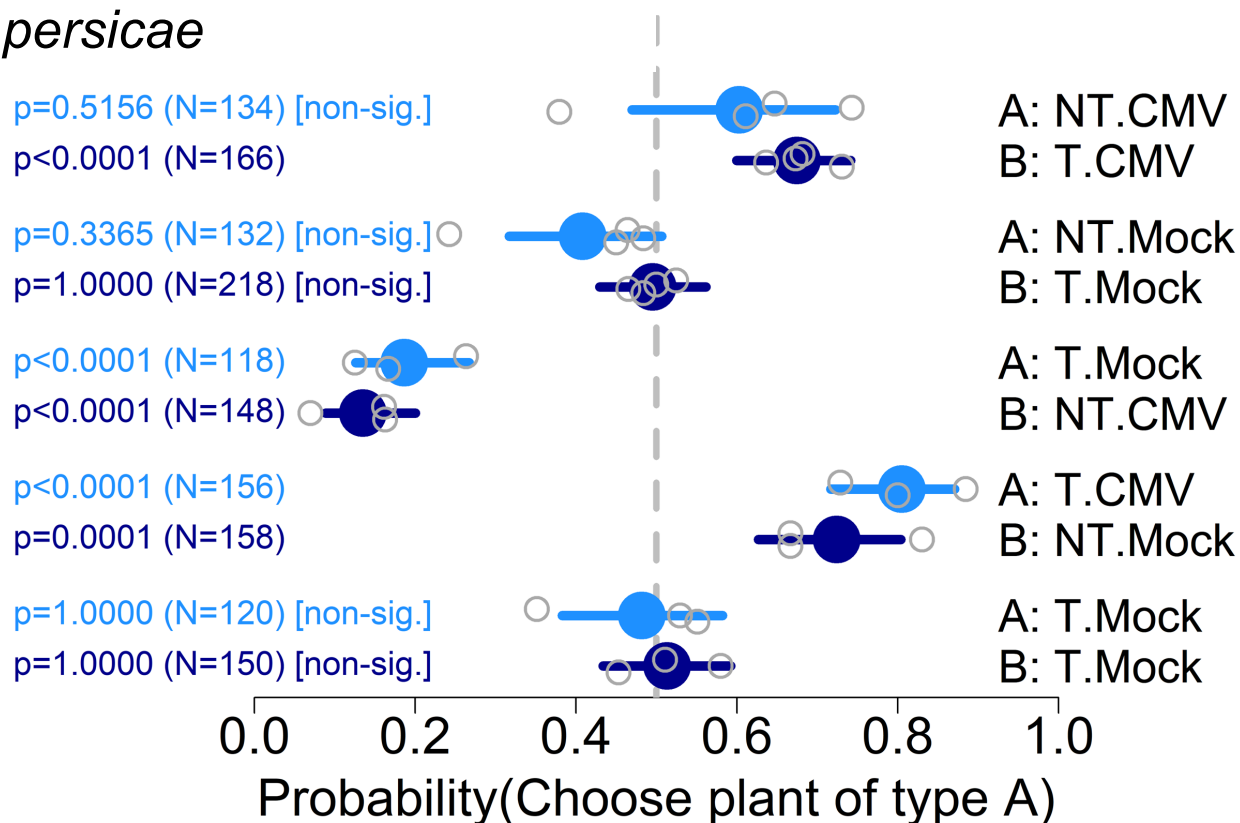


Figure S3 Free-choice settling assays indicated that LS-CMV does not induce resistance to aphid settlement in tomato. In three independent experiments with *Myzus persicae* and *Macrosiphum euphorbiae*, aphids were allowed to settle on either mock-inoculated plants or plants infected with LS-CMV (at 21 days post-inoculation). Aphid settlement was counted at 1 and 24 h post-release. The error bars represent SEM and binomial tests indicated no statistical significance (at $\alpha = 0.05$) in settlement, and n represents the total number of aphids settled per pairwise choice.

(a) *Myzus persicae*



(b) *Macrosiphum euphorbiae*

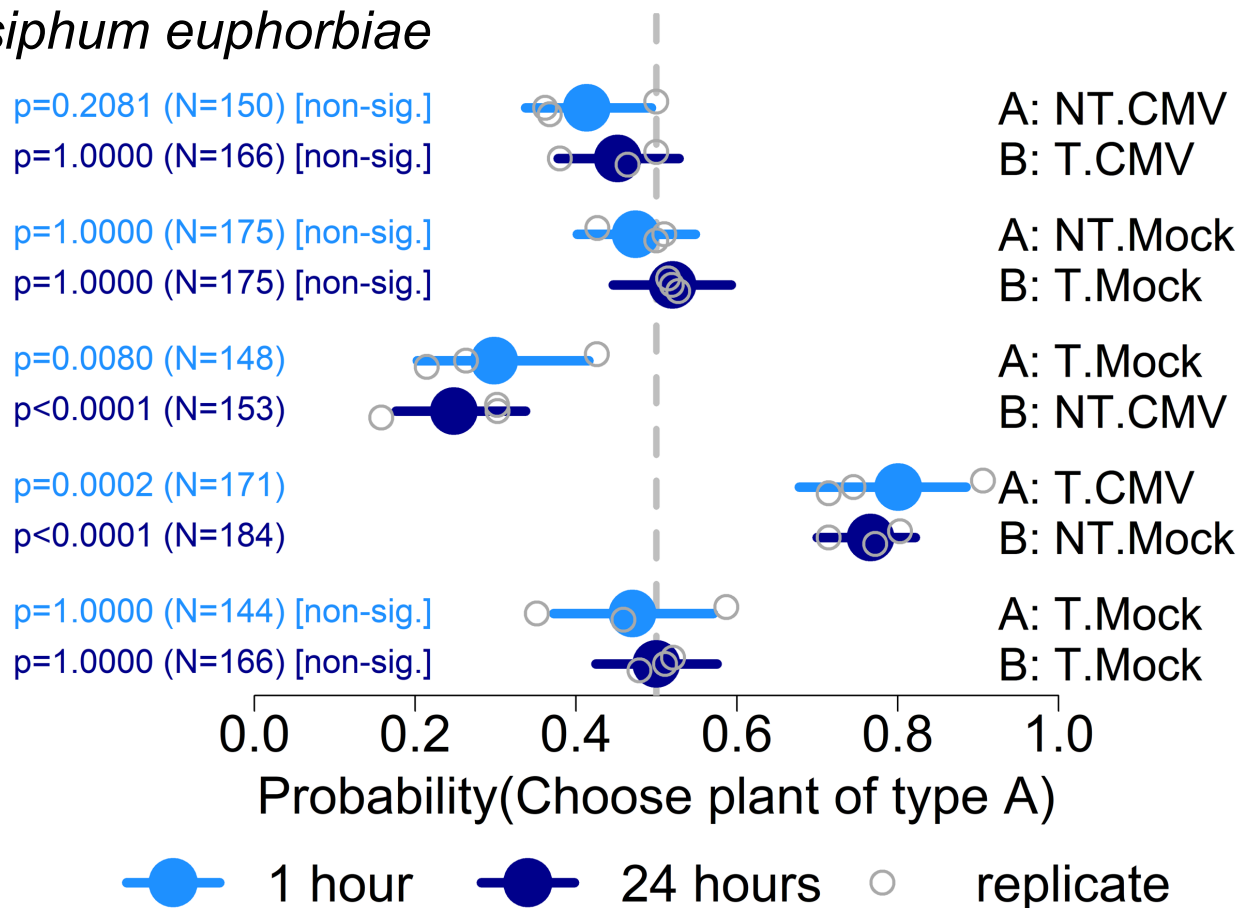


Figure S4 Aphid free choice tests to determine if signalling dependent upon salicylic acid influences cucumber mosaic virus-induced changes in aphid-tomato interactions. Summaries of assays for settlement of **A. *Myzus persicae*** and **B. *Macrosiphum euphorbiae*** on either *NahG*-transgenic (T: unable to accumulate salicylic acid) and non-transgenic (NT) tomato plants that had been mock-inoculated (Mock) or inoculated with Fny-CMV (CMV) 7 days previously (plant A or plant B in various pairwise plant treatment combinations as indicated). Four independent experiments were performed using *Myzus persicae* (**A**) and three with *Macrosiphum euphorbiae* (**B**). The x-axis shows the range of the 95% credible interval of the probability of aphid settlement at 1 and 24 h after aphid release, with values for each independent experiment (replicate). The total number of aphids (N) investigated for each comparison is indicated and statistical significance or non-significance determined using binomial tests. The vertical grey dotted line indicates a probability of 0.5 of settlement on infected versus mock-inoculated plants, i.e., no preference.

Mock-Inoculated

NahG

Non-transformed



CMV-infected

NahG

Non-transformed

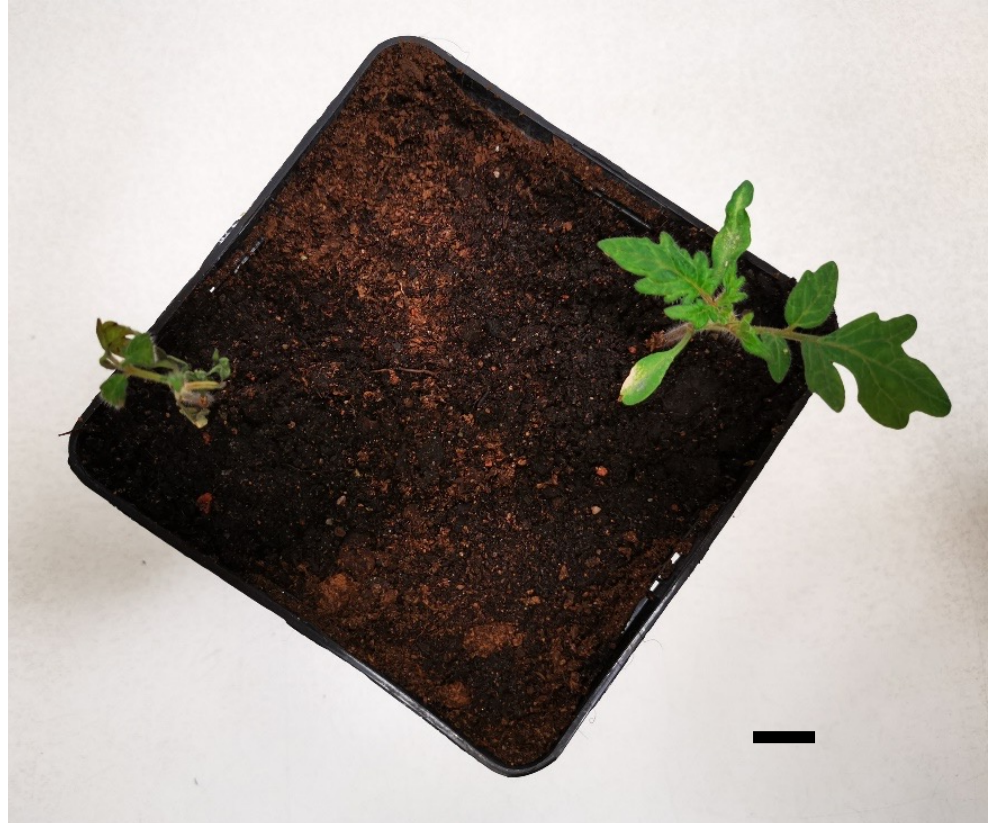


Figure S5. The typical appearances of non-transformed or *NahG*-transgenic tomato plants. Plants were photographed at 10 days following mock-inoculation or inoculation with cucumber mosaic virus (CMV) strain Fny. Scale bars in upper figures indicate 1 cm. The same plants were photographed for top-down and side view photographs.