

Supporting Information

Herbivore-induced volatile signalling is conserved across locally adapted populations of *Arabidopsis thaliana*

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Software citations

We used R v. 4.4.3 (R Core Team, 2025) and the following R packages: car v. 3.1.2 (Fox & Weisberg, 2019), carData v. 3.0.5 (Fox *et al.*, 2022), colorspace v. 2.1.1 (Stauffer *et al.*, 2009; Zeileis *et al.*, 2009; 2020), DHARMA v. 0.4.6 (Hartig, 2022), emmeans v. 1.10.1 (Lenth, 2024), ggdist v. 3.3.2 (Kay, 2024a; 2024b), ggpubr v. 0.6.0 (Kassambara, 2023), ggrepel v. 0.9.5 (Slowikowski, 2024), glmmTMB v. 1.1.9 (Brooks *et al.*, 2017), lattice v. 0.22.6 (Sarkar, 2008), lme4 v. 1.1.35.3 (Bates *et al.*, 2015), lmerTest v. 3.1.3 (Kuznetsova *et al.*, 2017), lsmeans v. 2.30.0 (Lenth, 2016), MASS v. 7.3.64 (Venables & Ripley, 2002), Matrix v. 1.7.2 (Bates *et al.*, 2025), MetBrewer v. 0.2.0 (Mills, 2022), MoMAColors v. 0.0.0.9000 (Mills, 2025), multcomp v. 1.4.25 (Hothorn *et al.*, 2008), multcompView v. 0.1.10 (Graves *et al.*, 2024), mvtnorm v. 1.2.4 (Genz & Bretz, 2009), pacman v. 0.5.1 (Rinker & Kurkiewicz, 2018), permute v. 0.9.7 (Simpson, 2022), reshape v. 0.8.9 (Wickham, 2007), survival v. 3.8.3 (Terry M. Therneau & Patricia M. Grambsch, 2000; Therneau, 2024), TH.data v. 1.1.2 (Hothorn, 2023), tidyverse v. 2.0.0 (Wickham *et al.*, 2019), vegan v. 2.6.4 (Oksanen *et al.*, 2022).

Bibliography

- Bates D, Maechler M, Jagan M.** 2025. Matrix: Sparse and Dense Matrix Classes and Methods.
- Bates D, Mächler M, Bolker B, Walker S.** 2015. Fitting Linear Mixed-Effects Models Using lme4. *Journal of Statistical Software* **67**: 1–48.
- Brooks ME, Kristensen K, van Benthem KJ, Magnusson A, Berg CW, Nielsen A, Skaug HJ, Maechler M, Bolker BM.** 2017. glmmTMB Balances Speed and Flexibility Among Packages for Zero-inflated Generalized Linear Mixed Modeling. *The R Journal* **9**: 378–400.
- Fox J, Weisberg S.** 2019. *An R Companion to Applied Regression*. Thousand Oaks CA: Sage.
- Fox J, Weisberg S, Price B.** 2022. carData: Companion to Applied Regression Data Sets.
- Genz A, Bretz F.** 2009. *Computation of Multivariate Normal and t Probabilities*. Heidelberg: Springer-Verlag.
- Graves S, Piepho H-P, Sundar Dorai-Raj LS with help from.** 2024. multcompView: Visualizations of Paired Comparisons.
- Hartig F.** 2022. DHARMA: Residual Diagnostics for Hierarchical (Multi-Level / Mixed) Regression Models.
- Hothorn T.** 2023. TH.data: TH's Data Archive.
- Hothorn T, Bretz F, Westfall P.** 2008. Simultaneous Inference in General Parametric Models. *Biometrical Journal* **50**: 346–363.
- Kassambara A.** 2023. ggpubr: `ggplot2' Based Publication Ready Plots.
- Kay M.** 2024a. ggdist: Visualizations of Distributions and Uncertainty in the Grammar of Graphics. *IEEE Transactions on Visualization and Computer Graphics* **30**: 414–424.
- Kay M.** 2024b. ggdist: Visualizations of Distributions and Uncertainty.
- Kuznetsova A, Brockhoff PB, Christensen RHB.** 2017. lmerTest Package: Tests in Linear Mixed Effects Models. *Journal of Statistical Software* **82**: 1–26.
- Lenth RV.** 2016. Least-Squares Means: The R Package lsmeans. *Journal of Statistical Software* **69**: 1–33.
- Lenth RV.** 2024. emmeans: Estimated Marginal Means, aka Least-Squares Means.
- Mills BR.** 2022. MetBrewer: Color Palettes Inspired by Works at the Metropolitan Museum of Art.
- Mills BR.** 2025. MoMAColors: Color Palettes Inspired by Artwork at the Museum of Modern Art in New York City.

- Oksanen J, Simpson GL, Blanchet FG, Kindt R, Legendre P, Minchin PR, O'Hara R, Solymos P, Stevens MHH, Szoecs E, et al.** 2022. *vegan*: Community Ecology Package.
- R Core Team.** 2025. R: A Language and Environment for Statistical Computing.
- Rinker TW, Kurkiewicz D.** 2018. *pacman*: Package Management for R.
- Sarkar D.** 2008. *Lattice: Multivariate Data Visualization with R*. New York: Springer.
- Simpson GL.** 2022. *permute*: Functions for Generating Restricted Permutations of Data.
- Slowikowski K.** 2024. *ggrepel*: Automatically Position Non-Overlapping Text Labels with `ggplot2`.
- Stauffer R, Mayr GJ, Dabernig M, Zeileis A.** 2009. Somewhere over the Rainbow: How to Make Effective Use of Colors in Meteorological Visualizations. *Bulletin of the American Meteorological Society* **96**: 203–216.
- Terry M. Therneau, Patricia M. Grambsch.** 2000. *Modeling Survival Data: Extending the Cox Model*. New York: Springer.
- Therneau TM.** 2024. A Package for Survival Analysis in R.
- Venables WN, Ripley BD.** 2002. *Modern Applied Statistics with S*. New York: Springer.
- Wickham H.** 2007. Reshaping data with the reshape package. *Journal of Statistical Software* **21**.
- Wickham H, Averick M, Bryan J, Chang W, McGowan LD, François R, Grolemund G, Hayes A, Henry L, Hester J, et al.** 2019. Welcome to the tidyverse. *Journal of Open Source Software* **4**: 1686.
- Zeileis A, Fisher JC, Hornik K, Ihaka R, McWhite CD, Murrell P, Stauffer R, Wilke CO.** 2020. *colorspace*: A Toolbox for Manipulating and Assessing Colors and Palettes. *Journal of Statistical Software* **96**: 1–49.
- Zeileis A, Hornik K, Murrell P.** 2009. Escaping RGBland: Selecting Colors for Statistical Graphics. *Computational Statistics & Data Analysis* **53**: 3259–3270.