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| **Table S1**: Summary of abundance responses of key arthropod guilds in the ant-aphid experiment. We analyzed all of these responses using generalized linear mixed-effect models (error distribution = Poisson, link function = log). We report the likelihood-ratio test statistic and include the degrees of freedom for each test as a subscript next to each predictor. | | | | | | | |
| **Arthropod abundances** | **Genotype (G)(9)** | **Eaphid(1)** | **Eant(1)** | **GEaphid(9)** | **GEant(9)** | **EaphidEant(1)** | **GEaphidEant(9)** |
| Leaf-mining moth  (Gracilliaridae) | **26.78** | 0.32 | 2.35 | 13.56 | **20.31** | **4.32** | - |
| non-*A. farinosa* aphids  (Aphididae) | **24.43** | 0.01 | 0.04 | **23.16** | 6.99 | *3.63* | 8.16 |
| Leafhopper  (Cicadellidae) | **21.92** | 0.84 | 0.01 | 7.29 | 11.54 | 1.67 | - |
| Spiders  (Araneae) | *16.24* | 0.01 | 0.10 | *15.39* | 11.34 | 0.01 | - |
| non-*F. obscuripes* ants  (Formicidae) | **22.43** | **17.70** | 1.52 | 5.21 | 7.07 | 0.73 | - |
| Leaf-tiering moth  (Tortricidae) | **23.79** | 0.81 | **9.79** | - | - | *3.77* |  |

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| **Table S2**: Summary of abundance responses of key arthropod guilds in the wind experiment. We analyzed all of these responses using generalized linear mixed-effect models (error distribution = Poisson, link function = log). We report the likelihood-ratio test statistic and include the degrees of freedom for each test as a subscript next to each predictor. | | | | | | | |
| **Arthropod abundances** | **Genotype (G)(9)** | **Ewind(1)** | **GEwind(9)** | **Eyear(1)** | **GEyear(9)** | **EwindEyear(1)** | **GEwindEyear(9)** |
| Leaf-mining moths  (Gracilliaridae) | **17.15** | **9.42** | - | **4.26** | - | 0.09 | - |
| Gall midges  (Cecidomyiidae) | **19.26** | **17.59** | - | **38.07** | - | - | - |
| Leaf-tiering moths  (Tortricidae) | **24.78** | 1.34 | 11.50 | **117.19** | - | 2.65 | - |
| Aphids2012  (Aphididae) | 4.31 | 0.32 | - | - | - | - | - |
| Spiders  (Araneae) | 8.27 | **6.04** | - | **6.54** | - | 0.20 | - |

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| **Table S3**: Summary of loadings and variance explained by first two components from separate principal components analysis (PCA) of aboveground plant traits. All traits were scaled to mean = 0 and SD = 1 prior to PCA to give them equal weight in the analysis. | | |
| **Individual traits** | **Trait PC1** | **Trait PC2** |
| *Ant-aphid experiment* |  |  |
| Plant height | 0.51 | -0.49 |
| Shoot count | 0.43 | 0.25 |
| Shoot length | 0.64 | -0.14 |
| Leaf trichome density | -0.12 | -0.72 |
| Leaf water content | -0.36 | -0.39 |
| Variance explained | 39% | 29% |
| *Wind experiment, 2012* |  |  |
| Plant height | 0.55 | -0.18 |
| Shoot count | 0.47 | 0.29 |
| Shoot length | 0.68 | -0.07 |
| Leaf trichome density | -0.08 | 0.64 |
| Leaf water content | 0.09 | 0.69 |
| Variance explained | 36% | 24% |
| *Wind experiment, 2013* |  |  |
| Plant height | 0.46 | -0.29 |
| Shoot count | 0.49 | -0.27 |
| Shoot length | 0.45 | -0.20 |
| Leaf water content | -0.36 | -0.52 |
| Specific Leaf Area (SLA) | -0.46 | -0.42 |
| Leaf C:N | -0.04 | 0.59 |
| Variance explained | 45% | 26% |

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| **Table S4**: Summary of loadings and variance explained by first two components from separate principal components analysis (PCA) of soil properties. All soil characteristics were scaled to mean = 0 and SD = 1 prior to PCA to give them equal weight in the analysis. | | |
| **Soil properties** | **Soil PC1** | **Soil PC2** |
| NO3--N | -0.25 | -0.09 |
| NH4+-N | -0.15 | -0.02 |
| Ca2+ | 0.23 | 0.45 |
| Mg2+ | 0.29 | 0.34 |
| K+ | 0.23 | -0.20 |
| H2PO4--P | 0.23 | 0.09 |
| Fe3+ | 0.33 | -0.20 |
| Mn2+ | 0.19 | 0.16 |
| Cu2+ | 0.24 | -0.30 |
| Zn2+ | 0.17 | -0.40 |
| B(OH)4--B | 0.20 | -0.26 |
| SO4--S | 0.26 | 0.10 |
| Pb2+ | 0.21 | -0.10 |
| Al3+ | 0.27 | -0.23 |
| Cd2+ | 0.05 | 0.40 |
| Organic matter (%) | 0.35 | 0.14 |
| Soil moisture | 0.30 | 0.04 |
| Variance explained | 38% | 14% |