Table 1. Biomarkers of leafhopper density in order of the strength of correlation to the RDA constrained axis. For each compound, the type of univariate relationship between log transformed relative peak areas and leafhopper density is reported. For step function relationships, the change point is reported in units of leafhoppers per young leaf.

| | | Multivariate | | Univariate | | | | |
|---|---|---|---|---|---|---|---|---|
| **Compound** | **CAS** | **RDA Loading** | **RDA Correlation** | **Response type** | **Linear Slope** | **Change point** | **ΔIntercept** | **Aroma** |
| cis-Butyric acid, 3-hexenyl ester | 16491-36-4 | -0.185 | -0.817*** | linear | 3.941 | - | - | wine, green |
| (E,E)-α-Farnesene | 502-61-4 | -0.216 | -0.814*** | step | - | 0.312 | 15.075 | woody, sweet, green, floral |
| Sulcatone | 110-93-0 | -0.202 | -0.804*** | linear | 4.11 | - | - | green, musty, pepper, mushroom |
| (3Z)-Hexenyl hexanoate | 31501-11-8 | -0.169 | -0.77*** | step | - | 0.579 | 10.444 | green, fruity, fatty, tropical |
| 3 | - | -0.183 | -0.755*** | linear | 2.293 | - | - | - |
| (E)-β-Ocimene | 3379-61-1 | -0.195 | -0.751*** | step | - | 0.25 | 14.521 | citrus, green, terpene |
| trans-Dehydroxylinalool oxide | 54750-70-8 | -0.167 | -0.741*** | step | - | 0.625 | 10.313 | herbal, green, terpene |
| cis-Linalool oxide (pyranoid) | 14009-71-3 | -0.175 | -0.717*** | step | - | 0.429 | 9.876 | citrus, green |
| cis-Linalool oxide (furanoid) | 5989-33-3 | -0.158 | -0.713*** | linear | 3.65 | - | - | earthy, floral, sweet, woody |
| (E,E)-Allo-ocimene | 3016-19-1 | -0.175 | -0.684** | step | - | 0.25 | 10.159 | terpenic, sweet, fresh, floral |
| Indole | 120-72-9 | -0.141 | -0.669** | step | - | 0.682 | 7.266 | concentrated = fecal, animal<br>dilute = sweet, floral |
| Diendiol I | 13741-21-4 | -0.185 | -0.668** | linear | 3.673 | - | - | - |
| Benzyl alcohol | 100-51-6 | -0.155 | -0.66** | linear | 2.276 | - | - | fruity, floral, sweet |
| β-Myrcene | 123-35-3 | -0.154 | -0.648** | step | - | 0.625 | 7.272 | balsamic, must, spice |
| trans-α-Bergamotene | 13474-59-4 | -0.185 | -0.646** | step | - | 0.429 | 10.38 | woody, warm, tea |
| cis-3-Hexenyl isovalerate | 35154-45-1 | -0.123 | -0.645** | step | - | 0.579 | 9.674 | fresh, green, apple, fruity, tropical |
| Heptanoic acid | 111-14-8 | 0.102 | 0.621** | null | - | - | - | cheesy, sour, rancid |
| Hexanoic acid | 142-62-1 | 0.089 | 0.615** | null | - | - | - | cheesy, fatty |
| (Z)-β-Ocimene | 3338-55-4 | -0.149 | -0.606** | linear | 3.321 | - | - | citrus, herbal, floral |
| (E)-2-Hexenyl acetate | 2497-18-9 | -0.106 | -0.592** | linear | 1.676 | - | - | sweet, apple skin, banana peel, waxy |
| 1-Nonanol | 143-08-8 | -0.104 | -0.59** | linear | 1.716 | - | - | fatty, green, orange |
| Decanal | 112-31-2 | 0.063 | 0.569* | null | - | - | - | citrus, sweet, waxy |
| Cyclopentenone | 930-30-3 | 0.091 | 0.54* | null | - | - | - | - |
| trans-Linalool oxide (furanoid) | 5989-33-3 | -0.104 | -0.513* | null | - | - | - | earthy, floral, sweet, woody |
| ɣ-Nonalactone | 104-61-0 | -0.122 | -0.508* | step | - | 0.579 | 9.411 | coconut, creamy, waxy, sweet, buttery |
| ɣ-Butyrolactone | 96-48-0 | 0.096 | 0.507* | step | - | 0.625 | 4.725 | caramel, fatty, sweet |
| 2 | - | 0.1 | 0.494* | null | - | - | - | - |
| p-Xylene | 106-42-3 | -0.115 | -0.493* | linear | 2.198 | - | - | sweet |
| 1-Octen-3-ol | 3391-86-4 | 0.086 | 0.493* | null | - | - | - | earthy, green, vegetative, mushroom |
| Benzyl nitrile | 140-29-4 | -0.066 | -0.491* | null | - | - | - | - |
| Octanoic acid | 124-07-2 | 0.079 | 0.488* | null | - | - | - | cheesy, fatty, waxy |
| Butylated hydroxytoluene | 128-37-0 | -0.091 | -0.481* | null | - | - | - | phenolic, camphor |
| Linalool | 78-70-6 | -0.114 | -0.477* | null | - | - | - | flower, lavender |
| Cyclopentanone | 120-92-3 | 0.125 | 0.475* | linear | -2.219 | - | - | minty |
| Coumaran | 496-16-2 | -0.131 | -0.47* | step | - | 0.769 | 9.943 | - |

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table 2. Biomarkers of visible leafhopper damage in order of the strength of correlation to the RDA constrained axis. For each compound, the type of univariate relationship between log transformed relative peak areas percent damage to the focal DCSE leaf is reported. For step function relationships, the change point is reported in units of leafhoppers per young leaf.

| | | Multivariate | | Univariate | | | | |
|---|---|---|---|---|---|---|---|---|
| **Compound** | **CAS** | **RDA Loading** | **RDA Correlation** | **Response type** | **Linear slope** | **Change point** | **ΔIntercept** | **Aroma** |
| 1-Hexanol | 111-27-3 | 0.2 | 0.801*** | linear | 0.166 | - | - | resin, flower, green |
| (3Z)-Hexenyl hexanoate | 31501-11-8 | 0.175 | 0.768*** | linear | 0.15 | - | - | green, fruity, fatty, tropical |
| cis-3-Hexenyl isovalerate | 35154-45-1 | 0.199 | 0.727*** | step | - | 8.541 | 10.545 | fresh, green, apple, fruity, tropical |
| (Z)-2-Hexenol | 928-94-9 | 0.175 | 0.663** | linear | 0.138 | - | - | leaf, green, wine, fruit |
| Coumaran | 496-16-2 | 0.162 | 0.651** | hinge | 0.167[a] | 8.541 | - | - |
| cis-Butyric acid, 3-hexenyl ester | 16491-36-4 | 0.155 | 0.645** | linear | 0.134 | - | - | wine, green |
| ɣ-Nonalactone | 104-61-0 | 0.145 | 0.629** | linear | 0.089 | - | - | coconut, creamy, waxy, sweet, buttery |
| Benzyl alcohol | 100-51-6 | 0.15 | 0.625** | step | - | 2.4 | 7.916 | fruity, floral, sweet |
| Methyl salicylate | 119-36-8 | 0.176 | 0.62** | linear | 0.073 | - | - | wintergreen |
| Benzothiazole | 95-16-9 | 0.149 | 0.617** | linear | 0.077 | - | - | rubbery, sulfury, vegetal, gasolinear |
| Phenethyl alcohol | 60-12-8 | 0.172 | 0.6** | linear | 0.147 | - | - | honey, spice, rose, lilac |
| Isopropyl tetradecanoate | 110-27-0 | 0.113 | 0.594** | linear | 0.02 | - | - | fatty, oily |
| (3-hydroxy-2,4,4-trimethylpentyl), 2-methylpropanoate | 74367-34-3 | 0.124 | 0.59** | null | - | - | - | - |
| 10,18-Bisnorabieta-8,11,13-triene | 32624-67-2 | 0.222 | 0.584* | linear | 0.06 | - | - | - |
| Isovaleric acid | 503-74-2 | -0.118 | -0.564* | step | - | 4.206 | 2.867 | sour, cheesy, rancid |
| cis-Methyl dihydrojasmonate | 39647-11-5 | -0.185 | -0.553* | linear | -0.105 | - | - | jasmine, floral, green |
| N,N-Dibutylformamide | 761-65-9 | 0.106 | 0.533* | null | - | - | - | - |
| Diendiol I | 13741-21-4 | 0.144 | 0.527* | linear | 0.116 | - | - | - |
| Benzoic acid | 65-85-0 | 0.06 | 0.5* | null | - | - | - | balsam, faint, urine |
| Phenylacetaldehyde | 122-78-1 | 0.125 | 0.488* | null | - | - | - | floral, honey, sweet |
| Mesityl oxide | 141-79-7 | 0.06 | 0.481* | null | - | - | - | acrylic, earthy, sweet, chemical |
| Ethyl benzoate | 93-89-0 | 0.087 | 0.48* | null | - | - | - | sweet, wintergreen, fruity, medicinal |
| o-Hydroxybiphenyl | 90-43-7 | 0.093 | 0.476* | null | - | - | - | - |
| Decanoic acid | 334-48-5 | 0.147 | 0.474* | linear | 0.15 | - | - | fatty, sour, rancid |
| cis-Linalool oxide (pyranoid) | 14009-71-3 | 0.109 | 0.472* | null | - | - | - | citrus, green |

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

[a] Slope after the change point