**Running head: Aromatic plants volatiles regulated *Aphis citricola* infestation**

Billing contact:

Yuncong Yao

College of Plant Science and Technology

Beijing University of Agriculture

Beijing, 102206, China.

Tel: +86-01-80799300

E-mail: [yaoyc\_20@126.com](mailto:yaoyc_20@126.com)

**Behavioral responses of *Aphis citricola* Van der Goot and its natural enemies *Harmonia axyridis* Pallas to non-host plant volatiles.**

Song Beizhou1,2,#, Liang Yinping1,#, Liu Sizhou1, Zhang Linfeng1, Tang Guangbo1, Ma Teng1, Yao Yuncong1,2,\*

1College of Plant Science and Technology, Beijing University of Agriculture, Beijing, 102206, China, E-mail: songbeizhou0821@163.com

2 Beijing Collaborative Innovation Center for eco-envirenmental improvement with forestry and fruit trees, Beijing, 102206, China, E-mail: [yaoyc\_20@126.com](mailto:yaoyc_20@126.com)

#Contributed equal to the work.

\*Corresponding author; E-mail: [yaoyc\_20@126.com](mailto:yaoyc_20@126.com)

**Supplementary table 1**

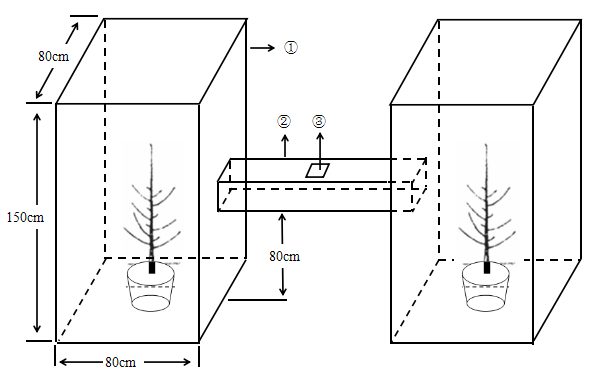
**Tbale S1.** Relative amount (% of internal standard peak area) of volatiles released by French marigold.

|  |  |  |
| --- | --- | --- |
| **Retention time** | **Compounds** | **Relative amount (％)** |
| 2.72 | Pentanal | 1.22 |
| 3.28 | 1,6-Hexanediol | 1.76 |
| 4.19 | 2-Octene, (2E)-; | 1.52 |
| 4.49 | Hexanal | 4.76 |
| 4.82 | Hexamethylcyclotrisiloxane | 0.96 |
| 6.01 | Ethylbenzene | 0.90 |
| 6.27 | 3,5-Octadiyne | 2.10 |
| 6.94 | 1,2-xylene | 2.78 |
| 8.26 | alpha-Pinene | 2.18 |
| 9.05 | Hexanal, 2-ethyl-; | 2.25 |
| 10.15 | Octamethylcyclotetrasiloxane | 1.44 |
| 10.3 | 1,6,10-Dodecatriene,7,11-dimethyl-3-methylene-, (6Z) | 1.35 |
| 10.82 | 4-Methyl-1-(methylethyl)bicyclo[3.1.0]hexane | 1.22 |
| 11.5 | p-isopropyltoluene; | 3.59 |
| 11.78 | 2-Ethyl-1-hexanol | 25.90 |
| 11.98 | 1,3,6-Octatriene,3,7-dimethyl-, (3E)- | 3.40 |
| 13.89 | Benzene,1-methyl-4-(1-methylethenyl)- | 7.76 |
| 14.65 | Bicyclo[3.1.0]hex-2-ene,4-methylene-1-(1-methylethyl)- | 1.32 |
| 15.29 | (4E,6Z)-2,6-Dimethyl-2,4,6-oct​atriene | 2.01 |

**Tbale S2.** Relative amount (% of internal standard peak area) of volatiles released by savoty.

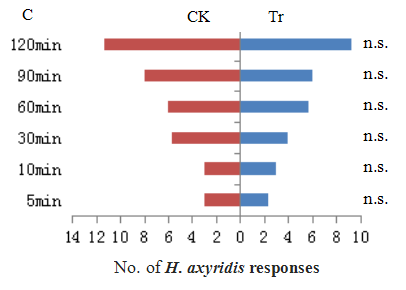
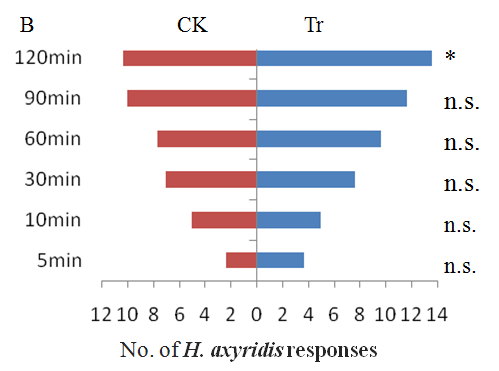
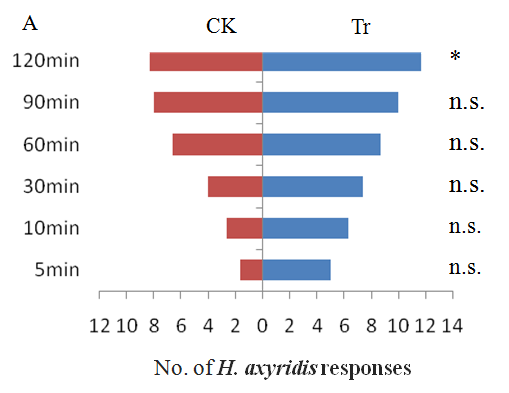
|  |  |  |
| --- | --- | --- |
| Retention time | Compounds | Relative amount (％) |
| 4.2 | 2-Octene, (2E)-; | 1.20 |
| 4.48 | Hexanal | 2.62 |
| 5.92 | Leaf alcohol | 1.49 |
| 6.01 | Ethylbenzene | 8.04 |
| 6.27 | o-Xylene | 9.05 |
| 6.8 | 3-Heptanone | 1.26 |
| 6.93 | P-xylene | 7.60 |
| 9.03 | Hexanal, 2-ethyl- | 1.14 |
| 10.15 | Octamethyl cyclotetrasiloxane | 6.41 |
| 10.6 | 3-Octanol | 1.42 |
| 10.89 | 3-Hexen-1-ol,1-acetate, (3Z)- | 2.91 |
| 11.09 | 1,3-Dichlorobenzene | 1.86 |
| 11.76 | 2-Ethyl-1-hexanol | 23.29 |
| 11.96 | 1,3,6-Octatriene,3,7-dimethyl-(3E)-; | 4.12 |
| 14.49 | Nonyl aldehyde | 0.95 |
| 14.68 | Phenethyl alcohol | 2.59 |
| 15.28 | Cyclohexene,1,5,5-trimethyl-3-methylene- | 1.83 |
| 15.69 | Cyclopentasiloxane,2,2,4,4,6,6,8,8,10,10-decamethyl- | 1.16 |

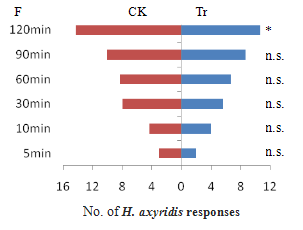
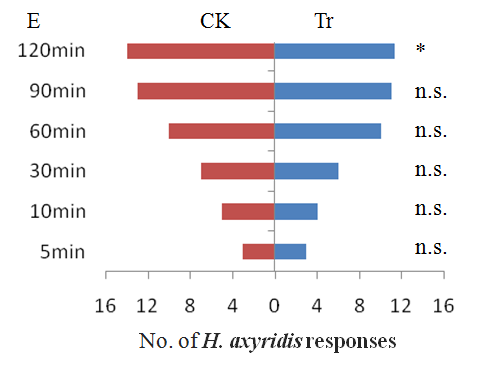
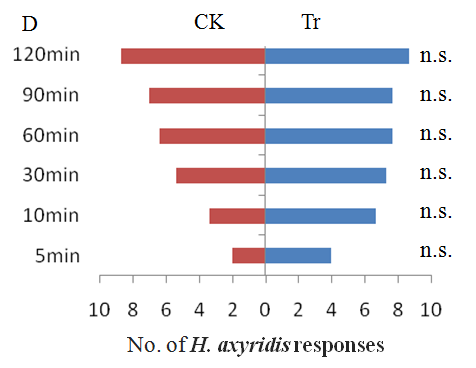
**Supplementary figure 1**



**Figure S1.** H-tube olfactometer schematic diagram. ①: Plastic boxes (80 cm in length, 80 cm in width, 150 cm in height); ②: Cross arm (20 cm in length, 8 cm in width, 8 cm in height); ③: Hole used to inoculate insects (5 cm in length, 5 cm in width).

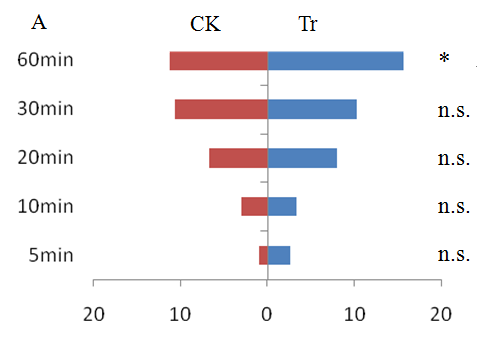
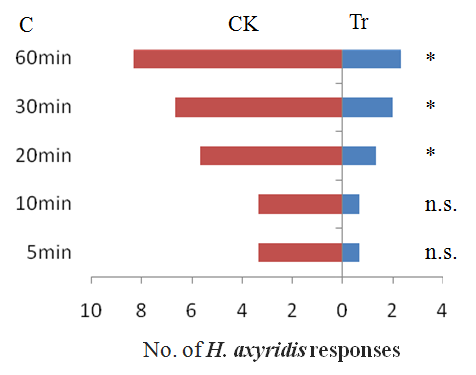
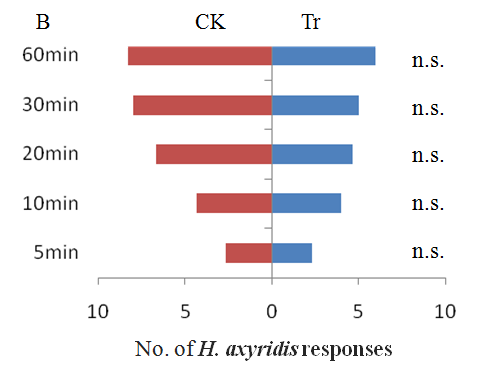
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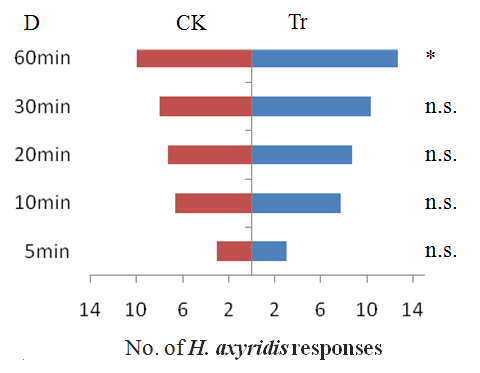
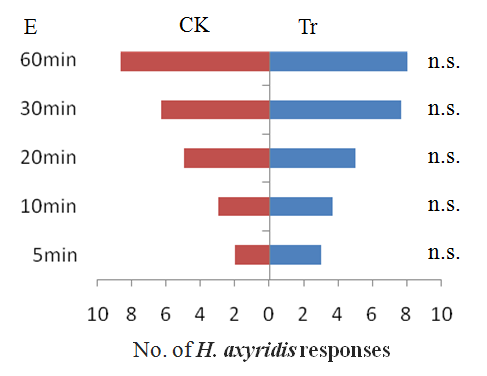
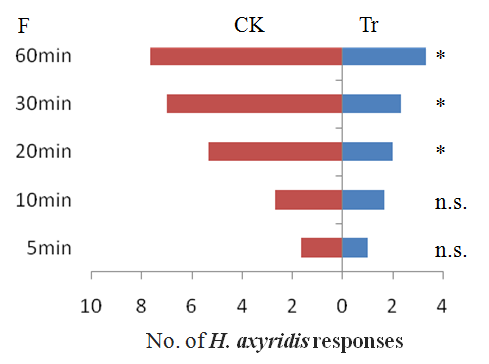




**Figure S2.** Response of *Harmonia axyridis* to French marigold (*Tagetes patula* L.) (A, B and C) and savory (*Saturela hortensis* L.) (D, E and F). A and D: no aphids, B and E: aphids present; C and F: aphids were applied for 2 hours and removed. Tr: apple trees + aromatic plants; CK: apple trees only. The different footnote symbols represent significant difference (t-test). \* significant difference (P < 0.05). n.s. no significant difference.

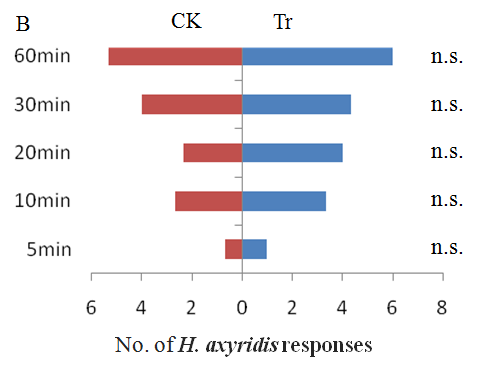
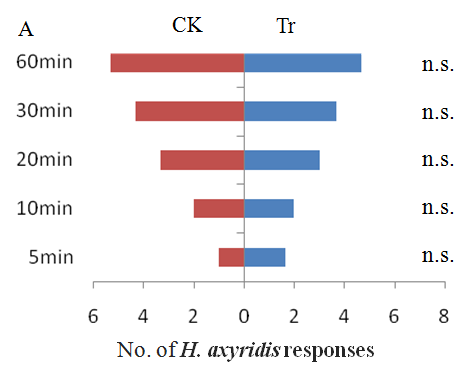
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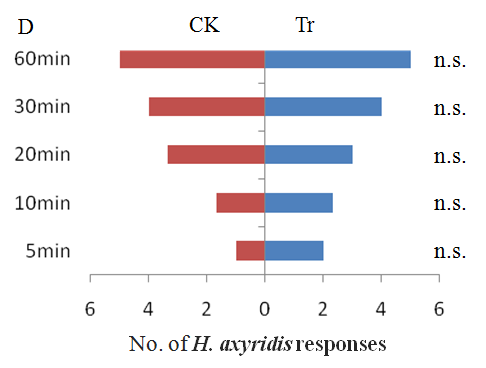
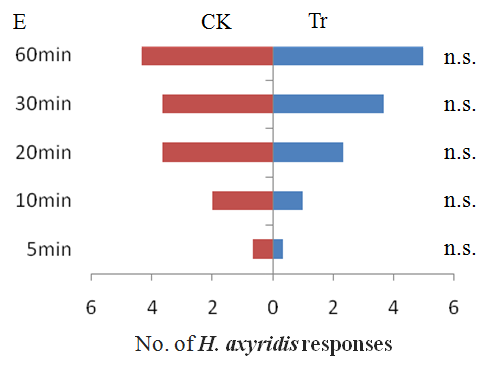
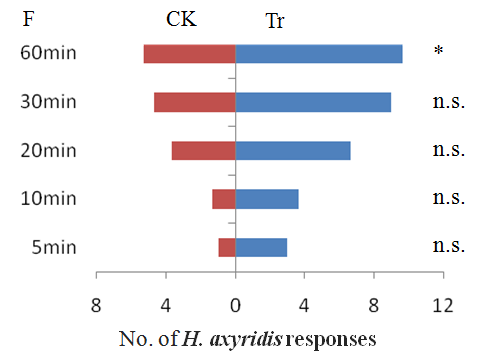
 

**Figure S3.** Response of *Harmonia* *axyridis* to 12.5μl/L (A, D), 25μl/L (B, E) and 50μl/L (C, F) D-limonene (A, B and C: no aphids; D, E and F: aphids present). Tr: apple tree + *D*-limonene; CK: apple tree + distilled water. The different footnote symbols represent significant difference (t-test). \* significant difference (P < 0.05). n.s. no significant difference.

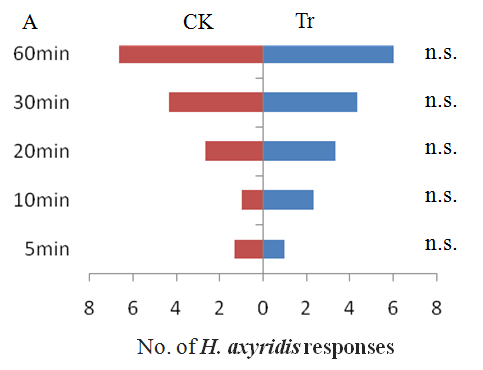
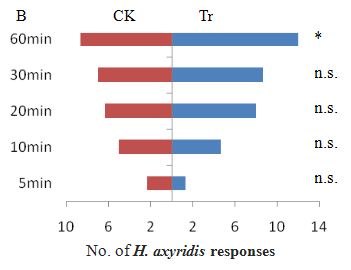
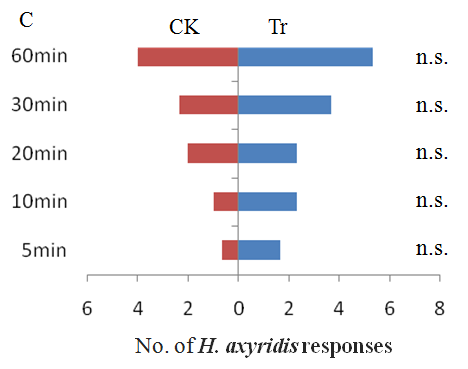
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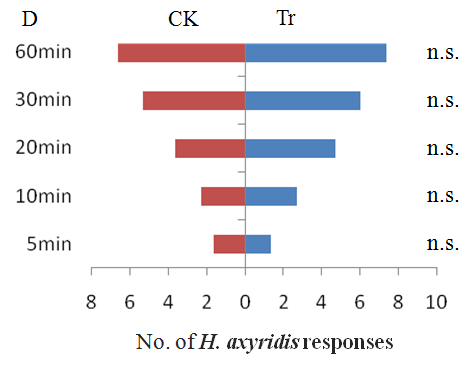
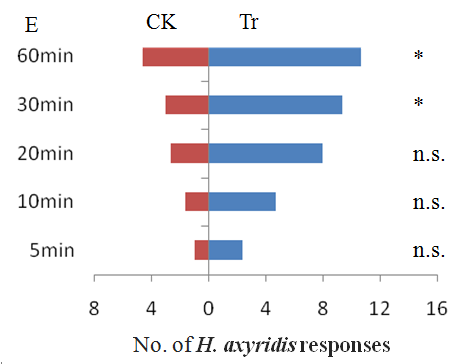
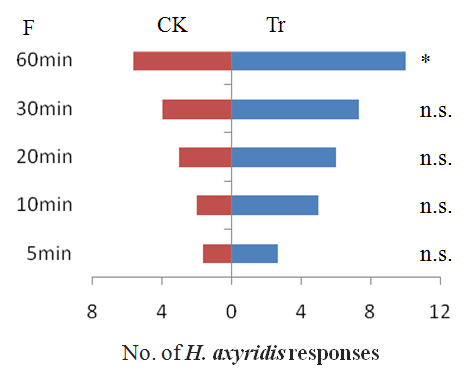


**Figure S4.** Response of *Harmonia axyridis* to 12.5μl/L (A, D), 25μl/L (B, E) and 50μl/L (C, F) terpinolen (A, B and C: no aphids; D, E and F: aphids present). Tr: apple tree + terpinolen; CK: apple tree + distilled water. The different footnote symbols represent significant difference (t-test). \* significant difference (P < 0.05). n.s. no significant difference.

**Supplementary figure 5**

**Figure S5.** Response of *Harmonia axyridis* to 12.5μl/L (A, D), 25μl/L (B, E) and 50μl/L (C, F) 1:1 mixed *D*-limonene and terpinolen (A, B and C: no aphids; D, E and F: aphids present). Tr: apple tree + terpinolen; CK: apple tree + distilled water. The different footnote symbols represent significant difference (t-test). \* significant difference (P < 0.05). n.s. no significant difference.