## Stress Combination and their Interactions in Plants (SCIP) Database



Website link- <a href="http://www.nipgr.ac.in/scipdb.php">http://www.nipgr.ac.in/scipdb.php</a>

#### Effect on tomato genotypes (Solanum lycopersicum L.)

#### A. The net impact of individual and combined stress on the plant

Stress 1: Ozone (72.2 nmol/mol) Stress 2: Whitefly (*Bemisia tabaci*) Stage of plant: 2- weeks old plants

The table shows the impact of individual and combined stress on the volatile compounds emitted from tomato plants

|                         |  | Response under combined stress (Type C parameters*) |   |  |  |
|-------------------------|--|---|---|--|--|
| Genotype                | Treatment  | Total amount<br>of volatiles<br>(ng/hr/g FW)        | Amount of<br>monoterpene<br>volatiles (ng/hr/g<br>FW) | Amount of<br>green leaf<br>volatiles<br>(ng/hr/g FW) | Amount of<br>aldehyde<br>volatiles<br>(ng/hr/g FW) |
| Wild type               | Ozone (72.2<br>nmol/mol) +<br>whiteflies<br>(Sequential<br>stress) | 554.24  | 540.54  | 9.41   | 5.50   |
|                         | Whiteflies only  | 198.69  | 189.18  | 3.24   | 4.77   |
|                         | Ozone (72.2 nmol/mol) only   | 193.46  | 183.78  | 3.03   | 6.12   |
|                         | Untreated  | 36.60   | 32.43   | 1.46   | 1.35   |
| JA-defence-<br>enhanced | Ozone (72.2<br>nmol/mol) +<br>whiteflies<br>(Sequential<br>stress) | 6.68  | 56.90   | 6.68   | 56.90  |
|                         | Whiteflies only  | 11.01   | 104.51  | 11.01  | 104.51   |
|                         | Ozone (72.2 nmol/mol) only   | 11.04   | 72  | 11.04  | 72   |
|                         | Untreated  | 16.55   | 140.51  | 16.55  | 140.51   |

Note: Values are presented as it is from the source article without subjecting to the calculation.

<sup>&#</sup>x27;\*'- For more information on parameters classification, please refer to 'methodology' tab



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# B. The interaction between the ozone and insect under the combined stress treatment at the plant interface

The table shows the effect of ozone on number of aphids on whiteflies feeding and oviposition preference

|                         |  | Response under combined stress<br>(Type B parameters*) |   |  |
|-------------------------|--|--|---|--|
| Genotype                | Treatment  | Feeding preferences (3 weeks after treatment)          | Oviposition preferences (3 weeks after treatment) |  |
| Wild type               | Ozone (72.2 nmol/mol) + whiteflies (Sequential stress) | 12.07  | 65.03   |  |
|                         | Whiteflies only  | 15.62  | 91.74   |  |
|                         | Ozone (72.2 nmol/mol) only                             | 13.49  | 95.22   |  |
| JA-defence-<br>enhanced | Ozone (72.2 nmol/mol) + whiteflies (Sequential stress) | 6.68   | 56.90   |  |
|                         | Whiteflies only  | 11.01  | 104.51  |  |
|                         | Ozone (72.2 nmol/mol) only                             | 11.04  | 72  |  |

Reference— Cui H, Su J, Wei J, Hu Y, Ge F, (2014) Elevated O₃ enhances the attraction of whitefly-infested tomato plants to *Encarsia formosa*. Sci. Rep. 4:5350

Note: Values are presented as it is from the source article without subjecting to the calculation.

Inference from the study: Cui et al., 1982 studied the combined effect of ozone and whiteflies on two genotypes of tomato plants, wild type and jasmonic acid (JA) defense-enhanced genotype. The combined treatment of ozone followed by infestation with whiteflies increased the total amount of volatile organic compounds, monoterpenes, green leaf volatiles, and aldehyde volatiles in wild type JA-defence enhanced genotype. The overall observation concludes the resistance of JA-defence enhanced genotype over wild type tomato to the combined stress of ozone and whiteflies.

<sup>&#</sup>x27;\*'- For more information on parameters classification, please refer to 'methodology' tab