

Correction

Correction: Vannini, A.; Petraglia, A. Wood Distillate Mitigates Ozone-Induced Visible and Photosynthetic Plant Damage: Evidence from Ozone-Sensitive Tobacco (*Nicotiana tabacum* L.) BelW3. *Horticulturae* 2024, 10, 480

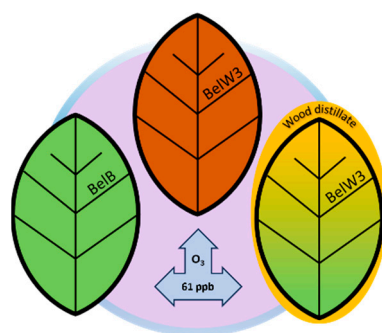
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1. Error in Figures

In the original publication [1], there was a mistake in the “Graphical Abstract” as published. The corrected Graphical Abstract appears below.



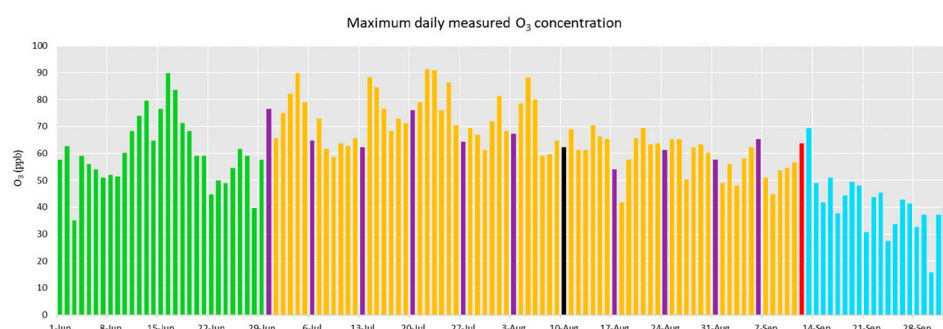
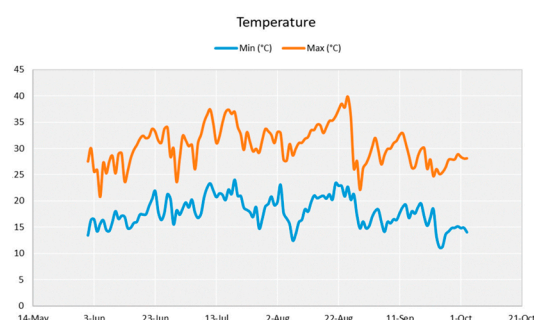
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Wood Distillate Mitigates
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In the original publication, there was a mistake in the bottom graph of “Figure 1” as published. Data in the graph were expressed in $\mu\text{g}/\text{m}^3$ instead of ppb. The corrected Figure 1 appears below.



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2. Text Correction

There was an error in the original publication. We misspelled the unit of measurement for ozone in the text. Therefore, the values and the unit of measurement needed to be corrected.

A correction has been made to the Abstract:

“Ten BelW3 and five BelB plants were grown just outside Parma from June to October 2023, a period when average maximum O₃ concentrations were approximately 61 ppb.”

A correction has been made to the Introduction in paragraph one:

“Ozone (O₃) poses a significant threat to vegetation [1]. By generating reactive oxygen species (ROS) such as -OH, -O₂, and H₂O₂ [2], O₃ disrupts the functionality of plant photosynthetic systems, retarding their development and accelerating senescence. This effect is particularly important in agriculture as it leads to reduced crop yields [3,4] which result in significant economic losses [5]. Crops affected by the phytotoxic effects of O₃ include wheat (*Triticum aestivum*) [6], maize (*Zea mays*), soybean (*Glycine max*) [7], and even rice, potato, and barley [5]. Wheat, in particular, stands out as one of the agronomic plants most sensitive to O₃ [8]. In 2019, wheat production in Europe was severely impacted by O₃, resulting in an average reduction of 20,000–35,000 tons in Italy alone [9]. In certain Italian regions, such as Emilia-Romagna, the reduction reached 60,000 tons, equivalent to 1.5% of national production (estimated at 4 million tons) [10], a significant datum considering that in this region O₃ levels are high, often reaching up to 102 parts per billions (ppb) during the summer [11]. Future increases in CO₂ may potentially mitigate the negative effects of O₃ on crop yields [12] which are expected to worsen with rising ground-level concentrations [5]. Even though short-term effects are hard to observe, reducing atmospheric concentrations of O₃ precursors—such as NO_x and CH₄—remains of crucial importance [13]. Until such time, further studies are needed to assess potential protective strategies to counteract the negative effects that the constant rise in summer O₃ concentrations in Europe may have on plants.”

A correction has been made to the Materials and Methods section in paragraph two of the Experimental Design subsection:

“To simulate the most common type of cultivation, plants were exposed to ambient rainfall and were watered daily with well water, with no artificial watering being carried out on rainy days. Furthermore, no fertilizer was applied. Starting on 29 June, five randomly selected BelW3 plants were labeled and sprayed weekly with 100 mL of a 1:500 v/v (0.2%) WD solution derived from forest wood, including *Pinus* spp., *Abies* spp., *Cedrus* spp., *Castanea sativa* Mill., *Alnus* spp., *Quercus* spp., *Acacia* spp., and *Robinia pseudoacacia* L., on both the lower- and upper-leaf surface of each plant. WD was produced from a reducing oxide plant, using countercurrent steam extraction with controlled temperature gradients (Endotech RM Energy Solutions). Throughout the experiment, the three groups of plants—BelB, untreated BelW3 (positive control), and treated BelW3 (BelW3(wd))—were kept at a distance of five meters from each other to prevent the WD being absorbed by the untreated BelW3. Treatments were completed 11 weeks later (12 September). All three groups of plants were then left to grow for a further three weeks (until 3 October). During the field trial, the average temperature was around 24 °C. The highest temperatures were recorded at the end of August (39.9 °C), while the lowest at the end of September (11.1 °C). Temperatures were obtained from the weather station located approx. 5 km from the BelW3 and BelB tobacco planting area (San Pancrazio; Parma). In addition, the average maximum O₃ concentration was 61 ± 11 ppb. In particular, the following mean maximum O₃ concentrations were recorded for each plant-growth period: 61 ± 13 ppb during the pre-treatment period (1 June–28 June); 68 ± 11 ppb during the treatment period (weekly spraying with wood distillate 1:500 v/v from 29 June to 6 September); and 42 ± 11 ppb during the post-treatment period (6 September–3 October). Ozone concentrations were obtained from the ARPAE station located approx. 1.5 km from the BelW3 and BelB tobacco

planting area (Cittadella Park; Parma; coordinates: 44.791311, 10.329581). An overview of the climatic conditions and O₃ concentration during the test period is shown in Figure 1.”

A correction has been made to the Discussion in paragraph seven:

“Considering that cultivated plants in most parts of the world are exposed to O₃ concentrations well above their pollution tolerance threshold (around 40 ppb) [52–55], the protective effect of WD on horticultural plants exposed to average O₃ concentrations of 61 ppb could be complete, as previously observed for lettuce plants [25].”

A correction has been made to the Conclusion:

“In the present study, we found that foliar WD application successfully mitigated O₃ effects on both the morphometric and photosynthetic characteristics of BelW3 plants exposed to ecologically relevant O₃ concentrations (61 ppb). Wood distillate applications reduced leaf injury by approx. 86% and leaf senescence by approx. 120%. Additionally, WD applications enhanced the overall photosynthetic machinery (i.e., the PI_{TOT}) by approx. 300% when compared to BelW3 plants. Notably, the WD protective effect persisted for (at least) 3 weeks after the end of treatments, highlighting the protective capacity of the distillate, albeit short-term, to counter the oxidizing effects of O₃. This preliminary research provides important insights into the potential usefulness of WD in mitigating ozone-induced damage in summer crops, with wider implications for sustainable agriculture. It also underlines the advantages of using BelW3 tobacco plants as a model with which to evaluate the effectiveness of anti-ozonants for protecting crops against the oxidizing effects of this harmful pollutant. The biochemical mechanisms involved in the protective effect of WD on this plant remain to be elucidated.”

The authors state that the scientific conclusions have been unaffected. This correction was approved by the Academic Editor. The original publication has also been updated.

Reference

1. Vannini, A.; Petraglia, A. Wood Distillate Mitigates Ozone-Induced Visible and Photosynthetic Plant Damage: Evidence from Ozone-Sensitive Tobacco (*Nicotiana tabacum* L.) BelW3. *Horticulturae* **2024**, *10*, 480. [[CrossRef](#)]

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