Reviewer Comments:

Reviewer 1

Dear Reviewer, thank you for your comments and feedback on how to improve the manuscript. Each suggestion will be addressed below. All changes in the manuscript are highlighted in red.

Comments 1: L.25-26."in localities of Piura and Tumbes."The country in which these regions are located should be indicated.

Response 1: Thank you for pointing this out. We agree with this comment. Therefore, we have incorporated the requested information into the revised manuscript (lines 26-27).

Comments 2: L.68. The citation "Beseega [12]" should be corrected to "Beseega et al. [12]." Please check the entire text.

Response 2: We agree with this comment. Therefore, we have incorporated the requested correction throughout the revised manuscript (all relevant sections and lines have been updated accordingly).

Comments 3: After the first mention of the full species name, "N. pallida" should be written.

Response 3: Thank you for pointing this out. We agree with this comment. Therefore, we have incorporated the requested correction throughout the revised manuscript (all relevant sections and lines have been updated accordingly).

Comments 4: L.152. "for subsequent physicochemical analysis." The soil analysis methods should be specified.

Response 4: Thank you for the observation. We agree with this comment. Therefore, we have incorporated detailed information regarding the soil analysis methods into the revised manuscript (lines 175-187).

Comments 5: L.180-182. "In addition, Brix degrees were determined in the laboratory…." Were Brix degrees measured for the fruits? Brix analysis results are not included in the text.

Response 5: Thank you for the comment. We agree with this. Therefore, we have clarified in the revised manuscript that fruit sweetness in this study was evaluated organoleptically through a sensory test rather than by instrumental determination of soluble solids (°Brix). The sensory perception of sweetness is a reliable and practical approach for preliminary field screening, particularly when the objective is to assess fruit quality differences under natural growing conditions (Bayarri & Costell; Lawless & Heymann). Organoleptic assessments integrate not only sugar content but also the interactions among acids, volatiles, and textural attributes that define consumer acceptability (Civille et al.). This information was included in line 217-218.

Nonetheless, we acknowledge that including instrumental °Brix measurements would enhance the interpretation of sweetness perception and facilitate direct comparison with other studies. Consequently, this aspect has been incorporated into Section 4.4, "Limitations and Perspectives", to highlight the importance of including quantitative °Brix determinations in future investigations. The corresponding information has been added to the revised manuscript (lines 684-686).

References:

Bayarri, S.; Costell, E. Sensory Evaluation of Fruit and Vegetable Flavors. In Handbook of Fruit and Vegetable Flavors; John Wiley & Sons, Ltd, 2010; pp. 45–57 ISBN 978-0-470-62283-4. doi: 10.1002/9780470622834.ch3

Lawless, H.T.; Heymann, H. Sensory Evaluation of Food: Principles and Practices; Food Science Text Series; Springer: New York, NY, 2010; ISBN 978-1-4419-6487-8. doi: 10.1007/978-1-4419-6488-5

Civille, G.V.; Carr, B.T.; Osdoba, K.E. Sensory Evaluation Techniques; 6th ed.; CRC Press: Boca Raton, 2024; ISBN 978-1-003-35208-2. doi:10.1201/9781003352082

Comments 6: Section 2.5. Is the approximate age of the trees studied known? Quantitative parameters such as diameter and height are highly dependent on age.

Response 6: Thank you for this observation. We agree with the reviewer's comment and have revised the manuscript accordingly to address the consideration of tree age.

To minimize potential age-related effects on phenotypic analyses, morphological maturity criteria were applied, considering only fully developed adult trees with a diameter at breast height (DBH) ≥ 10 cm and a total height > 4 m. Juvenile individuals were excluded from the analysis (see Section 2.5, lines 234–236), ensuring comparisons among trees at equivalent developmental stages.

We acknowledge that quantitative parameters such as diameter and height can be influenced by the age of individuals. However, this study was conducted in natural populations of *Neltuma pallida*, where no historical establishment records are available, making it impossible to accurately determine tree age through direct methods. This information has been included in the limitation section (lines 681–684). Furthermore, future research will incorporate the age variable using non-destructive or dendrochronological approaches suitable for tropical species, as demonstrated for Neltuma pallida by López et al. This consideration has been incorporated into Section 4.4, "Limitations and Perspectives" (page X, lines 687–689) of the revised manuscript.

References:

López, B.C.; Sabaté, S.; Gracia, C.A.; Rodríguez, R. Wood Anatomy, Description of Annual Rings, and Responses to ENSO Events of Prosopis Pallida H.B.K., a Wide-Spread Woody Plant of Arid and Semi-Arid Lands of Latin America. Journal of Arid Environments 2005, 61, 541–554, doi:10.1016/j.jaridenv.2004.10.008.

Comments 7: L.192. "The selection objective for *Neltuma pallida* focuses on pod production. "If selection is for fruit, the importance of this species' fruit should be described in the Introduction.

Response 7: Thank you for pointing this out. We agree with this comment. Therefore, we have added a paragraph to the Introduction section describing the importance of *Neltuma pallida* pods, considering that the selection objective for this species focuses on pod production. This addition can be found in the revised manuscript (lines 76-85).

Comments 8: L.473. The species name should be italicized.

Response 8: Thank you for the observation. We agree with this comment. Therefore, we have incorporated the requested correction into the revised manuscript.

Comments 9: Table 1. Precipitation is given in mm/day. It should probably be given in mm/year.

Response 9: We agree with this comment. Therefore, we have corrected the writing error in Table 1, changing the precipitation unit from mm/day to mm/year in the revised manuscript (Table 1).

Comments 10: Table 2. Was fruit quality (bitter-sweet) assessed organoleptically?

Response 10: Thank you for pointing this out. We have clarified in the revised manuscript that fruit quality (bitter-sweet) was assessed organoleptically through a sensory evaluation, rather than by instrumental methods. This clarification has been incorporated into the revised manuscript at Materia and Methods (lines 217-218) and limitation (lines 684-686)**.**

Comments 11: Table 4. "4 Fruit quality," "5 Foliage quality" is a mistake. They should be removed.

Response 11: We agree with this comment. Therefore, we have removed the errors “4 Fruit quality” and “5 Foliage quality” from Table 4 in the revised manuscript (Table 4).