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REVIEWER'S REPORT

Manuscript No.: IJAR-55682

Title: Effect of Different Fluoride Ion Concentrations on Germination, Vigour Index, and Fresh Leaf Yield of Spinach (Spinacia oleracea) Varieties.

Recommendation:

Accept as it is …… ……

Accept after minor revision……

Accept after major revision ……

Do not accept (*Reasons below*) ……

Rating	Excel.	Good	Fair	Poor
Originality		✓		
Techn. Quality		✓		
Clarity	✓			
Significance		✓		

Reviewer Name: Tahir Ahmed

Reviewer's Comment for Publication.

The manuscript examines the impact of varying fluoride ion concentrations on germination percentage, vigour index, and fresh leaf yield of different spinach (Spinacia oleracea) varieties under pot culture conditions. The study addresses an environmentally and agriculturally relevant issue, particularly in regions affected by fluoride-contaminated groundwater and soils.

Major strengths of the manuscript include:

1. **Relevance and significance:**
   Fluoride toxicity in crops is a growing concern, especially in fluoride-affected regions such as Fatehabad, Haryana. The study provides useful varietal-level information that can aid in crop selection and management in contaminated areas.
2. **Clear experimental design:**
   The pot experiment with graded fluoride concentrations (0, 25, 50, and 100 ppm) is well structured. Replication and use of a completely randomized design enhance the reliability of the results.
3. **Appropriate analytical methodology:**
   The use of a fluoride ion selective electrode (ISE) with TISAB-II and proper calibration is a standard and reliable method for fluoride determination. The calculation formulas for germination percentage, vigour index, and yield are clearly defined.
4. **Consistent results and discussion:**
   The results show a clear dose-dependent decline in all growth parameters, which is consistent with existing literature. Identification of Variety I as relatively fluoride-tolerant adds practical value.

Minor revisions are recommended before publication:

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1. **Statistical analysis:**
   The manuscript would benefit from inclusion of statistical parameters such as standard deviation, standard error, or ANOVA to strengthen the interpretation of treatment effects and varietal differences.
2. **Formatting and presentation:**
   Table formatting should be improved for clarity and uniformity. Figure captions (Figures 4–7) should be more descriptive, and figures should be properly referenced in the text.
3. **Language and grammar:**
   Minor grammatical and typographical errors are present throughout the manuscript. Careful language editing will improve readability and professional presentation.
4. **Discussion depth:**
   The discussion section could be strengthened by more explicit comparison of the present findings with previous studies cited in the references, particularly regarding varietal tolerance mechanisms.

Conclusion:
Overall, the manuscript presents meaningful and relevant findings on fluoride stress in spinach varieties. With minor revisions addressing statistical analysis, formatting, and language clarity, the study is suitable for publication and will contribute valuable information to the field of environmental stress physiology and sustainable agriculture.