

## Review of Article

**\*\*Title:\*\* Classification of Red Beet and Sugar Beet for Drought Tolerance Using Morpho-Physiological and Stomatal Traits**

**\*\*Manuscript ID:\*\* #112865**

Drought is one of the most severe threats to global agricultural production, causing reduced crop yields and limiting food security in many regions. The manuscript titled "Classification of Red Beet and Sugar Beet for Drought Tolerance Using Morpho-Physiological and Stomatal Traits" (Manuscript ID: #112865) focuses on a timely and critical topic in plant science. By investigating the morphological, physiological, and stomatal responses of red and sugar beet cultivars to varying drought stress levels, the study aims to contribute valuable insights into improving drought tolerance in these economically significant crops. Identifying and classifying drought-tolerant genotypes is essential for breeding programs and sustainable agricultural practices, especially in regions prone to water scarcity.

### 1. Basic Reporting

1.1 Language: The manuscript demonstrates professional use of language, but certain sections require refinement for clarity, particularly in the introduction and results sections. Technical jargon can be simplified for readers unfamiliar with plant physiology.

1.2 Introduction: The introduction provides a strong background on the study's relevance. However, it should clearly specify the knowledge gap being addressed by the research. Expanding on the study's objective would improve the narrative.

1.3 References: The references cited are current and relevant, covering both foundational and recent studies. The authors have demonstrated a solid understanding of prior research.

1.4 Figures and Tables: Figures and tables are relevant and well-organized, but some captions lack sufficient detail. For example, Figure 2 should include more explanation of what the stomatal images signify in terms of drought tolerance.

### 2. Experimental Design

2.1 Research Question: The study's research question is clearly defined, focusing on the comparative drought tolerance of different beet cultivars. It aligns well with the scope of the journal.

2.2 Methodology: The methods are detailed and reproducible. However, the rationale for selecting the 10% and 20% PEG-6000 drought stress levels needs further elaboration. Justifying these levels with prior studies or preliminary data would strengthen this section.

2.3 Parameters: The selected parameters—fresh and dry weight, relative water content,

stomatal density, and membrane stability—are appropriate and scientifically valid for assessing drought tolerance.

2.4 Ethical Standards: The research adheres to ethical and technical standards expected in plant studies.

### **3. Validity of Findings**

3.1 Data Presentation: The data are presented comprehensively, with appropriate statistical analyses. However, there is redundancy between the narrative text and data tables. Condensing repetitive information would improve readability.

3.2 Statistical Analysis: The use of analysis of variance (ANOVA) and Tukey's HSD test is appropriate for comparing the effects of drought on various traits. Statistical significance is clearly indicated.

3.3 Interpretation: The discussion provides a solid interpretation of the results but could further explore potential genetic or physiological mechanisms explaining the superior drought tolerance of sugar beet.

3.4 Relevance: The findings are relevant to both researchers and agricultural practitioners. Highlighting practical implications, such as how these results can inform breeding programs, would increase the study's impact.

### **4. General Comments**

4.1 Strengths: The manuscript's strengths include its comprehensive dataset, examination of multiple drought-related traits, and comparison of several cultivars. The findings are timely and relevant given the global challenge of drought stress in agriculture.

4.2 Improvements:

- Refine the language to enhance clarity and accessibility for a wider audience.
- Provide more detailed figure captions to improve the reader's understanding of the visual data.
- Reduce redundancy in the presentation of data across tables and text.
- Expand the discussion on the genetic and physiological traits underlying drought tolerance.

4.3 Practical Implications: The conclusion should include actionable recommendations for farmers and breeders. Discussing the broader applicability of the findings would enhance the article's practical relevance.

### **5. Confidential Notes to the Editor**

The article presents novel and relevant research with significant potential contributions to the field of drought tolerance in crop plants. However, revisions to the language, data presentation, and depth of analysis are necessary to enhance clarity and scientific rigor. The

study is well within the scope of the journal, and acceptance is recommended after addressing the outlined revisions.