ISSN: 2320-5407

International Journal of Advanced Research

Publisher's Name: Jana Publication and Research LLP

www.journalijar.com

REVIEWER'S REPORT

Manuscript No.: **IJAR-53387** Date: 18-08-2025

Title: Alternative Sources of Potassium from Potassium Feldspars, from Mining to Cropping: A Review"

Recommendation:
Accept as it is .....YES.....
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 Ahmad

Reviewer's Comment for Publication.

Abstract Evaluation:

The abstract offers a comprehensive overview of the subject matter, emphasizing the exploration of potassium feldspars as alternative sources of potassium fertilizers. It effectively highlights different activation processes—thermal, hydrothermal, chemical, and biological—and provides a comparative perspective based on extraction efficiency, environmental impact, and technological feasibility. Quantitative details, such as efficiencies exceeding 80–90% for hydrothermal and pyrometallurgical approaches, lend credibility and precision to the review. The discussion on agronomic trials is noteworthy, as it connects the activation processes with real-world agricultural performance. The macroeconomic focus on Brazil's dependence on potassium imports adds strategic significance to the work, extending its relevance beyond technical aspects. Overall, the abstract is clear, balanced, and informative, setting a strong foundation for the review.

ISSN: 2320-5407
International Journal of Advanced Research
Publisher's Name: Jana Publication and Research LLP
www.journalijar.com

REVIEWER'S REPORT

Introduction Evaluation:

The introduction clearly situates potassium as a critical macronutrient for crop growth, linking it to fundamental plant physiological processes such as photosynthesis, enzyme activation, and stress regulation. It provides global context by outlining the dominance of KCl in the fertilizer market (over 90%) and the geographic concentration of its supply in a few countries, particularly Canada, Russia, and Belarus. This framing underscores the vulnerability of dependent nations and establishes a rationale for exploring alternative sources such as feldspars. The introduction thus combines scientific necessity with geopolitical and economic considerations, giving the review a multidisciplinary relevance.

Content Strengths:

- The manuscript provides a well-balanced treatment of technological, environmental, and economic aspects of feldspar-based potassium fertilizers.
- Inclusion of both high-efficiency extraction methods (hydrothermal, pyrometallurgical) and lower-efficiency but environmentally advantageous methods (calcination, bioleaching) demonstrates comprehensive coverage of activation routes.
- The link between feldspar activation processes and agronomic performance is clearly articulated, ensuring agricultural applicability of the findings.
- The economic and strategic analysis of Brazil's reliance on potassium imports adds policy and developmental relevance to the study.
- The structure integrates mining, beneficiation, activation, and application stages into a holistic framework, aligning the review with sustainable agricultural development goals.

Overall Assessment:

The manuscript presents a thorough, well-contextualized, and interdisciplinary review of potassium feldspars as alternative fertilizer sources. It bridges scientific, technological, environmental, and economic dimensions, offering a strong contribution to the literature on sustainable fertilizer development. The integration of agronomic results, process comparisons, and macroeconomic considerations ensures the review's applicability for both scientific researchers and policymakers.

ISSN: 2320-5407
International Journal of Advanced Research
Publisher's Name: Jana Publication and Research LLP
www.journalijar.com

REVIEWER'S REPORT