The manuscript "Unveiling the Bioactive Potential of Cowpea Pods Through Optimized Extraction and Integrated Experimental-Computational Analysis" is conceptually sound and investigates the extraction of bioactive compounds from cowpea pods.

However, the manuscript does not align with the agronomic focus of the journal Agronomy. It lacks sufficient agronomic context, and the study design does not meet the expectations for applied agronomic research. Therefore, I do not recommend this manuscript for publication in Agronomy and suggest the authors consider submitting it to a journal focused on food chemistry, functional foods, or plant-based bioactives.

The main reasons for this recommendation are as follows:

The agronomic aspects are insufficiently described throughout the manuscript,

The trial was conducted over a single growing season, which is generally not acceptable in agronomic field research unless performed under fully controlled conditions.

Key agronomic traits and parameters are missing from the results. .

The reference list lacks citations of agronomy-related research, particularly studies focused on field evaluation, cropping systems, or environmental conditions affecting cowpea production.

- Specific Comments:

Line 83: Clarify whether similar studies exist in the literature. If not, state that literature on this topic is limited or underexplored.

Materials and Methods: The agronomic background is not adequately presented.

Line 96: Provide more detail on the cultivation conditions of cowpea. If this was an open-field trial, one year of data is insufficient. Field trials must be replicated over multiple seasons to ensure reliability and applicability of results for growers.

- Results: Agronomic indicators are missing. The focus is entirely on biochemical and extraction-related traits.

-- References: Include relevant agronomy research to position the work within the scope of the field.

Furthermore, according to the journal's stated scope — "Full experimental and/or methodical details must be provided for research articles" (https://www.mdpi.com/journal/agronomy/about) - this manuscript does not currently meet that requirement.. The absence of essential agronomic information on cultivation practices, soil management, environmental conditions, and field replication makes it unsuitable for Agronomy in its current form