Review Form 1.7

Journal Name:	**International Journal of Environment and Climate Change**
Manuscript Number:	**Ms_IJECC_100402**
Title of the Manuscript:	**"Response of Nitrogen and Foliar Application of Boron on Growth and Yield of Barley (Hordeum vulgare L.)"**
Type of the Article	**Original Research Article**

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty'**, provided the manuscript is scientifically robust and technically sound.
To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

(https://www.journalijecc.com/index.php/IJECC/editorial-policy)

Review Form 1.7

PART 1: Review Comments

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Compulsory REVISION comments **1. Is the manuscript important for scientific community?** (Please write few sentences on this manuscript) **2. Is the title of the article suitable?** (If not please suggest an alternative title) **3. Is the abstract of the article comprehensive?** **4. Are subsections and structure of the manuscript appropriate?** **5. Do you think the manuscript is scientifically correct?** **6. Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form.** **(Apart from above mentioned 6 points, reviewers are free to provide additional suggestions/comments)**	Barley (Hordeum vulgare L.) is the fourth most important and widely cultivated crop among cereals worldwide, a well-known salinity and drought-tolerant crop. For barley production, micronutrient application into the soil is a common practice by farmers. However, the uptake rate of micronutrients by plant roots from the soil is slow. Thus, foliar fertilization is a useful strategy to fulfil these micronutrient requirements and improve the nutrients lost through soil application. Micronutrients play important roles in the plant system, such as cell elongation, cell division and regulation of nutrients in the plant system. The foliar application supports the delivery of nutrients to the plant's tissues and organs, improves applied nutrient deficiency, and reduces nutrient losses. Leaves are the plant's green factories where photosynthesis occurs to synthesize necessary compounds for growth and development. Foliar application of micronutrients on leaves enhances the hormones and enzyme formation and improves plant growth, flowering, and fruit set. By referring to websites, this topic has been researched a lot. The abstract needs structural revision. They should be set according to the guidelines of journal authors. **It requires review and statistical reports.** **In the material and method section:** - **The characteristics to be examined should be fully described, and their measurement methods should be specified and referred to related references.** - **There is a need for statistical tables and statistical comparison and specifying the standard error and analysis of variance in each treatment.** - **There is a need for a two-way variance analysis for the effects of nitrogen and boron on the studied traits.** **References should be corrected and standardized according to the authors' guide.** **The article should be reviewed and rewritten in terms of writing.**	
Minor REVISION comments **1. Is language/English quality of the article suitable for scholarly communications?**	1. Correctness: very weak, Clarity: A bit unclear. Engagement: A bit Bland It needs severe revision and correction.	

Review Form 1.7

	sustainability, the demands on cereals, especially those that are hardy and drought tolerant, such as barley has tremendously increased **(Maher, 2017)**. In addition, the energy rich drinks are also prepared from the malt extracts of barley. In India, about 90 % of the barley produced is used for human consumption, while in USA and European countries most of it is used as cattle feed. The barley grains make palatable and nutritious livestock feed, the straw is used as forage and green forage either directly fed to the animals or used for making hay and silage. It is a *rabi* cereal crop is India and usually used as food for human beings and feed for animals and poultry birds **(Singh *et al.*, 2012)**. As it can tolerant to saline and alkaline condition than other winter cereals.Its cultivation in India suffered during green revolution period due to replacement from marginal land and rainfed areas by more remunerative oilseed and pulses. However, during early nineties, due to economic liberalization, the industrial demand for barley increased and presently 25-30 % of total barley produced is used in the manufacturing of malt extract, which is further utilized for brewing, distillation, baby foods, coca malt drinks and medicinal syrups. Nitrogen as known is very crucial to plants for its growth as it forms the basic structure of protein and nucleic acid which further plays important role in plant physiological phenomenon. Chlorophyll, the most important component, green color material of every plants and the one responsible for photosynthesis have the component nitrogen. Nitrogen is one or other way associated with proper functioning of plants. Thus, barley grain yield, protein content in grain and kernel appearances are the characteristics that are strongly related to available nitrogen **(Grant, 2000)**. Nitrogen also plays an important role in maintaining the yield attributes in barley **(Assefa, 2018)**. Different doses of nitrogen significantly influenced the grain yield and yield parameters. For the highest grain yield, nitrogen doses of 100 kg N/ha was the best treatment when considering nitrogen fertilizer only. Irrigation regimes also have significant effect on yield and growth parameters of barley **(Shirazi *et al.*, 2014)**. Nitrogen play a vital role as its presence in the form of protein and nucleic acid is basis for the formation of living material or protoplasm of every cell. This increase plant height, spike length, no of tiller which results into higher production of dry matter and grain yield **(Franklin *et al.*, 2017)**. In addition to nitrogen, phosphorous is of paramount importance for energy transfer in living cells by means of high energy phosphate bonds of ATP. Thus, it plays a pivotal role in formation and translocation of carbohydrates, fatty acids, glyceroids and other essential intermediate compounds. It also affects seed	*Original Research Article* **"Response of Nitrogen and Foliar Application of Boron on Growth and Yield of Barley (*Hordeum vulgare* L.)"** **ABSTRACT** The field experiment entitled "Response of Nitrogen and Foliar Application of Boron on Growth and Yield of Barley (*Hordeum vulgare* L.)" was conducted Response of during the *rabi* season of 2022 in Crop Research Farm, Department of Agronomy, Naini Agricultural Institute, SHUATS, Prayagraj (U.P.). The experiment was laid out in a Randomized Block Design with ten treatment combinations. The soil in the experimental area was sandy loam with pH (7.6), organic carbon (0.23 %), available N (184.8 kg/ha), available P (16.45 kg/ha) and available K (187.64 kg/ha). Seeds are sown at a spacing of 30 cm × 5 cm to a seed rate of 100 kg/ha. Consisting of three nitrogen levels (45, 60 and 75 kg N/ha) on different Concentration of Boron *viz.,* 1, 1.5 and 3 % foliar spray. The experimental result reveals that growth parameters *viz.,* plant height (102 cm), number of tillers/running row meter (95.66), plant dry weight (19.08 g), crop-growth rate (CGR) (49.38), relative growth rate (RGR), and Yield attributes *viz.,* No. of effective tillers/m^2 (200.33), number of grain/spike (52.60), test weight (44.66 g), seed yield (4.81 t/ha) and straw yield (6.48 t/ha) recorded to be were significantly higher with treatment 9 (75 kg N/ha + 3 % boron). **Key words:** Barley, Nitrogen, Boron, Growth, Yield, quality. **Introduction** Barley (*Hordeum vulgare* L.) is an important cereal crop from all over the world. Among cereals, it ranks fourth with respect to area and production after wheat, rice and maize and is a hardy crop grown throughout the temperate, tropical and sub-tropical regions of the world. It is a *rabi* cereal crop is India and usually used as food for human beings and feed for animals and poultry birds **(Singh *et al.*, 2012)**. Globally, barley occupies the area of 48.48 million hectare with a production of 145.10 million tonnes grain and the productivity of 2990 kg/ha during 2020-21 **(United States Department of Agriculture, 2021)**. Barley though recognized as a hardy cereal crop due to its wider adaptability to environment has been viewed as crop for marginal lands. While the global concern has been focused on food and environment	
Optional/General comments	It needs correction and revision in terms of statistics and English grammar.		

PART 2:

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

Reviewer Details:

Name:	**Sayed Mohammad Reza Khoshroo**
Department, University & Country	**Islamic Azad University, Iran**