

## Comments to the Authors

The manuscripts “Differential responses of the seed germination of three functional groups to low temperature and darkness in a typical grassland, Northern China”, focused on the effects of temperate and light on seed germination of sixteen species belonging to three plant functional groups of grassland in northern China, providing a good theoretical basis for better grassland management under the current climate change background. It is important to explore environmental change effect on plant community in terms of seeds preservation and seeding. Overall, this is a very good research article. I think it is suitable for publication in this journal. However, there are still some major and minor issues.

### Major comments:

Q1,

The Abstract showed us the main results, but they did not tell us why. Please add necessary explanations to these results. In addition, the description of the results in the Abstract is not clear enough. For example, Lines 26-21: “We found that low temperature had a significant negative effect on final germination percentage, germinative force, germination duration, and germination start of total species. Low temperature significantly decreased the final germination percentage and germinative force of the three plant functional groups and the germination duration of perennial grasses.” The above statement is a slightly wordy, and I suggest authors refine these narrations and provide some mechanism analysis.

Q2,

In the Introduction section, the authors showed the effects of temperature (e.g., elevated temperature) on seed generation. However, the manuscript mainly concerned about how low temperature effects on seed generation. Please supplement some information of low temperature.

In addition, the introduction of temperature and light could be separately described in two separate sections. The specific objections or hypotheses in introduction are necessary.

There are many language problems that need improvement.

See detailed comments below:

Line 28: change “total” to “all”

Line 32: change “perennials” to “perennial”

Lines 36-37 The sentence of “The seed germination of different plant functional groups varied greatly in response to changing environmental conditions.” is redundant, delete it.

Line 41: Captitalize the S of semiarid, in order to keep the same format as the rest of the words.

Line 46: change “of” to “to”  
Lines 71-72: change “lead to” to “result in”  
Line 133: please check all the Celsius signs are consistent  
Lines 145-153: combine the sentences to one paragraph  
Line 165 “ANOVA indicated” is not academic.  
Line 218: change “total” to “all”  
Line 222: delete “results”  
Line 246: delete “and”  
Line 249: change “response” to “responses”  
Line 277: change “and” to “or”  
Lines 267 and 285: “nitrogen addition” or “nitrogen deposition” should not be deleted, replaced by nutrient availability or other descriptions.  
Lines 305 and 316: change “results” to “observations/findings”  
Lines 318-319: “climate changes”, “climate change” should be replaced by “temperature changes/changes in temperature”  
Line 323: add “found” after “those”  
Line 326-328: should be referred to seed germination. For example: there is much uncertainties regarding how plant community structure might change associated with seed germination.