

Interactive comment on “The role of sexual versus asexual recruitment of *Artemisia wudanica* in transition zone habitats between inter-dune lowlands and active dunes in Inner Mongolia, China” by Y. Wang et al.

Anonymous Referee #2

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The paper presents an interesting and scarcely documented topic concerning the study of the density and frequency from different regenerative strategies (sexual and vegetative reproduction) on pioneering plants as *A. wudanica* in transition zone of sand dune systems in northeaster Inner Mongolia (China). The paper was well written and structured. The objective of the study is well defined; the study examines the relationship between sexual and asexual reproduction vs environmental factors (wind erosion, soil moisture and pH). This paper contributes to understand the reproductive strategy of pioneering species in an area affected by overgrazing with risk of desertification. In addition, this study can help to gain knowledge of the function of sexual and asexual

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reproduction of perennials in restoration of vegetation of active dune fields which has been generally underestimated. The experimental methodology was adequate. The findings of the study demonstrate the predominance of sexual reproduction and the different effect of study environmental parameters on the two reproduction patterns. So the results are definitely worth being published. However, the manuscript could be improved, in my opinion, by tackling aspects that are described in the following:

Specific comments:

Lines 28 – 31 I suggest specify the total number of quadrats, iron sticks and soil samples and the area of each quadrat (1x1 m).

Line 31 Authors indicate wind erosion (WE) intensity. However in Materials and methods (Line 184) it is written wind erosion intensity (WEI). Please choose only one of these abbreviations.

Line 32 It should be interesting to introduce that soil samples were sectioned at 10 cm intervals to measure SM, OM and pH at different soil depth.

Line 33 Please revise the sentence “to test for soil moisture, organic matter and pH” and delete respectively

Keywords I suggest to combine sexual and asexual reproduction as one term or use reproductive strategies and include other keywords i.e. *Artemisia wudanica* or sand dune ecosystems.

Introduction is rather long (4 pages). Concerning transition zones it can be shortened and focus more on the study area.

Line 56 Authors should avoid the repetition of references. I suggest eliminate Dregne and Chou, 1992 since it is cited three lines below.

Lines 62 – 64 Linking the problematic of soils with low cover vegetation and desertification with specific locations in China.

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Line 69 “research about transition zones has greatly increased as a result of the need. . .”

Line 91 “this will allow” can be removed.

Lines 106 – 118 the reference Liu et al., 2014a is cited four times. I suggest including in Lines 110 and 113 other related references or delete the citation Liu et al. (2014a).

Lines 149 Author’s hypothesis is based on previous research treating this point with other type of plant and/or habitat?

Line 152 The brackets can be removed

Materials and methods - Lines 164 It should be important to mention the maximum (July) and minimum (January) temperatures.

Line 183 Please introduce the number of iron sticks inserted near at each quadrat and remove it from line 187. I guess the number of iron sticks inserted near each quadrat was 3.

Line 173 The percentage of plant coverage is greater for *A. wudanica* than *Agriophyllum squarrosum*? Please specify which of these pioneering plant species is predominant in the study area.

Line 195 Authors explain their own soil preparation I do not think it is necessary to include a reference.

Line 197 It remains unclear the replicates. Did the authors collect 3 replicates at each sampling point?

Line 203 Why sampling depth was extended up to 30 cm?

Line 217 It should be interesting in order to facilitate the comprehension of the methodology for determining frequency and density include a brief description from the list of references.

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Lines 222 – 224 Please move the sentence “The mean number of surviving . . . (Wu et al., 2015)” after line 218.

Line 227 Specify in which figures.

Line 233 Authors explain their own data analysis I do not think it is necessary to include a reference. Results

Lines 237 – 244 Authors present the percentage of moisture content comparing 20 – 30 cm and 0 – 10 cm it should be interesting to include a comparison with 10 – 20 cm and mention there is no differences in organic matter with depth and highlight the low values of OM<0.02

Did the authors consider comparing the density and frequency between the different soil depths 0 – 10 cm, 10 – 20 cm and 20 – 30 cm?

Lines 237 – 244 Please refer Table 1 in the text and use the abbreviated codes from table 1 in this part.

Line 258 WI, SM, OM and pH can be removed

Line 281 Figure 5?

Discussion -Line 287 “It is well known that” can be removed

Lines 290 – 291 “Invasive clonal. . . (Qin et al., 2014)” can be moved to Introduction section.

Line 291 Revise Sand or Sandy (line 162)

Lines 303 – 305 Please provide a depth discussion regarding to different relationships between sexual/asexual reproduction and environmental parameters

Line 308 “The predominance of sexual reproduction in all 27 study plots suggest. . .” to avoid repetition of content between results and discussion

Lines 354 – 356 It is a result that can be rewritten as “Slightly higher pH content below

10 cm might be due to the calcareous..." Is the difference between pH 1 and pH2 statistically significant?

Technical corrections

Line 30 delete also

Line 54 fragile and coarse-textures soils

Line 156 delete like

Line 187 "sitck" instead of "stich"

Line 199 for soil analyses which included (1) pH...

Lines 308 – 353 and lines 370 – 375 Justify text

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