Response to Anonymous Referee #1 Comments

We feel great thanks for your professional review work on our article. As you are concerned, there are several problems that need to be addressed. According to your nice suggestions, we have responded. The details of the reply are as follows:

Point 1: Introduction section: In this section, the authors need to specify the scientific problems and highlight the innovations and academic contributions of the study.

Response: We fully agree with your suggestion that it helps to enrich the content and increase the quality of the manuscript. We will revise the introduction section. The scientific problem will be clarified in the research background section of the introduction, and the innovation of the study and the ecological significance of studying dew will be highlighted in the research objectives section of the introduction.

Point 2: Figure 1: The line of “Provincial boundary” should be the boundary of Yan’an City, but not the one of Shaanxi Province.

Response: We are very grateful to you for pointing out the details in the manuscript. We found this error in the manuscript, and in the next revision we will correct the “provincial boundary” in Figure 1 to read “Yan'an city boundary”. The modified Figure 1 is as follows：

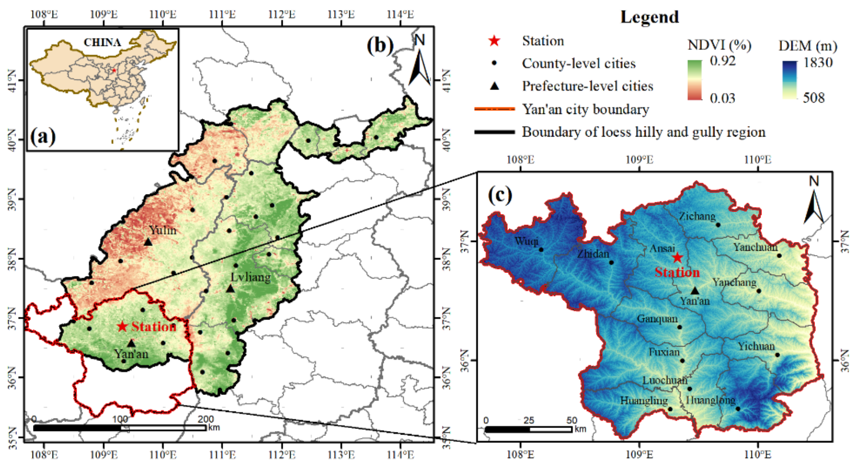

Figure 1. Location of the experimental site (Jia et al., 2023): (a) China map, (b) Geographic location of the loess hill and gully area, (c) Geographic location of the study area.

Point 3: Section 2.2: Please give out the field pictures of the three plants of Tribulus, Hippophae, and

Elm from different angles. It is better to include their pictures in different growth period.

Response: Thank you for your comment. Our artificial field observation experiments were conducted in September-October 2021 and September-October 2022. No pictures in other periods were taken because leaf collection was not carried out during the other growth periods of the plants. Figure 2 shows images of plant leaves taken during the artificial field observation period, which we will add to the manuscript.

Figure 2. The field pictures of the three plants. (a) Tribulus(19 October 2022); (b) Hippophae(16 October 2022); (c) Elm(16 October 2022); (d) Tribulus leaves sampling(18 September 2022); (e) Hippophae leaves sampling(19 September 2022); (f) Elm leaves sampling(19 September 2022).

Point 4: Section 2.3: Why did the authors place the sensors/equipments of ATMOS14, WSD01, and ECRN-100 at 0.2 m, 1.0 m, and 1.6 m, respectively above the ground? Are there any standards to do that?

Response: We are very grateful to your valuable comment. There is no prescribed standard for the mounting height of the sensors/devices of ATMOS14, WSD01 and ECRN-100, and we mainly referred to the existing studies in the experimental design: the mounting height of the ATMOS14 sensor was referred to the mounting height of the air temperature and relative humidity sensors in the article of Jia et al (2023); the mounting height of the WSD01 anemometer was referenced to the mounting height of anemometer in the article Zhang et al (2015); the mounting height of ECRN-100 rain gauge was referenced to the mounting height of ECRN-100 high-resolution rain gauge in Jia et al (2023);

Point 5: Figure 2(a): Please give out the date/time when you took the photo.

Response: We gratefully appreciate your comment. The date of Fig. 2(a) was taken on 18 May 2022 at 7:32 a.m. The original image is shown in Fig. 3.

Figure 3. The original image of Fig. 2(a)

Point 6: Line 103: Why are the number (5 and 10) different for these three plants? Did you collect leaves everyday?

Response: We gratefully appreciate your comment. In the artificial field observation experiment, we measured the leaf area of Tribulus, Hippophae and Elm with the SYS-Leaf1000 leaf image analyzer, respectively. The average leaf area was 320.40 mm^2 for Tribulus, 187.66 mm^2 for Hippophae, and 398.94 mm^2 for Elm. Because the leaf area of Hippophae was much smaller than that of Tribulus and Elm, and in order to better observe the variation of dew amount on the leaves of the plants, five leaves were taken from the leaves of Tribulus and Elm and ten leaves from the leaves of Hippophae when taking samples. Plant leaf shape characteristics show in Table 1.

Table 1. Plant leaf shape characteristics

Type	Leaf	Maximum	Minimum	Median	Standard	Mean	Coefficient

	Characters				deviation		of Variation
Tribulus	Area (mm^2)	560.44	35.20	295.45	89.75	320.40	0.28
	Aspect Ratio	3.91	0.40	1.11	0.42	1.03	0.41
	Perimeter (mm)	367.96	25.36	211.28	41.90	215.14	0.19
	Leaf Shape Coefficient	0.69	0.05	0.09	0.06	0.10	0.57
Hippophae	Area (mm^2)	301.45	83.24	191.97	49.58	187.66	0.26
	Aspect Ratio	4.69	0.18	3.16	1.51	2.44	0.62
	Perimeter (mm)	117.56	46.70	77.44	13.76	76.22	0.18
	Leaf Shape Coefficient	0.55	0.26	0.43	0.06	0.42	0.14
Elm	Area (mm^2)	866.56	166.84	381.75	140.48	398.94	0.35
	Aspect Ratio	2.28	0.45	1.57	0.60	1.27	0.47
	Perimeter (mm)	146.07	51.01	88.20	18.20	89.93	0.20
	Leaf Shape Coefficient	0.78	0.47	0.60	0.06	0.61	0.10

Point 7: Equation (1): Please give out the unit of S_i in the explanation section of the equation.

Response: We are very grateful to you for pointing out the details in the manuscript. In Eq. (1), S_i is the area of the ith plant leaf in cm^2. In manuscript revisions, we will explain this in the explanation section of the equation.

Point 8: Equation (4): I feel that this equation is incorrect. For example, when W_{dmax}=W_{dmin} and both are not zero, the result D_d=0 is obviously unrealistic.

Response: We are very grateful to you for pointing out the details in the manuscript. We agree with you. We found an ambiguity in this equation in the manuscript. In our revision, we will correct this equation by replacing W_{dmax} with W_{d_imax} and W_{dmin} with W_{d_imin}, where W_{d_imax} is the maximum dew amount monitored in the ith period (mm); and W_{d_imin} is the minimum dew amount monitored in the ith period (mm). The revised Eq. (4) is:

$$D_d = \sum_{i=1}^{n} (W_{d_imax} - W_{d_imin}), \qquad (4)$$

Point 9: Section 3.5: Are there other factors affecting dew formation? In Section 2.2, it is apparent that the heights of these three types of plants differ. When collecting leaves, are the heights of the leaves from the ground the same? Does height also affect the amount of dew?

Response: We are very grateful to your valuable comment. It has been shown that meteorological factors and substrate characteristics are the most important factors affecting dew formation (Pan et al., 2010), with lower air temperatures (Monteith, 1956; Li, 2002), higher air relative humidity (Zangvil, 1996; Ye et al., 2007), and moderate wind speeds (Zhang et al. 2015; Beysens, 2016; Zhuang and Zhao, 2017) are the most suitable meteorological conditions for dew formation. In addition, differences in subsurface properties such as soil texture, soil moisture content, and surface roughness can affect dew formation in different regions (Tao and Zhang, 2012). Since the object of our present study is plant leaf condensation rather than soil condensation, only the effect of meteorological factors on dew formation is considered.

When we collected plant leaves, the collection heights of leaves of the same species were basically the same, i.e. 0.2m for Tribulus leaves, 0.6m for Hippophae leaves and 1.5m for Elm leaves.

Different heights can have an effect on the amount of dew on the leaves of different plants, and the height factor was weakened during sampling by incorporating the growth characteristics of different plants, which we have described in the discussion.

Point 10: Section 3.5.1: The installation height of the WSD01 anemometer is fixed (1 meter above the ground), which is approximately the same as the height of the Hippophae, but differs from the heights of other trees. Therefore, is it appropriate to quantify the formation of dew for these three types of trees using the same wind speed?

Response: We are very grateful to your valuable comments, which helped to improve the readability of the manuscript. The wind speeds at different heights can be converted according to the formula, which is as follows (Monteith and Unsworth, 1990; Sharan et al 2007). We will analyze the influence factors of the three plants separately according to the formula converted to wind speed at different heights.

$$\frac{V_{Z_1}}{V_{Z_2}} = \frac{\ln\left(\frac{Z_1}{Z_C}\right)}{\ln\left(\frac{Z_2}{Z_C}\right)} \tag{1}$$

where Z_c (m) is the roughness length and taken as equal to 0.1 m, V_{Z_1} (m/s) and V_{Z_2} (m/s) are wind speeds at different heights of Z_1 (m) and Z_2 (m), respectively.

Point 11: The manuscript only considers the amount of dew in three typical days, which is not representative enough. More daily calculation results should be added.

Response: We fully agree with your suggestion that it helps to enrich the content and increase the quality of the manuscript. To make the study more rigorous, we will add the average daily dynamics of plant leaf dew in May-October 2022 to the revision process

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