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Hongren Sun

*China Agricultural University, China*

Lingfa Ma

*Gansu Agricultural University, China*

Jianguo Han

*China Agricultural University, China*

Ruixin Wu

*China Agricultural University, China*

Pinghong Li

*China Agricultural University, China*

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**Water requirement and water requirement rate of alfalfa in Bashang area**

Sun Hong-ren<sup>1</sup>, Ma Ling-fa<sup>2</sup>, Han Jian-guo<sup>1</sup>, Wu Rui-xin<sup>1</sup>, Li Ping-hong<sup>1</sup>  
<sup>1</sup>Institute of Grassland Science, China Agricultural University, Beijing 100094, China. <sup>2</sup>Pratacultural College, Gansu Agricultural University, Lanzhou 730070, China. E-mail sunhongren@cau.edu.cn

**Key words :** alfalfa, water requirement, water requirement rate, Bashang area

**Introduction** The research was designed with purpose of revealing the water requirement and water requirement rate of alfalfa (*Medicago sativa* L) in Bashang area to provide scientific support for the water management of alfalfa in this area.

**Materials and methods** The large scale non-weighing lysimeter method (Cooperation group, 1993) was used for determining the water requirement and water requirement rate of Algonqin alfalfa sowed in June, 2006 with a seeding amount 15 kg/ hm<sup>2</sup> and a row spacing 30 cm in Bashang area in 2007. The lysimeter was made of mixed cement and bricks, with a capacity of 3×2×1.6m. Sufficient water was supplied during the experiment period to avoid the alfalfa plants endangered by drought. This process is repeated for three times using three lysimets. The amount of precipitation, irrigation, seepage and water change amount in soil were measured. The formulas for the water change amount in soil, water requirement and water requirement rate are as follow:

$$\begin{aligned} \Delta W &= 10 \sum \gamma_i H_i (\theta_{i2} - \theta_{i1}) \dots\dots\dots (1) \\ WR &= R + I - P - \Delta W \dots\dots\dots (2) \\ WRR &= WR / T \dots\dots\dots (3) \end{aligned}$$

In formula 1 to 3, ΔW, WR, R, I and P stand for water change amount in soil, water requirement, seepage, irrigation and precipitation with the unit mm, respectively. γ stand for soil bulk density with the unit g/cm<sup>3</sup>. θ<sub>1</sub> & θ<sub>2</sub> stand for the soil water content at the beginning and the ending of the calculation time with the unit%, respectively. WRR stand for water requirement rate with the unit mm/d. T stand for time with the unit d.

**Results and analysis** The results were shown in Table 1.

**Table 1** The water requirement and water requirement rate of alfalfa in Bashang area.

Harvest No.	1	2	1~2
Water requirement(mm)	503.8	180.1	683.9
Water requirement rate (mm/d)	7.8	3.2	5.6

**Discussion and conclusion** The range of water requirement and water requirement rate of alfalfa around the world is about 400—2250 mm and 3—7 mm/d, respectively (Sun Hongren, et al, 2005). Bashang area belongs to the area with low water requirement and high water requirement rate.

**References**

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