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**Presenter Information**

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## Effect of grazing intensity on photosynthesis and soil respiration of alpine grassland in Tibet

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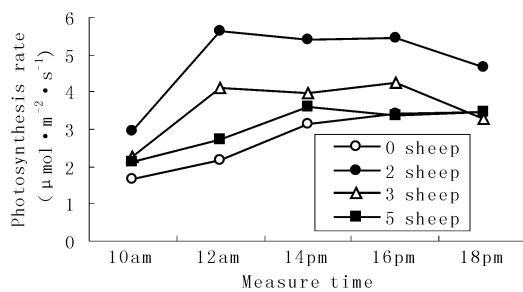
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**Key words :** alpine grassland , Northern Tibet , grazing intensity , photosynthesis , soil respiration

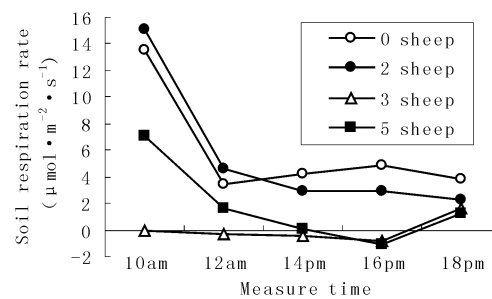
**Introduction** Naqu locates at the northern Tibet , and also the higher part of Tibet . Alpine grassland is one of the dominant grassland systems at Tibet Plateau . But how the effect of grazing on its photosynthesis and soil respiration is still not very clear . To understand the relationship between them will help to evaluate the sustainable development of grazing capacity and CO<sub>2</sub> emission from this system .

**Materials and methods** The site was on a typical Alpine grassland . The experimental plots were separated by net wall . There are four grazing intensity treatments that is no sheep as check (T<sub>0</sub>) , 2 sheep (T<sub>2</sub>) , 3 sheep (T<sub>3</sub>) and 5sheep (T<sub>5</sub>) , which represented no grazing , less grazing , current grazing and over grazing level , respectively . The plots were divided into 3 parts inside for shifting grazing every 10 days . There are 3 replications in this grazing intensity experiment . The canopy photosynthesis rate was measured by Li-6400 portable photosynthesis system by using transparent chamber . And the soil respiration rate also measured by Li-6400 portable photosynthesis system by using soil respiration chamber . The measurement was taken at sunny day of middle August , which is the most dominate weather type and the most thriving season of the year . The measurement was taken every 2 hours from 10am to 5pm in a continuous 3 days period and the average results were given .

**Results** The photosynthesis rate under difference grazing intensity has obvious difference as shown in Fig1 . The descend order is T<sub>2</sub> , T<sub>3</sub> , T<sub>5</sub> and T<sub>0</sub> . It seems that less grazing will stimulate the photosynthesis rate and overgrazing will slow down this trend . As to the diurnal photosynthesis rate , T<sub>2</sub> and T<sub>3</sub> has almost have same tendency , that is , from morning to noon it ascend quickly , then it keeps almost stable , until 4pm , after that it drops quickly . As to T<sub>0</sub> and T<sub>5</sub> , the tendency is similar and about 2 hours delay . Fig2 showed that the soil respiration also different from each other . The soil respiration rate of all treatments dropped rapidly from morning to noon , and then keep flat . T<sub>0</sub> and T<sub>2</sub> were much higher than T<sub>3</sub> and T<sub>5</sub> . It may result from the balance of sheep trample and the respiration of grass root . More sheep , and lower soil respiration .



**Figure 1** Photosynthesis rate of different grazing intensity .



**Figure 2** Soil respiration rate of different grazing intensity .

**Conclusions** Based on different grazing intensity experiments , the results showed that proper grazing intensity can stimulate the photosynthesis rate , overgrazing will slow down this trend ; Soil respiration rate will decrease with higher grazing intensity .