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内蒙古农业大学

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# Grazing systems on the desert steppe, Siziwang

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- Outline
- 1 Program objectives
- 2 Site description
- 3 Current situation
- 4 Farm improvement options
- 5 Suggestions



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# 1 Program objectives

To understand the farming system

To use the stage I and stage II models to find the possibility for improving farming system

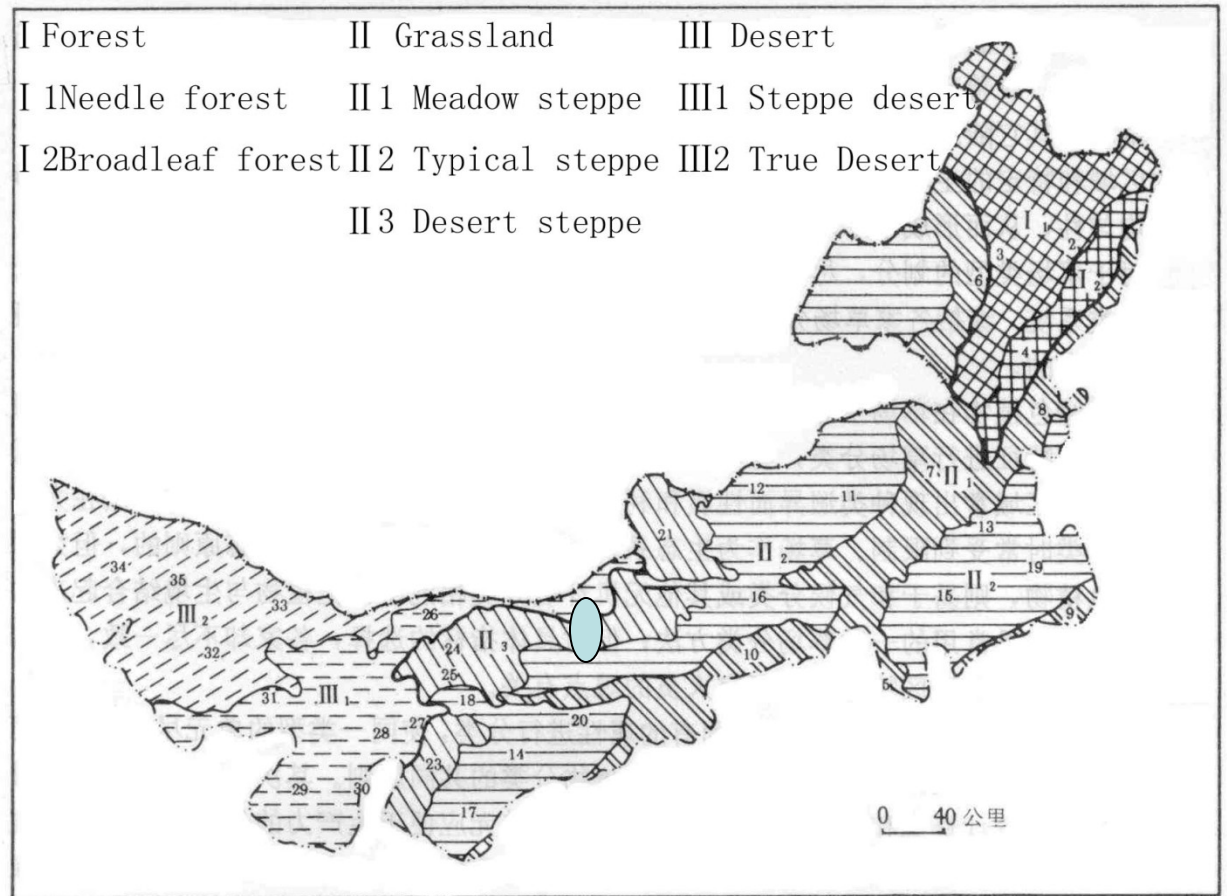


# 2 Site

## • Location

110°20'-113°00'  
40°10'-43°20'.

1400 m.



- Soil: light chestnut soil
- Vegetation: *Stipa breviflora*, *Artemisia frigida*, *Cleistogenes songorica*
- Climate: 250mm average annual precipitation

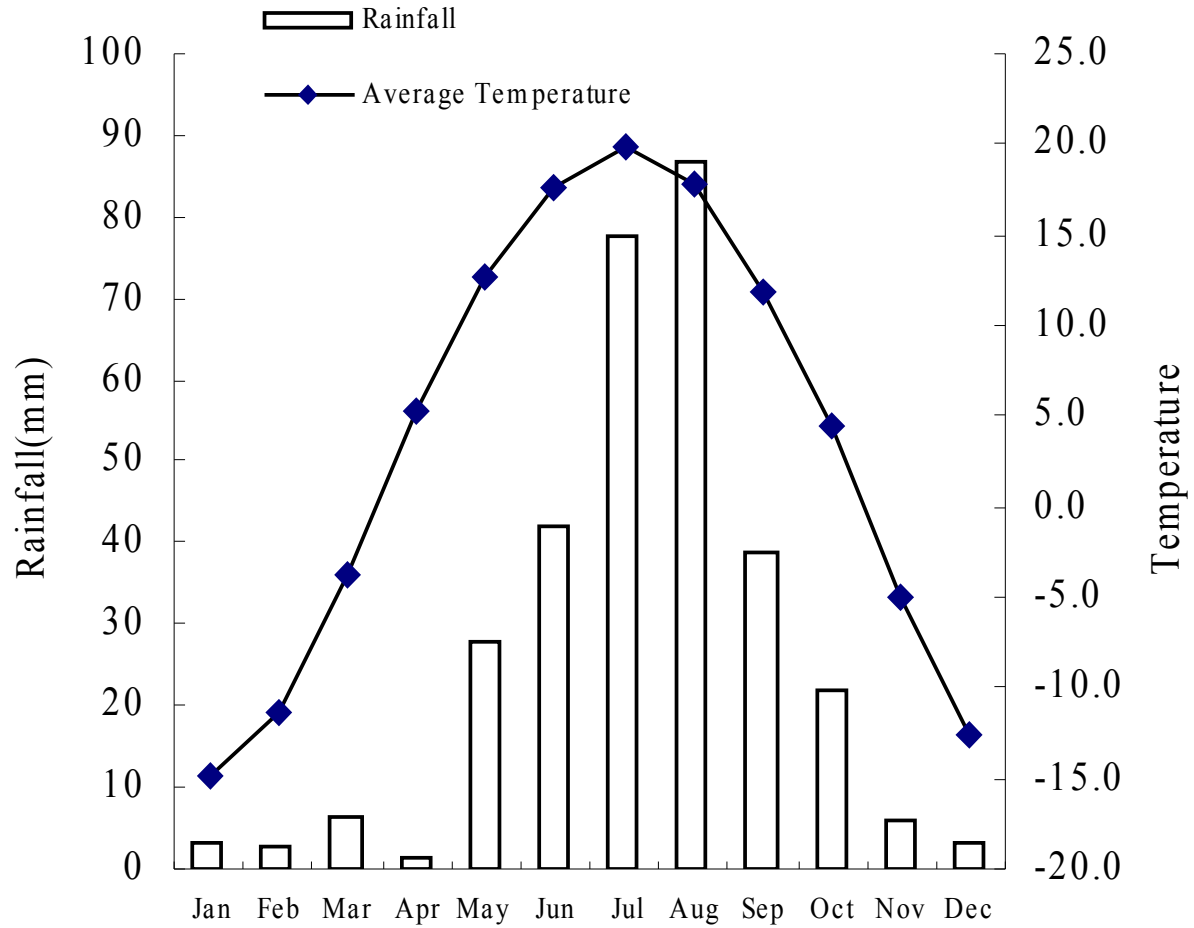


Figure 1 Mean monthly temperature and Rainfall for Siziwang (1986-2006), Inner Mongolia

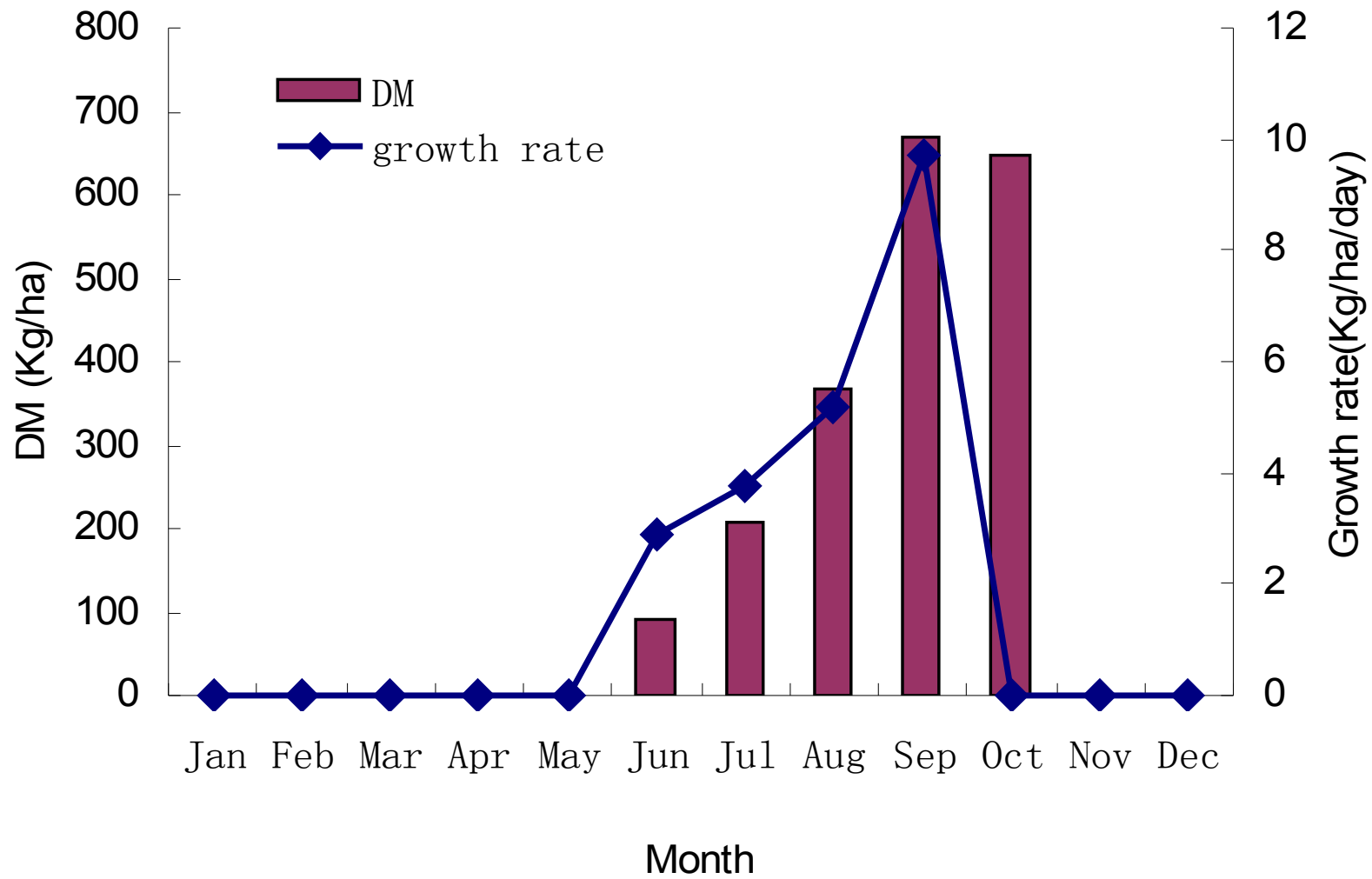


- 3 Current situation

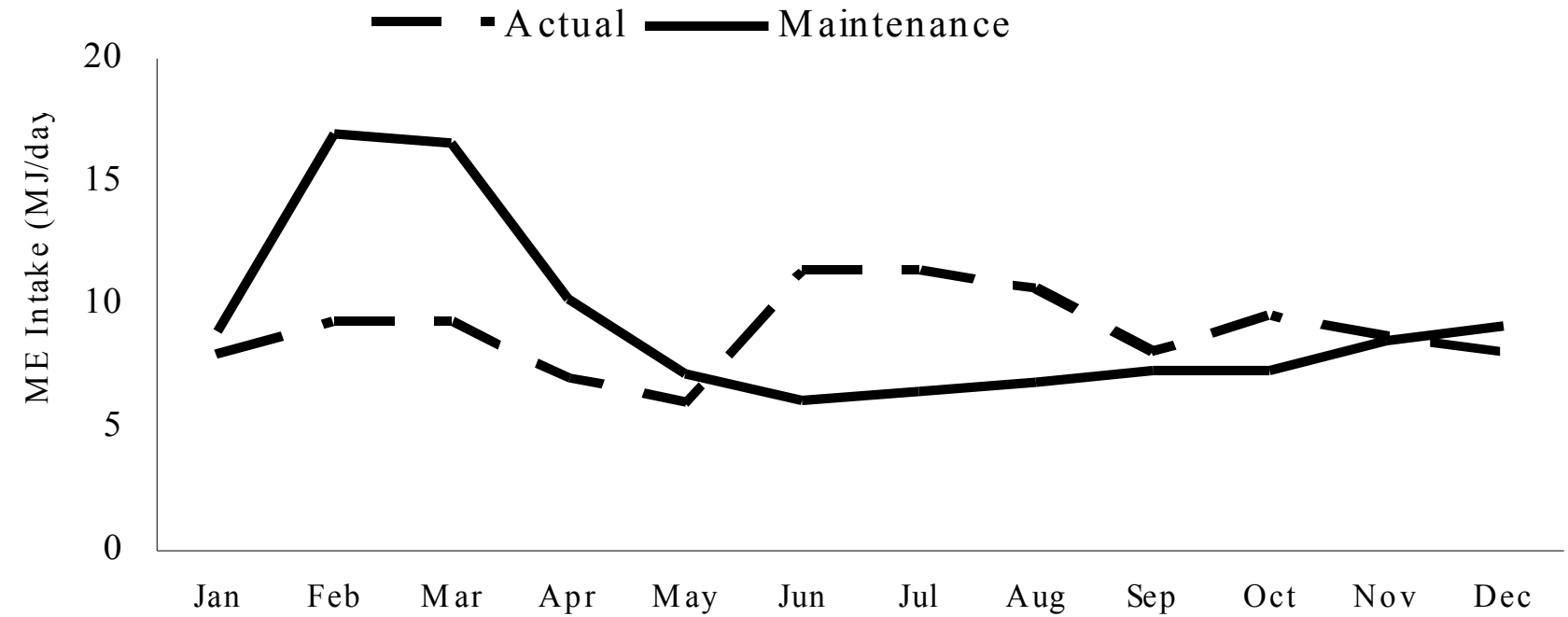
Animal numbers and pasture area of the six farms

Farmer	Sheep and goat number	Lamb and kid number	total number	pasture area(ha)
Buhechaolu	432	335	767	867
Siqintu	199	143	342	349
Alatengbagen	152	121	273	320
Zhangjingui	454	261	715	1312
Gendeng	254	176	430	545
Siqinbilige	165	104	269	213

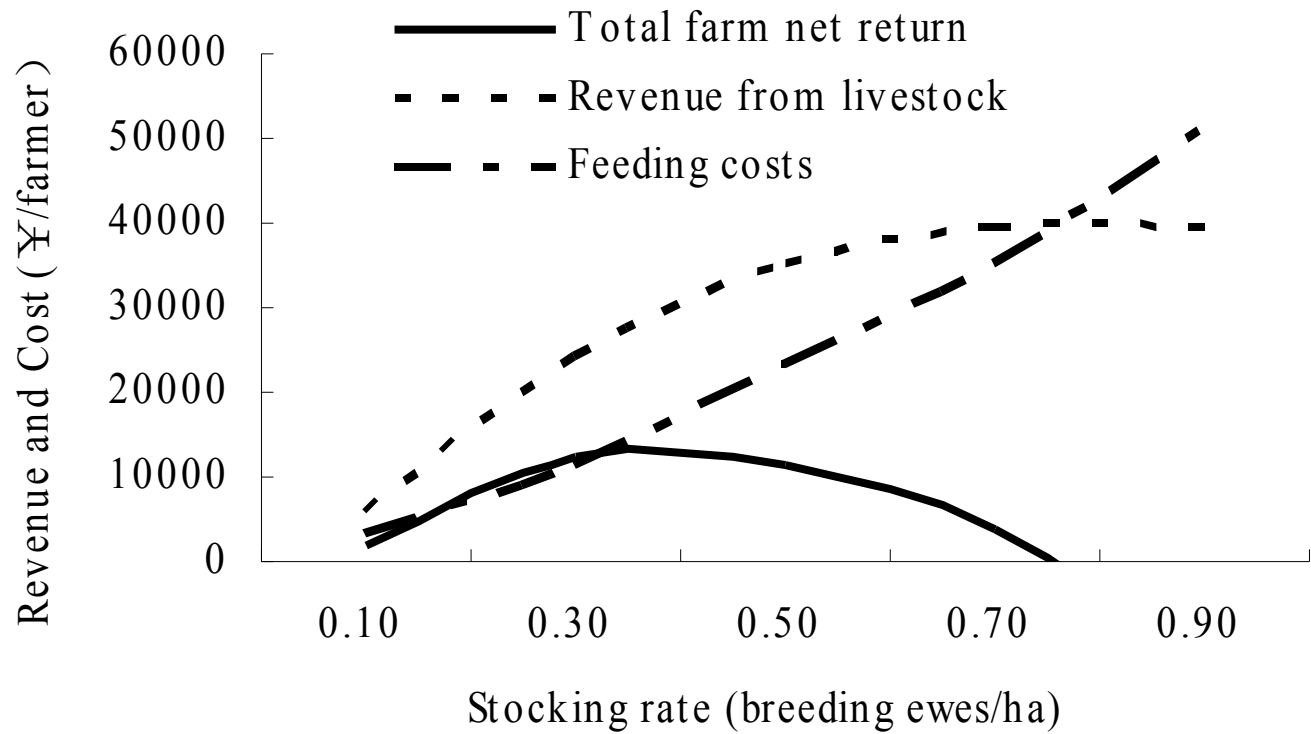
- Typical farms in Siziwang Banner encompass approximately 520 ha pasture with the majority of the area used for livestock production.
- Sheep and goat, 70% sheep and 30% goats.
- The livestock production management optimizes meat production.
- Lambing time is from December to April with lambs being sold sometimes in September.
- Stocking rate for pastures on an typical farm is 1.5 head/hectare of either sheep or goats.



# ME balance

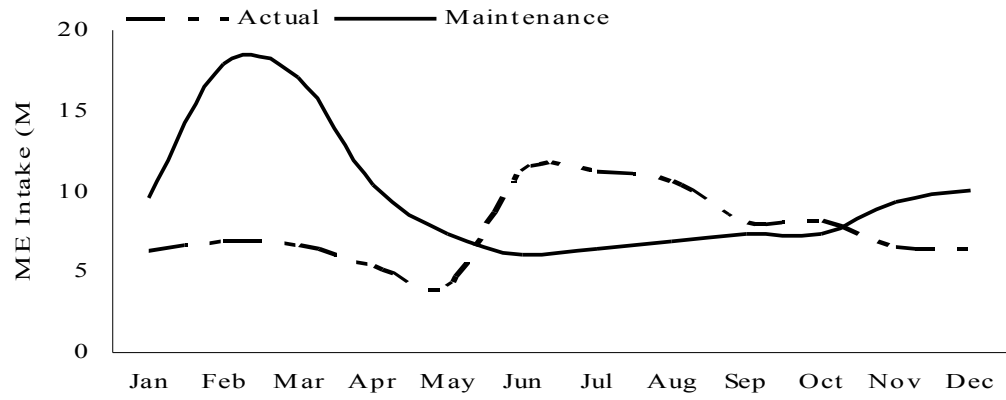


# Farm return

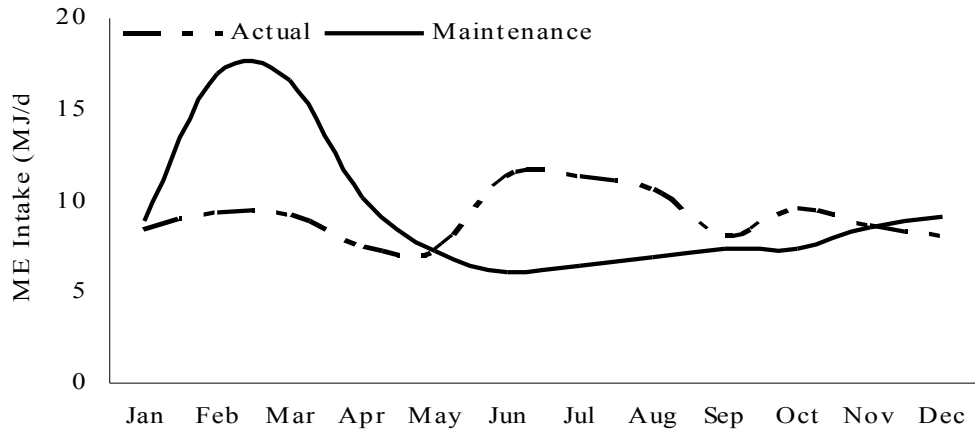


# 4 Farm improvement options

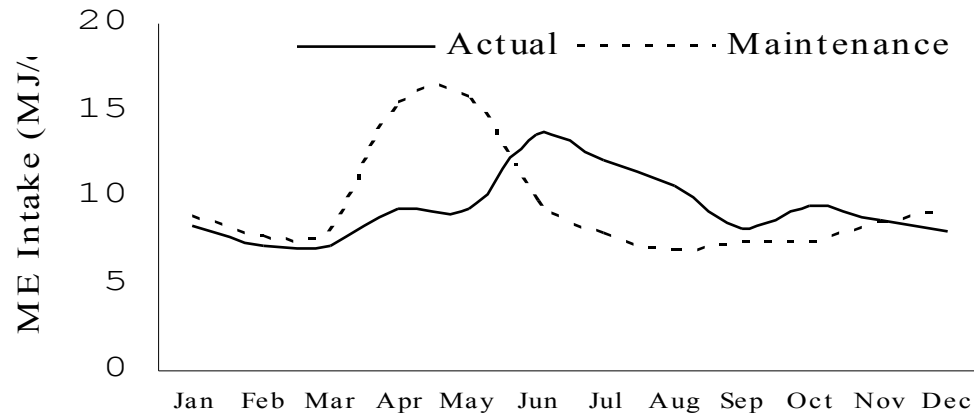
- Grazing and feed supplement
- Lambing time
- Pen feeding



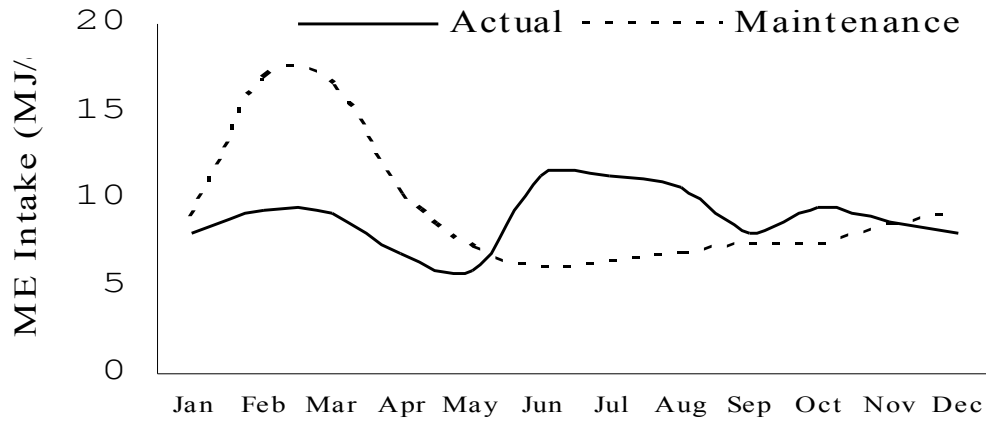
### Grazing all the year



Grazing and supplements (maize hay, maize, millet stubble, concentrate) from October to the following May

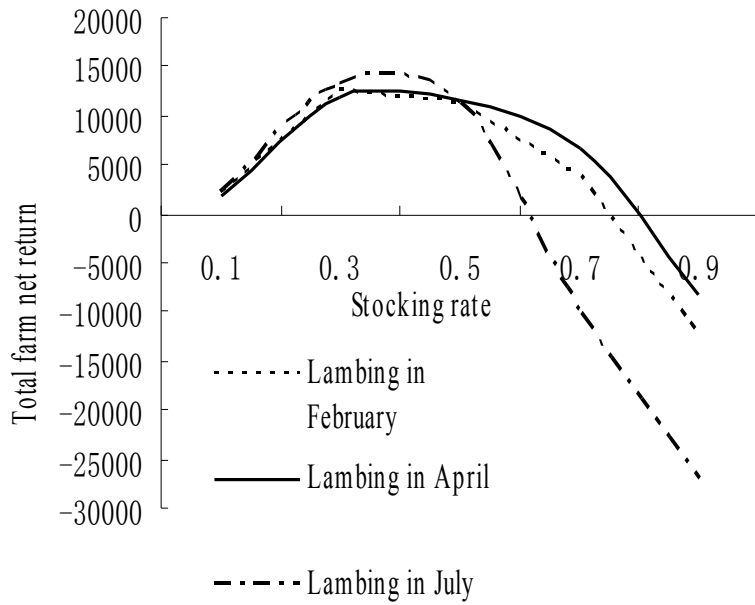


### Lambing in April

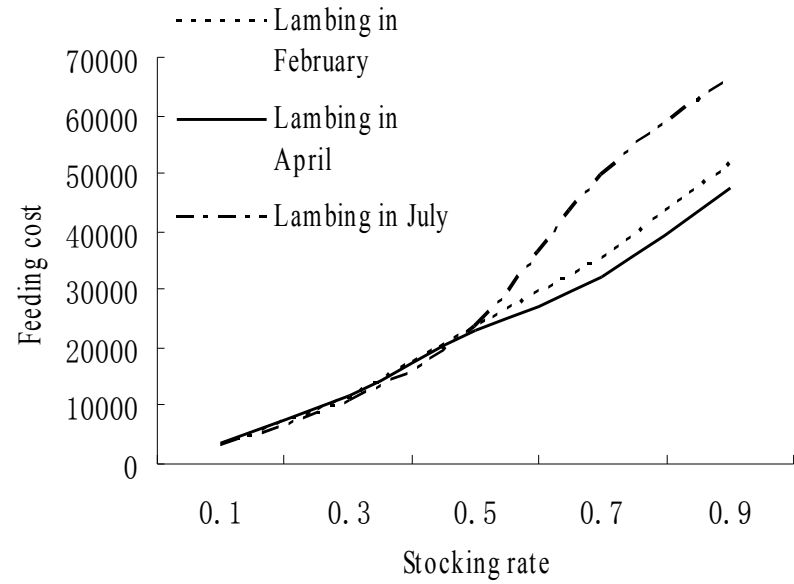


### Lambing in February

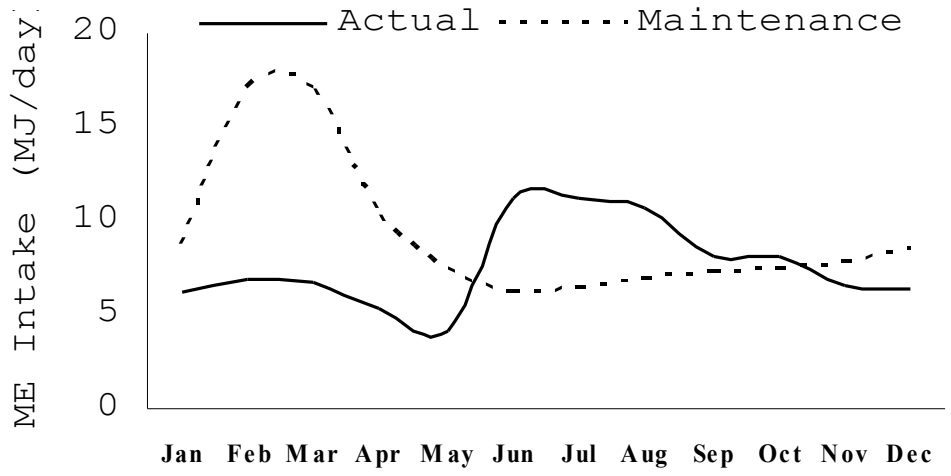
- April lambing versus February lambing, using identical feed and management protocols.
- The maintenance metabolic energy requirements are affected by various animals' physiological stages.
- The greatest maintenance metabolic energy requirements occur during lambing and lactating.
- The actual metabolic energy intake is significantly affected by the quality and quantity of feed, daily growth rate of grassland forages, and grassland condition.



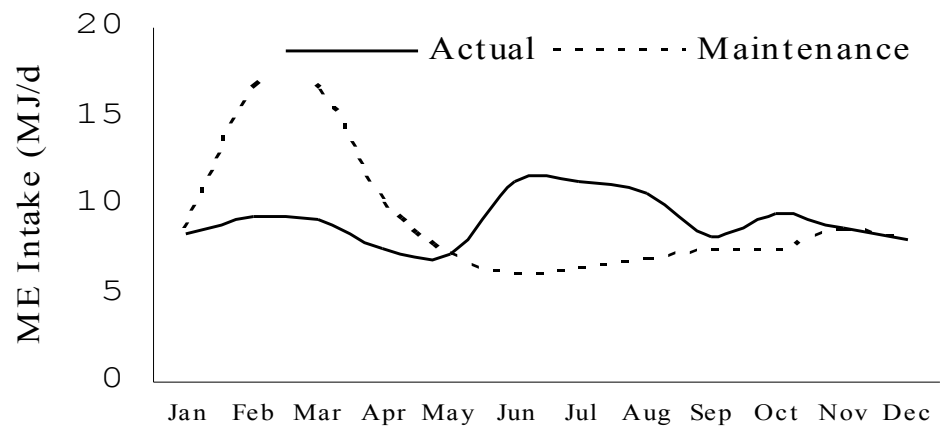
Total farm net return under different lambing time



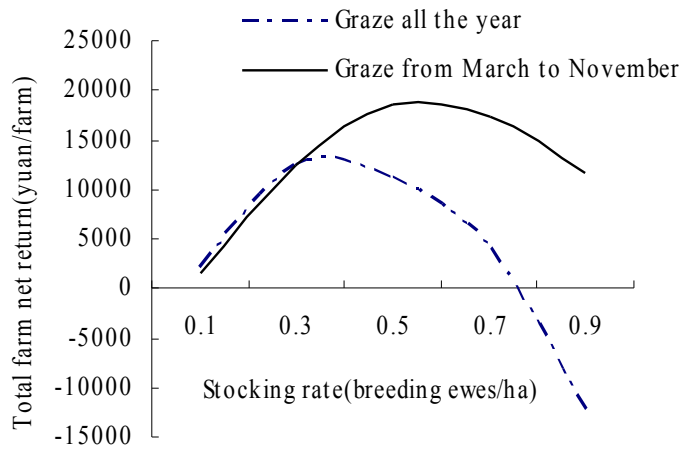
Feeding cost under different lambing time



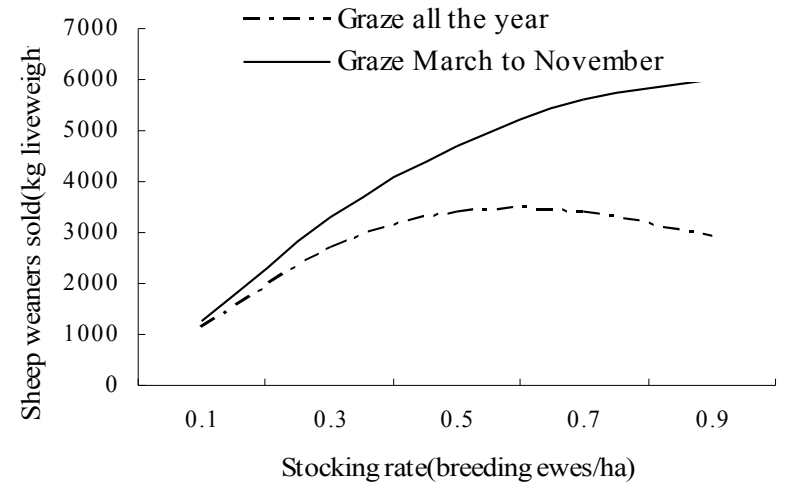
### Grazing all the year



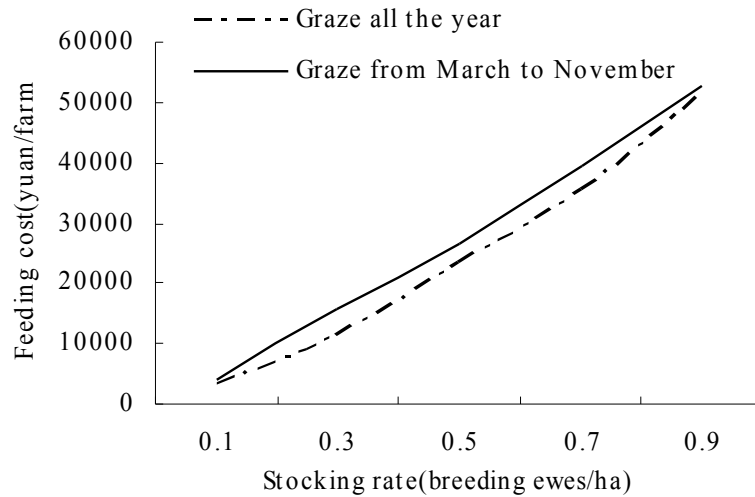
### Pen feeding in warm shed



**(a) Total farm net return**



**(b) Sheep weaners sold**



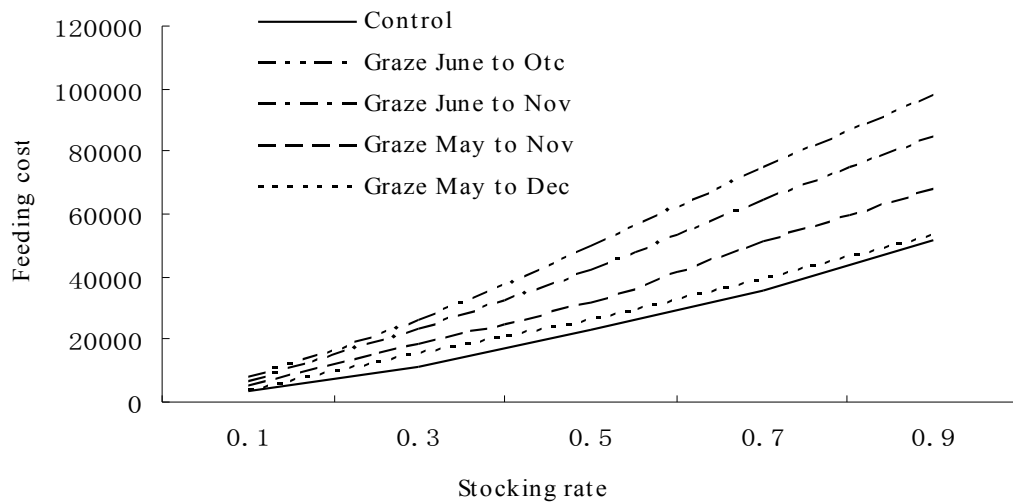
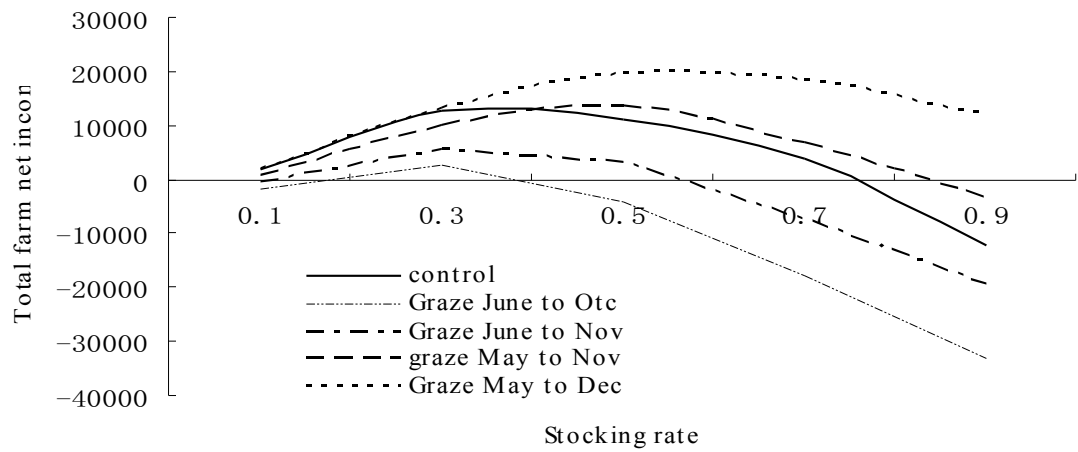
**(c) Feeding cost**

Forage intake under winter grassland grazing usually can't complement the heat loss for maintaining against the cold weather.

The heat loss of sheep each day reach up to 8.81-17.00MJ during winter when the average temperature is below  $-5^{\circ}\text{C}$  per day.

For the warm shed, the temperature of the ground inside is 11°C higher than the outside. Heat exchange between sheep and ground for bed down extremely lowered.

High intensity raising can keep the surrounding environment warm, relatively reduce the amount of supplementary feed and increase livestock productivity.



Pen feeding for several months is much better than grazing all the year.

The question is that what the best period to graze on the grassland is.

What we expected is that grazing from June to October since the grassland condition at this period is the best all around the year.

Pen feeding can not exceed half of a year otherwise the farm strategies will collapse because of money loss. The longer penned beyond half year, the more money loss. The key point is feeding cost which increases along with the pen feeding periods lasting longer.



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- 5 Suggestions
- The management options
- Marketing