



Australian Government

Australian Centre for
International Agricultural Research

Grazing systems on loess soils options at Huanxian

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Outlines

- **District description**
- **Farm survey**
- **Grazing experiment**
- **Energy balance**
- **Better options**
- **Other outcome**

1. District description



Research district

The map shows the outline of Gansu province with a green rectangular area in the north-central region labeled 'Research district'. Major cities are marked with light blue circles: Lanzhou, Yinchuan, Taiyuan, and Xi'an. The text 'Tianshui Huanxian county Gansu province' is written in large blue font in the center-right. An inset map in the top-left shows the location of Gansu province within China. Latitude and longitude markers are present at the corners: 105° E and 110° E at the top, 35° N and 40° N on the right, and 105° E and 110° E at the bottom.

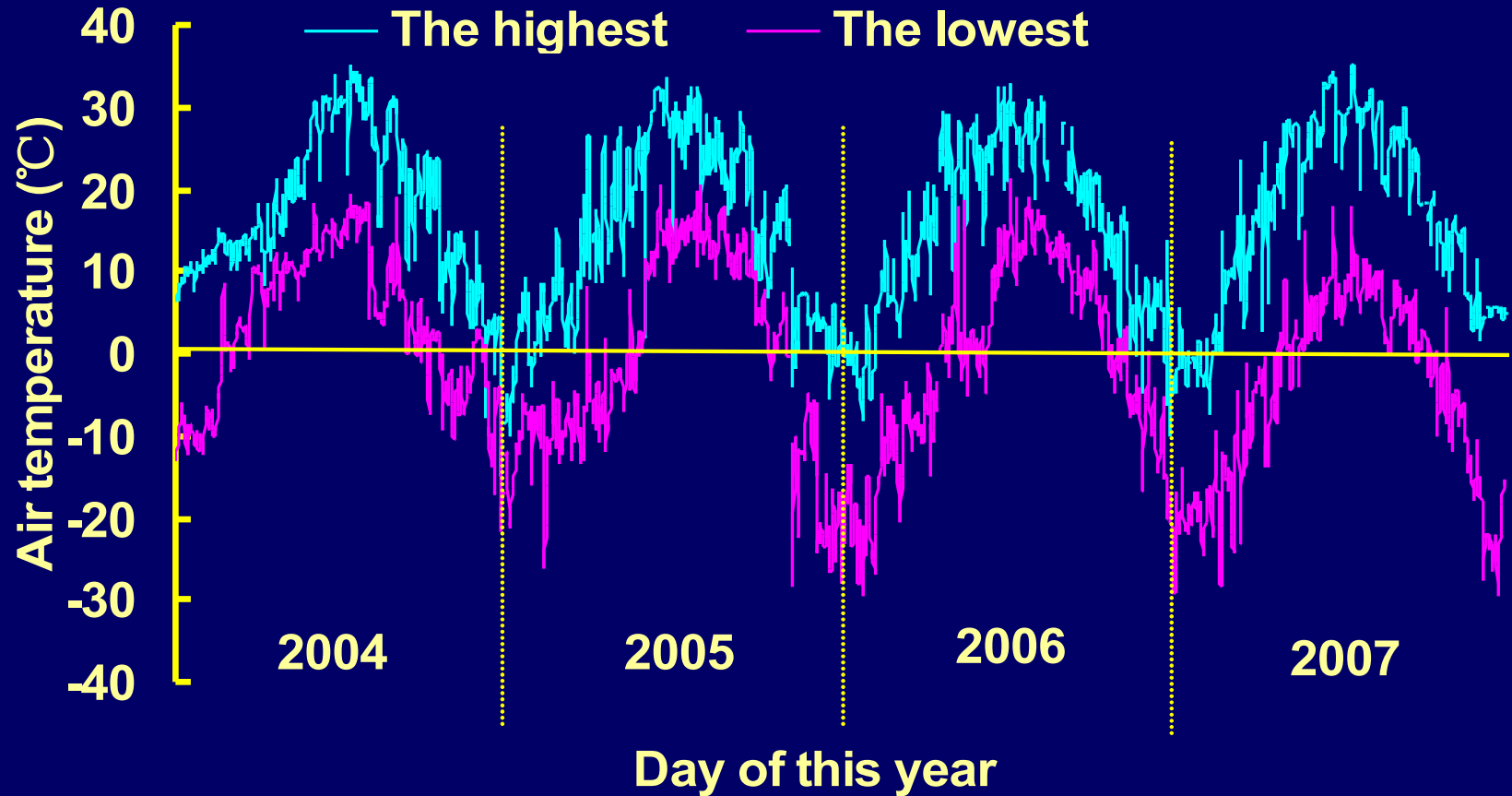
**● Tianshui
Huanxian county
Gansu province**

Hilly area

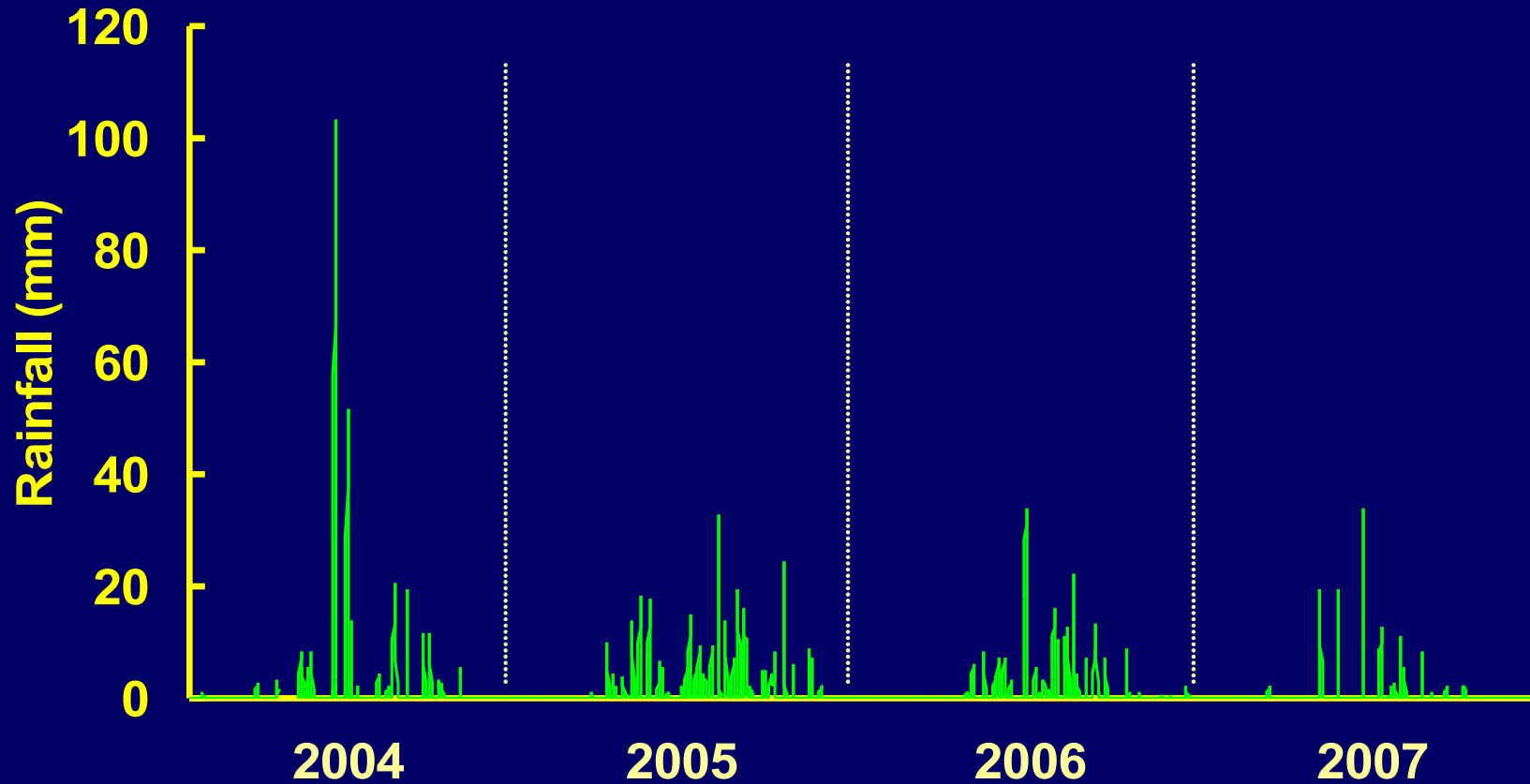
Loessial soil

**Typical steppe: *Stipa bungeana*,
*Lespedeza davurica***

Annual mean temperature 7.4°C



Annual mean rainfall 300 mm

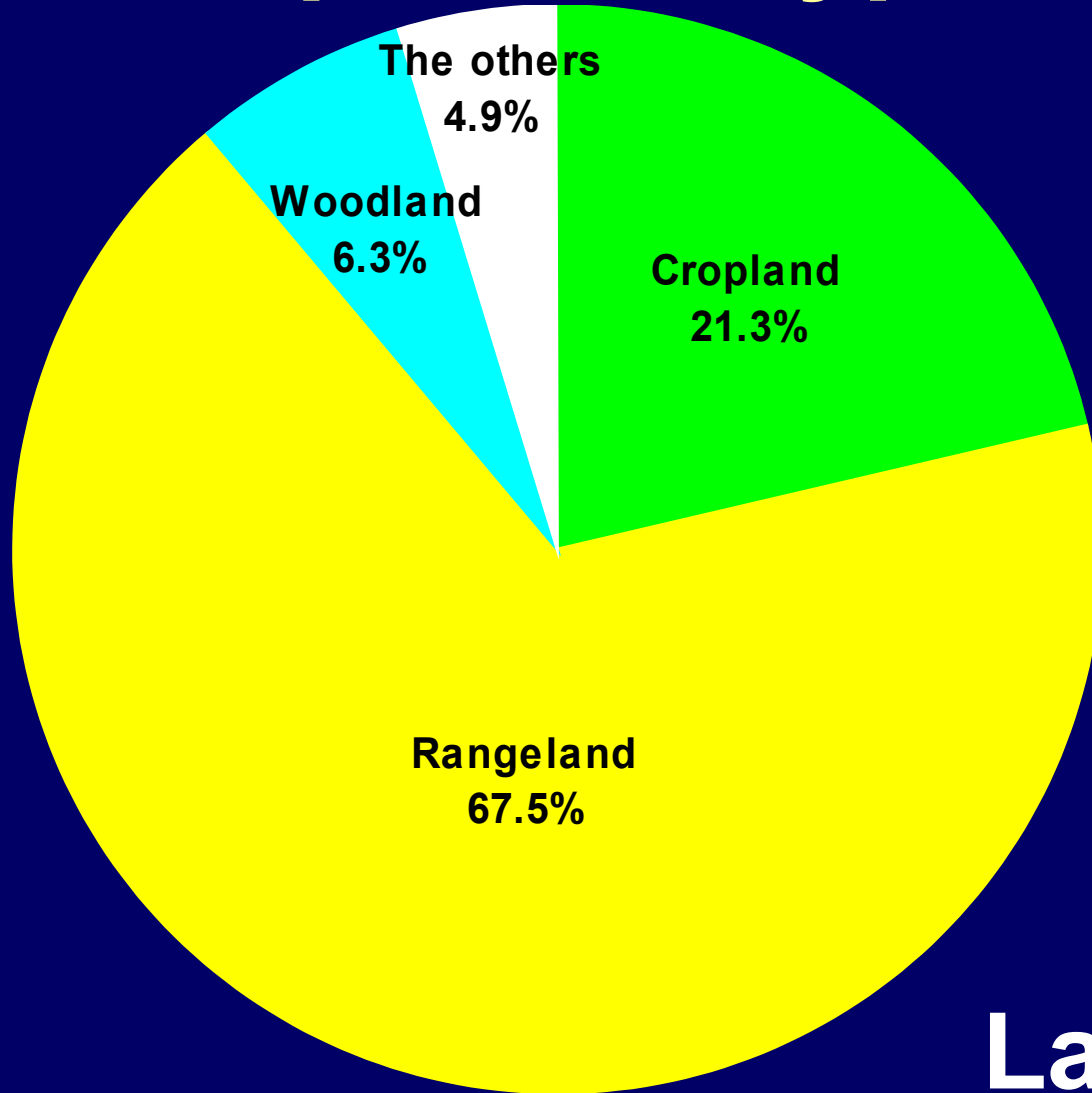


Serious degradation of rangeland

- **90-97% rangeland, 42-64% heavy**
- **Fertility loss: N 60-150kg/ha, P 90-225kg/ha, K 1200-3000kg/ha**

2. Farm survey summary

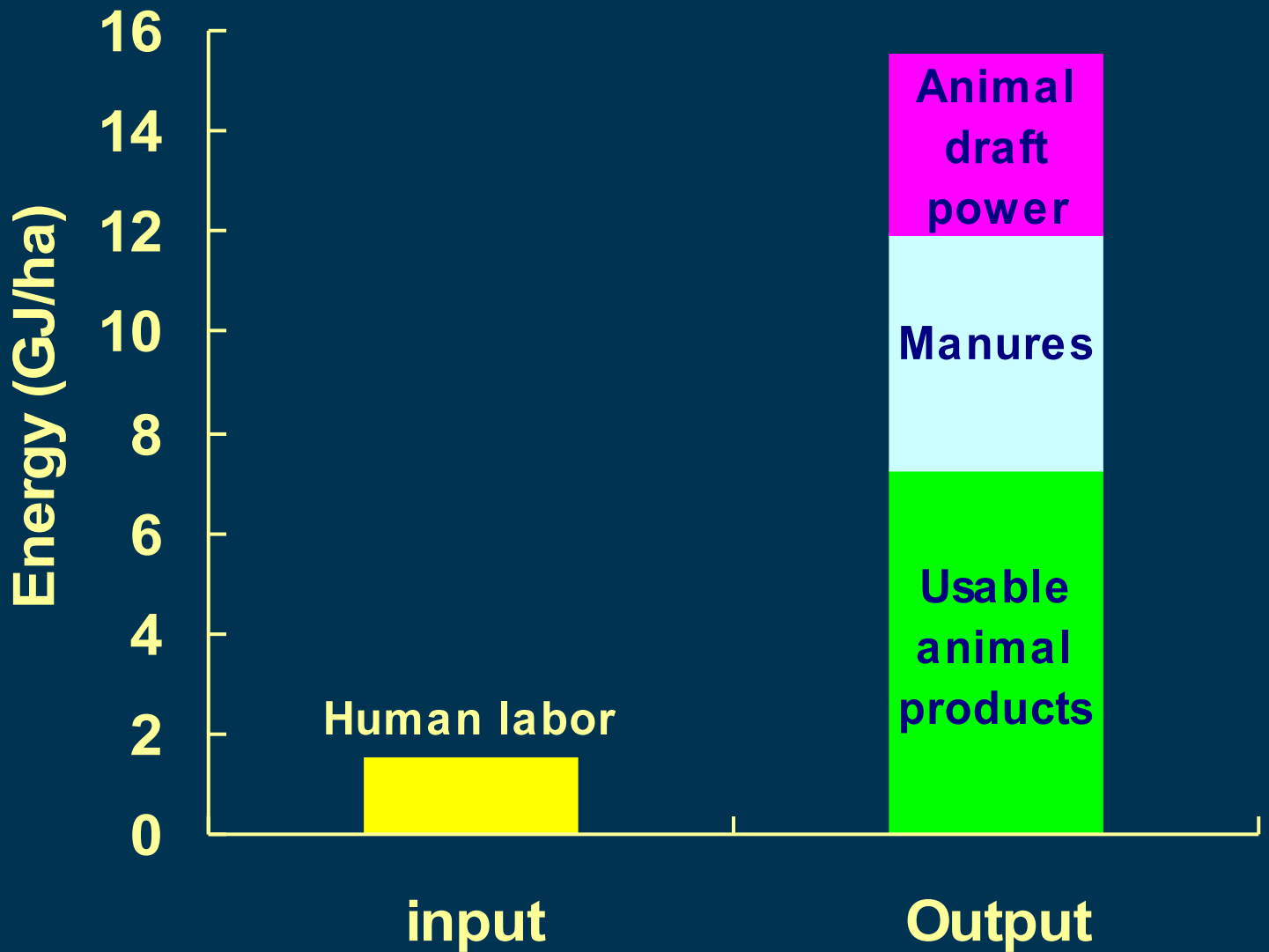
2.1 Description of typical farm



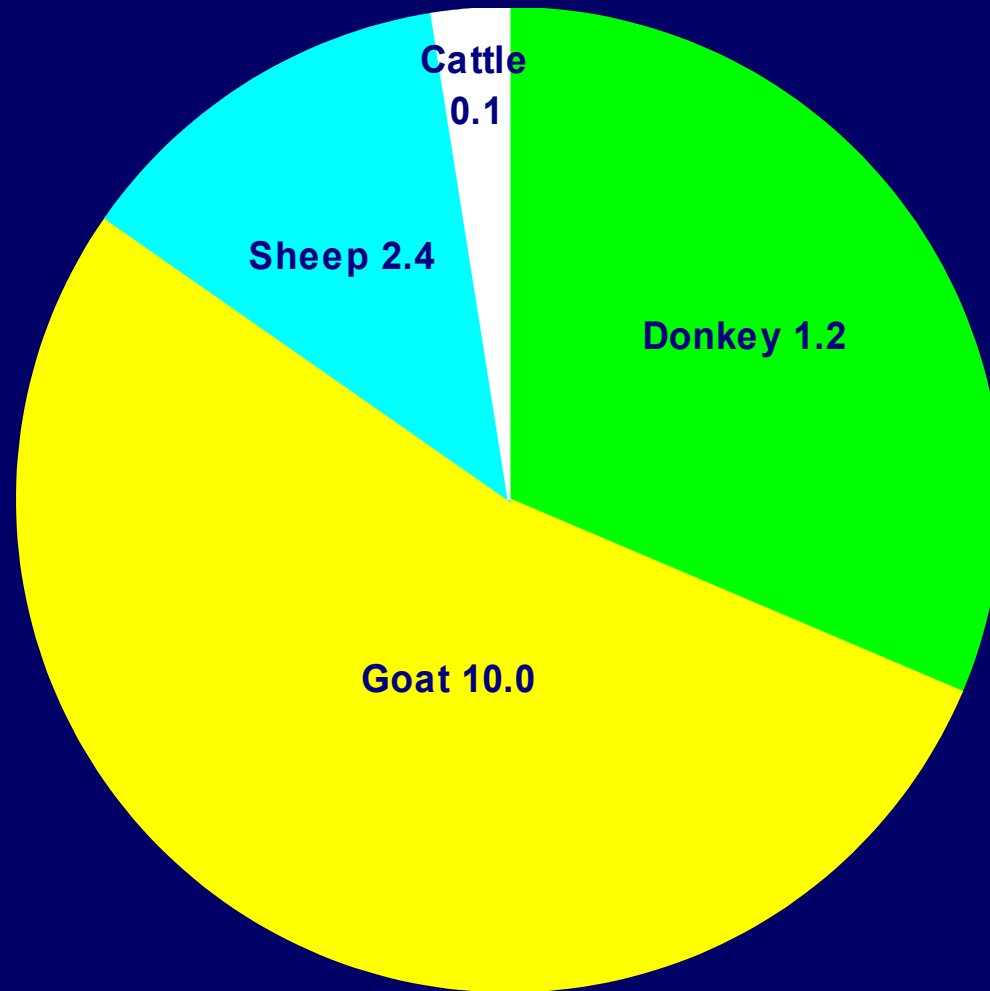
Land use

2.2 Rangeland condition

- **Communal grazing land**
- **High energy output / input ratio**
- **Meet 59.7% of energy demand of livestock**
- **Serious degradation**

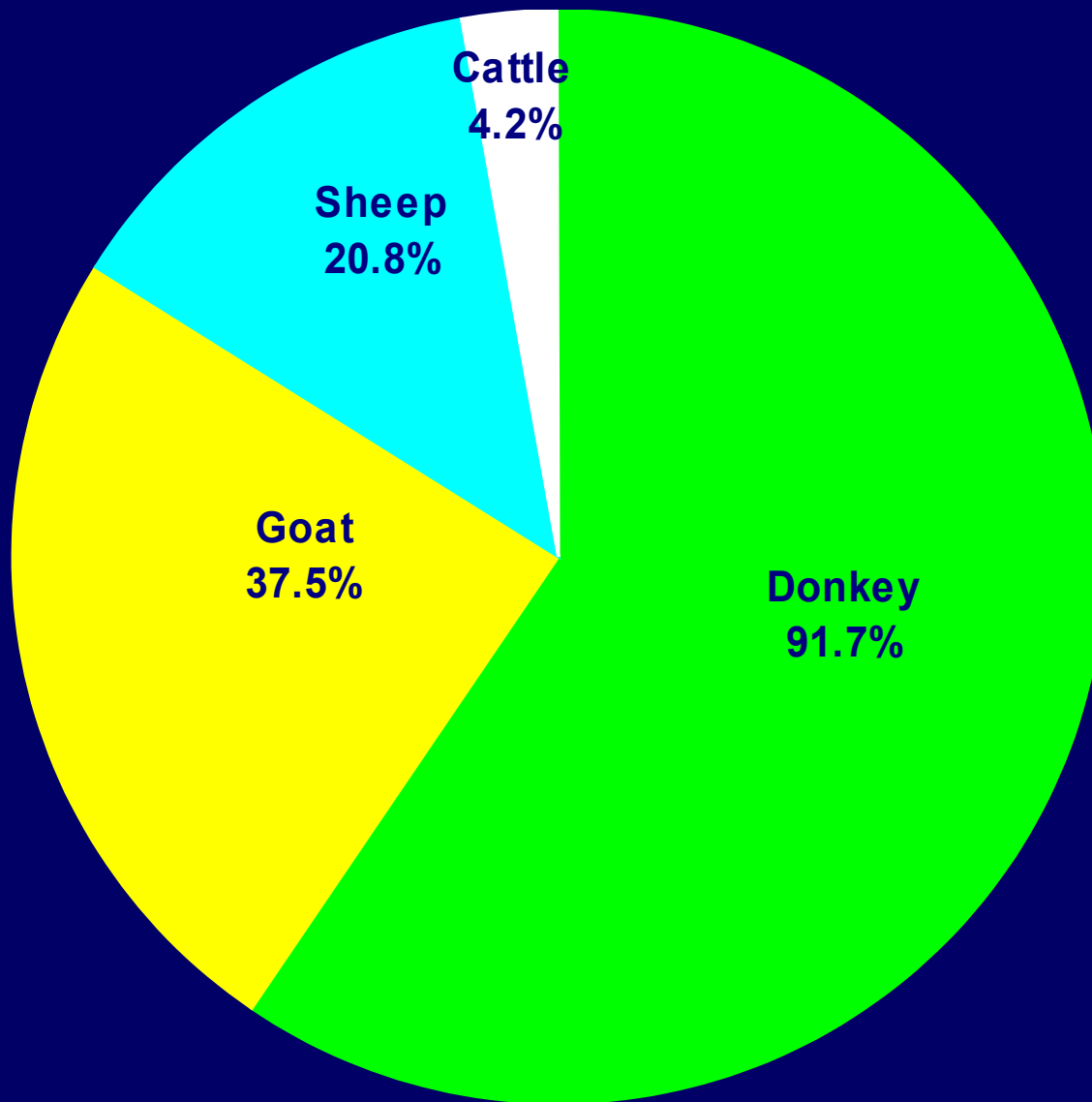


2.3 Animal number and condition



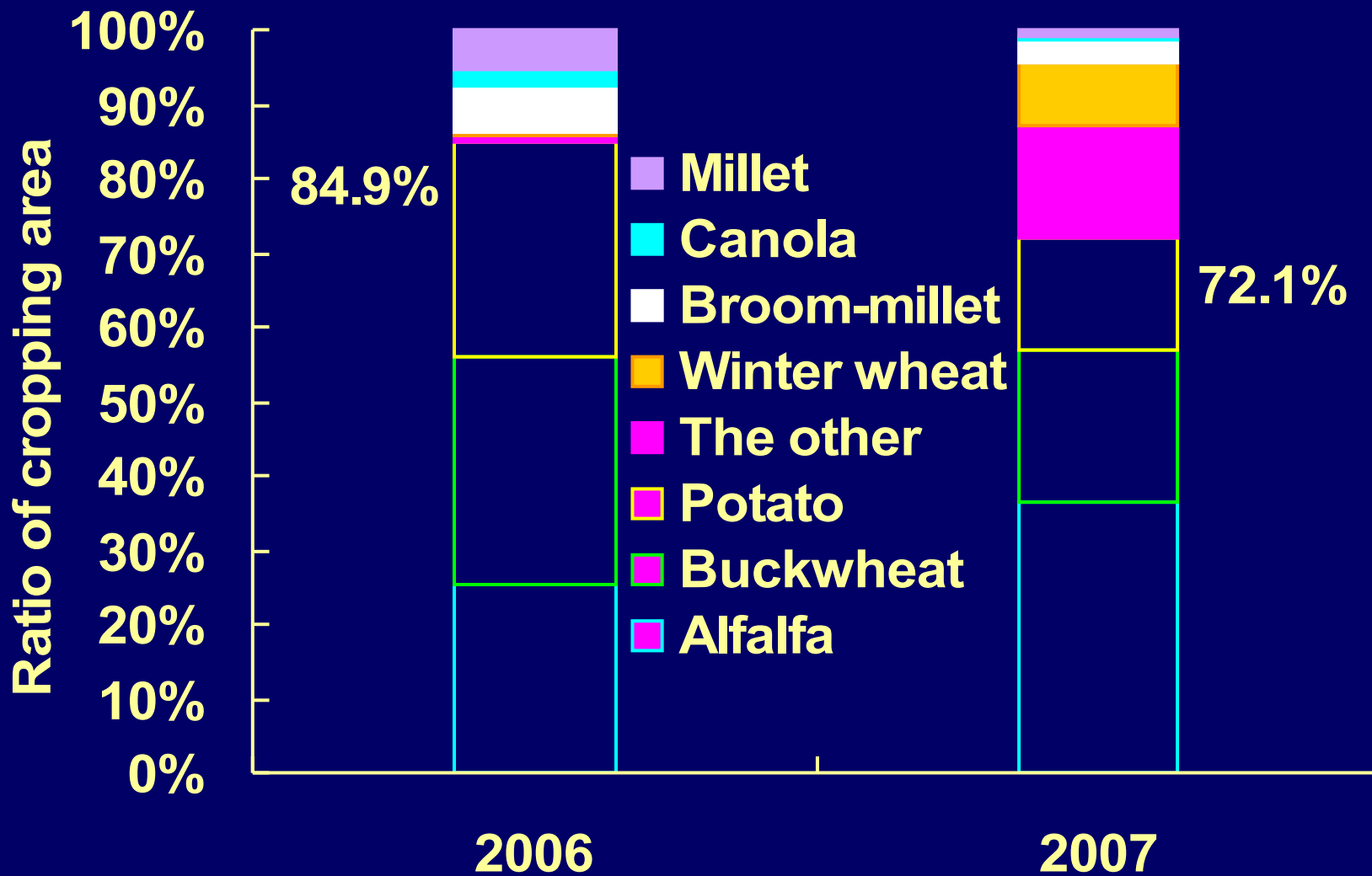
Animal number in farm

Number of farms with livestock

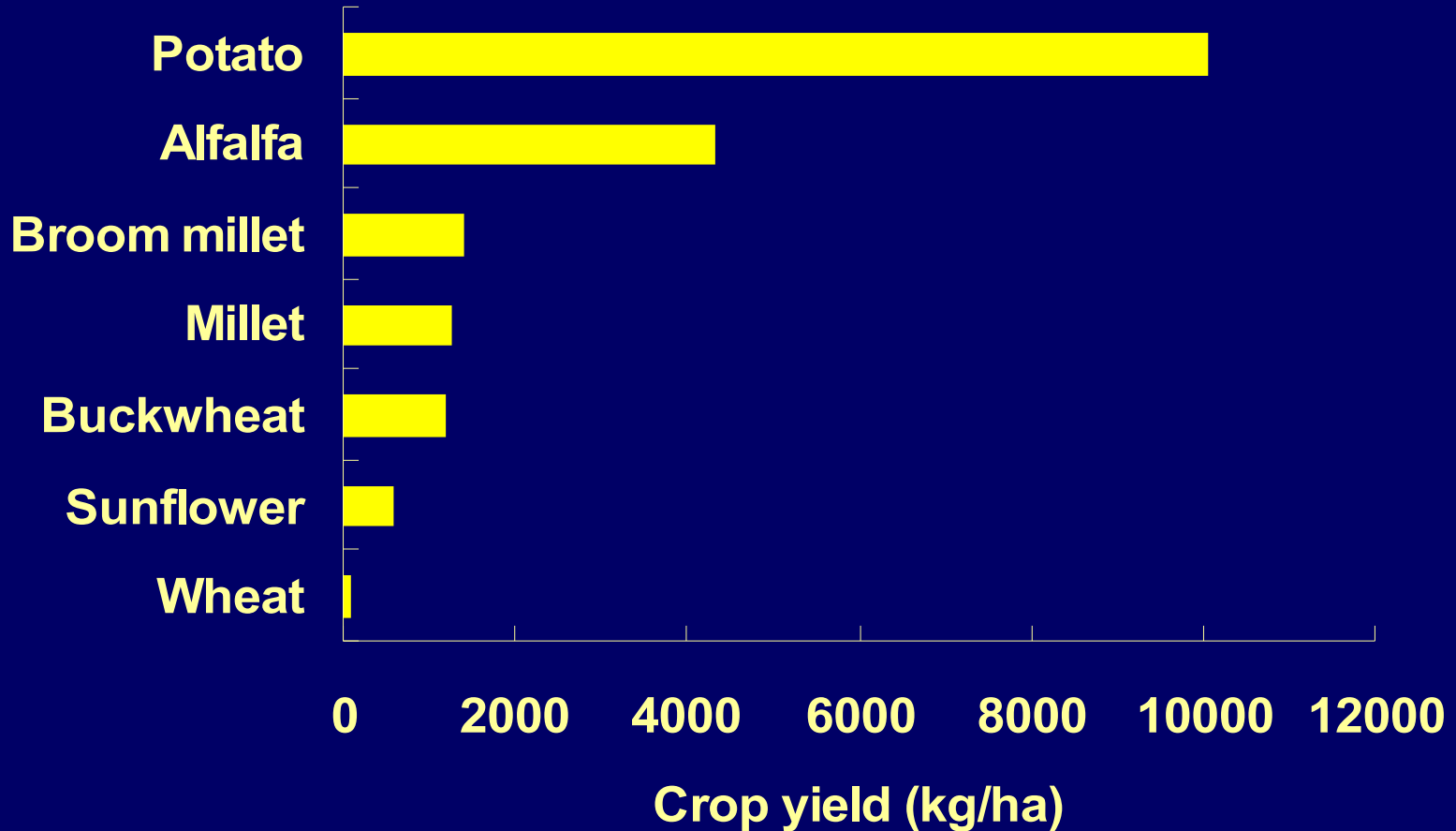


Contribution of livestock production to crop production

- 53.8% of draft power
- 49.6% of fertilizers
- 40.1% of net income



Crop yield



2.5 Household members

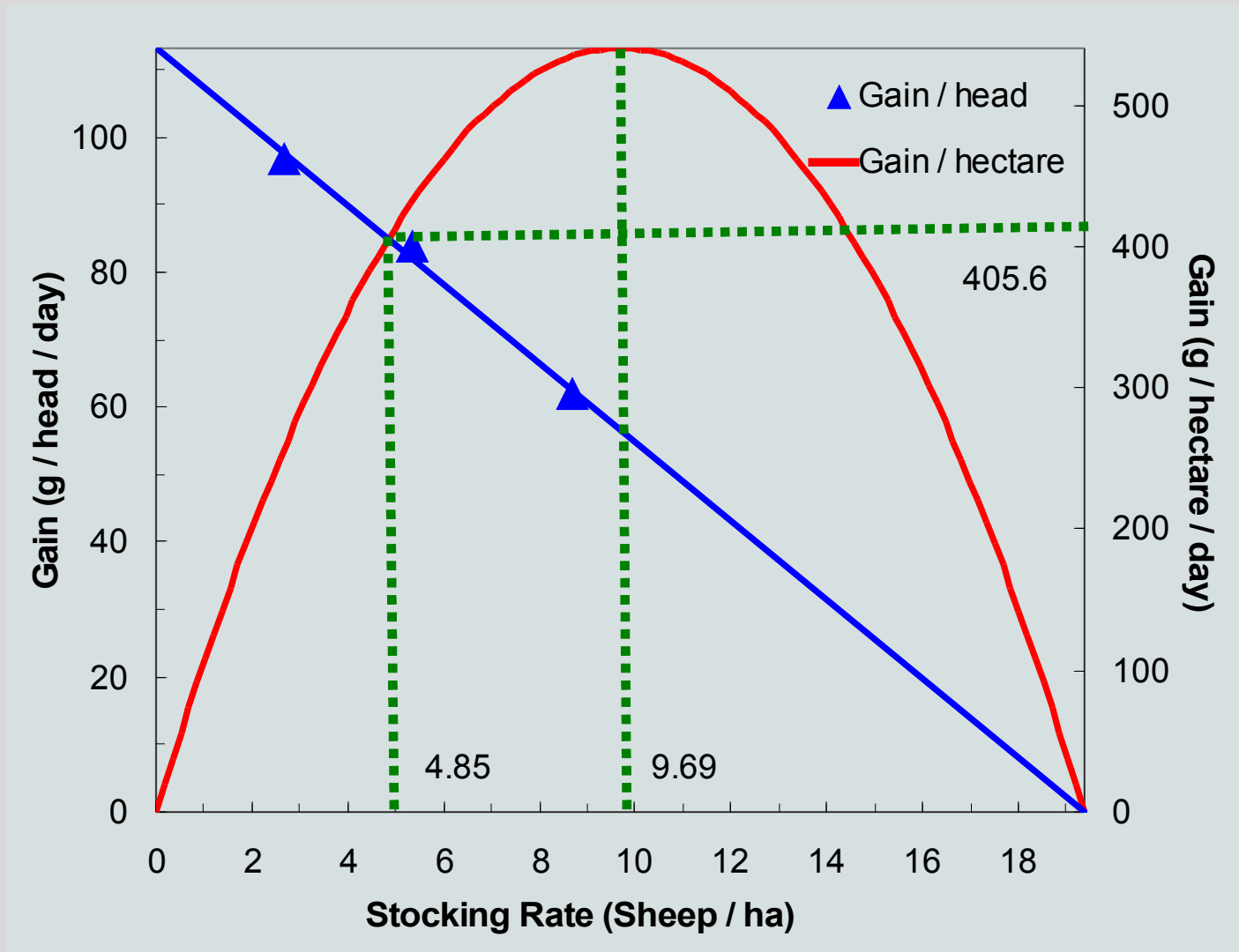
- **5.9 persons and 1.4 labors in each farm**
- **Human power input of each per year: 698.1 h and 474.0MJ for crop production, 1407.8 h and 588.5 MJ for livestock production**

2.6 Revenue and costs



3. Grazing experiment

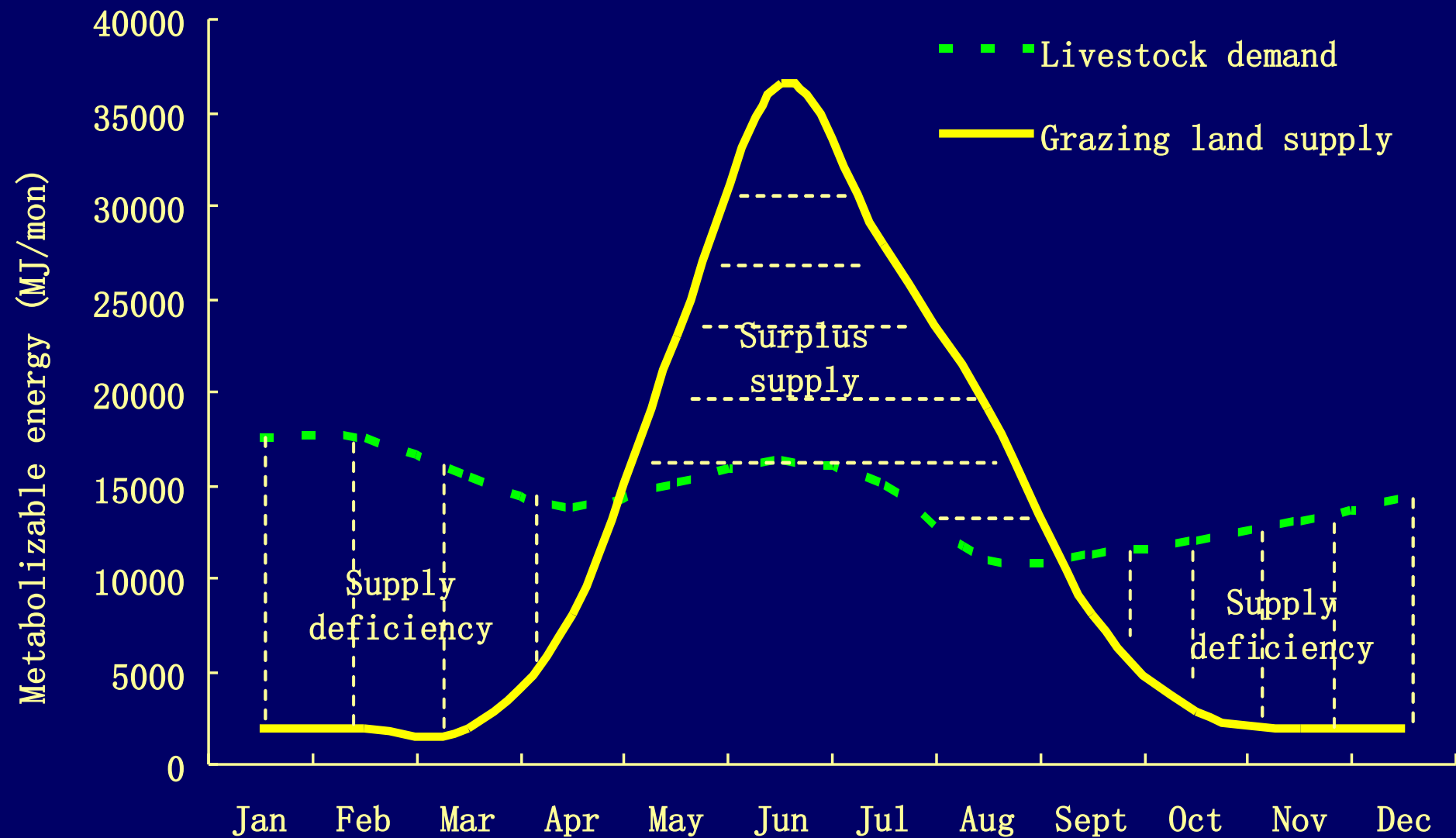
Tan sheep rotation grazing in summer



Proper stocking rate and maximum productivity

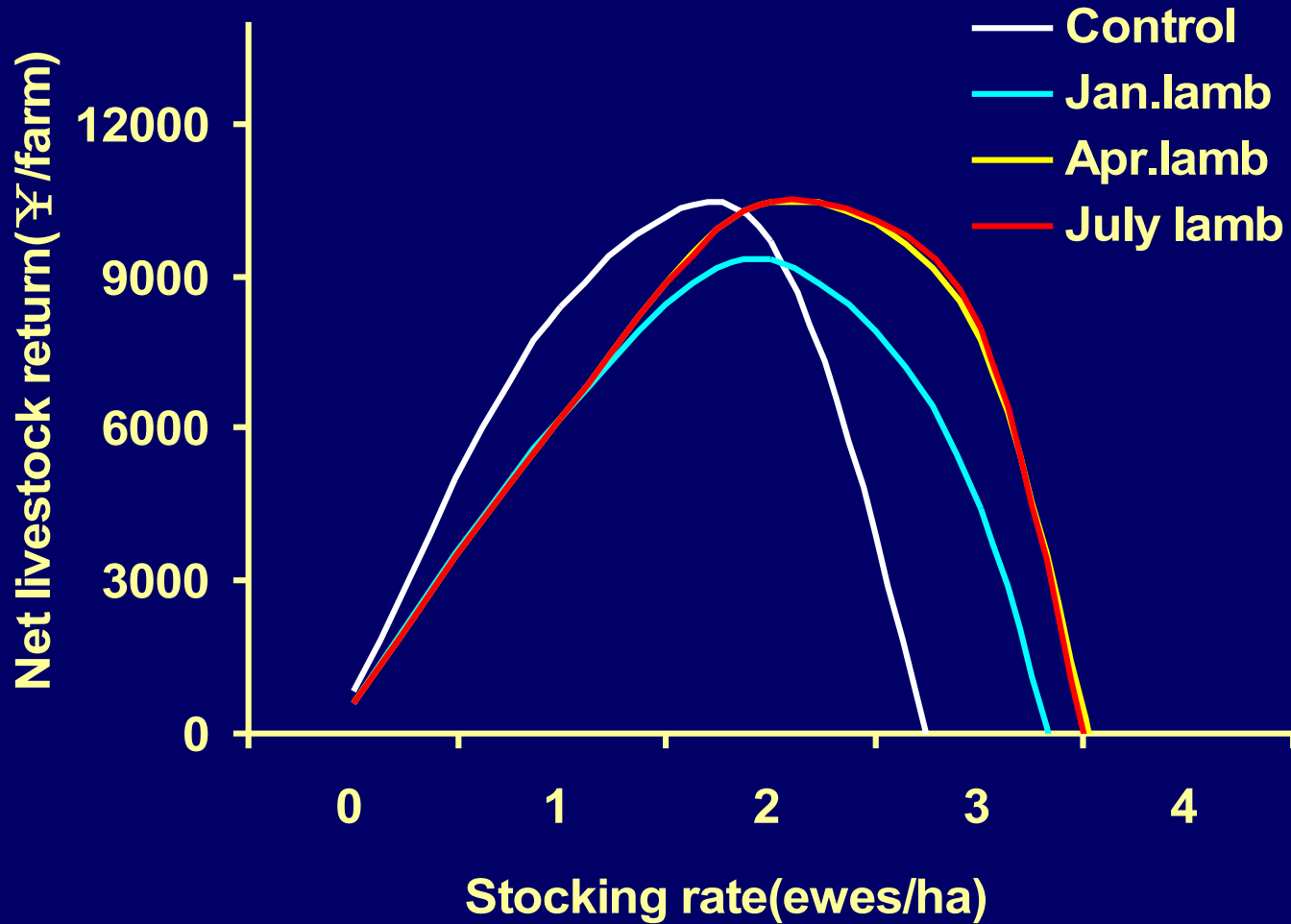
Year	Proper SR (sheep/ha)	Max Productivity (kg/ha)
2002	5.5	80.1
2003	4.3	86.9
2004	4.8	42.9
2005	3.7	36.8
2006	5.4	34.4
2007	4.7	33.7

4. Energy balance livestock production in typical farms

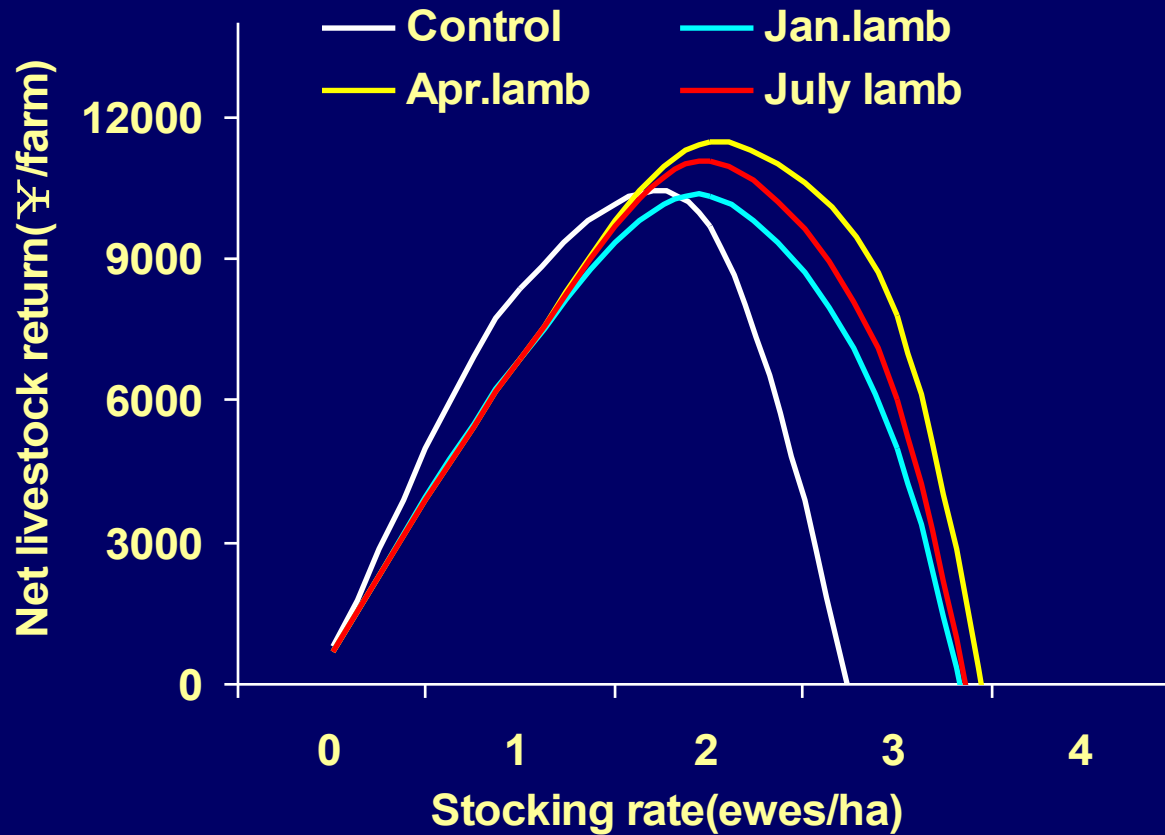


5. Better options for farm improvement

5.1 Lamb sale at 6months

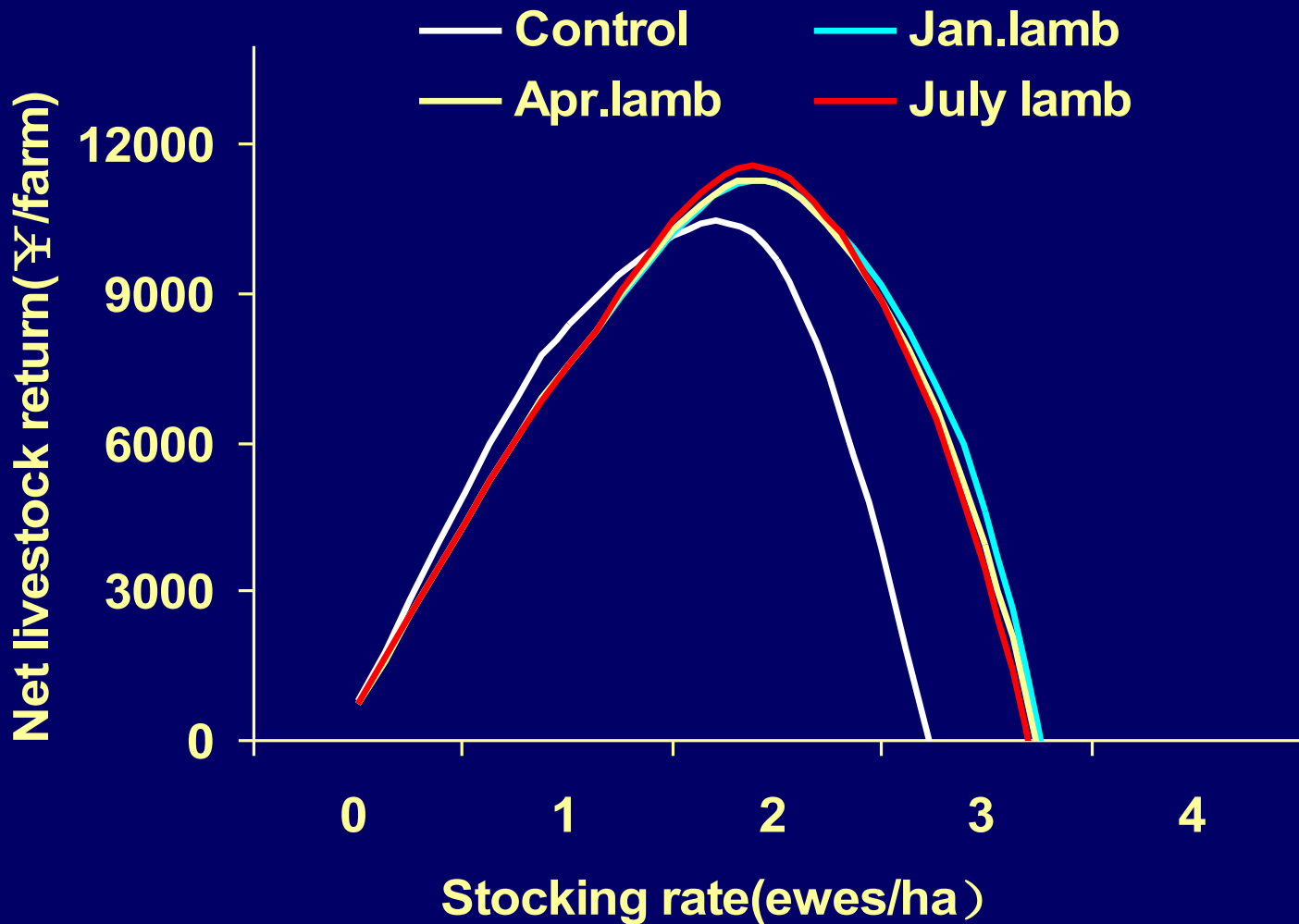


5.2 Lamb sale at 9months

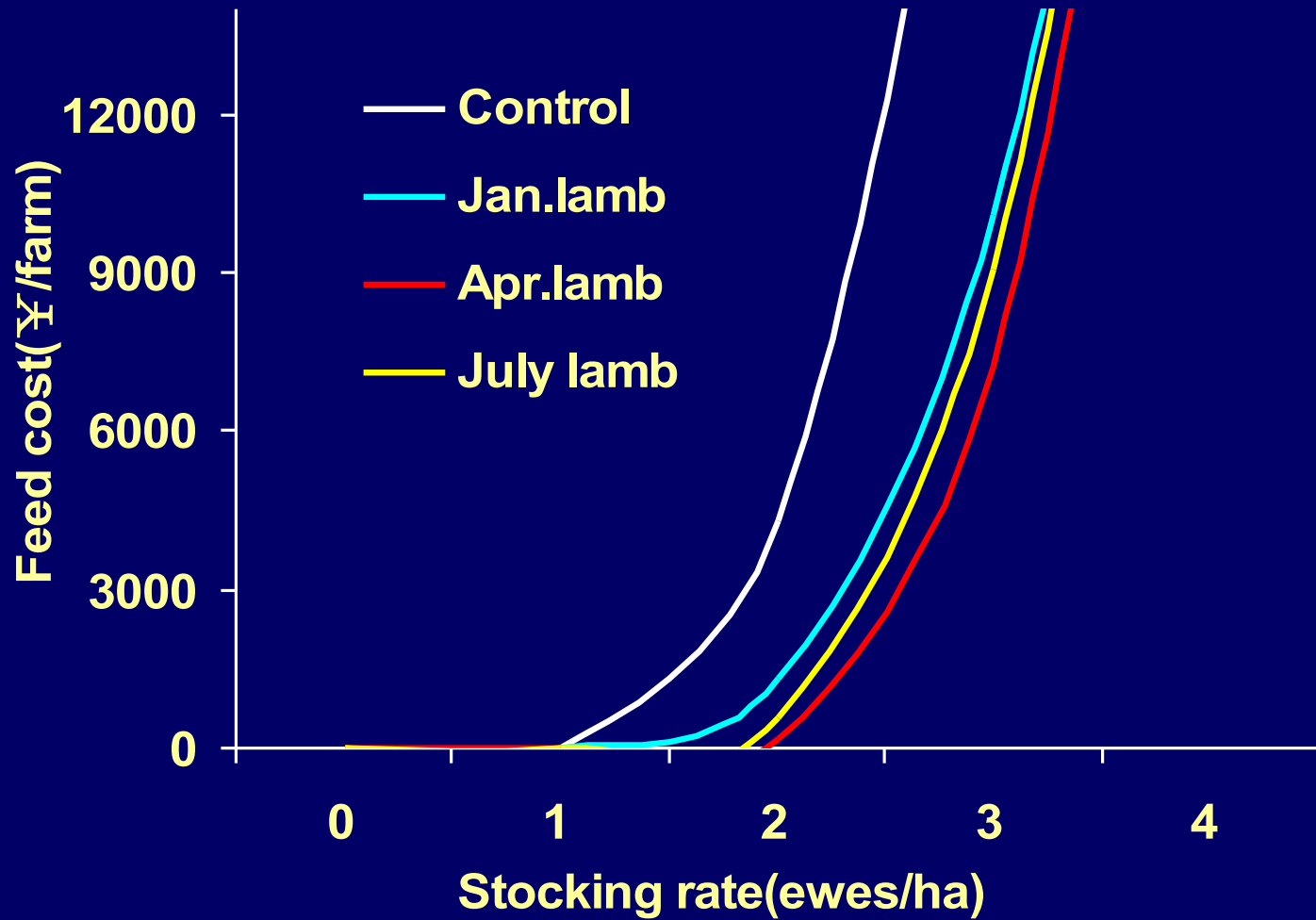


Net return

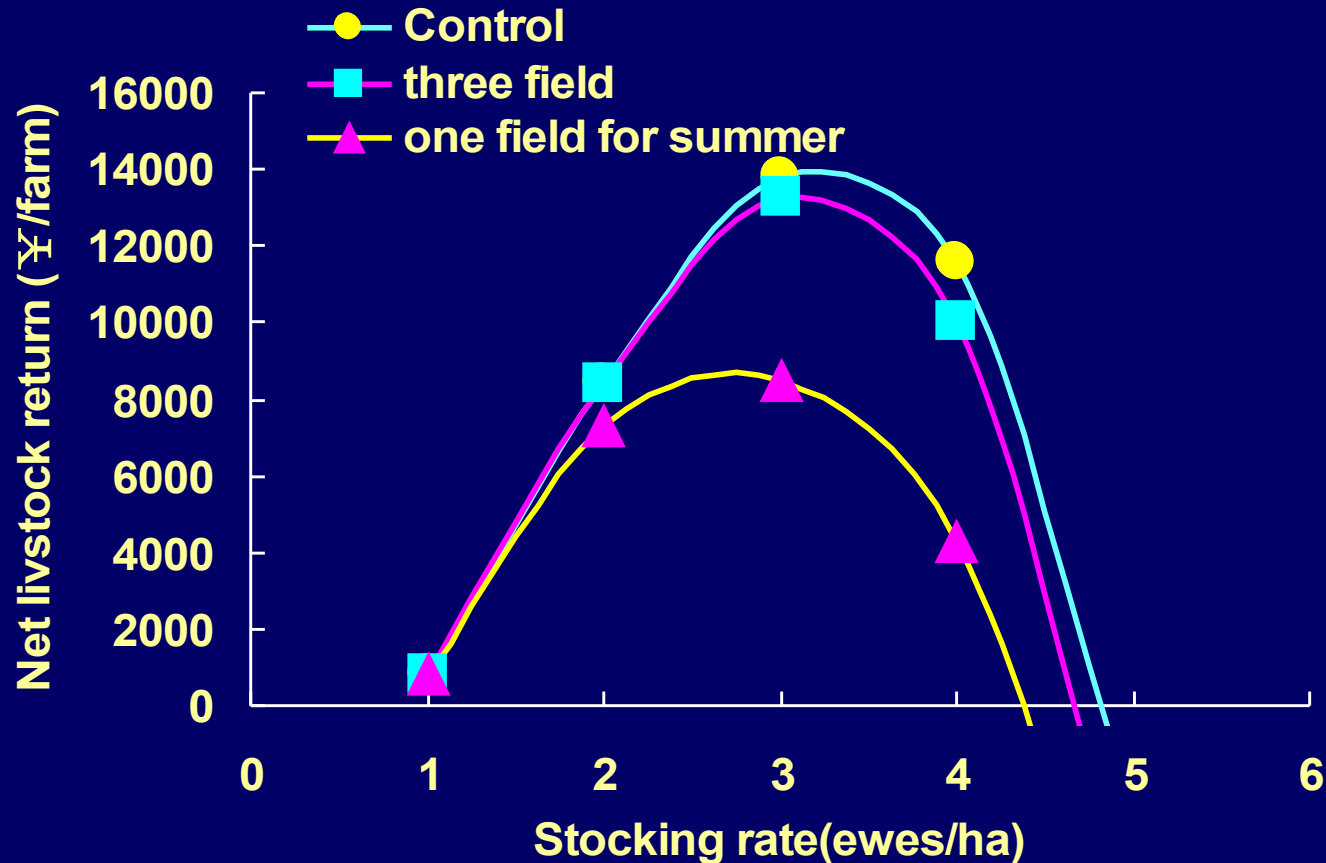
5.3 Lamb sale at 12months



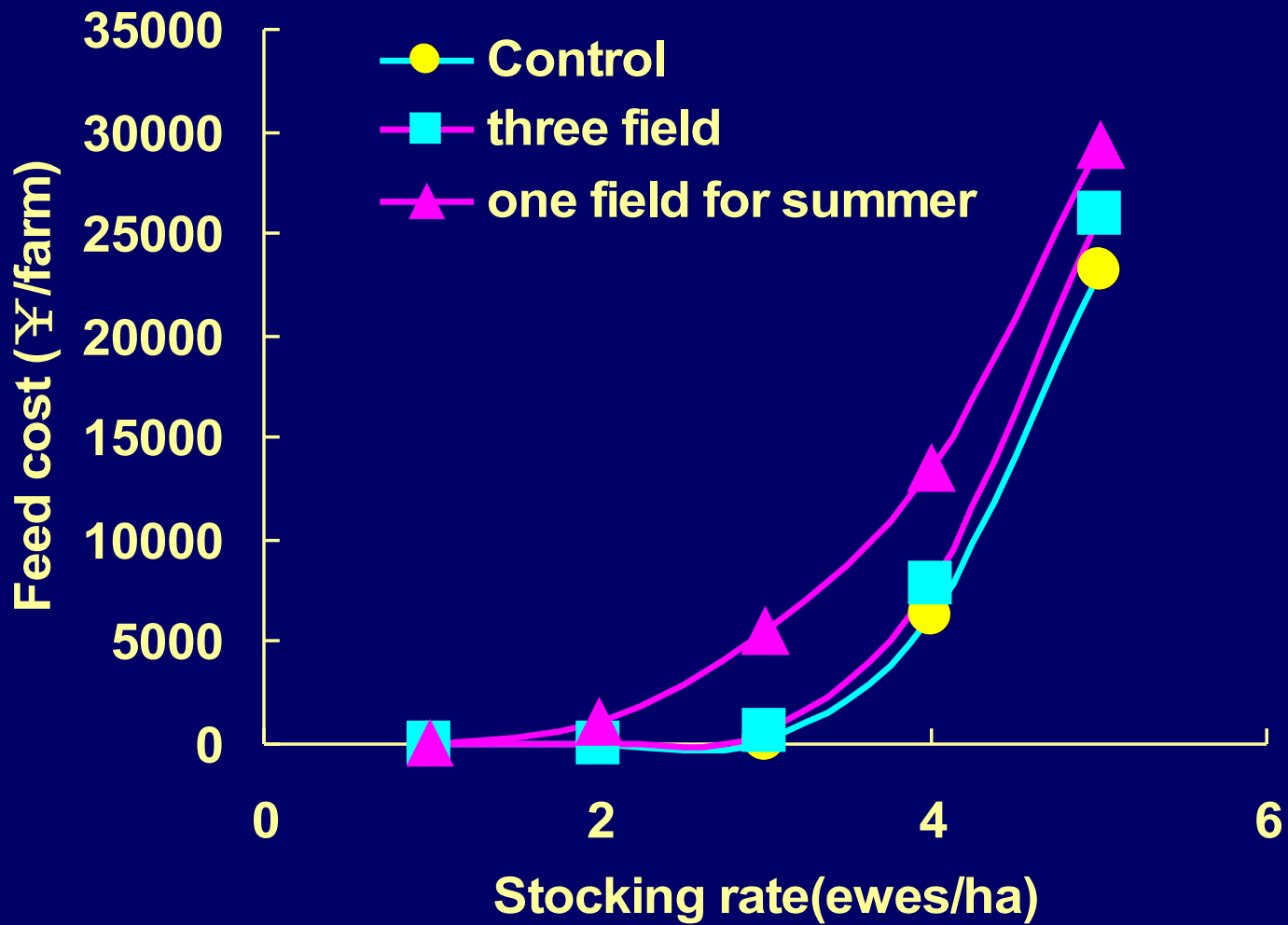
Cost



5.4 Change grazing methods



Net return



Cost

6. Other outcome

- **Improvement of grazing management**
- **More sown grassland**
- **Increase in income of farm**

Thank you!