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Grazing systems between the Tibetan plateau and the Hexi corridor: *A case study of Sunan County*

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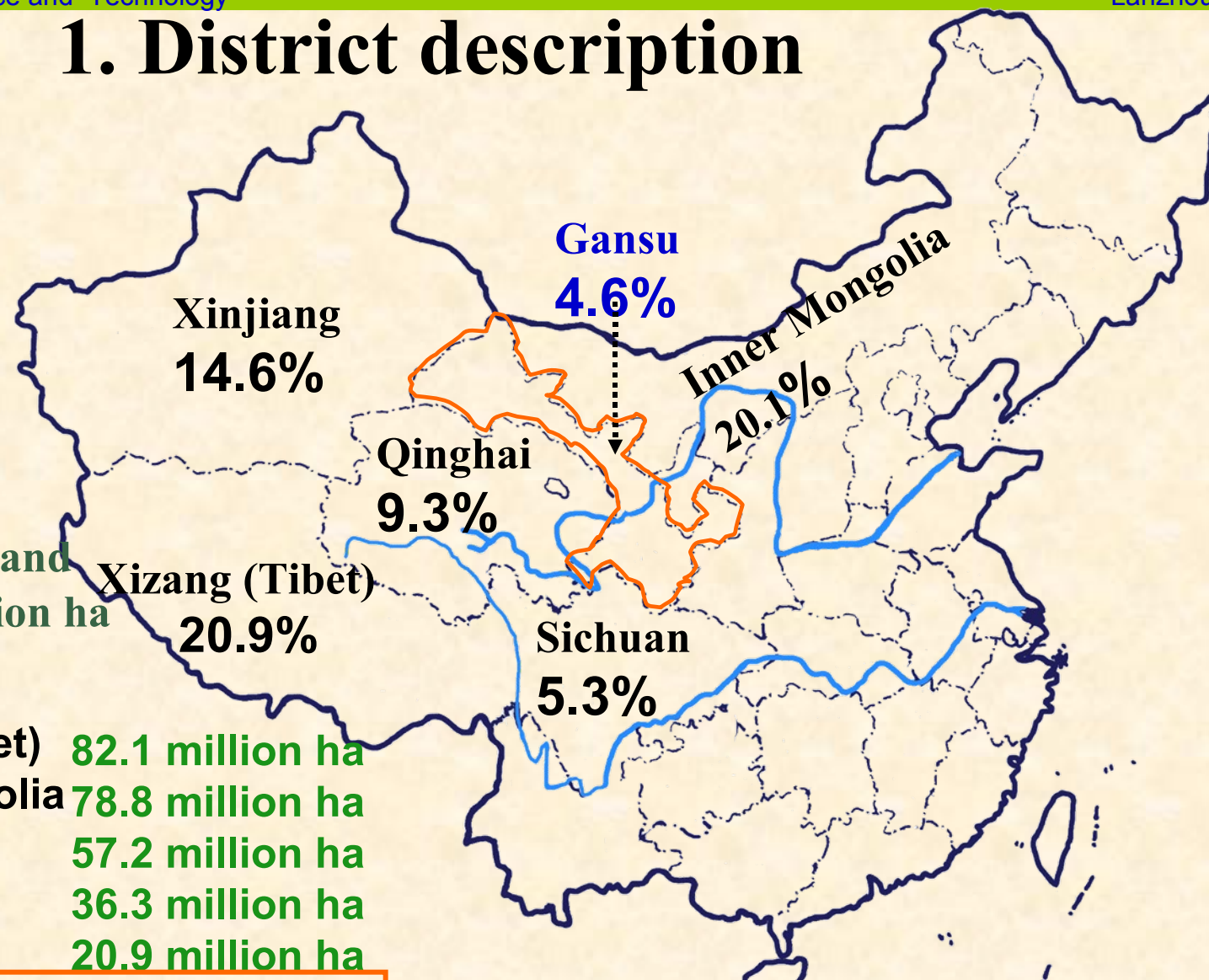


Outline

- 
- District description**
 - Farm survey summary**
 - Current status of typical farms**
 - Better options for farm improvement**
 - Local data from experiments**



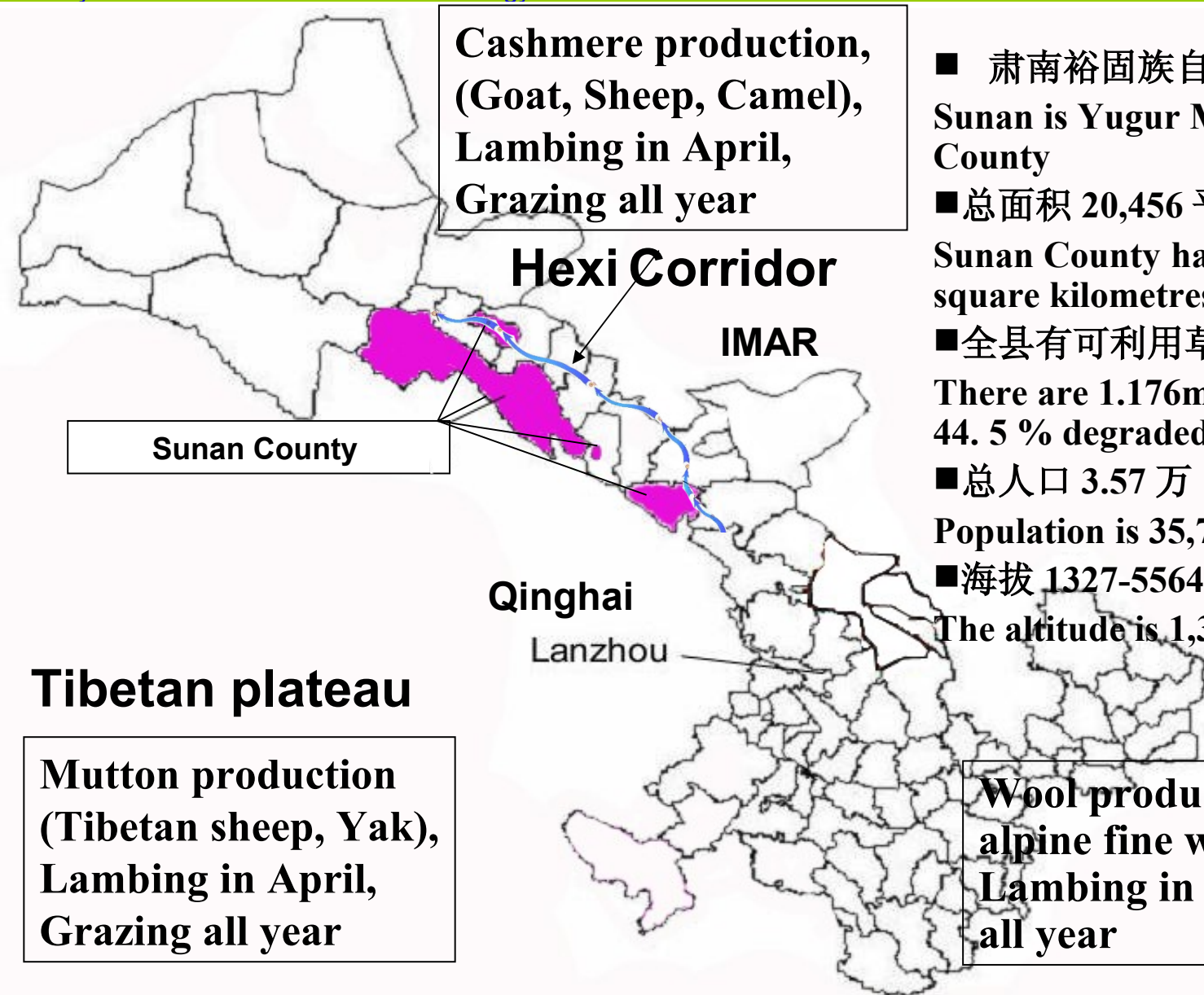
1. District description



The total grassland area is 3.92 billion ha in China

- 1. Xizang (Tibet) 82.1 million ha
- 2. Inner Mongolia 78.8 million ha
- 3. Xinjiang 57.2 million ha
- 4. Qinghai 36.3 million ha
- 5. Sichuan 20.9 million ha
- 6. Gansu 17.9 million ha

Source: Wang H. Zhao L.M. Wang Y.S. 2005



**Cashmere production,
(Goat, Sheep, Camel),
Lambing in April,
Grazing all year**

■ 肃南裕固族自治县
Sunan is Yugur Minority Autonomous County

■ 总面积 20,456 平方公里
Sunan County has an area of 20,456 square kilometres

■ 全县有可利用草原面积 117.6 万公顷
There are 1.176m ha usable grassland, 44.5 % degraded (Ning 2004)

■ 总人口 3.57 万 (2005 年)
Population is 35,700 (2005)

■ 海拔 1327-5564 米
The altitude is 1,327-5,564 m

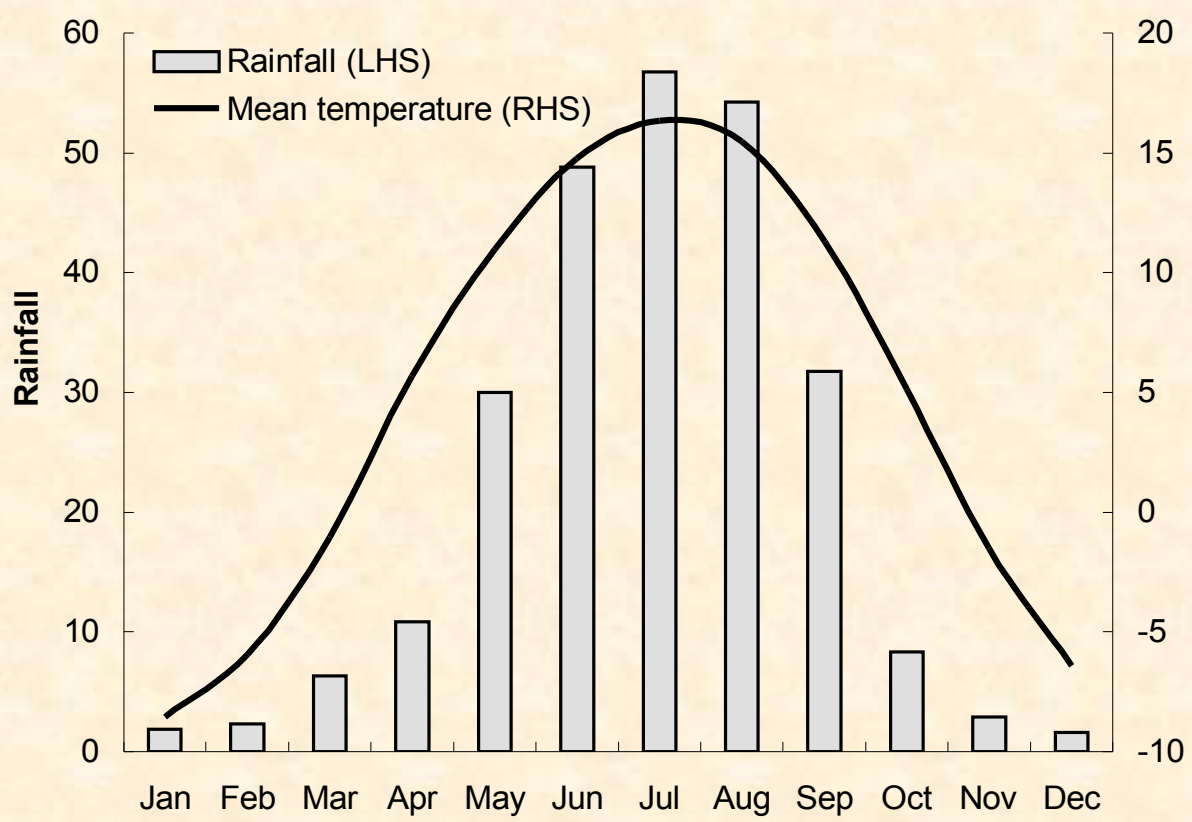
Tibetan plateau

**Mutton production
(Tibetan sheep, Yak),
Lambing in April,
Grazing all year**

**Wool production (Gansu
alpine fine wool sheep),
Lambing in April, Grazing
all year**



气候概况 Climate



Mean monthly temperature and Rainfall for Sunan County (1975-2006), Gansu

- 大陆型气候与高山气候交汇
Continental Climate with Alpine climate
- 全年平均气温 2-6 摄氏度
The mean temperature is 2-6°C ,
- 日照时数 2200-3100 h
The total annual sunshine hours are 2,200-3,100h
- 年平均降雨量 80mm-450mm
Annual precipitation is 80mm-450mm
- 年蒸发量 250~2900mm
Annual Evaporator is 250~2900mm
- 平均无霜期 127 天
There are 127 frost-free days.



土壤类型 Soil types

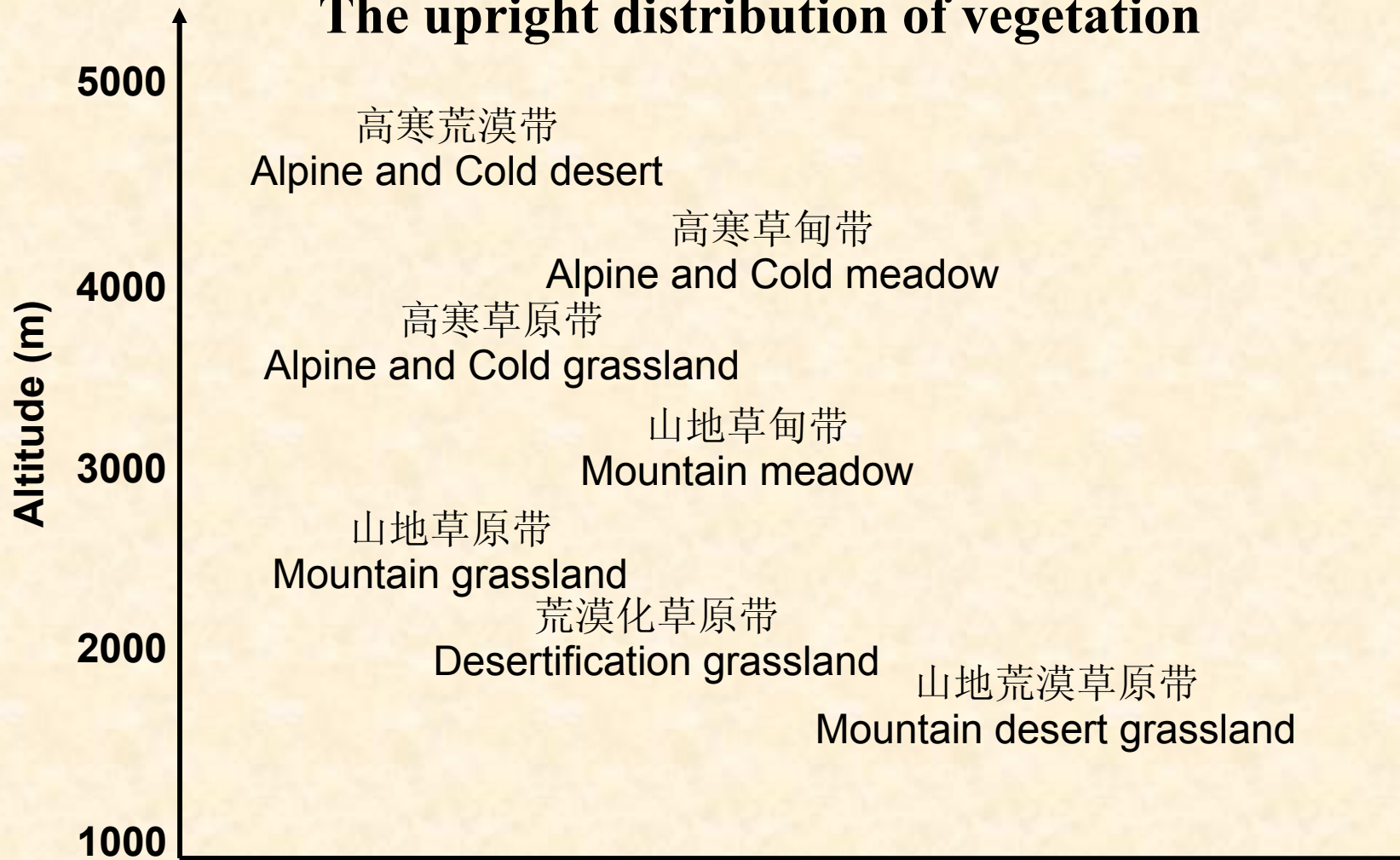
- | | |
|-----------|---------------------------------------|
| ■ 高山寒漠土类 | □ Alpine frozen soil |
| ■ 高山草甸土类 | □ Alpine meadow soil |
| ■ 高山草原土类 | □ Alpine steppe soil |
| ■ 亚高山草甸土类 | □ Sub-alpine meadow soil |
| ■ 亚高山草原土类 | □ Sub-alpine steppe soil |
| ■ 灰褐土类 | □ Gray-drab soil |
| ■ 山地黑钙土类 | □ Mountain Chernozem |
| ■ 山地栗钙土 | □ Mountain chestnut soil |
| ■ 山地棕钙土类 | □ Mountain brown deserter steppe soil |
| ■ 灰漠土类 | □ Gray desert soil |
| ■ 暗棕壤 | □ Dark brown soil |

Source: Sunan Yugur Minority Autonomous County annals 1994



植被垂直分布

The upright distribution of vegetation



Source: Wu Jianping et. al 2003



Mainly Species, Poison grasses, Weeds and Pests

Cold-temperate Subhumid rangeland
(Hu Z.Z 1997).

Mainly species are :

- 扁穗冰草 *Agropyron cristatum*,
- 西北针茅 *Stipa krylovii*,
- 洽草 *Koeleria cristate*,
- 草地早熟禾 *Poa pratensis*,
- 赖草 *Leymus secalinus*,

The main species of poison grasses
and weeds are:

- 狼毒 *Stellera chamaejasme*
- 棘豆 *Oxytopis Dc*
- 披针叶黄花 *Thermopsis lanceolata*
- 甘肃臭草 *Mprzewalskyi roskev*
- 醉马草 *Achnatherum inebrianskeng*

The mainly species of Grasshopper are:

- 雏蝗 *Chorthippus fieber*
- 星翅蝗 *Cauiptamus serville*
- 小车蝗 *Oedaleus fieber*
- 曲背蝗 *Pararcyptera toorbinsky*

危害面积 28.47 万 ha

The main species of Rodent Pest are:

- 高原鼠兔 *Qchotma curzonlae*
- 中华鼯鼠 *Myospalax fontanieri*
- 沙土鼠 *Meriones hnguicalcatus*

危害面积 55,115 ha



2. Farm survey summary

Since 2005, 52 farmers have been surveyed using PRA method at Kangle town and Dahe town in Sunan county, and selected typical farms which represents a major share of enterprise in the area. The brief summary as follow:

- Number of people per household is 4, there are 2 working members
- The rangeland resource,
 - summer pasture: 35ha,
 - autumn pasture: 37ha,
 - winter and spring pasture: 62ha;
- The enterprise is Gansu alpine fine wool sheep production;
- Lambing time is from April to May, weaning month is around September
- The shearing time is around June, sales time is around September;



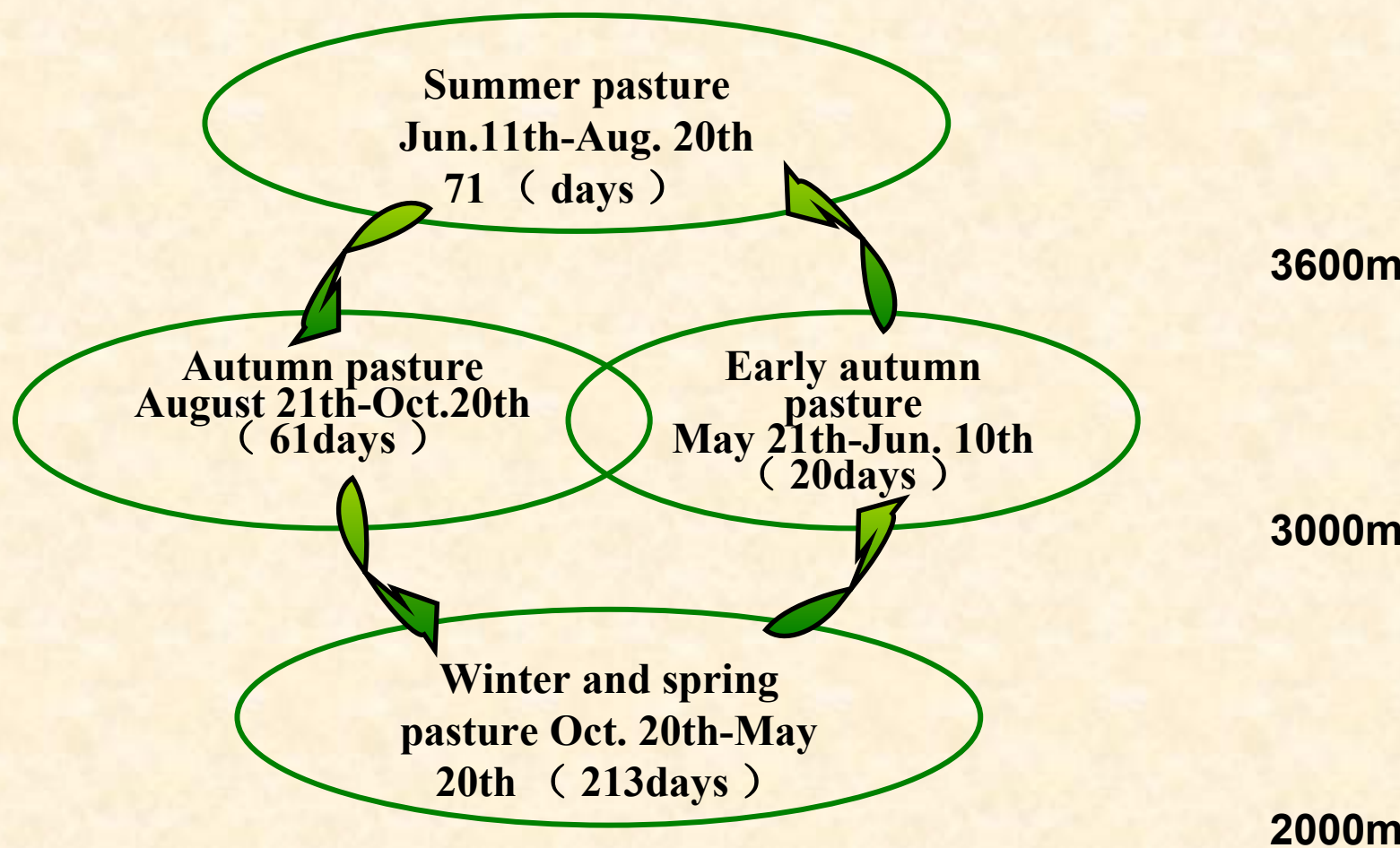
2. Farm survey summary

The number and bodyweight of sheep

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ewes (female over 12 months)													
-Number	hd	88	88	88	88	104	104	104	104	92	88	88	88
-Bodyweight	kg	40	39	39	39	34	37	41	41	42	43	43	42
Lambs (under 12 months)													
-Number	hd	44	44	44	44	81	81	81	81	49	44	44	44
-Bodyweight	kg	23	21	21	21	3	6	9	13	16	18	21	23
Wether (male over 12 months)													
-Number	hd	34	34	34	34	57	57	57	54	34	34	34	34
-Bodyweight	kg	48	47	47	47	41	45	49	50	51	52	51	51



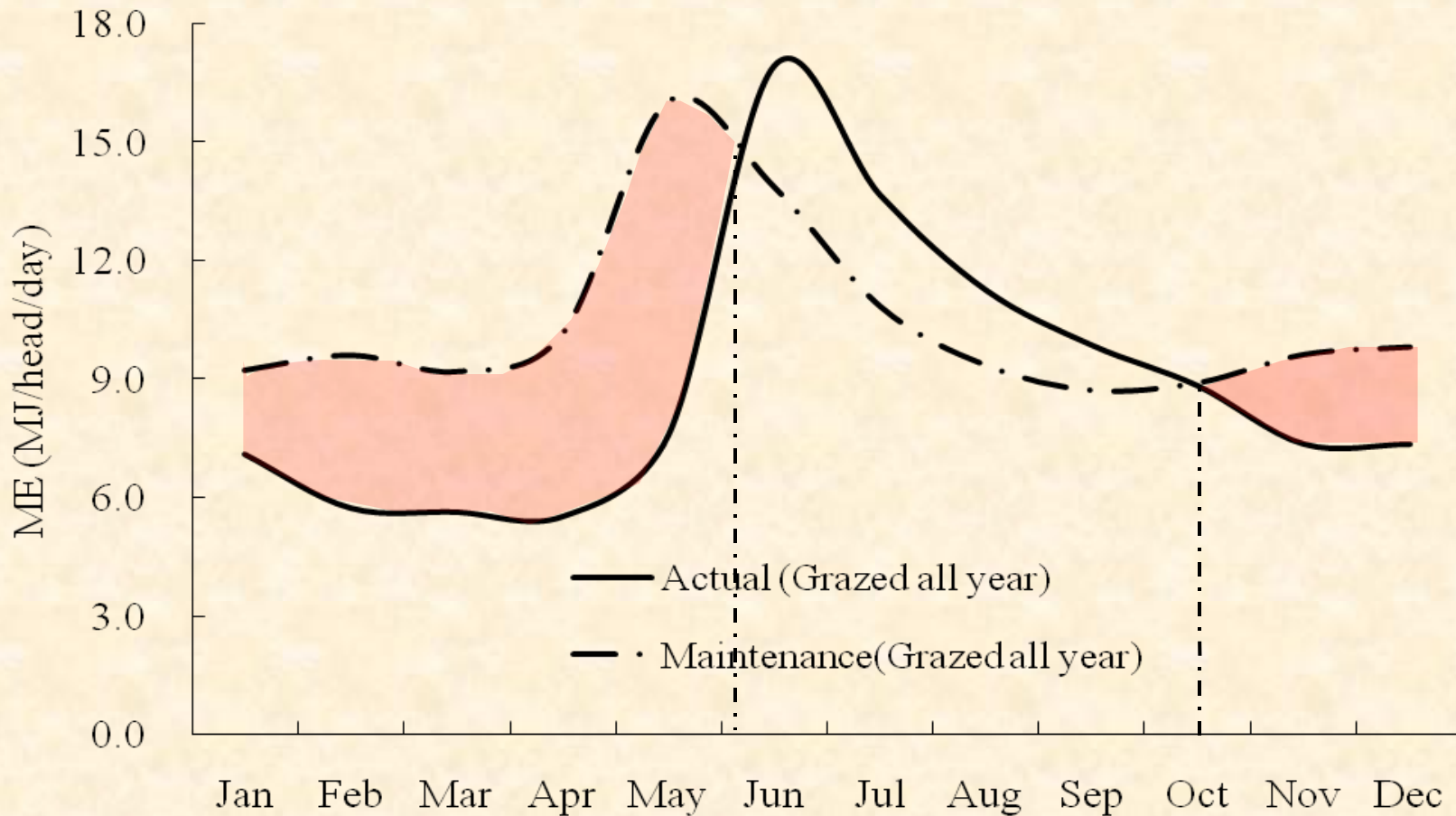
Grazing flow chart of Kangle





3. Current status of typical farms

Feed balance situation



Result of feed balance analyzer model



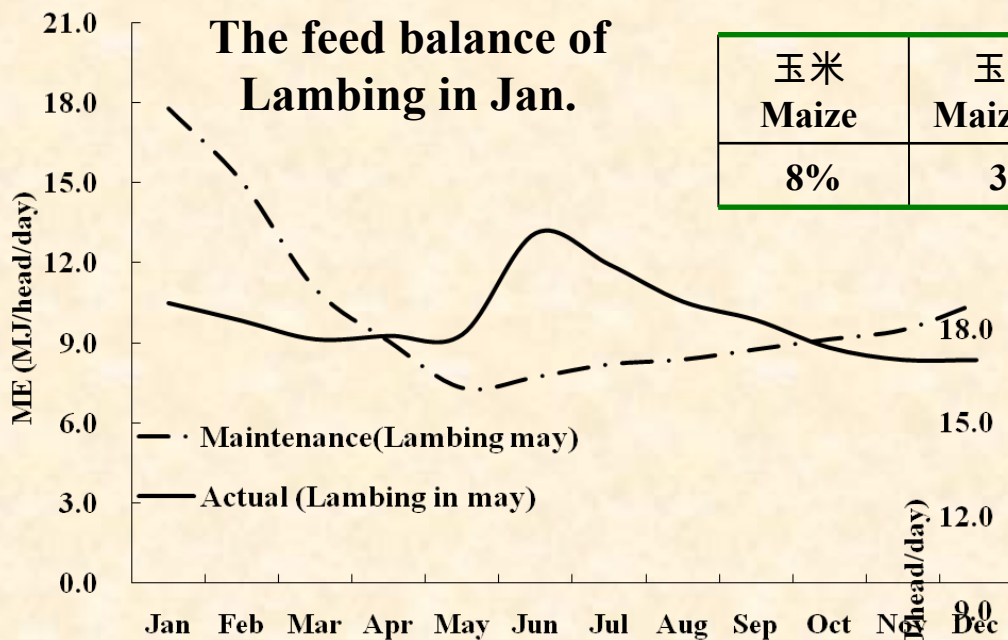
4. Better options for farm improvement

4.1 Supplements and defer the lambing time

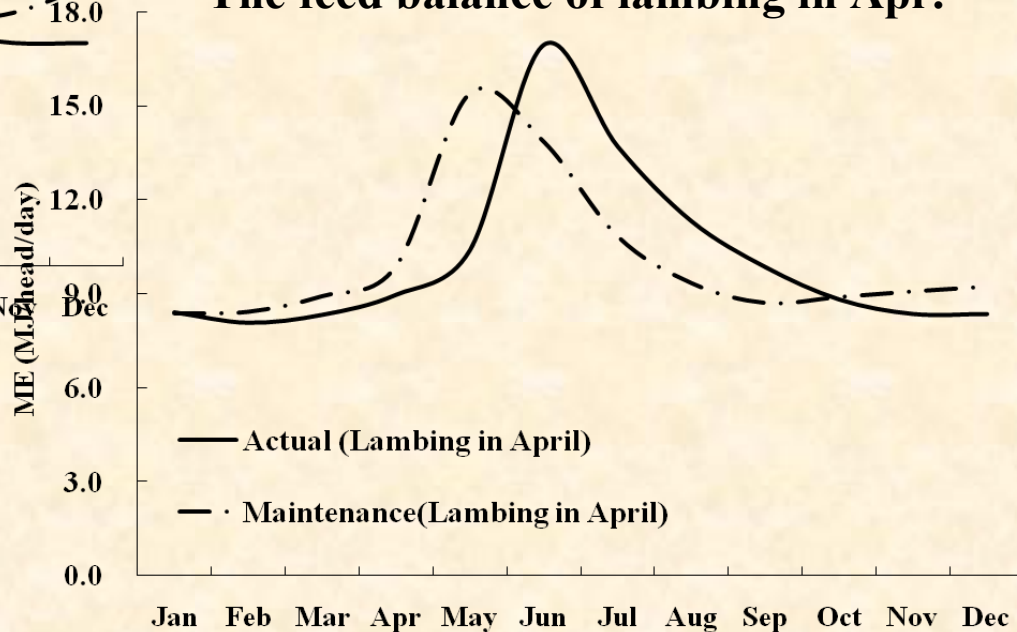
Feed Ratio

玉米 Maize	玉米糠 Maize Bran	青干草 Meadow hay	酒精糟 Liquor byproduct	洋葱 Onion
8%	30%	26%	10%	26%

The feed balance of Lambing in Jan.



The feed balance of lambing in Apr.



➤ The feed balance of lambing in

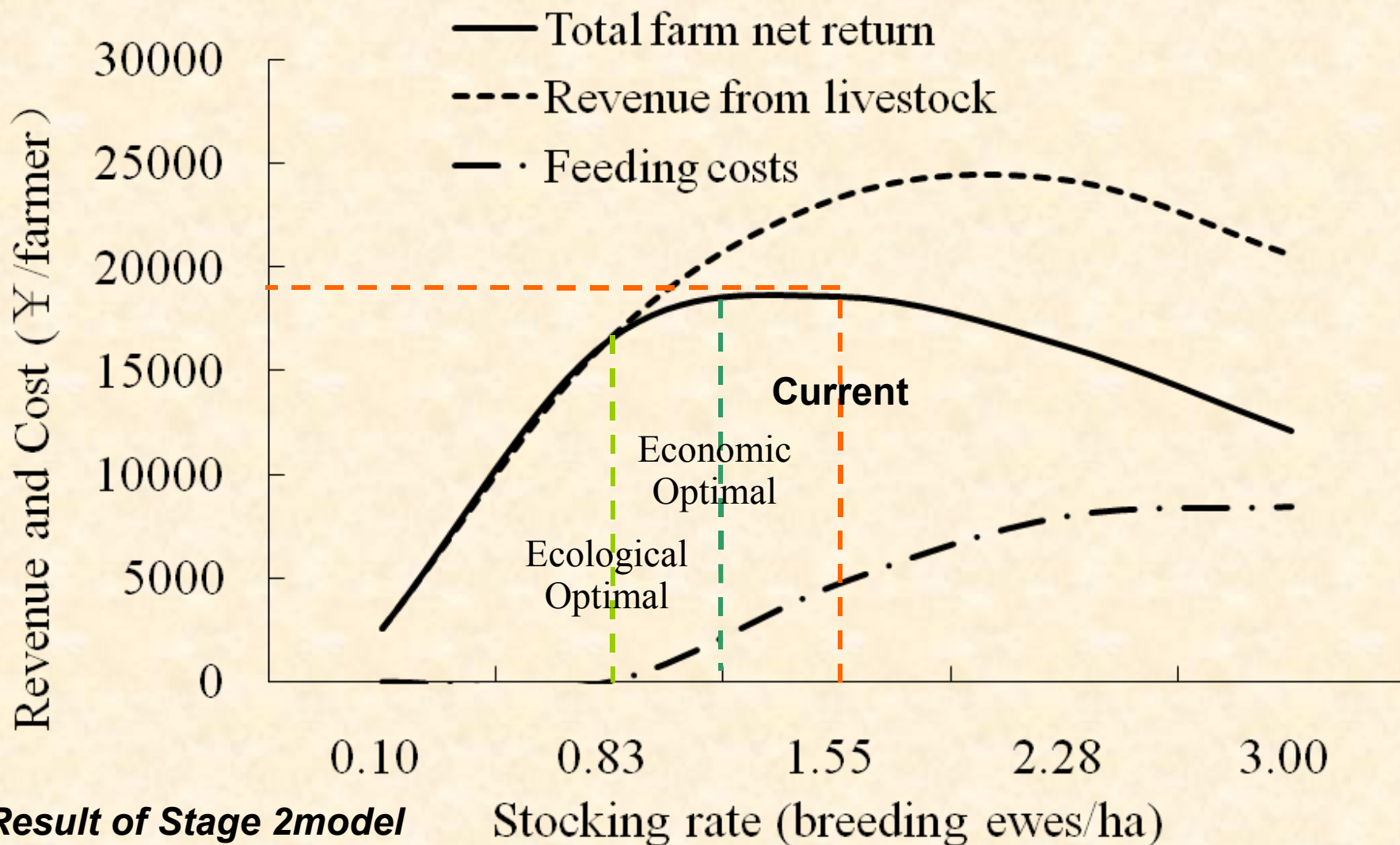
April is better than in January

➤ Farmers should defer

Lambing time

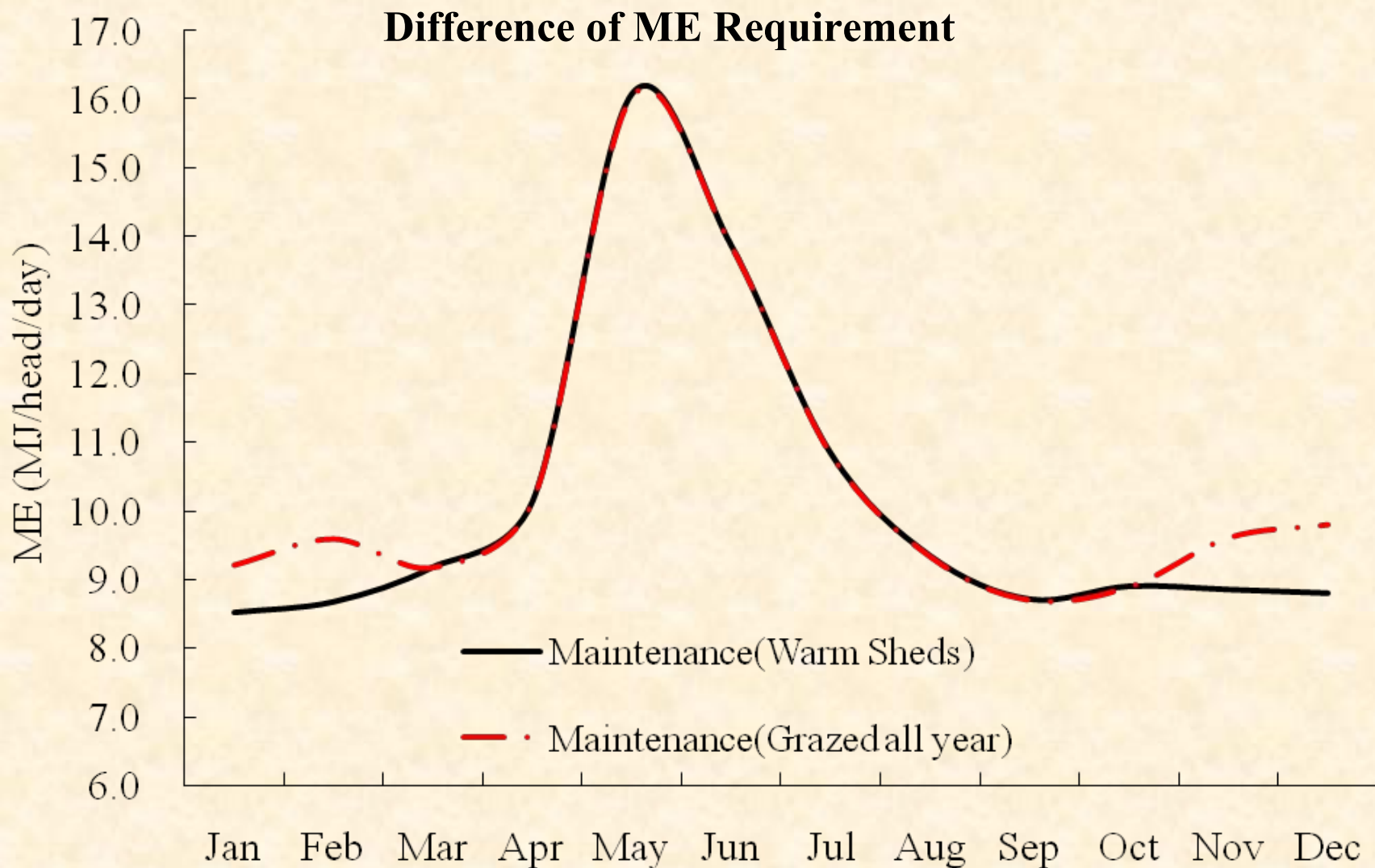


4.2 Decrease the stocking rate



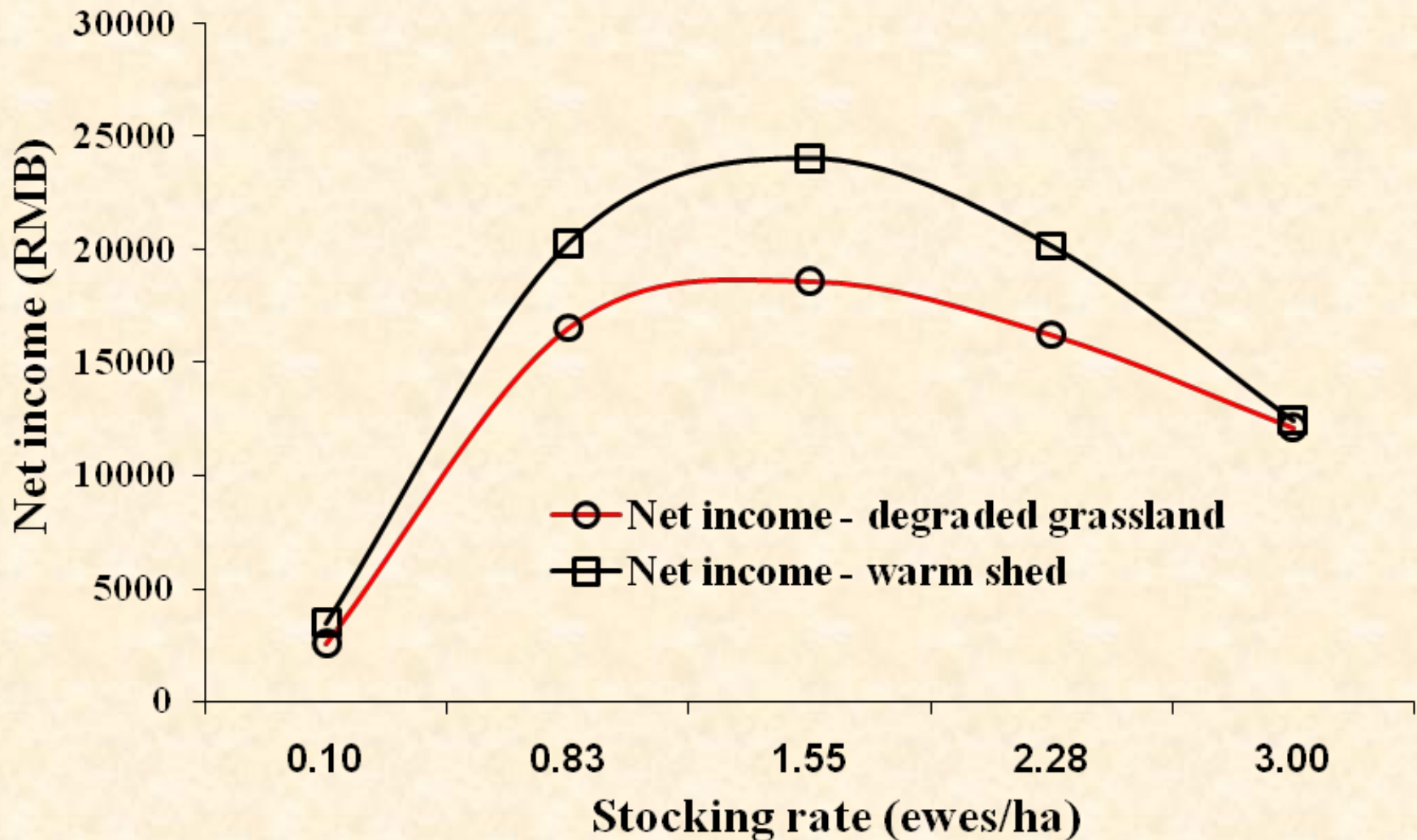


4.3 Pen feed in warm sheds during cold seasons





4.3 Pen feed in warm sheds during cold seasons





5. Local data from experiments

Warm shed plus supplement

(Experiment, Unit: head)

- Adult ewe: 90
- Ewe (1 year old) : 19
- Lamb: 20
- Supplement cost :
0.53RMB/sheep/day
- 151 days pen feed

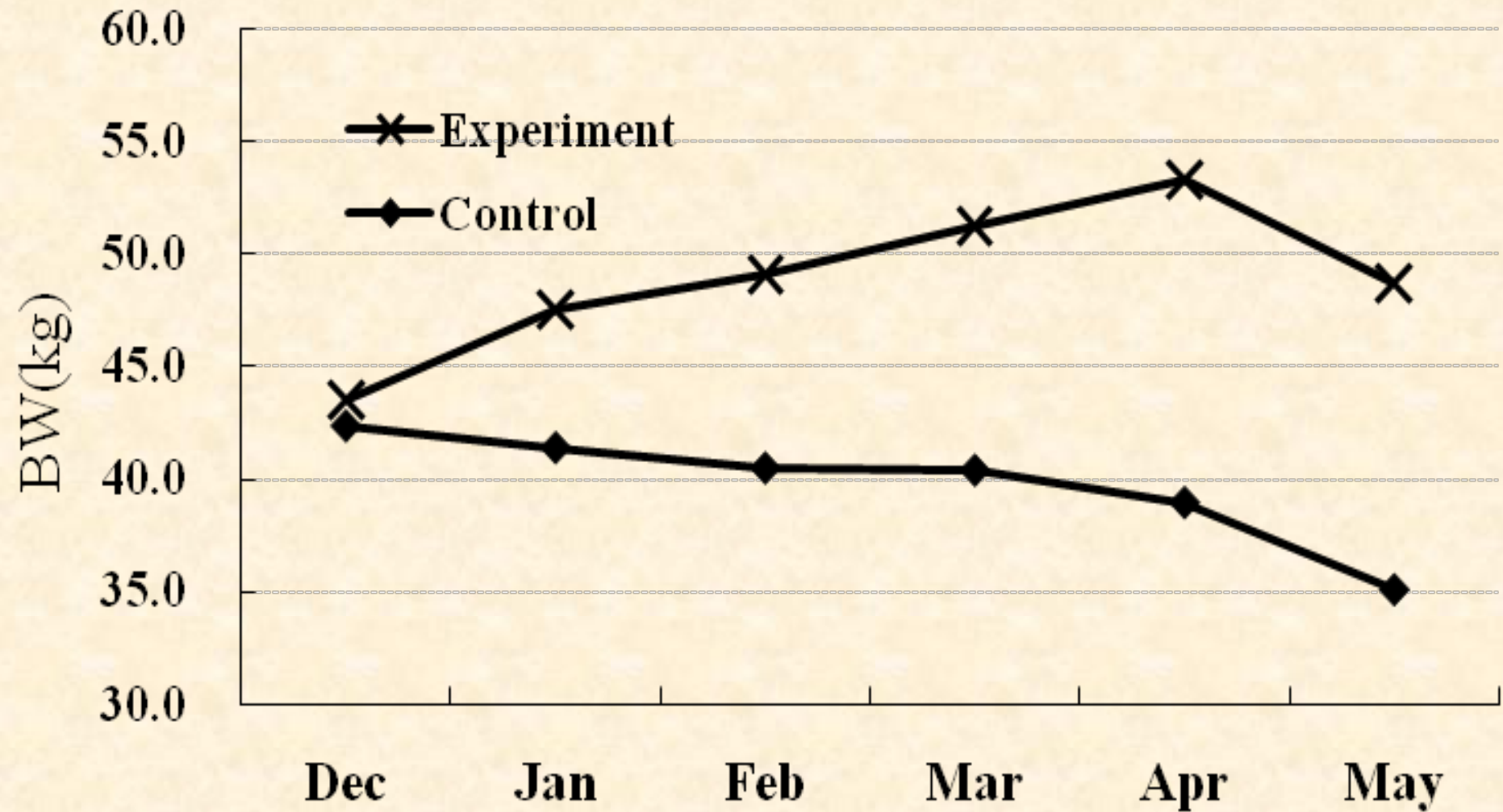
Grazing all year

(Control, Unit: head)

- Adult ewe: 90
- Ewe (1 year old) : 19
- Female lamb: 20
- Supplement cost: 0

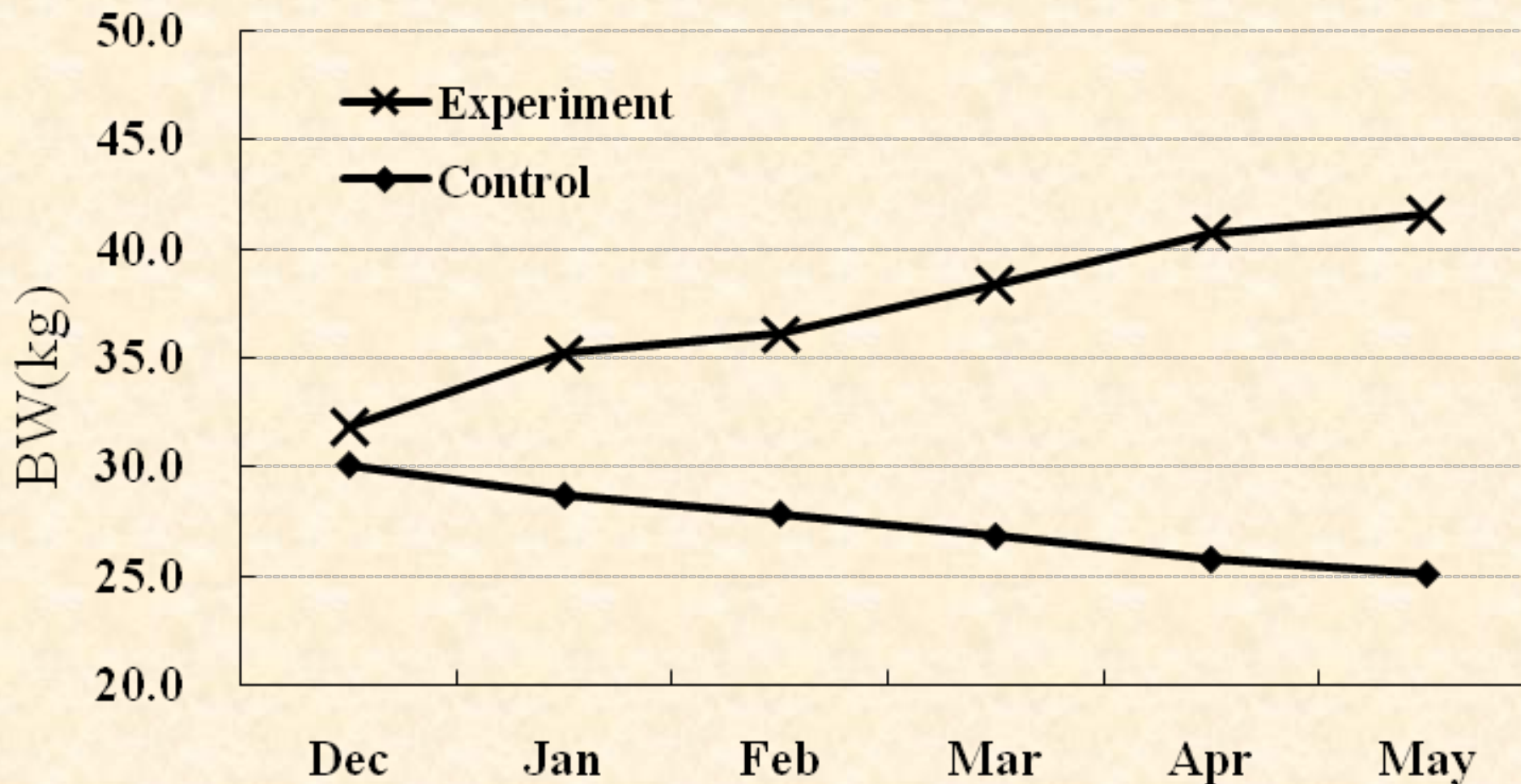


Adult ewes' Bodyweight





Maiden ewes' Bodyweight





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Thank you!

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