System of Animal Husbandry in Seyhan Basin and How Climate Changes Affect it

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1. Introduction

In this report, we will have a discussion on a scenario for animal husbandry in Seyhan Basin. First, we will sort out current situation of animal husbandry in Seyhan basin briefly. Secondly, we will consider how climate changes affect the system of animal husbandry in Seyhan basin using results of our farm survey.

Sample villages and households of this survey are as follows:

Irrigated Villages
- Geçitli (Yüreğir District; 26Households)
- Gerdan (Seyhan District; 25Households)

Rain-fed Villages
- Yeniyayla and Cihadiye (Yüreğir District; 28Households)
- Boztahta (Aladağ District; 27Households)

2. Systems of Animal Husbandry in Surveyed Area

Animal husbandry in Adana region is clasified into 3 areas according to altitude. First, sheep and cattle are mainly kept in lower plain. Crop production is prosperous in this area, therefore animal husbandry is placed as supplementary income source or self-supply source of dairy products. Goat is not common livestock in this area because goat is an inferior goods to sheep except characteristics of tolerance to mountainous area. Farmers, especially in irrigated area, also utilize purchased feeds a lot. This is because land is mainly not allocated for pastureland and feed grains in this area where crop production is prosperous. Fig 1. shows the changes of number of livestock in Yüreğir district, located in lower Seyhan basin.

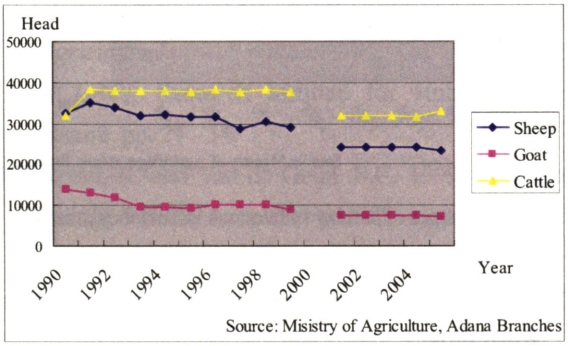

Fig 1. Changes of number of livestock in Yüreğir district

Secondly, sheep and goat are mainly kept in middle hilly and mountainous area. Cattle is also kept in this area, but basic system of agriculture - including animal husbandry - in this area is still a combination of small livestock and wheat and barley - this is principally for livestock. Fig 2. shows the changes of number of livestock in Aladağ district, located in middle Seyhan basin. In fig 2, sheep number decreased. There might be the influence of newly enforcement of the pasture-law.

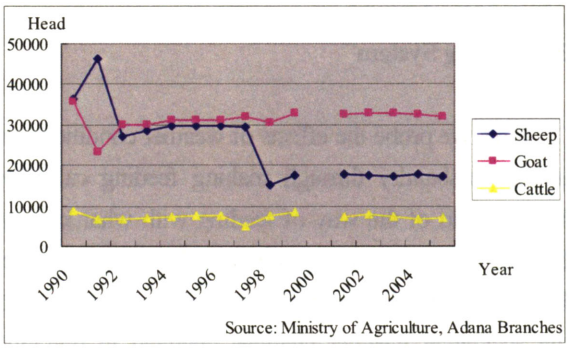

Fig 2. Changes of number of livestock in Aladağ district

Thirdly, sheep was the main livestock in the upper

plateau, but the number fell to one-fourth. The possible reason is the declination of relative profitability of sheep production with grazing to crops caused by introduction of irrigation. Fig 3. shows the changes of number of livestock in Tufanbeyli district, located in upper Seyhan basin.

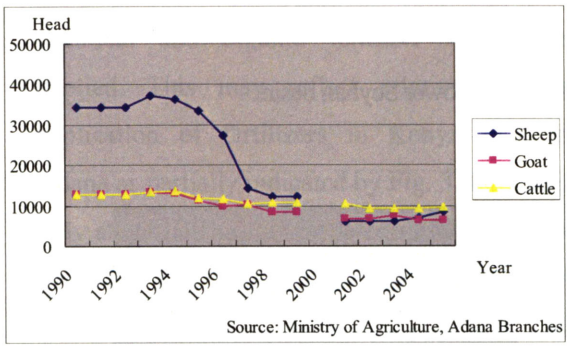

Fig 3. Changes of number of livestock in Tufanbeyli district

3. Possible Effects of Climate Changes on Animal Husbandry

In this fiscal year, we conducted a farm survey to grasp the effects of accidental weather changes on agriculture in areas mentioned above. In this farm survey, we asked 106 farmers and obtained information by means of questionnaires[1]. In the questionnaire, we settled items corresponding to climate and animal husbandry as follows;

A. System of animal feeding
B. Effects of accidental weather changes on mating, pregnant and milking periods.
C. Effects of accidental weather changes on milk yield and the growth of young livestock.

3.1 Feeding System

First, we probe the effects of weather conditions on animal husbandry through making feeding calendar. We get hold of the way of feeding with what kind of feedstuff, the time self-supplied feeds become scarce. By combining this result and perception of farmers to the accidental weather changes obtained in previous survey, we can indicate which month's what kind of climate change can affect supply of self-supplied feeds.

The result shows that many farmers think self-supplied feeds become scarce in March and April, as feed grains cultivated in early summer. On the other hand, farmers also recognize that this season is most important for grain production, and therefore weather changes can affect it the most. For that reason, If the yield of feed grains slump because of weather condition, farmers must change the feeding system to rely more on purchased feeds. As a result, some farmers must dispose of their livestock because of increase of cost for feeding. Although, we found that some farmers rely on purchased feeds almost all. The main income source of this type farmers is production of crops, and therefore the reason for keeping livestock is for home consumption. These farmers avoid fluctuation in feeding cost and save time and labor to produce feed grains. This kind of farmers can keep themselves away from the effects of weather conditions at this point.

3.2 Mating, Pregnant and Milking Periods

Secondly, there is other influence of animal husbandry on crop production caused by change of mating period of livestock, especially sheep and goat that need grazing a lot. Mating period will delay in the case of high temperature, and therefore grazing will be affected during planting period of crops. Under rapid weather change, farmers will change their livestock from sheep that needs much grazing to cattle from the viewpoint of controlling mating period of their livestock (Rotter and Van de Geijn, 1999). Furthermore, the changes of pregnant and milking periods will also affect feeding system. Hence we set question to grasp farmer's perception about effects of weather changes on each period.

About these periods, we couldn't get useful answers. This result means farmers don't pay a lot of attention to these periods. About cattle, posible reason for this result is the existence of Artificial Insemination methods and the characteristics of cattle - easiness to keep in barn. About sheep and goat, the result might be affected by the low proportion of farmers who keep

[1] Data obtained in this time survey are not ready to analyze at present, so we cannot mention the results in detail.

sheep and goat with grazing[2]. Nevertheless, we should say from this result that farmers don't think changes of weather conditions let animal husbandry directly affect crop production at this point.

3.3 Milk Yield and The Growth of Young Livestock

Thirdly, we must consider the direct effect of weather condition on livestock itselves. The results of this time farm survey shows that farmers recognize the effects of too hot and cold weather on milk yield and growth of young livestock, and react to the effects by altering circumstances of keeping livestock and adjusting feedings. Consequently, these reactions of farmers will change the amount of feeds stocks and give rise to influences on the feeding system as mentioned above.

4. Conclusion

In this report, we can conclude as follows;

- Weather conditions have not only direct influence on growth of grass of pastureland and feed grains as mentioned in last year's report, but also indirect influence on the feeding system through the effects on conditions of livestock.
- There exist some farmers, especially in irrigated villages located in lower plain, which mainly use purchased feeds to avoid the risk of producing feed grains and to save time and labor for that.
- In case of sharp fluctuations in climate, farmers, especially those in irrigated villages, will adopt to it by swiching their livestock from sheep and goat to cattle suitable for keeping in barn and feedstuff from self-supplied ones to purchased ones.

Acknowledgement

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[2] Otherwise, we may get any information if we conducted survey in upper plateau where grazing is prosperous.

References

[1] Hiroshi TSUJII, M. KUSADOKORO, T. MARU, U. GÜLTEKİN and K. TAŞDAN, 2005: "Current research status of the socio-economic team of the ICCAP and one analysis of the impacts of weather to wheat production in Adana and Konya", in Research Team for the ICCAP Project, Research Institute for Humanity and Nature eds. *Proceedings of the International Workshop for the Research Project on the Impact of Climate Change on Agricultural Production System in Arid Areas (ICCAP)*, Research Institute for Humanity and Nature, pp. 27 - 34.

[2] Rotter, R. and Van de Geijn, S.C. 1999: "Climate change effects on plant growth, crop yield and livestock". *Climate Change*, vol. 43, pp. 651-681.