

## [01]多頭化酪農経営における水田飼料作の農法的研究

武藤, 軍一郎

<https://doi.org/10.15017/13912>

---

出版情報 : 九州大学農学部農場報告. 1, pp.1-200, 1977-02-10. University Farm, Kyushu University  
バージョン :  
権利関係 :



# A Study with an Aspect of the System of Husbandry on the Production of Forage Crops on Larger Sized Dairy Farms in Paddy Field Areas

## Summary

### 1. Purpose of the Study

After the World War II the number of dairy farms in Japan increased and reached 417,000, the highest peak in number, in 1963. After that, it began to decline. Ten years later, in 1974, dairy farms were numbered only 179,000. A remarkable decrease of dairy farms was observed in paddy field areas. One of the main reasons for this decrease was that the production of forage crops did not correspond with the increasing number of cows kept on dairy farms.

The purpose of this study is to consider the mechanism of the production of forage crops on dairy farms in paddy field areas from the aspect of the system of husbandry. This aspect involves the system of crop rotation, the system of "Arbeitsmittel" (means of labor) and the system of "Reproduktion der Bodenkraft."

### 2. Findings of the Study

(1) Larger sized dairy farms (dairy farms raising relatively large number of dairy cows) can be classified into three: (i) small sized mechanized type that keeps 5 to 14 heads of cows and raises forage crops (mainly Italian ryegrass) only in winter, (ii) medium sized mechanized type that keeps 15 to 29 heads of cows and raised forage crops mainly in winter, but partly in summer, and (iii) large sized mechanized type that keeps more than 30 heads of cows and raises forage crops throughout the year.

(2) A dairy farm needs more forage crops as the number of cows kept increases. On a farm performed mainly by family labor, the production and harvest of forage crops has been done with the aid of machinery with increase in number of dairy cows, since more of the working hours are spent for cows and less labor is available for the production of forage crops.

(3) There seems to be little problem in raising and harvest of Italian ryegrass with small sized machinery such as power tiller, grass mower attached to power tiller. The raising and harvest of forage crops with large sized machinery, however, causes the pressing down of the field and the difficulty in regrowth of plants even in the winter season when paddy fields are dry. In summer the forage crops as dent corn or sorgho are damaged considerably by poor drainage due to the irrigation to rice fields that surround the field planted to forage crops. The damage of forage crops by the use of machinery is accelerated under such poor drainage condition.

(4) A light tillage of the field planted to forage crops is one of the measures to avoid such troubles. A further measure is the alteration of a paddy field into meadow, that is, the raising of perennial forage crops on a paddy without tillage. This alteration of land use from a paddy planted to forage crops to non-tilled meadow makes it difficult to apply manure to the field.

(5) Shifting from the small sized mechanized type to the large sized mechanized type, the rotation of forage crops tends to alter from rice--- Italian ryegrass to dent corn--- Italian ryegrass, and further to barnyard millet--- Italian ryegrass, and finally to meadow. This shift of the rotation means intensive to extensive cultivation of forage crops.

(6) With mechanization of the production of forage crops with larger sized machinery, the productivity of labor rises, but the productivity of land (yield of forage crops) declines.

(7) The following are the measures that may improve the present situation of the production of forage crops:

- (i) land improvement fit to the growth of forage crops,
- (ii) utilization of fallowed fields for forage crops,
- (iii) establishment of the rotation of crops including the forage crops, (iv) joint use of machinery and equipment among farms, and (v) organization of farms for use and disposal of manure.