

GRASSLANDS & FORAGE PRODUCTION IN SOUTH-EAST ASIA

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Edited by
Ridzwan A. Halim

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RENOVATION METHODS AND SUGGESTIONS FOR BETTER USE OF COMMUNALLY-MANAGED PASTURE

Pravit Sophanodora

INTRODUCTION

Communal pastures represent the main source of feed for ruminant livestock production in many countries of Southeast Asia, China, India and Africa (Jones et al, 1984). The pasture is mainly dominated with native species and heavily grazed. Hence, animal growth and productivity are highly related to the availability and productivity of those pastures which are poor in comparison with that of improved pastures.

The Department of Livestock Development (DLD) and other government agencies (Accelerated Rural Development: ARD) have enhanced livestock production through an improvement of those native communal pastures either by introducing the improved pasture species or by oversowing with adapted legumes. However, many improved communal pastures were sustained only for a short period of time.

This paper will discuss the author's experiences on the history, failure of some communal grazing areas and suggestion on management for a better use of communally-managed pasture.

HISTORY

Thai government agencies (DLD, ARD, Universities) have adopted the Australian technology to improve the productivity of communal grazing areas, by either introducing improved pasture species or oversowing with well adapted legumes for over a decade. The widely used species for pasture establishment are the mixture of ruzi (*Brachiaria ruziensi*), signal (*Brachiaria decumbens*), plicatulum (*Paspalum plicatulum*), setaria (*Setaria anceps*), Verano (*Stylosanthes hamata*), centro (*Centrosema pubescens*), and siratro (*Macroptilium atropurpureum*). The agencies provide land clearing, seed-bed preparation, seed and basal fertilizers. Whereas farmers provide labour for uprooting and burning those waste materials during land preparation and in addition they sometimes provide fencing materials. For oversowing pasture legumes to the native pasture, Verano is the widely used species. The pastures in both systems are established and regenerated under heavy village grazing pressure. Generally, farmers raise their livestock individually but graze collectively on those improved communal pastures.

In the early stage of this development, no emphasis has been given to pasture management. The priority in livestock development was on upgrading stock and the selection of improved pasture species and varieties. Upgrading the stock was carried out either by artificial insemination or by introducing a pure breeder bull.

The improved communal pastures were very successful for a period of 2-3 years. Overgrazing and mismanagement caused the depletion of soil fertility and the invasion of weeds. Hence, several communal pastures failed.

RENOVATION METHODS

The main objective of pasture renovation is to have a stable and persistent pasture which can sustain and increase the animal production. Renovation methods are those techniques which have been used in the establishment period. Pasture renovation can be done either with or without cultivation (Topark-ngarm, 1978). However, the following considerations should be kept in mind:

1. Land clearing and seed-bed preparation should be suited to the seasonal conditions. Estimation of the rainfall probability would be a useful guideline for a suitable time for land clearing and seed-bed preparation. In Thailand, regional studies on rainfall probability have been done by the Ministry of Agriculture using the methods as described by Oldeman and Frere (1982). This ensures a good seed-bed and adequate soil moisture supplied for a successful seed germination and establishment. Essentially, big trees should be retained for animal shade particularly for the upgrade breeding cattle.
2. The appropriate basal fertilizer applications are also required for a better seedling establishment, as most of the communal grazing areas are idle land with generally infertile soils. Depletion of soil nutrient elements due to the heavy grazing was observed. Omission and rate trial are needed before any decision on fertilizer application can be made.
3. Fencing is another factor which should be considered as a tool for a good early seedling establishment. In addition, it can be used to prevent overgrazing. Fencing during the early establishment phase substantially increased density of oversown *Verano* to the communal pasture in Northeast Thailand (Wilaipon, 1980). Natural woods have been used as fencing materials in newly improved communal pastures. However, browse or shrub legumes such as *Leucaena leucocephala* and *Griilicidia maculata* could be used as living fences.

MANAGEMENT OPTIONS

Overgrazing could possibly be controlled by an appropriate system to control number of animal. But it is hard to accurately estimate the carrying capacity of a communal pasture. In Northeast Thailand, an experiment carried out with improved communal pasture and continuous grazing showed that the maximum stocking rate of 2.5 AU/ha/yr gave the highest liveweight gain per area (Gutteridge et al, 1980). Accordingly, it is possible to estimate the optimum number of animal for any improved communal pasture. The more sophisticated estimation (Iannelli, 1985) is to regularly estimate livestock and pasture weight, and allowing for a reduction of resting period and forage losses due to livestock trampling or other possible causes. Failure to control animal number is related to socio-economic limitations, and religious reasons (Jones et al, 1984).

However, some management methods have been successfully used and adopted by farmers in several communally-managed pastures. These are as follows:

1. Re-organization. Farmers were stimulated to establish the common pasture group with specific aim (e.g. beef production group, dairy production group). Farmers need to bring an initial number of cows as an equal share for their individual group. They must devote an equal day for on farm duty (e.g. herding, guarding and maintenance of shed).
2. Maintenance. Each member must be responsible for maintenance of the pasture under 3 categories.

- 2.1 Spreading the manure.
 - 2.2 Maintenance a given length of fence which has been previously allocated among the members.
 - 2.3 Stock control. Annual meeting is held to make a decision of stock selling in order to control the animal number.
3. Grazing management. Continuous grazing is still in practice, since cost of fencing the sub-plot is high and require more management skill.

However, with above management methods, problems still existed due to overgrazing and invasion of weeds particularly *Mimosa pudica*. In my point of view a better use of those communally-managed pasture would be through management strategies based on the understanding of persistency of pasture. This depends on longevity of original crown, or replacement of dead shoots by vegetative and by reproductive cycle. The details regarding the persistency of pasture have been discussed by Humphreys (1984). The management strategies are as follows:

1. Rotational grazing to create a rest period and suitable time for flowering and seed setting as well as soil seed-reserves.
2. Movable electric fence would make it easier to adjust the grazing pressure which is largely dependent on forage productivity and number of animal. The Thai Dairy Promotion Co-operative has developed a set of electric fence at the price of US\$ 3,000 per 10 paddocks in 6 hectares. This fence is supplied either by direct house electricity or a car battery (Suvarat, 1988).
3. Synchronization of activities (e.g. artificial insemination and stock selling) must be done to adjust the animal requirement and the availability of feed supply. The latter is dominated by distribution of rainfall.
4. Seasonal topdress of fertilizer should be done to enhance the recovery of grazed pasture and to improve feed quality.

CONCLUSIONS

The development of livestock do not only require the improvement in animal upgrading and pasture production but also require the management skill to maintain a persistent and productive animal production system. Input in breed stock and pasture development have been widely used by several Thai government agencies, but the pasture management skill is scarcely implemented. This is probably due to inadequate knowledge in management system by both the extension officers and farmers and due to the socio-economic constraints of the farmers. Farmers' objectives and constraints must be identified before implementation of any new technology. The new technology must be easily implemented, compatible with an existing system, and substantially benefit to farmers.

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