

FORAGE DEVELOPMENT IN THAILAND

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INTRODUCTION

Although work on pastures had been initiated since early 50's when a number of forage crop species were introduced and tested for their adaptability, (Manidool, 1968), it was not until in early 70's that an appreciable progress of pasture development in Thailand was really witnessed. The main limiting factors impeding its progress during that period were the lack of qualified workers, low-input system of livestock production e.g. subsistence type, and to a lesser extent, the availability of feed from natural sources and farm by-products. The latter factor always wrongly impressed the subsistence farmers that local livestock breeds which are poor performers could do well on such materials.

During the mid 70's a notable change was observed. Farmers took more interest in better breeds of livestock and forage crop testing and research was carried out by a number of institutions such as universities, Department of Livestock Development, Thai-Danish Dairy Farm, Institute of Applied Scientific Research Cooperation of Thailand and others. Khon Kaen University, seconded by the government of Australia, played a leading role and produced a number of useful research results applicable to the Northeast region (Khon Kaen University, 1976-1984) whereas the Department of Livestock Development took the job of development using the fund from a loan from the world Bank (Department of Livestock Development, 1974). The latter has successfully carried out extension and development of a pasture seed production program.

APPROACHES IN PASTURE DEVELOPMENT

For decades, pasture development in Thailand was modelled on the development as practised in the European countries without much modification. This was because of the training background of the officers who have had occasions to visit those countries in those days. Recommendations contained little information derived from local research, particularly regarding the proper management and economic aspects of pasture development.

Thus it would cost so much for small farmers to grow pasture crop. Land holdings are small and crop and livestock are always integrated on small pieces of farm area with crop being the dominant component. Cattle and buffalo are kept for farm power purpose and not much land is available for growing forage. Thus extension work on pastures during the past two decades was considered a failure. The present approach in pasture development is therefore to use the low-cost technique, particularly in relation to the communal grazing land and backyard pastures. Attention is also paid to the combined use of backyard pasture and farm by products for animal feeds. With this approach, better response is seen and acceptance by small farmers is felt. Another factor that has played an important role is the rapid development of the dairy industry. This could be seen from the fact that milk production has increased several folds during the past ten years. The production was 22.1 t/day in 1976 compared to 216 t/day in 1988.

The pasture development program includes research, seed production, and the improvement of communal grazing land, road edges and backyard pastures. Seed production program is considered an important component of the development strategy. Without sufficient seed supply from local source the pasture development work in this country could not be successful.

The pasture seed production program is handled by the Department of Livestock Development which adopts two schemes of work: production on government stations and the contract scheme. The latter involves the participation of small farmers on contract basis with a guaranteed price for pasture seed. In 1988, seed production of up to 505 t was achieved with the involvement of 3,294 farmers. Some of those seed, particularly hamata seeds, are used in communal grazing-land development by means of oversowing, both by manual methods and by aerial sowing using helicopters.

For backyard pasture program, species of hamil, ruzi, guinea, napier and leucaena are recommended. This program is well appreciated by dairy farmers. They are willing to pay for forage seed. The situation has completely changed from the past two decades when seeds were given free to them who sometimes were hesitant to receive.

Crop-livestock integration is also receiving high priority in the agricultural policy of the country. The objectives are to increase farm income from supplementary sources such as the sale of livestock and the efficient utilization of farm by-products for animal feeds. This system also includes pasture under plantation crops and agro-forestry (Manidool, 1984; Manidool, 1985). Village forest plantations were established in a number of areas and in some of these the labourers are allowed to raise herd of cattle to graze the forage available in the plantations. Detail studies are needed for this system. Highland pasture research was carried out by Thai-Australian joint project and a great deal of research results have been published (Australian Development Assistance Bureau, 1979). *Desmodium intortum* was found to be a very useful forage species under such condition and seed production of this species was initiated using the cooperation of hilltribe people. This worked well but the development was not continued after the aid program was phased out.

Ley farming was also introduced and tried in the northeast region where the soils are of low fertility. In this area cassava is the dominant crop on the upland area. Repeat cropping of this crop year after year aggravates the problem of low soil fertility. The high cost of fertilizers makes it rather difficult for the farmers to apply higher rates of fertilizer. A ley of hamata stylo seems to offer a better alternative. Hamata ley for two years after repeat crops of cassava has been found to increase cassava production by two folds (Lorwilai, 1988). Cassava is grown for export with very little local use. Utilization of farm by-products as animal feeds is increasing and many of such materials are becoming valuable. Green corn stalk and its wastes are fully utilized by dairy farms around the growing area. Manidool (1988) reported that 56,290 t of baby corn ears were produced and had fetched US\$ 9.2m. of foreign exchange. The wastes which are green, young and contain high nutritive value are sold to dairy farmers and in certain area this becomes an important forage for dairy cows. There are many cases where young green corn waste is a sole roughage feed for dairy cows.

Pineapple wastes are another important by-product that are being utilized as animal feeds, both for dairy and high grade cattle fattening (Manidool, 1987). It is sold at US\$ 23.00 per truckload. The materials are kept in a pile and left to ferment for two weeks before they are fed to the cattle.

In irrigated areas in the North, peanut and soybean straw are also important forage source for dairy animals. Both these crops are important cash crops for dairy farmers.

Utilization of tree fodder and shrub legumes have not seen much progress except for leucaena which is used for leaf meal production. Leaf meal production in 1982 (Manidool, 1982) was reported to be about 60,000 t but has declined drastically in recent years due to insect damage.

Other fodder trees which attract the forage researcher are sesbania, pigeon pea, *Erythrina* and *Pterocarpus*. Nutritive value reports are available but details on agronomic aspects have yet to be studied (Manidool, 1984).

SOME PROBLEMS ASSOCIATED WITH PASTURE DEVELOPMENT PROGRAMME

Social Problems

Traditionally village farmers are crop-producing farmers with livestock e.g. cattle and buffaloes being kept as a source of power in farm work, with the exception of dairy farmers. This situation, together with the limited land available, tend to lead them to believe that no advantage would be obtained from growing forage crops. Furthermore, they are content with their traditional use of crop residues and non-productive natural grasses. In addition, cash crop growing, cultural festival and other rural social activities keep them too busy to take interest in growing grasses.

The effective strategy to correct this is to use the forage grasses as a cash crop so that farmers are able to earn additional income from growing grasses. Two measures were taken.

One of this is to encourage them to produce forage seeds for sale. The village cooperators are advised to grow hamata or ruzi grass on small areas of land and the seeds are sold at guaranteed prices. This has proven to be a very successful operation. The farmers in the project areas have done well by earning a good supplementary cash income and becoming well acquainted with forage growing.

The other measure was the introduction of cow calf operation program. In this program, the villagers are encouraged to produce dairy calves for sale. The cooperators are advised to grow forage grass as a base for the operation. Grass seeds and artificial insemination service are provided. We could observe the good cooperation and every family in the project grow backyard pastures.

Other farmers in many areas follow the advice and establish backyard pastures for draft animals and breeding herds. This shows that villagers learn and accept that they could derive benefits from pastures. Large request for seeds and planting materials by those farmers supports this view.

Technical Problems

Seed Production

Seed yields of many grasses in many stations are very low. The causes range from the early falling of seed, harvest techniques, low level of management, and in recent years, the occurrence of seed borne diseases. Loose smut was found in guinea grass in several areas. Psyllids on leucaena are most serious and no preventive measure has been developed. Trials with insect predators are being carried out by the Division of Entomology in cooperation with Division of Animal Nutrition.

Lack of Funds for Research Work

This is a common problem to all institutions having research work on pastures, although there are sufficient qualified technicians. Luckily, in a few cases, financial support was obtained from foreign sources making it possible to run a small project.

One chronic problem is that work on pasture usually will take many years but research funds are for short term. Thus continuation of the project could not be done. Because of less support from national budget, coordinated forage research has never been implemented.

Research on Pasture Quality

It is well known that tropical forages are low in nutritive value and studies related to pasture quality will need fairly large amount of fund particularly in the case of grazing trials. This is one weak point in our pasture research program. Without the support from foreign sources, it is impossible to carry out such experiment. So that up till now not much information is available regarding the carrying capacity of some most promising species.

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