

MIXED FARMING IN COCONUT GARDENS

By

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The use of high yielding varieties, proper management practices and plant protection measures has greatly contributed to an overall increase in food production. However, adequate emphasis is not given for animal husbandry. The consumption of milk in Kerala is much below the recommended level of 300 cc per adult per day.

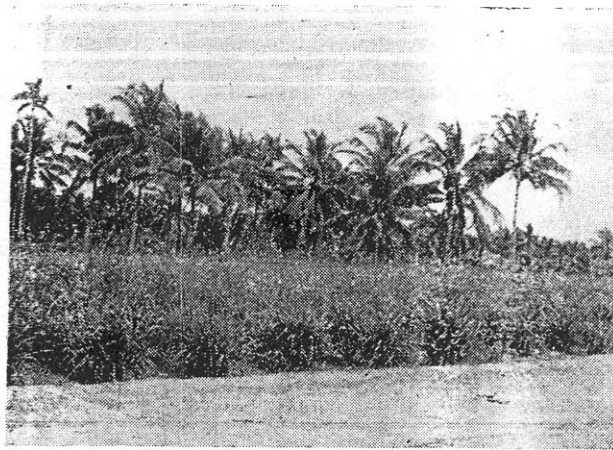
Mixed farming or alternate husbandry in coconut gardens can solve the deficiency in milk production to some extent. Most of the coconut growers own less than one hectare of land and the income from their land is insufficient to maintain a decent standard of living. Further, since, coconut culti-

vation does not require intensive utilisation of labour, both the cultivator and his family can utilise a good deal of their spare time for other useful work. In addition to the increase in employment potential, mixed farming in coconut gardens increases productivity also. Coconut being a perennial palm, the interspaces afford sufficient space for growing fodder and food crops. Cocoa, pineapple, nutmeg, clove, cowpea, bananas, tapioca, sweet potato, groundnut, colocasia, elephantfoot yam, etc. are successfully grown depending upon the locality and thus production per unit area is increased.

Growing fodder and maintaining good milch cows is a profitable

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Growing hybrid napier grass as forage

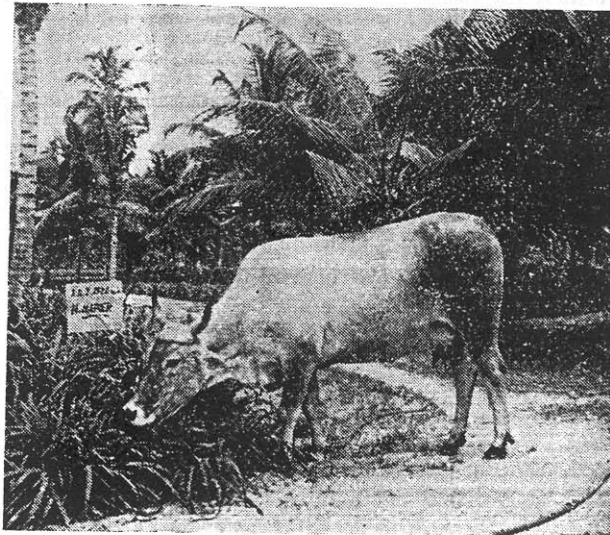
proposition in coconut garden. This will give a fillip to the dairy industry and enable the small coconut grower to get more profit and to produce nutritious dairy products at cheaper rates. Besides, fodder grasses and fodder legumes enrich the soil by adding more organic matter and nitrogen. Soil erosion is also prevented. All these contribute indirectly to increasing the yield of the coconut palm. Since the dreaded coconut root (wilt) has spread in an area of about 2.5 lakhs of hectares in Kerala, mixed farming has greater significance in increasing the income for the coconut grower.

Considering all these aspects, a research project on mixed farming —“Raising fodder grass and maintaining milch cattle”—was started at the regional station of the Central Plantation Crops Research Institute at Kayangulam. The experiment is being conducted in collaboration with Indo—Swiss Project, Mattupatty and the Intensive Cattle Development Scheme of the Kerala State. Hybrid napier grass mixed with legumes such as *Stylozanthus gracillis*, *Pueraria*

javanica and *Centrosema pubescens* is raised and the grass legume fodder is fed to graded Brown Swiss cows maintained in the dairy unit attached to the regional station. Hybrid napier grass contains about 10-12 per cent protein and gives about 120 tonnes of fodder per

hectare per year in the open and about 60-70 tonnes when grown under the coconut palms. The cultivation details are as follows:-

The coconut garden is first ploughed and terraced if necessary. Ten to twelve cart loads of farmyard manure or compost, 150 kg. of ammonium sulphate, 500 kg. of superphosphate and 133 kg. of muriate of potash per hectare are applied as basal dressing. The grass slips are planted at the time of commencement of monsoon at a spacing of 50 cms. In between the rows of grass, legume seeds are sown using a seed rate of 10-12 kg. per hectare. Gaps are filled as and when necessary. The first cutting is taken 70-80 days after planting and thereafter at 30-40 days intervals. The grass is cut at about 5 cms. above the ground. After each cutting, cattle dung, urine and 18½ kg. of nitrogen as urea or ammonium sulphate are applied to the grass. In addition, 50 kg. of P_2O_5 and 100 kg. of K_2O are also applied as superphosphate and muriate of potash in two equal



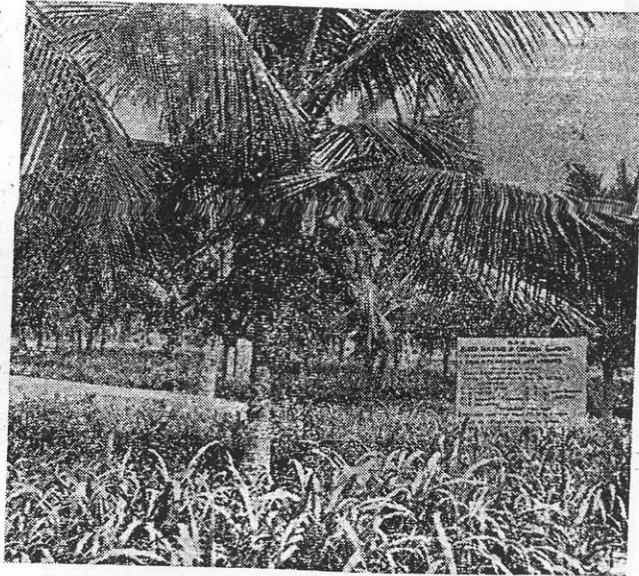
Graded Brown Swiss Cow

split doses—one before the monsoon and the remaining after the monsoon. The coconut palms are also given fertilizers and organic manure as per recommendation. Urea and ultraphos at one kg. each and two kg. each of dolomite and muriate of potash are applied per tree. One third of the fertilizer dose is applied in April-May and the balance quantity in August-September. The grass is irrigated during summer period and this gives uniform yield throughout the year. When the perennial grasses remain in the field for a period of more than three years, the clumps become bigger in size due to tillering and the dead shoots increase resulting in poor out-turn. The crop then requires rejuvenation. Under such circumstances, the grass clumps may be cut into four parts and three parts may be removed leaving the fourth part to develop. While doing so, it should be noted that the dead sprouts are discarded as far as possible.

Graded Brown Swiss cows are suited to our climatic conditions. They are high yielders and some of them yield upto 15 litres of milk per day. Eight of them are at present maintained at the dairy unit of the Central Plantation Crops Research Institute, Regional Station, at Kayangulam. Cows yielding upto 3 kg. of milk per day get all their nutritional needs from 35-40 kg. of this fodder grass. For higher yielders concentrates are also given as follows:-

Qty. of milk yield in litres per day	Grass legume at 75:25 ratio in kg.	L & P feed given in kg.
4	40	$\frac{1}{2}$
5	38	1
10	32	3
12	30	4

The brown swiss cows are trained to remain within the shed. However, they are taken out every



Hybrid napier grass and legume as intercrop in coconut gardens

morning and brushed. They are bathed on alternate days. The feed is served thrice a day and cows milked twice a day at fixed hours. The cattle shed is maintained clean. Artificial insemination is given three months after calving. The number of milking days average 300 per year.

Comparative data on milk yields of different types of cows are furnished below:-

Type of animal	Average length of lactation	Average milk yielded in kg. per lactation
Native cows	165 days	654
Swiss Brown	353 "	2824
50% graded Swiss Brown	335 "	2122

The calves are weaned at birth and fed as follows:-

Age of calf	Quantity of milk fed in litres
0-5 days	3 (mother's colostrum)
6-15 "	3.5
16-30 "	4.0
1-2 months	4.5

Economics

From the economic point of view it is better to maintain a dairy unit of four to five cows per hectare of coconut garden as capital expenses and maintenance charges are more or less the same as for a single cow. The economics worked out at Central Plantation Crops Research Institute, Regional Station showed a net profit of Rs. 2384/- per ha. per year by maintaining five cows. In addition, there was a saving of Rs. 1000/- per ha. towards expenditure on management of the coconut garden. A general improvement in the health of the trees affected by root wilt was observed and 23 per cent increase in yield of the palms was also recorded within three years of the experiment. The cost of production of one kg. of fodder worked out to six paise per kg. and milk at Re. 1/- per litre.

Mixed farming thus will result in greater productivity, work and employment. This will generate employment opportunities both for the educated and uneducated. In short, mixed farming is a path leading to greater agricultural prosperity.