The Red Cow

Proffessor -
with respectful
affection.

Lalitte
23/x/86.

THE RED COW

by

L.S.

Pali Prayer (ca. 3000 B.C)

Devo Vassathu Kālena
Sassa Sampatti Hotu Cha
Phīto Bhavatu Loko Cha
Raja Bhavatu Dhammiko

(" May the rains be timely
May the harvest be bountiful
May all forms of life be prosperous and content
May the King observe the Royal ten-fold code*")

* The Ten Royal Qualities :

1. Generosity
2. Morality
3. Providing for national needs
4. Integrity
5. Gentleness
6. Command over the senses
7. Control over anger
8. Hurting no one, verbally or physically
9. Forebearance
10. Observing customs and respecting tradition.

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WRITER'S PREFACE

The "Red Cow" Proposal is addressed to Mary's Friends for several reasons.

----Mary's Friends have a trustworthy reputation in Sri Lanka. The leaders of the organisation have been personal friends of the writer for some years, and since the objectives of the Proposal are not profit-oriented, it is presumed that the relationship will support a feeling of confidence about the disinterested motives of the writer.

----Mary's Friends have originated and successfully developed a programme based on a direct link between an orphan child and the sponsor of that child. The leadership and all those involved appear likely to continue with such voluntary commitments. The same kind of commitment - as will be seen from the details of the Proposal - is a very necessary component of the "Red Cow" project, where continuity is a most important factor.

----Since Mary's Friends' programmes are known and respected in Sri Lanka, there is a strong possibility of local people joining the sponsorship of the "Red Cow" project. Because of the bona fides of the organisation, the writer estimates that Sri Lankan friends, paying N. kr. 2000-3000 over a period of two to five years, would participate as sponsors of the project. Many Sri Lankans who can comfortably make such a contribution, would be drawn into the project through conviction about its value.

----The option of appealing to various other international funding organisations, based in Colombo, is a less attractive one, inspite of the fact that some of them might be interested in such a project. There are several reasons. First, they are not volunteer organisations, and the Board and staff are paid professionals.

Local opinion holds that far too much of their funds is spent on administrative and staff salaries, their dedication and conviction, therefore, are viewed with suspicion, and the possibility of local support and contribution is substantially lower. Secondly, the upper management of these organisations are usually on short-term contracts. The unfortunate result of this is the regular disruption and dislocation of personal association and contact, which would seriously and adversely affect the proposed programme.

It seems, therefore, that if the programme is to meet with success, it can be addressed only to Mary's Friends.

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INTRODUCTION

Several decades ago, the Prime Minister and head of State, the late Honourable D.S. Senanayake was speaking to the farmers of the rice-producing region, Anuradhapura. A well-intentioned gift of tractors was being offered by a Commonwealth country. After some discussion, the farmers promised to return the next morning with their opinion and observations. They returned and they asked the Prime Minister if the tractors produced cow dung.

During the last century the traditional cattle-rearing industry in Sri Lanka has been severely eroded. Today it survives in isolated pockets in the Northern Eastern regions, specifically in Jaffna, Mannar and Tamankaduwa districts, and in the South around the Hambantota-Tissamaharama region in Ruhuna.

India on the other hand, has recognised the cow as a basic element of its economy since Vedic times. Even the great Mogul Emperors of the Muslim Culture, while they ruled India, honoured the ban on cow-slaughter. Barbar, Aurangzeb and Akbar the Great recognised the intrinsic economic value of the cow. India today, with her Hindu traditions which support cattle-rearing, has a cow population of 800 million to match the human population of about 800 million.

Sri Lanka, with her predominantly Buddhist population, has been directly influenced by Northern Indian culture and philosophy for well over two thousand years. This is clearly reflected in her language, which is Sanskrit-based, as well as in Buddhist philosophy. But under the influence of foreign rule, however, Sri Lanka slowly

and steadily slipped into the habit of cow-slaughter and accepted meat as food. The result today is that her cow population is 2 million and the human population 15 million.

The socio-economic impact of the reduced livestock population is a massive one. Social values are altering rapidly, with youth seeking employment away from the villages, going to the cities, where industrial development has been growing. There is an obvious lack of awareness that by drifting away from the village, they are in fact leaving behind the primary natural resource of the country: agriculture and agro-based industry. The rural economy, as a result, is suffering. The average income of a rural family is about N. cr. 200 a month, while national imports of milk products amount to N. kr. 200 million annually, fertiliser imports cost N. kr. 450 million, and cement and allied products 127 million.

These costs, which can be only ill-afforded by the people of this country, can begin to be off-set by a well-developed cow economy. Since ancient times, the country's primary resource has been rural agriculture, but unfortunately, it has received little attention in recent planning. A serious nationwide adoption and support of the cow-based economy, and its whole-hearted implementation at all institutional levels, would reverse the process of urban migration; it would channel hundreds and thousands of youth to the villages, where the potential exists for productive employment, simple but decent housing, and maintenance of a traditional social structure.

The modern economic planner may pose the question of purchasing cheap surplus milk in the international market, rather than making the heavy initial investment in rejuvenating the cattle industry. But such an approach is tantamount to giving up as lost an essential part of the nation's rural economy, the cow. One would not do this gladly and willingly.

In the preparation of this report, dialogue and consultation with villagers in several districts has been continuous. Their opinions views, and hopes have been to some extent identified and incorporated, and a genuine effort has been made to give expression to their feelings, which are strongly and unshakeably linked with the cow. The Red Cow concept, introduced to the village home, could prove to be a blessing, a small but vital step in the correct direction, that of strengthening the infra-structure of the land and its economy.

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OBJECTIVES

The basic objective of the project is to re-introduce and support a valuable, essential and traditional element of the rural economy, one that is consistent with cultural traditions and religious practice. Work towards this objective would be enhanced through the use of modern scientific knowledge and procedures.

The objectives can be subdivided into two groups :

A. Specific-Immediate-Personal ---

1. To rear a good-quality cow in village homes.
2. To improve family nutrition through milk and its by-products. In improving the health of young mothers, breast-feeding becomes more possible and natural, and as a consequence the family saves N. kr.60-100 per month on powdered milk.
3. To provide a regular source of income from the sale of milk and calves.
4. To provide organic fertilisers.
5. To provide cow dung for plastering home floors and walls- a natural pest repellent and an excellent binding agent.
6. To provide bulls for draught and breeding.

B. Long-range-Social-Communal ---

7. To maintain and propagate a breed of cattle of high quality, making it available in an ever-increasing radius.
8. To experience the contact with cattle and develop the art of cattle-rearing as a productive way of life.

9. To act as a catalyst by infusing fresh thinking at village level, emphasising the cow as part of an agricultural life-style.

10. To indicate the good quality of life available in a village environment, bringing to the village home a sense of independence, contentment and self-respect.

11. To stem the movement of youth to the cities.

12. To become less dependent on machinery and on powdered-milk import (through the increased use of bullock-plough and cart and the production of domestic milk requirements).

13. To use the vast quantities of rice-straw, currently allowed to decay, and utilise the large number of foliage plants and trees which are suitable for lopping as cattle-feed.

14. To introduce bio-gas units for lighting and cooking.

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PROJECT I

The concept of the Red Cow project germinated in 1982 with the introduction of cattle to the writer's village farm. It became increasingly obvious, through the writer's experiences and personal satisfaction, that there was a great potential for benefit to the needy villagers in such an undertaking. This proposal is written in the spirit of inviting open discussion, criticism and questions that would lead to the improvement of the proposal, and healthy dialogue is welcome.

Pilot Project:

It would be sensible to begin with a small economy unit, with perhaps thirty cows as a pilot project. Such a project could be enlarged once progress is seen. The project warrants the establishment of a central dairy farm under efficient management. This farm would initially serve a village area with a one-kilometer radius. Since the population density is high in the South-Western region, this circle would have within it several hundred homes.

The breed selected for choice is the Sahiwal, which has proved itself as the best dairy breed in the Indian sub-continent, and it is probably the best indigenous tropical dairy breed in the world. They are well acclimatised to the tropics, with good disease-resistent qualities. The care required for the cow can easily be provided by an average unsophisticated village family. The bulls are massive,but useful for draft work. There is no intention to channel any of the animals to the meat market.

The animals forming the dairy herd would be purchased, and during the interim organisational period, the milk would be sold. During the second year of operation a predetermined number

of pregnant cows would be distributed to selected families, under a lease agreement; poorer families (an average income of N. kr. 200 a month) would be given preference in the first selection of participants. Ownership of the cows is retained by the Farm under the lease or loan agreement, and the cows would be insured against loss.

From this point, the condition of the cows would be monitored on a regular basis, the complete responsibility for this residing in the Farm Management. The cow's health, the birth of calves, milking, lactation, feeding and living conditions would be recorded and maintained by the staff, all of it being done on visits to the villagers' homes.

After the birth of the calf, the family, under the lease agreement, would milk the cow and deliver the milk to the Farm, where it would be tested and then transported to the State-owned collection centre, together with the Farm milk. Records of milk output are maintained at the farm, and the villager is paid on a monthly basis for his total milk production, each family having a separate set of records and also a separate account for income. Thus, the total income from the cow comes back to the family.

A few months after calving, the cow would be served by a Farm Sahiwal bull. When her lactation comes to an end, the calf is then eight to ten months old, and about this time the calf would be returned to the Farm, as it is owned by the project. The cow would remain with the village family.

Where the attention to and care of the cow is found to be lacking or seriously defective, the lease agreement would allow the cow to be withdrawn and returned to the Farm. Under normal and desirable circumstances, however, the second calf would be

born fifteen to sixteen months after the first one. According to local custom and practice, this calf becomes the property of the family. Thus, alternative calves are owned by the Farm and by the lessee of the cow. The first option to purchase calves from the lessee would also be contained in the lease agreement.

The bulls at the central Farm may also be used to serve indigenous local cows of the village - a factor that would significantly upgrade the calf population from village cows. It is estimated that within two years a fifty-percent Sahiwal animal would emerge. No strain on the bull is anticipated, since five hundred services per year may be expected as a norm.

The average income derived from the milk and the calves would be N. kr. 1000 per year, at a conservative estimate, and this is only the direct income. The value of manure, of nutrition, of vegetables and of other indirect benefits cannot easily be quantified. The average net income would thus be around N. kr. 80 per month, the introduction of the cow reflecting about a forty-percent increase.

It is quite evident that the success of the project is dependent on the degree of acceptance it receives from the village. Theoretical discussion and general meetings offer little indication of the villagers' real acceptance of a concept - which is undertsandable, given that they have been misled and misinformed because of either insufficient or inexact information on various occasions in the past. The actual physical operation of a project such as this, seen in action and in practical application, stands a very good chance of penetrating their basically cautious nature. Central Farm staff would necessarily have communication, dialogue and exchange of views and ideas with the village, and this interaction should develop into a trusting and valued relationship; this stage would

be reached naturally once the philosophy of the project is perceived in practice. Needless to say, a good deal of patience and hard work will be needed to achieve this desired condition; ideally, this trust and confidence would appear in the first year, but it might require several years.

One of the important confidence-inspiring factors would be the basic veterinary services provided from the very inception of the project by the central Farm. When cows are distributed, the families will feel confident about accepting responsibility, knowing that the advice and guidance of the Farm management and staff are available. Prompt attention in times of an eventual crisis will be one of the elements that will help cement the bond, proving that trust in the project is merited.

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PROJECT II

A Land ---

A reasonable-sized area for the project is fifteen hectares, going up as far as forty hectares, to allow for development and to meet future needs. It is likely that the land will have a coconut plantation on it. An application would have to be made to the Government to obtain on lease the land required, since privately-owned land is limited to twenty hectares per family, and thus not available.

The project concept has been discussed in detail with the District Minister for Galle, Mr Rupa Karunatilleke. An application for land allocation must be sent to him for approval and thence to the relevant State institution for the granting of a lease.

The Southern Province has been suggested for several reasons, First, this region has a high rainfall of about 100 inches per year, and the resulting grass-rejuvenation cycle is about 20 days; a hectare here can support double the number of cows capable of being raised in most other parts of the country. Secondly, the population density in this region is the highest in the entire country, and at the same time it is the most productive agricultural zone. Thirdly, the province hardly has any cattle stations or farms run by the State, while other provinces are well served on a national basis. The Fourth reason is given below, under 'Management'.

B. Management ---

The writer offers his voluntary service to the Foundation and is prepared to take full responsibility for the project's financial and administrative management. His village is located in the same province, in the South. If he is working with the project, it would

save a great deal of travel and energy if the Farm lies in that same region. At present, the writer spends at least three weekends of the month at his village. If the project becomes a reality, it is his intention to establish a fixed routine of leaving Colombo on Friday nights and of returning on Monday mornings, thus, he would spend two full days and nights at the Farm each week. He is prepared (as is necessary in Sri Lanka) to accept certain responsibilities on behalf of the State, as well as on behalf of the involved villagers. He also assures the Foundation that he understands that he is responsible and answerable directly to the Board in Norway.

C. Fencing & Water ---

The following would need to be attended to simultaneously:

a) Paddock fencing, that has to be planned and constructed, as well as electrical fencing, which is just being introduced to Sri Lanka.

b) Water sources, which are to be identified, and wells dug with pump-overhead tank systems. Flowing water would of course be ideal.

D. Dairy & Quarters ---

The dairy shed and loose barns in the grazing fields would need to be built. Milking cows are stall-fed, while the rest of the herd is allowed to graze freely both day and night. The loose barn provides shelter in the grazing paddock.

Staff quarters should be constructed early to allow resident management. All buildings would initially be in wattle-and-daub construction, because of the significant savings in cost. This type of housing, when properly planned can be most comfortable. The

roofing material of all buildings would be thatch, the most common practice.

In the extreme case of the necessity of shutting down the project, little money would have been wasted, although the leasehold of the land is another factor which needs to be reckoned with.

E. Grass & Fodder ---

Fodder grasses both for grazing and for stall feeding will need to be established in the initial stages. It is widely accepted through experience in this country that grasses of several types grow well under coconut, and both crops would be fertilised separately.

F. The Sahiwal Breed ---

(Origin and habitat) This breed originated in Western Punjab Pakistan. The climatic environment of its home is sub-tropical and arid; the average annual rainfall there is about seven inches, and summer temperatures rise to 48^0C., with average winter temperatures falling to 5^0C.

(Physical characteristics) The Sahiwal is a large, heavily-built, long, deep and rather fleshy animal. The coat colour is reddish to dark brown, and the male is massive. The dewlap is large and heavy, the naval flap is loose and hanging, and the sheath of the bull is pendulous. The udder of the cow is large.

It is recognised as one of the most productive of tropical dairy breeds, and cattle of this type have been exported to many parts of the tropical world. In Jamaica the breed has been crossed with the Jersey to provide the foundation stock for the breed known as the Jamica Hope. In East Africa they have been widely used for upgrading African Zebu cattle. Even the development of the Australian Milking Zebu was done with the infusion of Sahiwal blood.

G. Science and Technology ---

At a subsequent stage in the project, the manufacture of value added products,cream, butter, yoghurt, cheese, butter-fat, curd etc., - may be considered. These products would require technical expertise and specialists from Norway.

There does not appear to be in Sri Lanka at present a scientifically-oriented breeding programme. With technical input from Norway in the area of genetic planning, one can anticipate with hope the development eventually of a new breed. The Red Norwegian cow and the Red Sahiwal may possibly blend in the future to produce the "Red Cow".

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PRESENT STATUS OF THE SRI LANKAN CATTLE INDUSTRY

(This subject has been touched on in previous sections)

There are three State-managed organisations responsible for all the major farms in the country :

First, the Department of Animal Husbandry and Health, which is under the Ministry of Rural Development. All services in the country at the rural level are provided by the Veterinary branch of the Department. This includes the services of trained personnel for consultation, diagnosis and administration of drugs, and facilities for artificial insemination, all of which are provided free of charge.

Secondly, the National Livestock Development Board, which is also governed by the Ministry of Rural Development. The farms run by the Ministry are generally large, ranging from several hundred to several thousand head of cattle. The locations vary from upcountry (at elevations of 2000 meters) to sea level on the plains. Low-country stocks are chiefly Indian breeds: Kilari, Tharpaka, Hariyana, Gir, Kangayam and more recently the Sahiwal. The mid-country (at elevations from 500 - 1000 meters). European cross-breeds are being raised successfully. A high percentage of the nation's milk production comes from this region.

All of the abovementioned farms are run on a commercial basis with overseas training and scholarships for management staff. Training is done mainly in India, Pakistan, Holland, Australia to name a few. Management policy includes the culling of animals, calf-separation from the cow, artificial insemination, upgrading, as well as other modern techniques.

Finally, the most recent institution under the Mahaweli Ministry, a Livestock Programme of the Mahaweli Authority. The farms under this programme are all located in the Dry Zone, low-country, and they concentrate on the Killari for draught animals and on the Sahiwal for milk. The approach for this programme has a distinct Asiatic orientation to cattle-keeping. (The latest project of the Authority is at Lunugamvehera in the deep south, where a large irrigation dam has been commissioned).

All State institutions are financed by the Central budget, with further lines of financing coming from the World Bank and the Asian Development Bank. This policy is most necessary at present to prop up the staggering cattle industry of the island.

Note: (The costs of these programmes are additional to the expenses incurred for the imports mentioned in the "Introduction", paragraph 4. Also refer to Appendix VI).

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FINANCIAL REPORT

(NORWEGIAN KRONER)
N. kr.

The initial capital cost of setting up the Cattle Farm is estimated at N. kr. 375,000/-.

Annual cost of operating the Farm is expected to be N. kr. 160,000/-.

The Farm will derive a Revenue of N. kr. 56,250/- annually from the sale of milk. The net cash required to operate the farm annually is indicated in the cash flow statement.

Based on a milk yield of 6 litres per day per cow at a selling price of N. kr. 1.25 a farm family will have a monthly income of N. kr. 156.25.

By the 10th year of operation, 489 animals would have been issued to the farmers which means that 489 farm families would have benefitted by this project.

The project which commenced with 47 animals purchased for the farm would have increased to 576 by year 10.

ASSUMPTIONS

It is assumed that the farm will be of 50 acres extent taken on long lease.

Farm to be cleared, fenced and planted with paster grass.

Farm building mainly of wattle and daub type to be constructed for farm, office, lab, milking shed, loose barn, manager's bungalow and staff quarters.

The farm staff will consist of :-

The farm staff will consist of :-

Farm Manager	-	1
Head Cattle Keeper	-	1
Herdsman	-	2
Milkers	-	2
Grass Cutters	-	4
Carters	-	2
Care Takers	-	2
		14

To start up the farm 30 pregnant cows of the Sahiwal breed along with 5 heifers and 2 pure Sahiwal stud bulls to be purchased.

During the 1st year 5 pregnant cows will be given away to 5 families to be cared for in the village.

During the 1st year it is assumed that 30 cows will give birth to 30 calves. 25 calves being born in the farm and 5 in the village. Ratio of male to female calf is assumed at 50:50.

In order to maintain the policy of carrying 30 milking cows in the farm 5 more Sahiwal heifers will have to be purchased in year 2 and 3.

In the 2nd and subsequent years the birth rate assumed is 70% of the calves bearing herd, although the National average is 80%. The lower rate assumed is to account for any morality during or after birth.

After keeping a base stock of 30 milking cows in the farm any excess pregnant cows would be given away to the farmers. The farmer, will also be given 1 year old male calves.

The farmer will be expected to reurn to the farm every alternate calf born to the cow cared for by him in the village.

Summary of animals at the end of the year - 10.

Summary of animals at the end of the year - 10.

Originally Purchased		47
Born in village	390	
Born in farm	139	529
Total stock		576

Distributed as follows :

Animals in farm	87
Animals on lease to farmer	246
Animals owned by farmer	243
	576

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FINANCIAL PROJECTION

CAPITAL COST

		(Norwegian Kroner)
LAND		
50 Acres of land to be leased from State - Lease Rent (Annual)		1,500
LAND DEVELOPMENT		
Fencing - Cost of Barb wire and Poles, Labour charges for fencing around & within the Farm, estimated at 4 mile @ N.kr. 9250 per mile		37,000
ESTABLISHMENT OF PASTURE		
Cost of clearing land & planting 40 acres pasture grass, applying fertiliser @ N. kr. 300/- per acre		12,000
FARM BUILDINGS		
Farm Office, stores labs and milking shed - 20ft x 100 ft in cadjan roof, clay walls & cement roofing @ N. kr. 18.50 per sq. ft	37,000	
Loose Barns (4) - 18 ft x 40 ft open barn with cadjan roof and mud flooring @ N.kr. 1000 per barn	4,000	
Manager's Bungalow - wattle-and-daub type with cadjan roof, clay walls and mud floor - 1500 sq. ft @ N. kr. 12.50 per sq. ft	18,750	
Staff Quarters - 4 family quarters 750 sq. ft each 7 1 Bachelor's quarters 1500 sq. ft wattle-and-daub type @ N. kr. 12.50 per sq. ft	50,000	
Water Supply - 3 wells, overhead tanks, supply lines to milking shed, loose barns & Manager's Bungalow	31,000	
Electrical Supply - to Farm offices, Manager's Bungalow & Farm	92,000	
		231,750

CAPITAL COST

(Norwegian Kroner)

FARM ANIMALS		
Cows (30) @ N. kr. 1250/-	37,500	
Heifers (5) @ N.kr. 950/-	4,750	
Bulls (2) @ N.kr. 1500/-	3,000	
		45,250
FARM EQUIPMENT		
Cart & Bull (2) @ N. kr. 4600/-	9,200	
Milking cans, milk testing equipment & farm implements	4,600	
Bicycles (2)	1,000	14,800
OFFICE EQUIPMENT		
Tables, chairs, cupboard, typewriters, etc.		6,200
Contingencies		26,500
		375,000

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ANNUAL FARM OPERATIONAL COST (Norwegian Kroner)

			PER ANNUM
CATTLE UPKEEP			
Feed			
Milking cows (N. kr. 2.50 per day)	27.375		
Others (N. kr. 1.25 per day)	18.250	45.625	
VETERINARY EXPENSES			
Milking cows (N. kr. 5 per month)	1.800		
Others (N. kr. 3 per month)	1.440	3.240	
Ropes, Brushes, Soap etc.		1.250	50.115
FARM LABOUR			
Head cattle-keeper (1)	400		
Milker (2) @ 310 per month	620		
Herdsman (1)	310		
Grass cutters (4) @ 310 per month	1240		
Carters (2) @ 310 per month	620		
	3190		
Social Security	640		
Per month	3830		45.960
FARM UPKEEP			
Weeding & Fertiliser	11.000		
Farm Maintenance	2.400		13.400
FARM OVERHEADS			
Salaries & Wages			
Farm Manager (1)	800		
Caretaker (2) @ 310 per month	620		
	1420		
Social Security	285		
per month	1705	20.460	
Electricity		9.250	
Printing & Stationery		1.850	
Telephone		1.850	
Travelling & Transport		3.000	
Insurance		2.500	
Veterinary Surgeon's Fees		1.000	
Consultant's Fees		2.000	41.910
Contingencies			8.615
			160.000

CASH FLOW STATEMENT

NORWEGIAN KRONER(IN THOUSAND)

YEARS	1	2	3	4	5	6	7	8	9	10
CASH IN FLOW										
Milk Income	56	56	56	56	56	56	56	56	56	56
CASH OUTFLOW										
Capital Cost	375	-	-	-	-	-	-	-	-	-
Farm Operational Cost	160	160	160	160	160	160	160	160	160	160
Purchase of Heifers	-	5	5	-	-	-	-	-	-	-
Farm Replacements	-	-	-	-	60	-	-	-	-	60
	535	165	165	160	220	160	160	160	160	220
CASH REQUIREMENT	479	109	109	104	164	104	104	104	104	164

* Annual inflation not provided for.

ANALYSIS OF CATTLE IN FARM

YEAR - 1

	BEGINNING OF YEAR	BORN IN FARM	GIVE AWAY TO FARMERS	CALVES RETD TO FARM	POSITION END YEAR
PURCHASED					
Cows	30	-	(5)	-	25
Heifers	5	-	-	-	5
Bulls	2	-	-	-	2
BORN IN FARM					
Cows	-	-	-	-	-
Heifers	-	-	-	-	-
F/Calves 2 year old	-	-	-	-	-
F/Calves 1 year old	-	-	-	-	-
F/Calves	-	13	-	-	13
M/Calves	-	12	-	-	12
M/Calves 1 year old	-	-	-	-	-
M/Calves 2 year old	-	-	-	-	-
M/Calves 3 year old	-	-	-	-	-
Bulls	-	-	-	-	-
	37	25	(5)	-	57

ANALYSIS OF CATTLE IN FARM

YEAR - 2

	BEGINNING OF YEAR	BORN IN FARM	GIVE AWAY TO FARMERS	CALVES RETD TO FARM	POSITION END YEAR
PURCHASED					
Cows	30	-	(5)	-	25
Heifers	5*	-	-	-	5
Bulls	2	-	-	-	2
BORN IN FARM					
Cows	-	-	-	-	-
Heifers	-	-	-	-	-
F/Calves 2 year old	-	-	-	-	-
F/Calves 1 year old	13	-	-	3	16
F/Calves	-	9	-	-	9
M/Calves	-	8	-	-	8
M/Calves 1 year old	12	-	(12)	2	2
M/Calves 2 year old	-	-	-	-	-
M/Calves 3 year old	-	-	-	-	-
Bulls	-	-	-	-	-
	62	17	(17)	5	67

* Purchased during the year.

ANALYSIS OF CATTLE IN FARM

YEAR - 3

	BEGINNING OF YEAR	BORN IN FARM	GIVE AWAY TO FARMERS	CALVES RETD TO FARM	POSITION END YEAR
PURCHASED					
Cows	30	-	(5)	-	25
Heifers	5*	-	-	-	5
Bulls	2	-	-	-	2
BORN IN FARM					
Cows	-	-	-	-	-
Heifers	-	-	-	-	-
F/Calves 2 year old	16	-	-	-	16
F/Calves 1 year old	9	-	-	1	10
F/Calves	-	8	-	-	8
M/Calves	-	9	-	-	9
M/Calves 1 year old	8	-	(10)	2	-
M/Calves 2 year old	2	-	-	-	2
M/Calves 3 year old	-	-	-	-	-
Bulls	-	-	-	-	-
	72	17	(15)	3	77

* Purchased during the year.

ANALYSIS OF CATTLE IN FARM

YEAR - 4

	BEGINNING OF YEAR	BORN IN FARM	GIVE AWAY TO FARMERS	CALVES RETD TO FARM	POSITION END YEAR
PURCHASED					
Cows	30	-	(16)	-	14
Heifers	-	-	-	-	-
Bulls	2	-	-	-	2
BORN IN FARM					
Cows	-	-	-	-	-
Heifers	16	-	-	-	16
F/Calves 2 year old	10	-	-	-	10
F/Calves 1 year old	8	-	-	3	11
F/Calves	-	5	-	-	5
M/Calves	-	5	-	-	5
M/Calves 1 year old	9	-	(11)	2	-
M/Calves 2 year old	-	-	-	-	-
M/Calves 3 year old	2	-	-	-	2
Bulls	-	-	-	-	-
	77	10	(27)	5	65

ANALYSIS OF CATTLE IN FARM

YEAR - 5

	BEGINNING OF YEAR	BORN IN FARM	GIVE AWAY TO FARMERS	CALVES RETD TO FARM	POSITION END YEAR
PURCHASED					
Cows	14	-	(10)	-	4
Heifers	-	-	-	-	-
Bulls	2	-	(2)	-	-
BORN IN FARM					
Cows	16	-	-	-	16
Heifers	10	-	-	-	10
F/Calves 2 year old	11	-	-	-	11
F/Calves 1 year old	5	-	-	5	10
F/Calves	-	7	-	-	7
M/Calves	-	7	-	-	7
M/Calves 1 year old	5	-	(10)	5	-
M/Calves 2 year old	-	-	-	-	-
M/Calves 3 year old	-	-	-	-	-
Bulls	2	-	-	-	2
	65	14	(22)	10	67

ANALYSIS OF CATTLE IN FARM

YEAR - 6

	BEGINNING OF YEAR	BORN IN FARM	GIVE AWAY TO FARMERS	CALVES RETD TO FARM	POSITION END YEAR
PURCHASED					
Cows	4	-	(4)	-	-
Heifers	-	-	-	-	-
Bulls	-	-	-	-	-
BORN IN FARM					
Cows	26	-	(7)	-	19
Heifers	11	-	-	-	11
F/Calves 2 year old	10	-	-	-	10
F/Calves 1 year old	7	-	-	7	14
F/Calves	-	7	-	-	7
M/Calves	-	6	-	-	6
M/Calves 1 year old	7	-	(14)	7	-
M/Calves 2 year old	-	-	-	-	-
M/Calves 3 year old	-	-	-	-	-
Bulls	2	-	-	-	2
	67	13	(25)	14	69

ANALYSIS OF CATTLE IN FARM

YEAR - 7

	BEGINNING OF YEAR	BORN IN FARM	GIVE AWAY TO FARMERS	CALVES RETD TO FARM	POSITION END YEAR
PURCHASED					
Cows	-	-	-	-	-
Heifers	-	-	-	-	-
Bulls	-	-	-	-	-
BORN IN FARM					
Cows	30	-	(10)	-	20
Heifers	10	-	-	-	10
F/Calves 2 year old	14	-	-	-	14
F/Calves 1 year old	7	-	-	9	16
F/Calves	-	7	-	-	7
M/Calves	-	7	-	-	7
M/Calves 1 year old	6	-	(15)	9	-
M/Calves 2 year old	-	-	-	-	-
M/Calves 3 year old	-	-	-	-	-
Bulls	2	-	-	-	2
	69	14	(25)	18	76

ANALYSIS OF CATTLE IN FARM

YEAR - 8

	BEGINNING OF YEAR	BORN IN FARM	GIVE AWAY TO FARMERS	CALVES RETD TO FARM	POSITION END YEAR
PURCHASED					
Cows	-	-	-	-	-
Heifers	-	-	-	-	-
Bulls	-	-	-	-	-
BORN IN FARM					
Cows	30	-	(14)	-	16
Heifers	14	-	-	-	14
F/Calves 2 year old	16	-	-	-	16
F/Calves 1 year old	7	-	-	12	19
F/Calves	-	6	-	-	6
M/Calves	-	5	-	-	5
M/Calves 1 year old	7	-	(17)	12	2
M/Calves 2 year old	-	-	-	-	-
M/Calves 3 year old	-	-	-	-	-
Bulls	2	-	-	-	2
	76	11	(31)	24	80

ANALYSIS OF CATTLE IN FARM

YEAR - 9

	BEGINNING OF YEAR	BORN IN FARM	GIVE AWAY TO FARMERS	CALVES RETD TO FARM	POSITION END YEAR
PURCHASED					
Cows	-	-	-	-	-
Heifers	-	-	-	-	-
Bulls	-	-	-	-	-
BORN IN FARM					
Cows	30	-	(16)	-	14
Heifers	16	-	-	-	16
F/Calves 2 year old	19	-	-	-	19
F/Calves 1 year old	6	-	-	15	21
F/Calves	-	5	-	-	5
M/Calves	-	5	-	-	5
M/Calves 1 year old	5	-	(20)	15	-
M/Calves 2 year old	2	-	-	-	2
M/Calves 3 year old	-	-	-	-	-
Bulls	2	-	-	-	2
	80	10	(36)	30	84

ANALYSIS OF CATTLE IN FARM

YEAR - 10

	BEGINNING OF YEAR	BORN IN FARM	GIVE AWAY TO FARMERS	CALVES RETD TO FARM	POSITION END YEAR
PURCHASED					
Cows	-	-	-	-	-
Heifers	-	-	-	-	-
Bulls	-	-	-	-	-
BORN IN FARM					
Cows	30	-	(19)	-	11
Heifers	19	-	-	-	19
F/Calves 2 year old	21	-	-	-	21
F/Calves 1 year old	5	-	-	19	24
F/Calves	-	4	-	-	4
M/Calves	-	4	-	-	4
M/Calves 1 year old	5	-	(24)	19	-
M/Calves 2 year old	-	-	-	-	-
M/Calves 3 year old	2	-	-	-	2
Bulls	2	-	-	-	2
	84	8	(43)	38	87

ANALYSIS OF CATTLE IN VILLAGE

YEAR - 1

	BEGINNING OF YEAR	BORN IN VILLAGE	FROM FARM	RETURN TO FARM	POSITION END OF YEAR
Cows	-	-	5	-	5
Heifers	-	-	-	-	-
F/Calves 2 year old	-	-	-	-	-
F/Calves 1 year old	-	-	-	-	-
F/Calves	-	3	-	-	3
M/Calves	-	2	-	-	2
M/Calves 1 year old	-	-	-	-	-
M/Calves 2 year old	-	-	-	-	-
M/Calves 3 year old	-	-	-	-	-
Bulls	-	-	-	-	-
	-	5	5	-	10

ANALYSIS OF CATTLE IN VILLAGE

YEAR - 2

	BEGINNING OF YEAR	BORN IN VILLAGE	FROM FARM	RETURN TO FARM	POSITION END OF YEAR
Cows	5	-	5	-	10
Heifers	-	-	-	-	-
F/Calves 2 year old	-	-	-	-	-
F/Calves 1 year old	3	-	-	(3)	-
F/Calves	-	3	-	-	3
M/Calves	-	4	-	-	4
M/Calves 1 year old	2	-	12	(2)	12
M/Calves 2 year old	-	-	-	-	-
M/Calves 3 year old	-	-	-	-	-
Bulls	-	-	-	-	-
	10	7	17	(5)	29

ANALYSIS OF CATTLE IN VILLAGE

YEAR - 3

	BEGINNING OF YEAR	BORN IN VILLAGE	FROM FARM	RETURN TO FARM	POSITION END OF YEAR
Cows	10	-	5	-	15
Heifers	-	-	-	-	-
F/Calves 2 year old	-	-	-	-	-
F/Calves 1 year old	3	-	-	(1)	2
F/Calves	-	6	-	-	6
M/Calves	-	5	-	-	5
M/Calves 1 year old	4	-	10	(2)	12
M/Calves 2 year old	12	-	-	-	12
M/Calves 3 year old	-	-	-	-	-
Bulls	-	-	-	-	-
	29	11	15	(3)	52

ANALYSIS OF CATTLE IN VILLAGE

YEAR - 4

	BEGINNING OF YEAR	BORN IN VILLAGE	FROM FARM	RETURN TO FARM	POSITION OF END YEAR
Cows	15	-	16	-	31
Heifers	-	-	-	-	-
F/Calves 2 year old	2	-	-	-	2
F/Calves 1 year old	6	-	-	(3)	3
F/Calves	-	11	-	-	11
M/Calves	-	11	-	-	11
M/Calves 1 year old	5	-	11	(2)	14
M/Calves 2 year old	12	-	-	-	12
M/Calves 3 year old	12	-	-	-	12
Bulls	-	-	-	-	-
	52	22	27	(5)	96

ANALYSIS OF CATTLE IN VILLAGE

YEAR - 5

	BEGINNING OF YEAR	BORN IN VILLAGE	FROM FARM	RETURN TO FARM	POSITION END OF YEAR
Cows	31	-	10	-	41
Heifers	2	-	-	-	2
F/Calves 2 year old	3	-	-	-	3
F/Calves 1 year old	11	-	-	(5)	6
F/Calves	-	14	-	-	14
M/Calves	-	14	-	-	14
M/Calves 1 year old	11	-	10	(5)	16
M/Calves 2 year old	14	-	-	-	14
M/Calves 3 year old	12	-	-	-	12
Bulls	12	-	2	-	14
	96	28	22	(10)	136

ANALYSIS OF CATTLE IN VILLAGE

YEAR - 6

	BEGINNING OF YEAR	BORN IN VILLAGE	FROM FARM	RETURN TO FARM	POSITION END OF YEAR
Cows	43	-	11	-	54
Heifers	3	-	-	-	3
F/Calves 2 year old	6	-	-	-	6
F/Calves 1 year old	14	-	-	(7)	7
F/Calves	-	19	-	-	19
M/Calves	-	19	-	-	19
M/Calves 1 year old	14	-	14	(7)	21
M/Calves 2 year old	16	-	-	-	16
M/Calves 3 year old	14	-	-	-	14
Bulls	26	-	-	-	26
	136	38	25	(14)	185

ANALYSIS OF CATTLE IN VILLAGE

YEAR - 7

	BEGINNING OF YEAR	BORN IN VILLAGE	FROM FARM	RETURN TO FARM	POSITION END OF YEAR
Cows	57	-	10	-	67
Heifers	6	-	-	-	6
F/Calves 2 year old	7	-	-	-	7
F/Calves 1 year old	19	-	-	(9)	10
F/Calves	-	23	-	-	23
M/Calves	-	23	-	-	23
M/Calves 1 year old	19	-	15	(9)	25
M/Calves 2 year old	21	-	-	-	21
M/Calves 3 year old	16	-	-	-	16
Bulls	40	-	-	-	40
	185	46	25	(18)	238

ANALYSIS OF CATTLE IN VILLAGE

YEAR - 8

	BEGINNING OF YEAR	BORN IN VILLAGE	FROM FARM	RETURN TO FARM	POSITION END OF YEAR
Cows	73	-	14	-	87
Heifers	7	-	-	-	7
F/Calves 2 year old	10	-	-	-	10
F/Calves 1 year old	23	-	-	(12)	11
F/Calves	-	31	-	-	31
M/Calves	-	30	-	-	30
M/Calves 1 year old	23	-	17	(12)	28
M/Calves 2 year old	25	-	-	-	25
M/Calves 3 year old	21	-	-	-	21
Bulls	56	-	-	-	56
	238	61	31	(24)	306

ANALYSIS OF CATTLE IN VILLAGE

YEAR - 9

	BEGINNING OF YEAR	BORN IN VILLAGE	FROM FARM	RETURN TO FARM	POSITION END OF YEAR
Cows	94	-	16	-	110
Heifers	10	-	-	-	10
F/Calves 2 year old	11	-	-	-	11
F/Calves 1 year old	31	-	-	(15)	16
F/Calves	-	38	-	-	38
M/Calves	-	38	-	-	38
M/Calves 1 year old	30	-	20	(15)	35
M/Calves 2 year old	28	-	-	-	28
M/Calves 3 year old	25	-	-	-	25
Bulls	77	-	-	-	77
	306	76	36	(30)	388

ANALYSIS OF CATTLE IN VILLAGE

YEAR - 10

	BEGINNING OF YEAR	BORN IN VILLAGE	FROM FARM	RETURN TO FARM	POSITION END FOR YEAR
Cows	120	-	19	-	139
Heifers	11	-	-	-	11
F/Calves 2 year old	16	-	-	-	16
F/Calves 1 year old	38	-	-	(19)	19
F/Calves	-	48	-	-	48
M/Calves	-	48	-	-	48
M/Calves 1 year old	38	-	24	(19)	43
M/Calves 2 year old	35	-	-	-	35
M/Calves 3 year old	28	-	-	-	28
Bulls	102	-	-	-	102
	388	96	43	(38)	489

AGE ANALYSIS OF CATTLE

(END OF 10 TH YEAR)

	FARM (no)	VILLAGE (no)
COWS		
13 year old	-	30
12 year old	-	5
11 year old	-	5
10 year old	-	5
9 year old	-	16
8 year old	-	12
7 year old	-	14
6 year old	-	16
5 year old	-	21
4 year old	11	15
3 year old	19	11
2 year old	21	16
1 year old	24	19
Calves	4	48
BULLS		
Originally Purchased	-	2
9 year old	2	12
8 year old	-	12
7 year old	-	14
6 year old	-	16
5 year old	-	21
4 year old	-	25
3 year old	2	28
2 year old	-	35
1 year old	-	43
Calves	4	48
	87	489

REALISABLE VALUE OF ANIMALS IN 10TH YEAR

	AGE (YEARS)	UNIT PRICE (N.Kr.)	NO OF ANIMALS IN FARM	VALUE (N. Kr.)	NO OF ANIMALS AT VILLAGE	VALUE (N.Kr.)
	13	750	-	-	30	500
COWS	12	750	-	-	5	3,750
	11	950	-	-	5	4,750
	10	1,100	-	-	5	5,500
	9	1,100	-	-	16	17,600
	8	1,250	-	-	12	15,000
	7	1,250	-	-	14	17,500
	6	1,250	-	-	16	20,000
	5	1,250	-	-	21	26,250
	4	1,250	11	13,750	15	18,750
	3	950	19	18,050	11	10,450
	2	650	21	13,650	16	10,400
	1	325	24	7,800	19	6,175
	Calves	325	4	1,300	48	15,600
	ORIGINAL					
BULLS	PURCHASE	950	-	-	2	1,900
	9	1,100	2	2,200	12	13,200
	8	1,100	-	-	12	13,200
	7	1,250	-	-	14	17,500
	6	1,250	-	-	16	20,000
	5	1,600	-	-	21	33,600
	4	1,600	-	-	25	40,000
	3	1,600	2	3,200	28	44,800
	2	950	-	-	35	33,250
	1	650	-	-	43	27,950
	Calves	325	4	1,300	48	15,600
			87	61,250	489	455,255

APPENDICES

Page:

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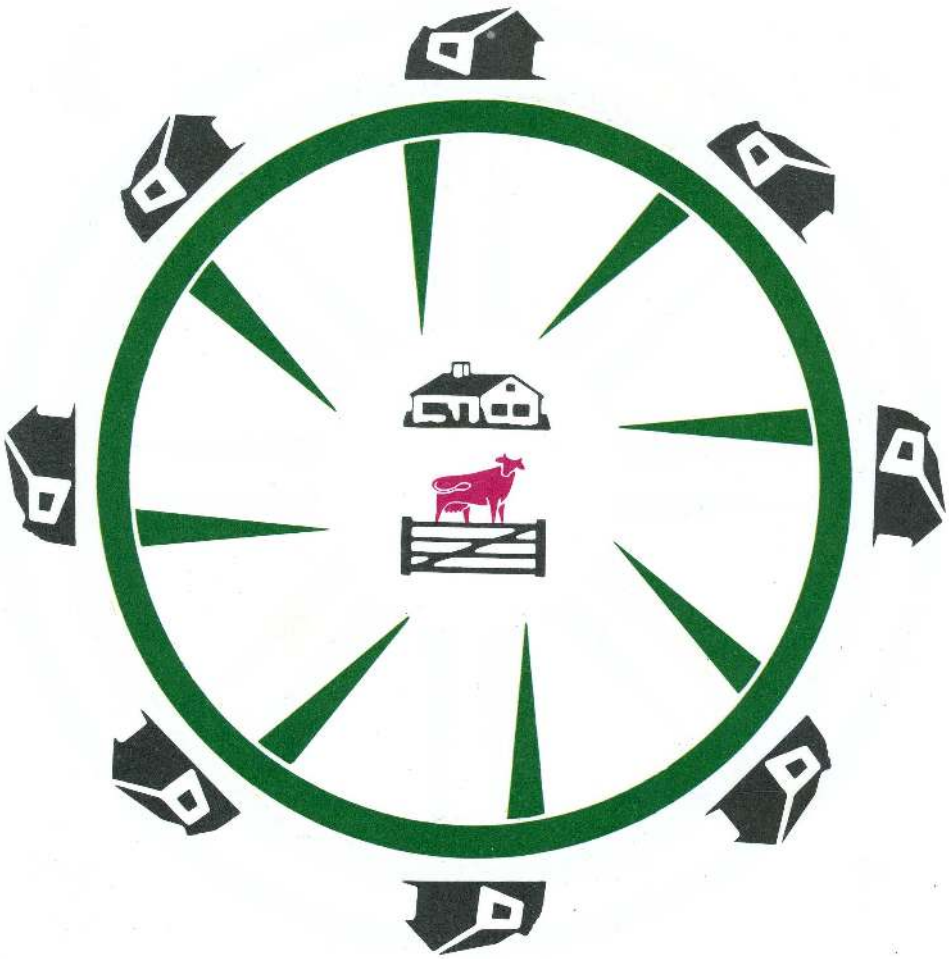
R. PATHMANABA IYER
36, KALADDY AMMAN ROAD
JAFFNA



FIRST TWELVE MONTHS
FRSTE TOLV MÅNEDER

CENTRAL FARM
PROSJEKT BONDEGÅRD

VILLAGE HOME
LANDSBYHUS

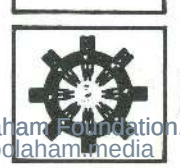
VILLAGER
LANDSBYBEBOER

COW LEASED TO VILLAGER
KU FORPAKTET TIL LANDSBYBEBOER

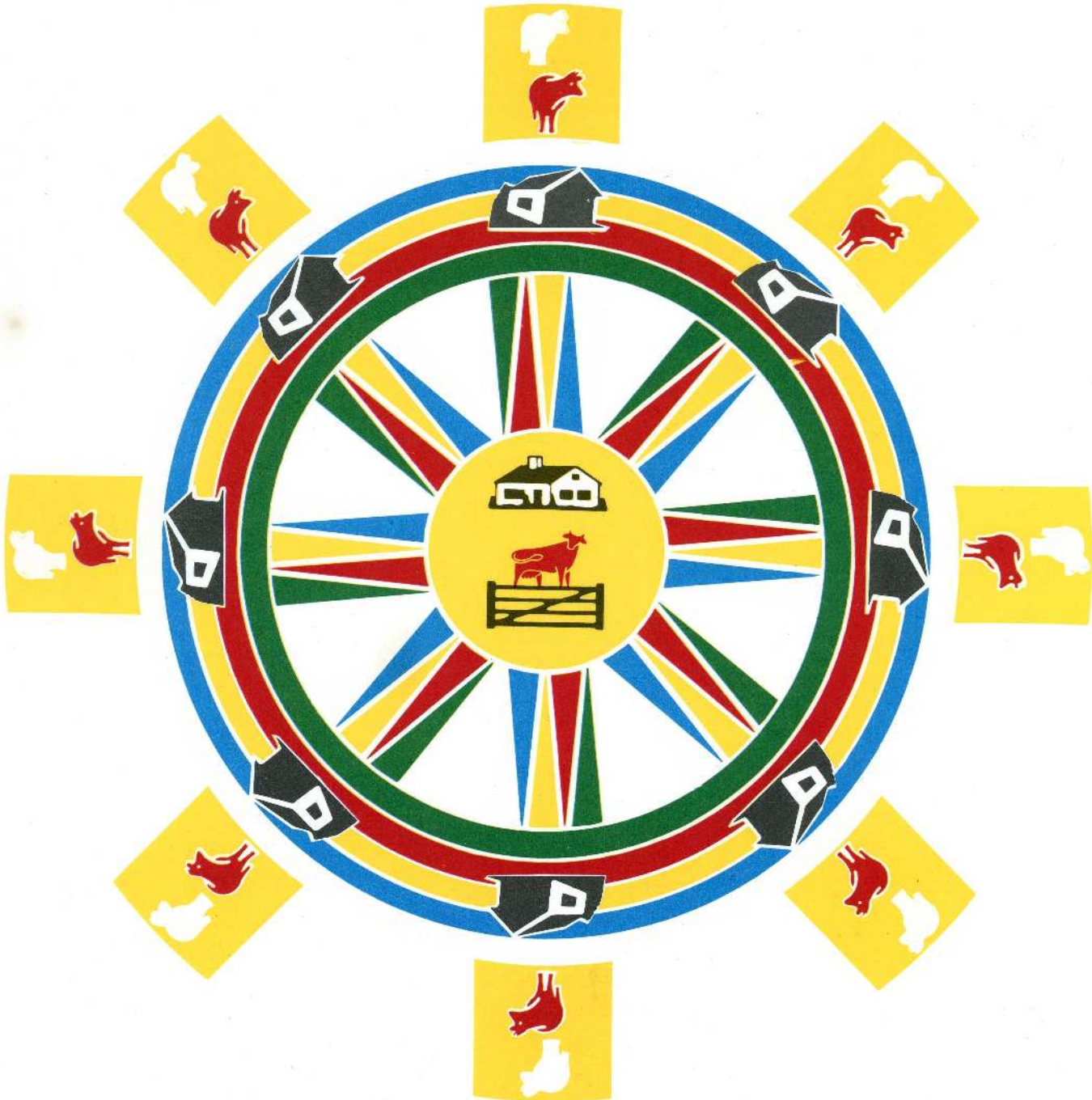
MILK COLLECTION
HENTING AV MELK

MONEY
PENGER

FIRST CALF COMES BACK TO CENTRAL FARM
FØRSTE KALV KOMMER TILBAKE TIL PROSJEKTBONDEGÅRDEN



INTEGRATION OF CONCEPT
INTEGRERING AV GRUNNFILOSOFIEN FOR PROGRAMMET



SECOND AND THIRD YEAR
ANDRE OG TREDJE ÅR

CENTRAL FARM
PROSJEKT BONDEGÅRD

VILLAGE HOME
LANDSBYHUS

VILLAGER
LANDSBYBEBOER

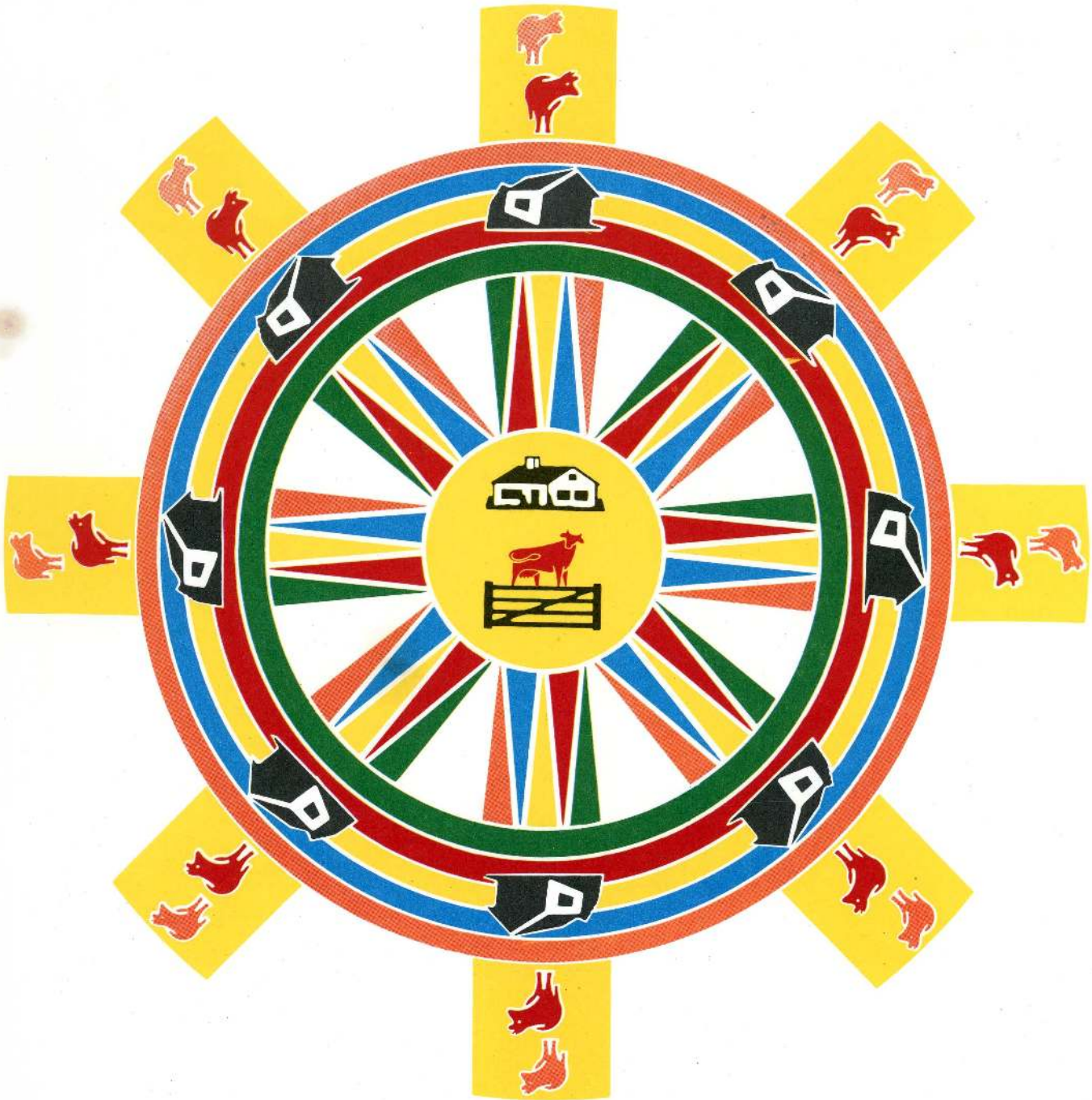
COW LEASED TO VILLAGER
KU FORPAKTET TIL LANDSBYBEBOER

MILK COLLECTION
HENTING AV MELK

MONEY
PENGER

FIRST CALF COMES BACK TO CENTRAL FARM
FØRSTE KALV KOMMER TILBAKE TIL PROSJEKTBONDEGÅRDEN

INTEGRATION OF CONCEPT
INTEGRERING AV GRUNNFILOSOFIEN FOR PROGRAMMET



THIRD TO FIFTH YEAR
TREDJE TIL FEMTE ÅR

CENTRAL FARM
PROSJEKT BONDEGÅRD

VILLAGE HOME
LANDSBYHUS

VILLAGER
LANDSBYBEBOER

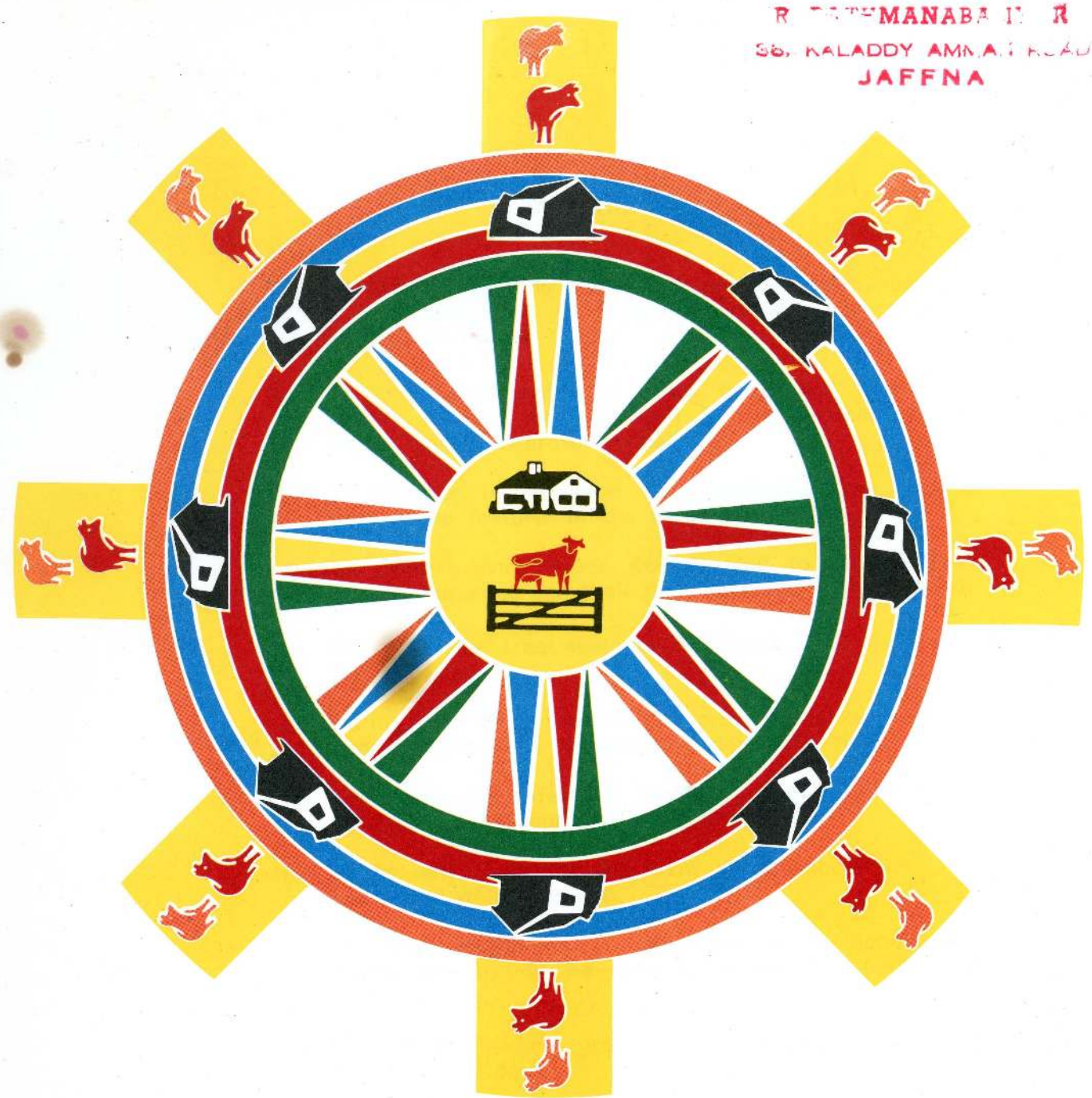
COW LEASED TO VILLAGER
KU FORPAKTET TIL LANDSBYBEBOER

MILK COLLECTION
HENTING AV MELK

MONEY
PENGER

FIRST CALF COMES BACK TO CENTRAL FARM
FØRSTE KALV KOMMER TILBAKE TIL PROSJEKTBONDEGÅRDEN

INTEGRATION OF CONCEPT
INTEGRERING AV GRUNNFILOSOFIEN FOR PROGRAMMET



FIFTH TO SEVENTH YEAR AND AFTER
FEMTE TIL SYVENDE ÅR OG VIDERE.

CENTRAL FARM
PROSJEKT BONDEGÅRD

VILLAGE HOME
LANDSBYHUS

VILLAGER
LANDSBYBEBOER

COW LEASED TO VILLAGER
KU FORPAKTET TIL LANDSBYBEBOER

MILK COLLECTION
HENTING AV MELK

MONEY
PENGER

FIRST CALF COMES BACK TO CENTRAL FARM
FØRSTE KALV KOMMER TILBAKE TIL PROSJEKTBONDEGÅRDEN

INTEGRATION OF CONCEPT
INTEGRERING AV GRUNNFILOSOFIEN FOR PROGRAMMET

APPENDIX II

The Indo-Aryan discipline and regulations for the management of cattle was confirmed 2500 years ago by Siddharta Gautama the Buddha - and it runs as follows :

"a) To know the number of bulls, cows, bull calves and heifers in the herd, as well as the number of red, white, black and brown animals.

b) To be able to recognise the marking on the skin, as well as the features of the horns and hoofs.

c) To observe and detect wounds, and to remove flies, insects, parasites and their eggs deposited in the wounds .

d) To administer treatment for an illness until it is completely cured.

e) During the rainy season, to provide smoke with log fires to keep away mosquitos and harmful flies.

f) To ensure the safety of cattle by knowing the danger factors and the depths at river fords.

g) To be able to detect and know which animal has drunk water and which has not.

h) To have knowledge of dangerous areas along cattle trails, thereby to be able to direct the herd along safe trails.

i) To rotate feeding grounds by changing areas every five or seven days.

j) Until the newborn calf develops in weight and strength, to extract milk only from three teats of the udder.

k) The fathers of the herd, or the lead-stud bulls, should be fed with pleasing foods, sprinkled with scents, dressed with flower garlands, their horns to be capped with gold and silver, and to be housed at night beneath an awning in a suitable place lit by oil lamps".

(The experienced cattle-manager will recognise many familiar and essential practices among this doctrine).

******

During the time of Guatama Buddha there lived a wealthy nobleman named Anatha Pindika. The Pali records describe his cattle pens as running for "miles". His cattle manager was named Nanda Gopala, and he was obviously a famous specialist in his field, to this day the Indians sing devotional songs in praise of Nanda Gopala.

***

When the Aryan Nomads settled at last in the Indus Valley, in prehistory, and developed agriculture, music and the arts, the great civilisations of Mohinjadaro and Harappa emerged. From those times, the traditions of the Hindu faith have promoted the cow as the most venerated animal in the world.

***

A Rig Vedic Sanskrit word "aghniya", meaning "not fit to be killed", refers especially to cattle.

The Sanskrit word "go mulya" means the system used to assess the exact value of cattle as a form of currency.

***

"Vasshalyya" signifies the height of filial affection, the affection displayed by a cow to her calf. It is said that exemplary motherly affection can best be learned by humans by observing the cow.

***

A poem by the famous Indian poet Kalidasa describes the Emperor Dileepa in Vedic times :

To ensure the preservation of cattle, the Emperor embarked on a campaign of evening worship, in which milk, curd, butter fat and cream were used for kindling the fires of worship in temples. Thus, the living cow became indispensable in conducting offerings to the gods.

***

The Emperor Dileepa prayed to Sakra-Indra, the King of the gods, to bring prosperity to his subjects and to help them follow the path that does not deviate from justice; he prayed also that the rulers of the world would not deviate from this path. Sakra-Indra's throne in heaven, according to the legend, was energised by this prayer, and he responded with clouds and rain to enrich the fortunes of man.

Hindu India, since the time of Dileepa, has zealously guarded the tradition established by the Emperor, of giving cattle a venerated place in their religion. The foresight of the Emperor provided the necessary reason for saving the cow from slaughter after its useful period.

******

APPENDIX III

TREES AND PLANT GRASSES AVAILABLE FOR CATTLE FODDER

Common Name	Botanical Name
1. Ruzi grass	Bacharia Russiensis (Mid country)
2. Cori grass	Bacharia Miliformia(Under coconut)
3. Signal grass	Bacharia Brizantha (Applies to all regions)
4. Napier - NB 21	Pensitum purpureum
5. Guinea B	Pannicum maximum
6. Water grass	Bracharia Mutica (Water logged areas)
7. Hamil	Panicum maximum (cultivar)
8. Style	Stylozanthus gracillis
9. Sirato	Macroptilium atropurtureum
10. Pureria	Pueraria phaseoloides (cover)
11. Dambala	Psophocarpus tetragonolobus
12. Kang Kung	Ipomea aquatica
13. Grapala	Commelina clavata
14. Mukunu venna	Alternanthera triandra

contd..

Common Name	Botanical Name
15. Battala	Ipomea batatas
16. Passion fruit	Passiflora edulis
17. Watu palu	Micanea scandens (Kreeper)
18. Kanda kola	Macaranga tomentosa (tree)
19. Manioc	Manihot utilissima
20. Shoe flower (Vada Mal)	Hibiscus sinenses
21. Eramudu (Red flower)	Erythrina indica
22. Grilicidia	Grilicidia meculata
23. Ipil Ipil	Leucaena Leucocephala
24. Jak	Artocarpus integrifolia
25. Kappok (pulun)	Eriodendron anfractuosum
26. Banana	Musasapientum
27. Bread fruit	Artocarpus incisa
28. Paddy (straw)	Oryza sativa

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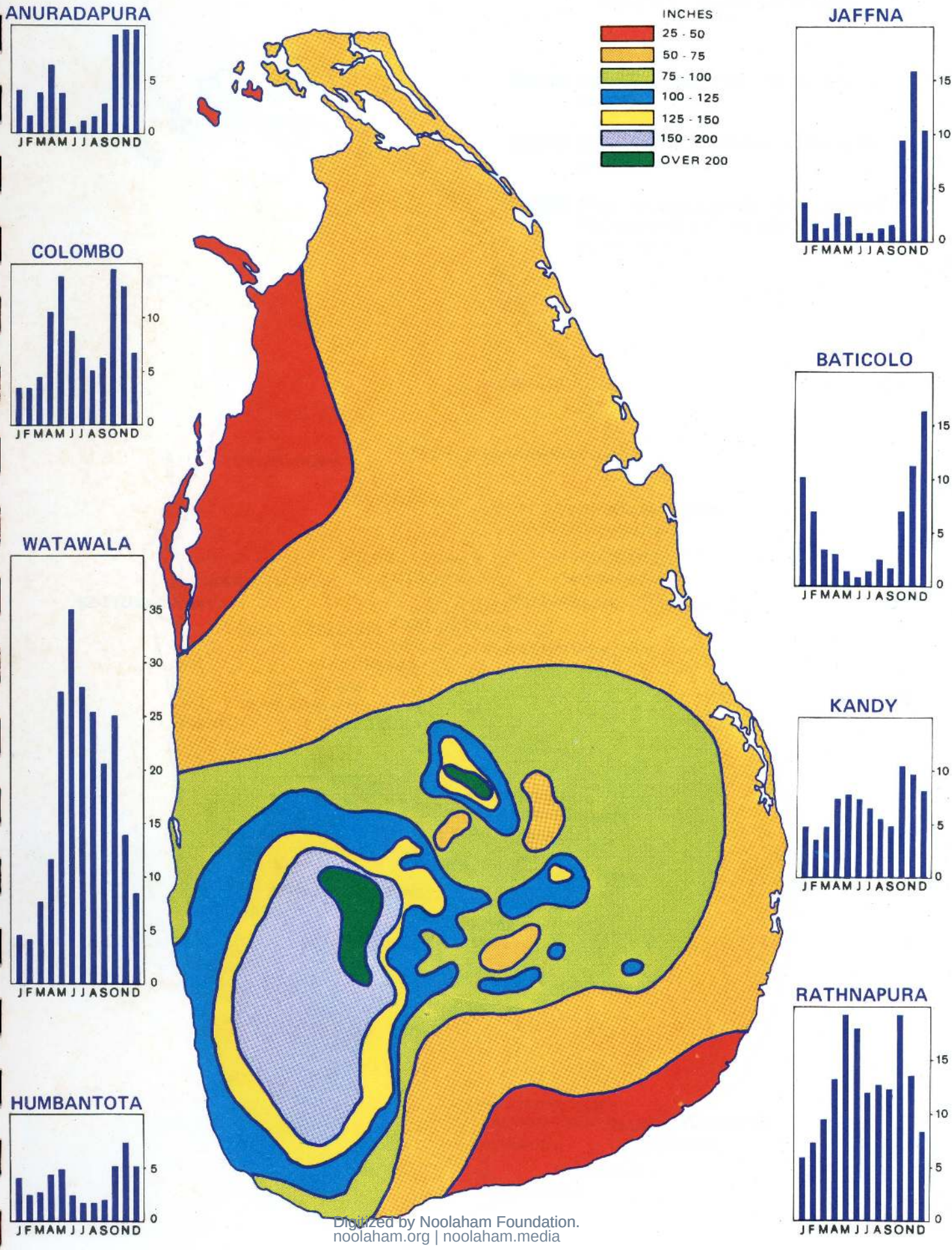
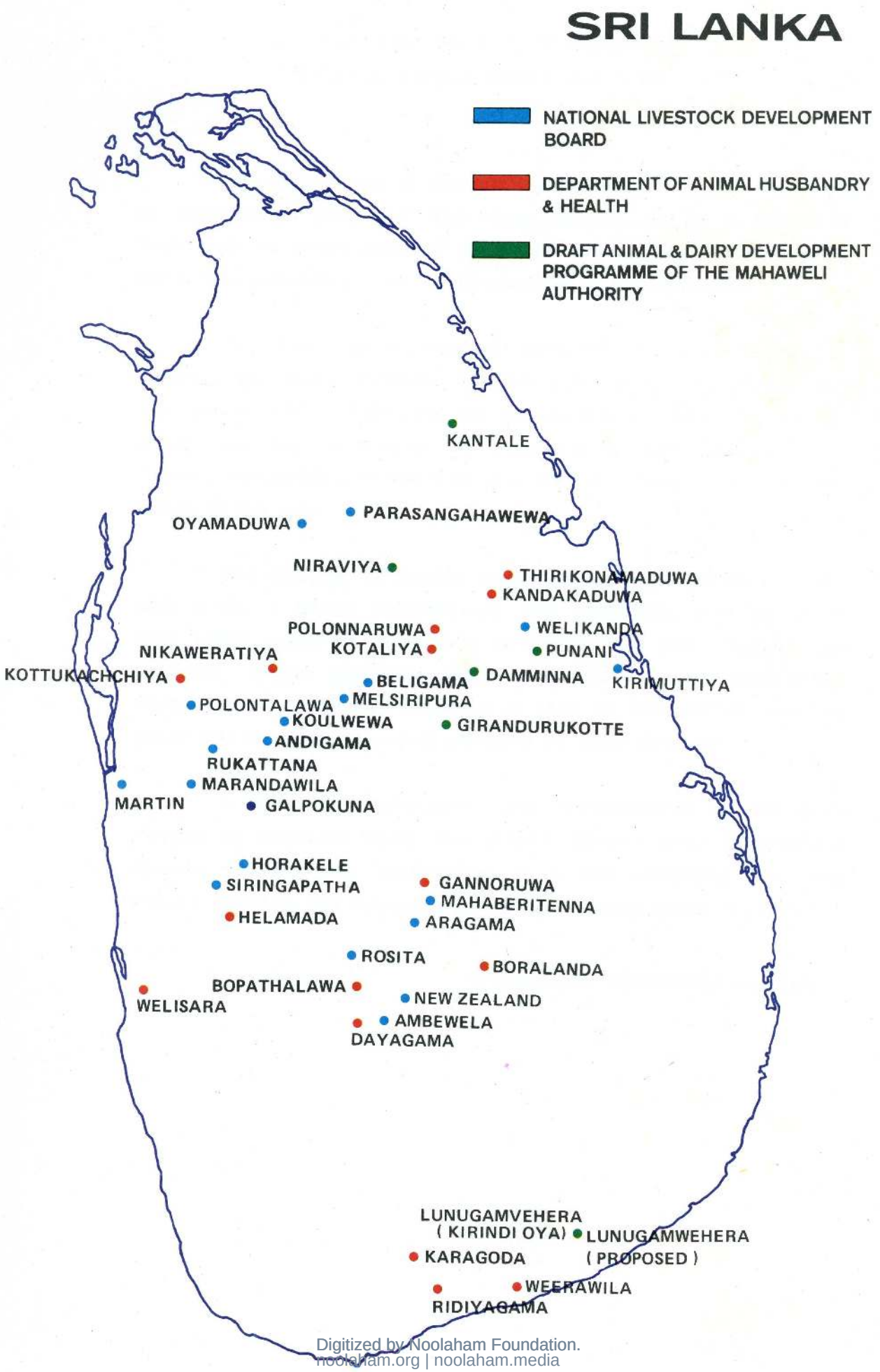
ANNUAL RAINFALL DISTRIBUTION

SRI LANKA



DISTRIBUTION OF STATE OWNED CATTLE FARMS



FOREIGN SOURCES OF FUNDING FOR NATIONAL DAIRY INDUSTRY

The dairy sector of this country has been a regular receipient of international assistance from many sources and in a variety of forms such as direct technical assistance, grants, food and commodity aid and concessionary loans for development of the industry.

The table below indicates some of the main sources of external assistance channelled to the dairy sector during the five year period 1980 - 1984, and the aid pledged in 1985. Of this aid project aid and commodity aid constitute a major portion, while Finland, Switzerland, Netherlands and the IDA have been the main source of the aid.

The quantum of foreign assistance increased sharply in 1985, with a Rs. 1 billion concessionary loan negotiated with the World Bank which would be channelled to develop the Milk Producer Co-operative system islandwide under a new dairy setup abolishing the national Milk Board and replacing it with an institutional structure which will be privately owned, primarily by dairy farmers.

A complete restructuring and modernisation of the dairy industry is envisaged under this project (second IBRD Development Project) involving the construction of a new processing plant and chilling facilities and the encouragement of private sector ownership.

(Please refer Appendix(a) overleaf)

APPENDIX VI(a)

Funding Country/ Agency	(In N. kr. millions) 1980	1981	1982	1983	1984	1985
1. Asian Development Bank					3.9	3.3
2. Finland			13.6	3.5	3.1	
3. Switzerland		2.1	0.2	4.6	1.7	
4. International Development Association (IDA)	4.4	4.1	2.7	0.1		
5. Sweden		0.1	0.3	0.03	0.6	
6. Australia				5.9		
7. Netherlands					31.7	
8. USA					15.2	
9. World Bank (IBRD)						316.1
TOTAL	4.4	6.3	16.8	14.13	56.2	319.4

APPENDIX VI (b)

Average Quantities of Milk and Milk Products Consumed per Person for one Month by Income Groups in N. kr.

ITEMS	Monthly income 60-91	182.12	303.33	606.36 909.39		1515.45	Over	Over all
	60 - 60	181 • 82	303 •03	606•06	909.09	1515 •15	3030•30	3030.30	Average
Milk (MLT)	52.3	96.8	114.3	200.8	316.9	416.0	474.8	855.8	204.5
Fresh Milk Cow	37.8	68.5	82.3	156.7	247.5	325.1	387.9	689.0	158.1
Fresh Milk Goat	-	5.1	1.8	3.3	1.6	4.0	2.2	-	2.4
Infant Milk	0.9	8.9	14.6	15.5	17.7	18.5	26.8	28.4	15.5
Other Powdered Milk	8.7	7.8	9.6	19.5	32.2	43.5	39.1	64.9	19.2
Condensed Milk	-	0.4	0.1	0.2	1.9	1.9	1.6	6.1	0.6
Curd/Yoghurt	0.5	2.8	4.3	3.8	7.7	17.9	15.2	60.9	6.0
Infant Cereal Food	-	0.5	0.4	0.3	0.5	0.7	-	0.8	0.4
Other Milk	0.5	2.3	1.2	1.5	7.8	4.5	1.9	5.7	2.6
Milk Products	1.9	0.3	0.5	1.4	4.8	13.3	16.2	50.8	3.1
Butter	1.9	0.3	0.1	0.8	3.3	11.0	11.9	28.1	2.0
Cheese	-	-	-	-	0.1	0.2	0.9	0.2	0.1
Butter Milk (Moru)	-	-	-	-	0.1	-	-	-	-
Ice Cream	-	-	0.2	0.1	0.3	0.4	1.7	15.7	0.3
Other	-	-	0.3	0.5	1.0	1.6	1 .7	6.8	0.6

Source : Economic Review March 1986 - Peoples' Bank.

INDEX TO PHOTOGRAPHS

1. "The Father".

2. Sahiwal Stud on a State Farm.

3. Young stud bull allowed to graze free range, with the herd.

4. $ cows on a State farm about 75% Sahiwal blood. Capable of yielding five litres of milk per day, with individual care. This is possible when the cow lives with a village family.

5. Cow and calf at the dairy on a State farm. The poor condition of both mother and calf is a striking feature.

6. A Sahiwal herd grazing on pasture established under coconut.

7. First generation cross-breed. Sahiwal blood 50 percent, local indigeneous blood 50 percent. The variation in size is noticeable, when compared to the pure Sahiwal stud in the centre background.

8. A typical example of a cow, where the cross breeding program has not produced results. Eireshire, Jersey and local cross breeding - resulting in a peculiar mixture without producing the better characteristics of the European breeds.

9. Village cattle that cannot produce more than a litre or two of milk per day. However, the cows are most fertile and produce a calf pwer year.

10. Typical local cow.

11. A villager with an income of less than N. Kr. 200 per month. This rman is building a shelter for his cow that gives him a litre of milk.

12. Cattle shelter at a State farm. The floor is cement and the structure wood, with a clay tile roof.

13. A loose barn shelter - cement floor, wood and thatched roof.

14. The dense foliage on either side of the road is Grilicidia - a good feed. This section in the picture will quite easily fill a tractor load.

15. Women harvesting Napier grass for stall feeding.

16. A plot of Ruzi grass no more than 1/8 of a hectare, - planted in November 1985.

17. A large area planted with Ruzi pasture.

18. Guinea B grass - for stall feeding.

19. The Kappok tree - very good as a lopped fodder.

20. Ipil Ipil growing together with coconut. An excellent supplementary cattle fodder, with a high recovery rate of growth.

21. A variety of Hibiscus usually grown along fences - a good fodder.

22. Paddy Straw after threshing is often allowed to decay in the field. A clear indicator that the cattle population is low.

23. Dried meat of the coconut known as copra. Coconut oil is produced by crushing the copra under high pressure. The resulting oil cake is poonac and provides the main local concentrate food for cattle.

24. Poonac resulting from the milling process.

25. Milk being delivered to a collection centre for testing and transport to a factory.

26. A farmer delivers his milk early morning when taking the children to school. The man with the pot is a tractor driver who also has a cow.

27. Milk is measured and tested immediately.

28. The processing plant to which the farmers milk is finally transported.

29. Interior of the milk processing plant. Machinery purchased from India.

30. The laboratory used for quality testing and controls.

31. The milk is processed into the following :- Yoghurt , Curd, butter fat (ghee) and butter.

32. Double bullock cart made with ninety percent local material. Suitable for all local roads - it may be called the poor mans four wheel drive vehicle.

33. The grass cutter, rope maker, carpenter, village blacksmith are some who derive a living from the bullock cart. Collection of coconut is still done by cart on large estates.

34. A proud carter who's sole income is transport. The pay-load is 1.5 metric tonnes of firewood. However, he does not qualify for a bank loan, either for a new cart or repairs. The total cost of the cart and bull - N. kr. 4 to 5000.

35. The land master - two wheel tractor - imported for agricultural use. The pay-load is 1.5 metric tonnes and costs N. kr. 25,000. The local banks finance the purchase of these machines.

36/'37. A farmer who continues to plough with the bullock. He is not prepared to pay at the rate of N. kr. 250 per hectare to the tractor owner, twice an year.

38. Wattle and daub home with mud plastered walls and floor. The family can build this house with their own effort for N. kr. 1000 or less.

39. House of a better quality with plastered walls and a cement plinth. The roof is thatched coconut fronds. It has wooden doors and windows. The cost would be around N. kr. 2 - 3000.

40. This mud house was built in the nineteen fifties. Cement plinth outside to avoid wash off, thatched roof, mud flooring - washed with cow dung. Consists of a verandah, two rooms and a kitchen. Cost N. kr. 3000.

41. A family that should be considered to receive a Red Cow. Total income per month is about N. kr. 150-200. The husband is a carter with two bulls and an old cart.

42. Her family with the mother in-law to support eans under N. kr 200 per month. She cannot afford, and fortunately does not need powdered milk. A rare example; most young women are not as fortunate as her. The results that follow are a ill nourished family - as half the family income is spent on powdered milk - to feed only the infant.

43/44. A mixture of mud and cow dung in a ratio of 6 to 4 approximately is applied every few months on the floor and walls as a disinfectant. The practice dates back several thousand years. As the families do not have - cattle they have to go looking for dung or wait for carts to pass along the road.

45. The fire-place or hearth is also plastered like the floor, as a good binding agent and for cleanliness.

46. The establishment of bio-gas units is feasible. The local usage is not quite prevalent, as of today. A simple unit can have five lights and sufficient gas for cooking. Of course the cow has to be at home.

47/48. Stone carvings of a cow head depicting the close association between the deity the cow and an agro-based society.

49. The Emperor Dileepa principle of venerating cattle - the Nandi bull is to be found in all major Hindu Shrines, placed at the entrance courtyard -facing the God or Goddess in the inner sanctum.

****

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