EVALUATION STUDY OF FEED AND FODDER DEVELOPMENT UNDER THE CENTRALLY SPONSORED SCHEMES IN KARNATAKA

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Feed and fodder are important inputs for keeping the animals in good health. This helps our rural community to use the male more productively for agricultural operations and female cattle for increased milk production. Unfortunately, our livestock is not in better condition an account of fodder scarcity. This scarcity of fodder is the result of numerous inter-dependent as well as exogenous factors. One important factor is inadequate attention paid to fodder development in the country. To mitigate this problem the intervention into this sector has come both from the State and central governments in the form of implementing some fodder development programmes right from the First Five Year Plan. However, the fodder development got more thrust only in 1993-94 with the introduction of seven CS & CSS fodder development programmes. These schemes are in operation since 1993-94. The State government intends to know the working of these schemes and their effectiveness. In this direction, the study was assigned to the Institute for Social and Economic Change (ISEC) to evaluate various CS and CSS related to fodder development programme for identifying the problems and making appropriate policy recommendations for effective implementation of the schemes. This report is the outcome of the investigation taken up for evaluation of CS and CSS for fodder development in Karnataka.

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CHAPTER I

INTRODUCTION

1.1 Introduction

Livestock provides livelihood support to millions of people having little access to land. In addition to the complementary and supplementary role in crop husbandry, it provides milk, egg, meat, wool, hides and skins. Livestock plays an important role in improving food and nutritional security by providing nutritious food. It is also a major supplier of draught power and manures for crop production. In totality, this sector helps in augmenting and stabilizing farm income. This sector having strong forward and backward linkages with other sectors in the economy has vast employment potential. In Karnataka, the gross value of output from this sub-sector is estimated at Rs. 70,667 million in 2000-2001 compared to Rs. 5,381 million in 1980-81 (GOK, 2002). The value of output from livestock accounted for more than one fifth of the value of output from agriculture sector in the 1990s.

Development and growth of livestock are conditioned by the availability of fodder from forest and arable land. Traditionally, cattle grazed on the pastures and grazing lands and supported by feeding crop residues. Crop residues and by-products comprise the main feed stuff accounting for 40 per cent of the total feed and fodder consumption (World Bank 1996). Green fodder contributes about 26 per cent, while concentrate feed contributes only 3 per cent of the total feed consumption. The rest comes from grazing (Birthal, 2000). Large gap exits between requirement and the actual availability of feed and fodder at the national level. The deficiency in feed and fodder is more conspicuous in arid and semi-arid regions (Singh and Mazumdar 1992). As per the Ministry of Environment and Forest, Government of India (1993), India is short in dry fodder by 31 per cent, green fodder by 23 per cent and concentrates by 47 per cent. It is estimated that Karnataka would require 373.83 lakh MT of green fodder and 238.01 lakh MT of dry fodder by 2002. According to the trend up to now, Karnataka may face shortage of fodder in the coming years.

Plant breeding research has focused more on increasing grain yield with little attention towards the by-product yield and quality. The emphasis on grain production has impinged on the production of fodder after the introduction of dwarf high yielding

crop varieties in the farming systems. The shift from food crops (which has a sizable component of fodder) to cash crops or commercial agriculture has also contributed towards reduced production of byproducts which hitherto were used as fodder for milch and draught animals. Grazing land and pastures play an important role in the livestock economy of the country and the state. However, increasing population pressure, encroachment and distribution of grazing land to landless households by the government agencies have resulted in the shrinkage of grazing land. The fallow lands and pastures on the farms are also declining over the years as farmers are bringing in more and more area under cultivation. Frequent drought and indifference shown by the community towards the maintenance of common pool resources (CPRs) like grazing lands and pastures have led to the degradation of these lands and reduction in the bio-mass production for animal feed. Common Property Resources (CPRs) can support limited grazing during kharif season and it is certainly not a dependable source of fodder supply. Under these circumstances, landless as well as small and marginal farmers who were dependent on CPRs for grazing their livestock can hardly afford to keep livestock.

The Government of India as well as the state Governments initiated the number of Schemes to improve and promote fodder production in the country. There are research stations funded by the Ministry of Agriculture, Government of India, for the development of new varieties of fodder and technologies Agricultural Universities are also undertaking research for the development of fodder species. The State government also has livestock breeding farms/centres, which are engaged in maintaining pedigree cows, collection of semen and growing fodder. Some of the livestock farms are entrusted with the responsibility of multiplying seed and planting material (Root slips) to encourage fodder cultivation by supplying these to the farmers.

The Central government provides detailed guidelines to the State governments for availing funds to implement these schemes. However, there are quite a few impediments in the proper implementation of these schemes by the States. There are instances of laxity in the release of funds from the Central government and therefore, the possible delay in the implementation of certain components of the schemes has become an inevitable outcome. Added to this, multiplicity of schemes and their overlapping objectives also create hurdles in their smooth functioning. The government of Karnataka assigned the task of evaluating the Centrally sponsored feed and fodder

schemes to the Institute for Social and Economic Change (ISEC), Bangalore, with the following objectives:

1.2 Objectives:

- To assess the effectiveness of all the schemes in the improvement of fodder production
- To estimate the fodder requirements in the livestock sector in a medium term perspective
- To look into the effectiveness of the schemes from the point of view of multiplicity of schemes with their objectives and exploring possibilities of merger into a few effective programmes.
- To evaluate the fodder development process and locate the growth inhibiting factors in fodder sector.
- To suggest ways and means to make the schemes more effective and serving the objectives set forth.

There are a few important schemes related to fodder development sponsored by the national government. This study has focussed on six Central Schemes (CS) and Centrally Sponsored Schemes, namely,

(i) Development of State Fodder Seed farms for the production of foundation/certified seeds:

This scheme is aimed at assisting the state government to build up their infrastructure and facilities by way of developing the existing farms so as to produce maximum quantity of fodder seeds required for development purpose.

(ii) Establishment of Silvipasture system in the bio-mass production:

The scheme is designed to make intensive use of waste lands/common lands. It is expected that the Silvipasture system will ensure supply of green fodder to the animals throughout the year and also check soil erosion as land will be covered by tree canopy. The scheme is also aimed at arresting degradation of common pool resources by planting suitable grasses and leguminous trees/shrubs (Gram Vana) to produce bio-mass which can be used by the

needy farmers. The scheme extends financial and technical assistance for the development of Silvipasture on private lands (Kisan Vana).

(iii) Development of grass lands and grass reserves:

This scheme is aimed at slowly improving the degraded grass lands, saline and acidic soils by planting suitable grass species. This also helps in checking soil erosion. The bio-mass produced on these lands will be cheaper and improve the fodder supply and minimize the shortage

(iv) Establishment of fodder bank:

The main objective of the scheme is preservation and storage of surplus fodder to meet the nutritional requirement of livestock during scarcity period. To save livestock from natural disaster and to stabilize the price of fodder and maintain supply in scarcity regions or areas experiencing shortage of fodder.

(v) Supply of mini kit:

The Department of Animal Husbandry and Dairy supplies small quantities of seeds of improved fodder cultivars to selected farmers free of cost. This is aimed at encouraging the farmers to grow improved fodder varieties on their farms to meet their fodder needs.

(vi) Enrichment of straws and cellulose waste:

The major objective is to enhance the nutritive value of crop residues and other cellulosic waste for livestock feeding. Minimize the wastage of the non-conventional as well as conventional fodder to narrow down the gap between availability and requirement of fodder by making these materials suitable for livestock feeding and finally, to make available the nutritious fodder during the scarcity period.

Under the first four programmes the farms receive funds for strengthening of infrastructure for growing fodder and production of fodder seed. Similarly, farmers receive assistance under the last two schemes in terms of mini kits and material and equipment under enriched straws and cellulosic waste.

1.3 Methodology

In order to evaluate the performance of the schemes the study has made use of secondary as well as primary data. The secondary data were collected from the Department of Animal Husbandry and Veterinary Services in Karnataka, and the Annual Reports of various schemes operating in the Department of Fodder Development. The list of Livestock Breeding /Training Centers in the state was obtained from the Department of Animal Husbandry and Veterinary Services in Karnataka (Table 1.1). The secondary data relating to financial allocations and targets and actual expenditure and physical achievements of each scheme were collected for the period 1995-96 to 2002-2003. Still, there are some gaps, as the information was not readily available with the department (For example, allocation and expenditure data by component under each scheme over the last 5 years). The land use pattern at the district level from 1990-91 to 2000-2001 and Livestock census from 1961 to 1997 were collected to analyze the trends in area available for grazing and projection of fodder respectively.

Table 1.1: Livestock Farms in Karnataka

Sl. No.	Name of the Farm
1	State Livestock Breeding and Training Centre, Hesaraghatta. **Taluk: Nelamangala, District: Bangalore North.**
2	State Livestock Breeding Farm, Hesaraghatta**.** **Taluk: Nelamangala, District: Bangalore North.**
3	Hallikar Cattle Breeding Centre, Kunikenahalli**.** **Taluk: Turuvekere, District: Tumkur.**
4	Amruthmahal Cattle Breeding Centre, Ajjampura. **Taluk: Tarikere, District: Chickmagalur.**
5	Jersy Cattle Breeding Station, Kudige. **Taluk: Khushalnagar, District: Kodagu**
6	Livestock Breeding and Training Centre, Koila. **Taluk: Puttur, District: South Kannada.**
7	Livestock Breeding and Training Centre, Munirabad. **Taluk: Koppal, District: Koppal.**
8	Livestock Breeding and Training Centre, Kurikuppe. **Taluk: Toranagal, District: Bellary.**
9	Buffaloes Breeding Farm, Tegur. **Taluk: Dharwad, District: Dharwad**
10	Livestock Breeding and Training Centre, Dharwad. **Taluk: Dharwad, District: Dharwad.**
11	Khillar Cattle Breeding Farm, Bankapur**.** **Taluk: Shiggaon, district: Haveri.**

Primary data were collected from various stakeholders by canvassing pre-tested structured schedules and questionnaires. The required data were collected from different sources i.e., from livestock breeding centres, Beneficiary households and

villages. The data from ten livestock breeding / training centers were collected through pre-tested questionnaire (Annexures 1 to 4). The data collected include details about the major objectives of the farm and its activities. Data were gathered about the area of the farm and land use details, infrastructure and facilities on the farm, number of animals, etc. Information was also sought on the staffing pattern, sources of irrigation, details about the financial and physical targets achieved in respect of feed and fodder schemes, assets created and other aspects of the schemes. We also tried to gather information about the constraints faced in the implementation of the schemes and suggestion for effective implementation centrally sponsored schemes of feed and fodder development.

The data were gathered from those households which either received MINI KIT of fodder seed or got material inputs and equipment under the enrichment of straw and cellulose waste. Eight districts, namely, Bangalore Rural, Chitradurga, Mysore, Haveri, Kolar, Chickmagalur, Koppal and Gadag were chosen for the study. At the second stage, one taluk was selected randomly from each district to locate the villages where either MINI KIT or Enrichment of straw and cellulosic waste schemes were implemented. A list of villages and beneficiaries was obtained from the Deputy Director, Department of Animal husbandry and Veterinary Services. located at the respective district headquarters. Finally, 15 beneficiary households from each scheme were selected from 5 to 10 contiguous villages from each taluk. Thus, 240 beneficiaries were interviewed to elicit their views on the programme and its impact. The list of districts, taluks and villages is enclosed in Annexure 2. The required data were collected by trained investigators using pre-tested schedules by personal interview method.

The data gathered from beneficiary households include details about demographic features of the household, land holding, land use pattern, livestock holding, consumption of fodder, participation in the fodder schemes, training in fodder development, and the constraints faced in availing the benefits of the fodder schemes. These details pertain to the agricultural year 2002-2003 (Annexure 3). In addition to this, a separate questionnaire was canvassed to collect information at the village level. The village level schedule was aimed at collecting details about land utilization, cropping pattern, trees and vegetation under gomal, bovine population, grazing practices, programmes implemented to develop gomal and common lands in the village

by PRIs or any agency etc. (Annexure 4). These details have been collected from the Village Accountants.

The study is spread over six chapters. The next chapter details the objectives of the scheme, mode of finance, and the details of establishment of the schemes. This is followed by an analysis of the implementation of the fodder schemes in respect of physical and financial achievement. The problems and prospects of the Central Schemes and Centrally Sponsored Schemes have also been discussed in this chapter. The analysis brings out clearly the overall weaknesses of the schemes based on primary and secondary data. Estimation of fodder demand is one of the important tasks assigned under this project. This has been incorporated in the fourth chapter. After reviewing the available methodologies, the most feasible scenario of fodder projections has been presented. The last chapter brings together the findings of the study and provides some policy insights.

CHAPTER II

ABOUT THE FARMS AND FODDER SCHEMES

2.1 Introduction

Fodder farms and livestock breeding activities have been historically undertaken in the State. Some of the livestock farms have a history of centuries behind their establishment. The activity received substantial boost during the days of White revolution where the demand for improved dairy cattle increased substantially. The shortages of fodder due to this activity as well as declining supply from crop residues required strengthening of the fodder growing activities and that was undertaken with the help of CS and CSS. We undertake here a full review of the fodder farms and the schemes operating on these farms.

2.2 State Livestock Breeding Farms

Some of the Livestock breeding farms in the state are about 400 years old. The Amrutmahal Cattle Breeding Farm at Ajjampur was established by the then Mysore Maharaja way back in 1617. This farm was transferred to the Directorate of Agriculture in 1920 and finally handed over to the State Department of Animal Husbandry. Similarly, Buffalo Breeding Centre at Tegur was established in 1910 whereas the Khillar Cattle breeding station at Bankapur (Haveri) came up during 1919. Initially, the major objective of these livestock farms was to maintain the pure breed cattle and supply pure bred livestock to the farmers for breeding purpose. Most of the farm had more than 100 cows/buffaloes and a large number of breeding bulls in the past. However, the number of cows as well as bulls on the farm has declined drastically due to change in priorities and objectives. Presently, the emphasis is on collection of semen for artificial insemination in the breeding programme. The infrastructure like buildings, stores, etc., created earlier is quite under-utilized on most of the farms. Similarly, almost all the livestock farms have more than one third of the sanctioned post vacant due to one or the other reason. Among the vacant posts, the position of agricultural officer/agricultural assistant is vacant in most of the farms and it affects the fodder and seed production activities on the farms.

2.2.1 Land use on Livestock Farms

Based on the information furnished by the livestock farms in the state, the total area under the control of state livestock farms and Amrutmahal kawal was to the tune of 15,833 ha (Table 2.1). The total area with the State livestock farms ranged from 55.64 ha at Khillar Cattle Breeding Centre , Bankapur, to more than 13,500 ha with the Amrutmahal cattle breeding farm at Ajjampura. The overall cutivable area accounted for little more than 7 per cent of the total area and area under fodder was less than 3 per cent. The cultivable area ranged from 2.49 per cent of the total area in Ajjampura farm to 88 per cent of the area on the State livestock breeding and training farm, Hesaraghatta.

Table 2.1: Land Use Pattern of State Livestock Farms – 2002-03

(Percentage to total Area)

Farm	Total area (ha)	Cultivable area	Fallow land	Wasteland/ Barren	Buildings/ Roads etc.	Fodder growing area	Forest	Silvi-pasture	Grazing land
Kurikuppe	274	29.97	13.89	6.10	12.28	9.65	20.21	0.00	17.54
Munirabad	106	32.45	9.55	15.28	11.32	30.85	0.00	0.00	31.40
Dharwad	27	77.61	1.87	4.85	15.67	77.61	0.00	0.00	0.00
Tegur	130	37.35	0.00	0.00	4.63	31.20	34.95	23.07	0.00
Bankapur	56	62.54	0.00	31.34	6.11	62.54	0.00	0.00	0.00
Kunikenahalli	370	9.72	4.32	2.70	4.05	5.40	10.80	2.16	66.25
Koila	334	7.19	2.40	3.29	5.99	4.79	29.94	16.47	29.94
Ajjampura	13575	2.49	0.00	1.02	N.A	1.02	24.75	0.00	71.73
Kudige	83	40.96	27.71	26.51	4.82	13.25	0.00	0.00	0.00
Hesaraghatta	479	87.98	0.00	0.00	4.17	15.03	0.00	0.00	7.85
Hesaraghatta	400	10.00	5.00	45.00	10.00	10.00	30.00	0.00	0.00
All	15833	7.04	0.73	2.61	1.00	2.86	23.50	0.59	64.43

The proportion of area under fodder was highest (78 per cent) in Dharwad livestock breeding farm and lowest in Ajjampura farm (1.02 per cent). Area for grazing cattle on Munirabad, Kunikenahalli, Koila and Ajjampura farms was about 30 per cent of the total area of the respective farms.

Most of the farms have more than required land under their control for their activities. However, lack of resources, man-power and proper planning has lead to inefficient use of available land. Almost all the sub-centres (Amrutmahal Kawal, Ajjampura, Livestock breeding farm, Kurikuppe, Hallikar Cattle Breeding station, Kunikenahalli, etc.) have vast patches of land which are not being used properly. For

example, Livestock breeding farm, Kurikuppe, has bore wells as well as open wells on the farm and has access to canal water, but less than 10 per cent of the area on the farm is under fodder crops. Jungle and wild weeds and bushes have occupied a sizable area on the farm.

2.2.2 Area under Irrigation by Farms

Almost all the farms have either open wells or borewells or at times both. The borewells are used for irrigating the fodder crops. Some of the farms like Livestock Breeding Farm, Kurikuppe, has access to canal irrigation. The area irrigated during 2002-2003 on all the farms was 210.6 ha and it ranged from 4 ha on Jersey Cattle Breeding Farm, Kudige, to more than 30 ha in Munirabad and Hesaraghatta farms (Table 2.2). The rain-fed area under cultivation was almost nil on Kurikuppe and Munirabad farms when compared with more than 120 ha on Amrutmahal cattle breeding Farm (Ajjampura) and Livestock Breeding Farm, Hesaraghatta.

Table 2.2: Area under Irrigation on State Livestock Farms During 2002-2003

(Area in Hecatres)

Farms	Irrigated	Rainfed	Total
Kurikuppe	26.4	0.0	26.4
Munirabad	33.0	0.0	33.0
Dharwad	13.0	8.0	21.0
Tegur	14.0	26.0	40.0
Bankapur	4.8	30.0	34.8
Kunikenahalli	4.4	9.6	14.0
Koila	6.0	10.0	16.0
Ajjampura	15.0	124.0	139.0
Kudige	4.0	7.0	11.0
Hesaraghatta	50.0	50.0	100.0
Hesaraghatta	40.0	140.0	180.0
All	210.6	404.6	615.20

2.2.3 Number of Livestock on the Farms

Bankapur and Kunikenahalli Livestock Farms have 24 Khillar and Hallikar cows whereas, Ajjampura farm has 204 cows of Amrutmahal breed. Minirabad, Tegur and Koila Farm has 19, 39 and 6 murrrah/surti buffaloes. There are a total of 163 bulls in the livestock farms of which 50 bulls are in State Livestock Breeding and Training Farm Hesaraghatta, and 34 on Livestock Breeding Farm, Hesaraghatta. Natural breeding is followed in Tegur, Bankapur, Kunkenhalli, Ajjampur Farms for maintaining pure line breeds of Surti buffaloes, Khillar, Hallikar and Amrutmahal cattle breeds, respectively.

Table 2.3: Number of Different Types of Livestock on the Farms@

(Nos.)

Farms	Cows	Buffaloes	CB cows	Bulls	Others[b]	Total
Kurikuppe[a]	0	0	4	0	5	9
Munirabad	0	19	0	14	2	35
Dharwad	8	0	0	39	15	62
Tegur	0	39	0	2*	50	89
Bankapur	24	0	0	0	63	87
Kunikenahalli	24	0	2	2	63	91
Koila	0	6	23	10*	25	54
Ajjampura	204	0	14	24	547	789
Kudige	17	0	0	0	22	39
Hesaraghatta	38	0	36	50	30	154
Hesaraghatta	0	0	20	34	40	94
All	315	64	99	163	862	1,503

@: Animals above 3 years
a: Kurikuppe Farm has 164 CB Sheep, 300 goats and 170 LCV goats.
b: Others include young stock, calves and heifers and bullocks
* Male buffaloes

Livestock Breeding and Training Centre, Kurikuppe, is basically a breeding centre for goats and sheep. The farm has 164 CB Sheep, 300 goats and 170 LCV goats. There are 5 bullocks and a few cross-bred cows.

2.2.4 Production of Fodder Seeds

The farms, after implementing the CS and CSS have not shown any remarkable or significant increase in the production of either fodder seed or fodder *per se*. There were fluctuations in fodder production. It appears that the farms have continued their seed production programme in a very routine manner without any change even after the implementation of CS and CSS programmes. Another interesting fact is that a large part of their production was and even now, is confined to South African Tall Maize (Table 2.4). Only 4 to 5 per cent of the seed produced has been used on the farm and the rest have been distributed to farmers in the form of minikits.

Total 2.4: Fodder Seeds Produced on the Farms and Distributed During the Last Six Years.

(in quintals)

Year	No. of Farms	Fodder Crops								Total		Total
		SAT Maize		Sorghum		Bajra		Ragi				
		Used	Distri	Used	Distri	Used	Distri	Used	Distri	Used	Distri	
1997-98	5	8.15	175.7	0	0	0	0	0	0	8.15	175.7	183.85
1998-99	3	11.25	104.8	0	22	1	0	0	0	12.25	126.8	139.05
1999-2000	5	12.8	240.6	0	0	0	0	0	0	12.8	240.6	253.4
2000-01	5	20.2	335.9	0	0	0	0	0	0	20.2	335.9	356.1
2001-02	5	30.6	161.9	0	0	0	0	0	91	30.6	252.9	283.5
2002-03	5	11.65	171	0	0	0	0	0	20	11.65	191	202.65
Grand total		94.65	1,190	0	22	1	0	0	111	95.65	1,322.9	1,418.55

The distribution of root slips of perennial grasses to the farmers showed improvement up to 2000-2001 but declined after 2001-02. This might be due to lack of demand for root slips (due to drought) or the farms might not have enough root slips for distribution (Table 2.5).

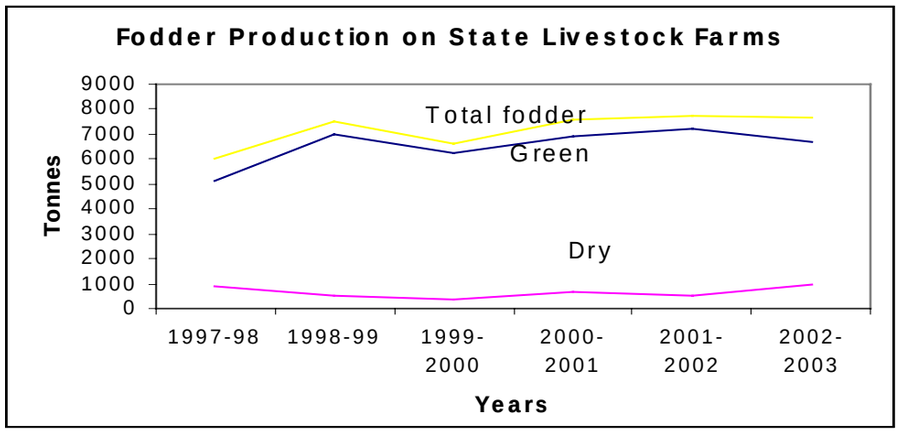
Table 2.5: Rootslips Distributed under the Strengthening of Fodder Seed Production Scheme

Year	Number of Farms	Rootslips Distributed (in lakhs)	Value (in Rupees)
1997-98	6	11.23	33,630
1998-99	5	14.55	44,030
1999-2000	6	14.35	43,050
2000-01	6	14,62	43,860
2001-02	6	5.1	15,580
2002-03	6	3.98	15,020

2.2.5 Fodder Production on the State Livestock Farms

Total green fodder production in all the state farms, taken together, was 5,196 tonnes during 1997-98 and it increased to 7,206 tonnes in 2001-2002 (Fig. 2.1). Similarly, production of hay (dry fodder) ranged from 406 tonnes in 1999-2000 to 973 quintals during 2002-2003. The total fodder production was 7,702 tonnes in 2001-2002 as against 6,096 tonnes during 1997-98. The green fodder produced in various state livestock breeding farms during 2002-2003 ranged from 115 tonnes in Ajjampura farm to 1,251 tonnes in the State Livestock Breeding and Training Centre, Hesaraghatta Table (2.6).

Fig. 2.1



Similarly, the hay (dry fodder) produced at different farms during 2002-03 ranged from 20 tonnes in the Munirabad Livestock Farm to 390 tonnes in the Ajjampura Farm.

Table 2.6: Production of Fodder by state Farms During the Last Six Years

Farm	Year	Quantity in tones		
		Green	Dry	Total
Livestock Breeding & training Centre, Kurikuppe	1997-98	273.6	88.35	361.95
	1998-99	156	84.8	240.8
	1999-2000	172.9	12	184.9
	2000-01	122	14	136
	2001-02	54.25	138	192.25
	2002-03	314	98	412
Cattle Breeding & training Centre, Munirabad	1997-98	237.1	0	237.1
	1998-99	336	0	336
	1999-2000	442	15	457
	2000-01	503.9	20	523.9
	2001-02	707.2	22	729.2
	2002-03	588	20	608
Livestock Breeding Centre, Dharwad	1997-98	627	63	690
	1998-99	539	21	560
	1999-2000	531	27	558
	2000-01	542	52	594
	2001-02	575	61	636
	2002-03	680	77	757
Buffaloes Breeding Centre, Tegur	1997-98	811	556	1367
	1998-99	455	183.9	638.9
	1999-2000	465	99.07	564.07
	2000-01	603	129.3	732.3
	2001-02	707	72.2	779.2
	2002-03	529	45	574
Khillar Cattle Breeding Centre, Bankapur	1997-98	453	33	486
	1998-99	453	33	486
	1999-2000	382	40	422
	2000-01	250	180	430
	2001-02	250	33	283
	2002-03	518	25	543

Continued ....

Table 2.6 (Contd)

Farm	Year	Quantity in tonnes		
		Green	Dry	Total
Livestock Breeding & Training Centre, Koila	1997-98	1.067	70.5	1,137.5
	1998-99	953	70.5	1,023.5
	1999-2000	874	136	1,010
	2000-01	1,034	30	1,064
	2001-02	1,019	30	1,049
	2002-03	578	72	650
Amrutmahal Cattle Breeding Farm, Ajjampura	2002-03	115.2	390	505.2
Hallikar Cattle Breeding Station, Kunikenahalli	1997-98	427	89	516
	1998-99	295	88	383
	1999-2000	N.A	N. A	N.A
	2000-01	386	150	536
	2001-02	268	49	317
	2002-03	668	49	717
Jersey Cattle Breeding Farm, Kudigi	1997-98	1,300	0	1,300
	1998-99	1,133	0	1,133
	1999-2000	735	0	735
	2000-01	742	0	742
	2001-02	496	11	507
	2002-03	495	48	543
State Livestock Breeding & Training Centre, Hesaraghatta	1998-99	1,305	68	1,373
	1999-2000	1,401	58	1,459
	2000-01	1,471	66	1,537
	2001-02	1,369	49	1,418
	2002-03	1,251	94.16	1,345.16
Livestock Breeding Farm, Hesaraghatta	1998-99	1,345	7	1,352
	1999-2000	1,234	19	1,253
	2000-01	1,258	6.2	1,264.2
	2001-02	1,761	30	1,791
	2002-03	969	55	1,024

2.3 Central Schemes and Centrally Sponsored Schemes for Fodder Development

To overcome the problems of fodder shortages, the Central and State governments have taken up special programmes for the promotion and development of fodder. Though, these programmes began in the First Plan, they could not make much headway. From the Second Plan onwards, attempts have been made to improve livestock by introducing Feed and Fodder Schemes. One such scheme included was the Indian Grass Land and Fodder Research Institute established at Jhansi in 1962.

During the Third Plan, one important scheme viz., Crash Programme for Intensive Cattle Development Programme was implemented. Under this scheme, feed and fodder development was given a pivotal role. In addition, the Central government also initiated two schemes viz., Central Fodder Development Organization and assistance to states for feed and fodder development to supplement their efforts in this sphere. As a part of this, new seed and livestock farms were established in addition to strengthening the existing ones. At the state level too, some important feed and fodder development programmes were implemented. In the Third Five Year Plan, a programme called "Comprehensive Feed and Fodder Development Scheme" was initiated with an outlay of Rs. 4.00 lakhs. The programme got big thrust in 1993-94 with the introduction of seven CS & CSS programmes for fodder development. These schemes are under operation since then.

2.4 Objectives of the Central and Centrally Sponsored Schemes

Centrally Sponsored Schemes have been implemented right from the First Five Year Plan. Some of them were closed when the specified objectives were achieved or dropped due to ineffectiveness in their operations. Over a period of time, a few new schemes were introduced to meet the growing demand of fodder. During the Eighth Five Year Plan, the Central government introduced a few more schemes for strengthening the state farms for improving the fodder and seed production on the State farms. For most of the schemes the Central and the State governments shared expenditure on these schemes in the ratio of 75:25 and a few schemes were financed entirely by the central government alone. The schemes have varying objectives. Some schemes provide thrust towards creating infrastructure for growing fodder seeds, while a few others aim at encouraging Silvi-pasture and grass land development. A brief discussion about the Centrally Sponsored Schemes is presented below.

(i) Development and strengthening of state fodder seed farms:

The schemes are in operation since Seventh Five Year Plan. The main objective of the scheme is to assist the state government in building up infrastructure facilities by way of developing the existing farms so as to produce the maximum quantity of fodder seeds required for development purpose. Financial assistance to the State is provided on 75:25 per cent basis as Central and State shares. One time grant to the

extent of Rs. 20 lakh per farm or actual cost whichever is less for various items as prescribed in the guidelines is made. The state government has to provide personnel for the implementation of the scheme. The cost estimates for different heads of expenditure are shown in Table 2.7. The salient features of the scheme are:

- Government of India grant-in-aid for Agricultural equipment including tractor and other implements
- Development of irrigation facilities
- Land development, and
- Provision of small seed cleaning/grading equipment, storage bean etc.

Table 2.7: Estimate of Cost for Strengthening of Fodder Seed Production Farms

Sl. No.	Items	Cost (Rs. in lakhs)
1	Agricultural equipment including tractor and other implements	8.00
2	Devt of irrigation facilities	7.00
3	Land development	2.00
4	Provision of small seed cleaning grading equipment, storage bin etc.	2.00
5	Miscellaneous	1.00
	Total	20.00

(ii) Establishment of Fodder Bank:

This scheme was introduced in 1993-94 to assist the state government in preservation and storage of surplus fodder to meet the nutritional requirement of livestock during scarcity period and to save livestock from natural disaster. The scheme also aims at stabilizing the prices of fodder by maintaining the supply during scarcity or shortage due to natural calamities. Financial assistance to the State is provided on 75:25 per cent basis as Central and State shares as one time grant to the extent of Rs. 55 lakhs per fodder bank. The cost estimates under different heads are presented in Table 2.8. The State Department of Animal Husbandry and Forest Department are the implementing agencies for the scheme. The fodder bank is to be located near the forest area in order to reduce the cost of transportation and can have 2–3 sublets at convenient locations so as to manage the supply of fodder to meet the demand from scarcity areas.

Table 2.8: Estimate of Cost for Different Items/Activities under Fodder Bank

Sl. No	Items	Cost (Rs. in lakhs)
A.	**Non-recurring Expenditure**	
1.	Barbed wire with stone pillar fencing (15 acres)	1.00
2.	Hay stacking yard with platform, A.C. sheets roof, 25'' x 100' x 5 Nos @ Rs. 40 /- per sq. ft.	5.00
3.	Hydraulic baling machine: 2 Nos.	0.60
4.	Chaff cutters (electric): 2 Nos.	0.60
5.	Chaff-cum-grinder: 2 Nos.	0.75
6.	Tractor with trailers: 2 Nos.	6.25
7.	Weighing bridge with shelter	2.30
8.	Jeep one	2.30
9.	Fire fighting equipment	1.00
10.	Molasses store tank: 2 Nos.	1.00
11.	Equipment for Urea Molasses Block	0.20
12.	Tube wells with pipelines: 2 Nos.	1.00
13.	Godown for storage of Mash ingredients 30' x 100'	2.00
14.	Security and watchman room	1.00
15.	Cost of Training	0.50
16.	Other unforeseen items	0.50
	Total A	**26.00**
B.	**Recurring Expenditure**	
1.	Harvesting and transportation of forest hay @ Rs. 600/- per MT for 2,500 MTs.	15.00
2.	Cost of procurement of straw and Kadbis from farmers 1,000 MTs @ Rs. 700 /- per MT	7.00
3.	Molasses, Urea, Minerals and other ingredients.	1.00
4.	Electric and Telephone charges	1.00
5.	Propulsion charge	1.00
6.	Maintenance and upkeep of vehicle and machineries.	1.00
7.	Miscellaneous stores	1.00
8.	Watch and ward and other labour wages	1.00
9.	Miscellaneous expenses	1.00
	Total B	**29.00**
	Grand Total for recurring and non-recurring	**55.00**

The salient features of the scheme are:

- Grant-n-aid by the central Government for the creation of infrastructure for storage of fodder
- Machinery /vehicles for bailing, chaffing and transport
- Harvesting and procurement of fodder.

(iii) Silvipasture System to Increase the Bio-mass Production

This scheme is one among the Centrally Sponsored schemes initiated during 1993-94. The scheme is aimed at increasing the bio-mass production for rearing livestock. The major objectives of the scheme are: (i) to make intensive use of wastelands/ common lands; (ii) year round supply of green fodder to animals through silvipasture; (iii) to minimize soil erosion by covering land under trees; and (iv) to bridge the gap between demand and supply of fodder for livestock. The scheme envisages development of silvipasture system by planting fodder trees on village common lands (Gram Van on 10 ha each) and also private land (Kisan Van, 1 ha each). Finance under the scheme is provided as 100 per cent assistance as one time grant to the extent of Rs. 3,000 for each Kisan van and about Rs. 65,000 for each Gram van. Cost estimates for one unit of Kisan van and Gram van are presented in Tables 2.9 and 2.10 below.

Table 2.9: Estimate of Cost for the Establishment of One Unit (one ha) of Kisan Van

Sl. No	Items	Cost (Rs.)
1.	Live fencing of the area @ Rs. 1 /running meter for 400 rm	400.00
2.	Clearing of unwanted bushes/land development	400.00
3.	Cost of seed and saplings	
	I. Cost of seed of pasture grass/legume 6 kg seed/ha @ Rs. 50	300.00
	II. Cost of seed of pasture grass/legume for reseeding 4 kg /ha @ Rs. 50	200.00
	III. Cost of 500 saplings of fodder trees @ Rs. 0.50 per sapling including transportation and spillage	250.00
	IV. Cost of saplings for replanting / gap filling considering mortality of 25 per cent	60.00
4.	Cost of pesticides to be supplied before planting	100.00
5.	Cost of fertilizer /manure (30 kg N and 100 kgs P_2O_5)	600.00
6.	Watering fodder trees by land including transportation & other costs	420.00
7.	Training for 4 days on silvipastoral technique and grass seed production inclusive of TA, DA & Training fees.	300.00
	Total	**3,000.00**

Table 2.10: Estimate of Cost for the Establishment of One Unit (10 ha) of Gram Van

Sl. No	Items	Cost (Rs.)
A.	**Capital Investment and Inputs**	
1.	a. Purchase of Agricultural Implements	3,900.00
	b. Inputs	
i.	Live fencing of the area @ Rs. 1 /running meter for 4000 RM	4,000.00
ii.	Initial land development including clearing of unwanted bushes/ inferior & coarse grasses @ Rs. 400/ha	4,000.00
iii.	Cost of seed and saplings: 1) Cost of seed of pasture grass/legume 6 kg seed/ha @ Rs. 50 2) Cost of seed of pasture grass/legume for reseeding 4 kg /ha @ Rs. 50 3) Cost of 5000 saplings of fodder trees @ Rs. 0.50 per sapling including transportation and spillage 4) Cost of saplings for replanting / gap filling considering mortality of 25 per cent	 3,000.00 2,000.00 2,500.00 600.00
iv.	Cost of pesticides to be supplied before planting	1,000.00
v.	Cost of fertilizer /manure (30 kg N and 100 kgs P_2O_5 per ha)	6,000.00
vi.	Watering fodder trees @ Rs. 250/ per watering for 12 times (including transportation & other costs)	3,000.00
	Total A	**30,000**
B.	**Recurring Expenditure**	
i.	For planting of stem slips and initial care & maintenance	6,000.00
ii.	Tilling land, contour trenching, digging pits, planting/sowing	10,000.00
iii.	Watering trees by hand @ Rs. 15/watering/ha for 12 waterings	1,800.00
iv.	Watering once a year for two years @ Rs. 200/ha.	4,000.00
V	Watch and ward @ Rs. 480 per month for two years	11,520.00
	Total B	**33,320.00**
C.	Extension material and stationery, maintenance of records, etc.	**2,479.00**
	Total (B + C)	**35,799.00**
	Grand Total (A + B + C)	**65,799.00**

The responsibility of supervision, technical support and supply of technical inputs in kind, such as seeds, saplings, fertilizer, pesticides, etc., will be borne by the implementing agency. The scheme is to be implemented by the State department of Animal Husbandry, District Milk Union, village Dairy Co-operatives, etc.

The salient features of the scheme are:

- State to develop silvipasture system using two or three-tier system depending upon the land capability.
- Specific grasses, legumes and fodder trees / shrubs suitable for the area to be identified and adopted

- Provide assistance to develop silvipasture system on community wasteland/grazing lands/revenue wasteland / degraded forest land (Gramvan of 10 ha. each). The needy households in the village will utilize the bio-mass produced.
- Wastelands available with the individual farmers' (Kisan van of 1 ha. each)

(iv) Grassland Development including Grass Reserves

The scheme was introduced in 1993-94. The scheme is aimed at improving the degraded grassland by introducing suitable grass cover, which would facilitate in checking/ minimizing the extensive soil erosion from grasslands. It is also expected that the biomass produced will help in bridging the gap between production and requirement of fodder. The forage also can be utilized for fodder bank operations. The scheme is being implemented by the State Department of Forest and Department of Animal Husbandry. A unit of 10 ha of such land is provided with Rs. 2.80 lakhs for development (Table 2.11). The scheme is fully financed by the central government.

Table 2.11: Cost Estimates for the Establishment of one Unit (10 ha) of Gochar Land/Wasteland

Sl. No.	Items	Amount (Rs. in Lakh)
A.	**Capital Investment**	
1.	Land development 10 ha @ Rs. 0.03 lakh/ha	0.30
	Fencing	0.20
2.	Sheds for equipment, seed, manure, bullock & office	0.50
3.	Purchase of bullocks, agricultural implements/tools	0.15
4.	Irrigation facilities	
	Well	0.30
	Pump	0.30
	Power line	0.10
	Water tank, pump room, pipe line, etc.	0.30
	Total A	**2.15**
B.	**Recurring Expenses**	
1.	Wages of supervisory staff	0.05
2.	Seeds, fertilizers, insecticides	0.12
3.	Fodder cultivation charges	0.25
4.	Irrigation – electricity / fuel charges	0.08
5.	Maintenance of bullock & dead stock	0.08
6.	Miscellaneous and unforeseen expenses	0.07
	Total B	**0.65**
	Grand Total (A+B)	**2.80**

The scheme is expected to improve the degraded grasslands as well as problems like saline or alkaline soils through plantation of suitable grass and trees species. Increased vegetation cover can help in augmenting the forage production, minimize soil erosion and improve soil health and productivity of the degraded grasslands as well as of the problem soils.

(v) Enrichment of Straw and Cellulosic Waste

This scheme is being implemented since 1993-94 in the State. The main objective of the scheme is to enhance the nutritive value of crop residue and other cellulosic waste for livestock feeding. This is also aimed at minimizing the wastage of the conventional as well as non-conventional fodder and help in bridging the gap between production and requirement and make available nutritious fodder during the period of scarcity. The scheme is fully supported by the Central Government. The Central Government provides Rs. 500 as one time grant per farmer. The scheme is implemented by the staff of the Department of Animal Husbandry/Veterinary. The details about the materials and costs are provided in Table 2.12.

Table 2.12: Estimate of Cost of Material Inputs for Enrichment of Straw

Sl. No	Item	Cost (Rs)
1.	Urea 20 kg	90.00
2.	Garden rose can (one)	150.00
3.	Polythene sheet	125.00
4.	Labour charges	135.00
	Total	**500.00**

The salient features of the scheme are:

- The beneficiary farmer is provided with 20 kg urea, one garden rose can, polythene sheet and labour wages to chaff 5 quintals of straw.
- Residuals of cereals like paddy, sorghum, pearl millet, maize, etc., which has poor nutritive value can be enriched by treating it with urea.

- The technique involves 4 per cent urea treatment with 50 per cent moisture preserved for 4-5 weeks in non-aerobic conditions. After this, 4 kg of urea dissolved in 90 litres of water is spread/sprinkled with a garden rose can on 100 kgs of chaffed straw or paddy straw thoroughly. The treated straw is stored in the room covered with a polythene sheet. The treated straw can be used after 4-5 weeks for feeding the cattle.

The available information for the years 1996-97, 1997-98 and 1999-2000 indicates that the number of demonstrations is declining. The demonstrations conducted declined from 8,250 in 1996-97 to 4,900 in 2002-2003 (Table 2.13). The scheme was supposed to continue in 2001-02 however, its implementation was deferred to 2002-03 and since it could not be implemented during 2002-2003. it will be taken up during 2003-2004.

The scheme is implemented in all 175 taluks. Each taluk got equal number of demonstrations. In 1996-97, each taluk had 47 demonstrations whereas, in 2003-2004, the number came down to 28 per taluk. This shows that the programme instead of progressing has started deteriorating. This may be due to either reduction in the grants or grants remaining unused despite the hike in the prices of items to be distributed to the farmers. Many beneficiaries did not receive the amount of labour charges, which was one of the components of the scheme. A few beneficiaries received Rs. 98 instead of Rs. 135, this cut was due to increase in the prices of polythene sheet, rose can and urea that was supplied to the farmers.

Table 2.13: Number of Beneficiaries of Enrichment of Straws and Cellulosic Waste Scheme by Districts

Districts	Year				Total
	1996-67	1997-98	1999-2000	2002-03	
Bangalore (U)	250	150	222	84	706
Bangalore (R)	250	150	222	224	846
Kolar	250	150	222	308	930
Tumkur	250	150	222	280	902
Chitradurga	250	150	222	168	790
Davangere	250	150	222	168	790
Shimoga	250	150	222	196	818
Mysore	250	125	222	196	793
Mandya	250	125	222	196	793
Chamarajanagar	250	125	222	112	709
Kodagu	250	125	222	84	681
Chickmagalur	250	125	222	196	793
D.Kannada	250	125	222	140	737
Hassan	250	125	222	224	821
Udupi	250	125	222	84	681
Belgaum	375	150	222	280	1027
Dharwad	375	150	222	140	887
Bijapur	375	150	222	140	887
U. Kannada	375	150	222	308	1055
Haveri	375	125	222	196	918
Gadag	375	125	222	140	862
Bagalkot	375	150	222	168	915
Gulbarga	375	200	223	280	1078
Bidar	375	200	223	140	938
Raichur	375	200	223	140	938
Bellary	375	200	223	196	994
Koppal	375	200	223	112	910
Total	8250	4050	5999	4900	23199

(vi) Fodder Seed Production through Registered Growers

This component was aimed at supporting the State Governments to encourage registered growers to produce seeds of fodder crops through financial support by fixing remunerative procurement prices for the seeds purchased from growers. Quality seed is one of the very important inputs for getting bumper/maximum yield of fodder crops. This would bring down the gap between the availability and requirement of quality seed for fodder crops in the States for supply to the livestock owners at a reasonable cost. State Livestock Breeding and Training Centre, Hesaraghatta, Bangalore has administered this scheme. About 15 growers have been registered with the farm. They supplied the seeds to the farms, however, they failed to supply the seeds when

the open market prices were higher. The scheme has been withdrawn since 2000-2001 due to some problems with the registered growers. The State and the Central Governments shared the fund of the scheme in the ratio of 75: 25.

(vii) Sample Survey of Area, Production and Requirement of Fodder Crops

This schema was introduced 1996-97 with an outlay of Rs. 2. Lakhs. Under this scheme, 100 per cent assistance was provided to the State Governments and National Sample Survey Organization for the estimation of the area under fodder crops, fodder crop production and requirement in various States. This scheme was discontinued since 1999-2000.

(viii) Mini-Kit Programme

This programme is in existence for a long time in the State. The state as well as Central government provide financial assistance for the programme. The Government of India procures certified seeds of high yielding fodder crops/grasses/legumes produced at Regional Stations and by other agencies and distributes freely to various states. The state department of animal husbandry prepares small kits called minikits and distribute these among districts and finally to the farms both in the kharif and rabi seasons. The objective of this scheme is to educate farmers through field demonstrations about the latest high yielding varieties of fodder crops and improved agronomic package of practices for increased production of green fodder.

The Central Regional Stations producing the fodder seeds with central financial assistance are located at Mamidipally, Hyderabad (Andhra Pradesh), Gandhi Nagar (Gujarat), Hissar (Haryana), Suratgarh (Rajasthan), Sahema (Jammu & Kashmir), Alamadhi (Tamil Nadu) and Kalyani (West Bengal). These stations cater to the requirements of farmers of different agro-climatic regions. During 2000-01, these stations produced 191 tonnes of fodder seed and Karnataka received about 21 tonnes of seed. In addition to the regional stations, the Central Fodder Seed Production Farm, Hesaraghatta and other farms in the state were also engaged in production of seeds of fodder crops and pasture grasses/legumes apart from other activities (Table 2.14).

Table 2.14: Farms Supplying Fodder Seeds to State Farms (2002)

Sl. No.	Name of the Seed Farm
1.	Central Seed Development Centre, Hesaraghatta
2.	Central State Farm, Surathpur, Rajasthan
3.	Central Seed Development Centre
4.	Central Seed Development Centre
5.	Central Seed Development Centre
6.	Central Seed Development Centre, Hesaraghatta
7.	Rajasthan Co-Operative of Diary Federation Ltd
8.	Central Seed Development Centre, Hesaraghatta
9.	National Seed Corporation
10.	The Punjab State Co-Op Milk Production Ltd
11.	National Seed Corporation, Hebbal.

Source: Hesaraghatta Farm, Bangalore

Note: The Following Centres also supplied seed in some years

1. Beejothpadana Vidyalaya, Aligarh, U.P.
2. Forage Production and Demonstration Farm, Gandhi Nagar (Gujarat)
3. Regional Fodder Production and Demonstration, Chennai.
4. Kerala Livestock Development Board

The State farms receive different kinds of fodder seeds like Lucerne, Oats, M.P. Chari, Rhodes, Stylos Scabage, South African Tall Maize, etc., from different central fodder seed producing farms and other agencies. The type and quantity of seeds received by Karnataka from different production centres in the country in the last three years have been presented in Tables 2.15. The fodder seed received from the centre as well as produced in the state seed farms is distributed to the various districts in the farm of minikits. These minikits contain different quantities of fodder seeds of different varieties. The variety and quantity of each mini kit is shown below (Table 2.16).

Table 2.15: Fodder seeds Supplied by the Center to the State

(quantity in kgs)

Name of the Seed	Year		
	2000	2001	2002
Lucerne	600	1,500	1,800
Chinese Cabbage	1,450		
Oats	20,000	11,400	33,500
Stylos Scabage	300	830	
S.A.T.Maize		2,825	28,776
Sorgam M P Cheri		3,900	1,800
Rhodes		150	200
Guinia Grass		450	900
Styloes Scofield		40	
Single Basilisc		100	
Cow- Pea			1,500
Bajra			280
Barseem			3,000
Total	**22,350**	**21,195**	**71,756**

Table 2.16: The Quantity of Seed in Each Minikit

Sl. No.	Name of the Seed	Quantity in Minikit (Kgs)
1	Oats	5
2	Stelo	1
3	African Tall Maize	4
4	Lucerne	1
5	Sorghum	3
6	Guinea Grass	3
7	Barseem	1
8	Chinese Cabbage	0.50
9	Bajra	1
10	Cow-Pea	3
11	Rhodes	3
12	Maize-80	2.50

The minikits containing fodder seeds are distributed to those farmers who have irrigation facilities and own cross-breed cows and/or buffaloes. Those who do not have access to irrigation facilities are provided minikits with seeds suitable for rain-fed conditions . Each veterinary centre receives about 4 to 5 minikits. In such situations,

the doctor of the concerned centre identifies the ideal farmers and distributes minikits without much publicity. Doctors distribute the minikits to farmers whoever approach them without strict verification when sufficient number of minikits is supplied under the scheme like the central calamity scheme. Now, the local elected representatives endorse and approve the beneficiaries in Gram Shabha meetings so as to minimize misuse or pilferage of minikits.

2.5 Procedure for Availing the CS and CSS Funds

The state government prepares fresh proposals for the reference year of various schemes as per the guidelines and submits the proposal along with the estimated amount. Along with this, they also prepare the proposal for revalidation of the unspent funds of a particular scheme from the previous year.

2.5.1 Funding of the Schemes

Both state and center, in case of Centrally Sponsored programmes, share the funding of the fodder development schemes. However, there are few programmes, which are entirely funded by the Central Government. During 1999-2000, an amount of Rs 179 lakhs was allotted for the implementation of 5 CS and CSS in Karnataka. The state government shared 12.84 per cent of the total amount. The allocations once approved were made available to the four administrative divisions based on the need of the farms and the districts. Broad guidelines and stipulations were given for some of the schemes wherein small and marginal farmers as well as SC/ST and women farmers got priority in the distribution of funds or benefits. However, due to lack of eligible farmers under these categories other farmers were covered.

2.5.2 Allocations and Releases

The release of funds to the CS and CSS always fall short of the allocation. The government released little more than 52 per cent of the allocations since 1995-96 to 2002-2003 (Table 2.17). Among the schemes, enrichment of straws and cellulose waste and grassland development including grass reserve schemes received lower allocation of funds when compared to other schemes.

In most of the schemes, the amount released both by Centre and State has been much less than the allocations made. We have also observed that the

expenditure incurred was less than the amount released resulting in huge unspent balances under some of the schemes. This phenomenon is attributed to the implementation bottlenecks as the funds were received almost at end of the financial year, (usually in the month of March) and there was hardly any time for the implementation of the scheme. It is interesting to note that the State government took more than 5 weeks (37 to 47 days) to approve the proposals prepared by the State Department of Animal Husbandry. Similarly, the Central Government took longer time for approval ranging from 127 days to 253 days to accord sanction to the proposals sent by the State Government (Tables 2.18a & 2.18b).

2.5.3 Revalidation of CS & CSS Fodder Development Funds

As stated earlier, unspent balances of the CS and CSS are revalidated to allow its use in the following year of the sanction. It is observed that, only Rs. 509.4 lakhs (52 per cent) of the total allocation of Rs. 970.4 lakhs were released for the implementation of the fodder development schemes in Karnataka from 1995-96 through 2002-2003. It is evident that only Rs. 455.64 lakhs were spent on fodder development programmes as against the actual release of Rs. 861.32 lakhs, leaving an unspent balance of Rs.229.18 lakhs (Tables 2.19a to 2.19b). The actual expenditure also included the unspent balances of the previous years (Rs. 368.72 Lakhs). The scheme-wise and farm-wise revalidated amount shows that many schemes and farms had experienced revalidation (Table 2.20)

If we look at the expenditure pattern in most of the years, the revalidation amount of previous years had been utilized in the subsequent years. The total amount of this sort was accounted for Rs.401.89 lakhs since 1996-97. However, the revalidation process has become almost routine after 2001-2002. Even the revalidated amount has not been utilized in the due period. For instance, in 2000-2001, an amount of Rs 10 lakhs and Rs. 14 lakhs had been released to Hallikar Cattle Breeding Centre, Kunikenahalli and Buffalo Breeding Centre, Tegur, respectively for strengthening of State farms for production of fodder seed and fodder respectively. However, the actual expenditure was Rs. 2.00 lakhs and 4.57 lakhs, respectively.

It is clear from the above that the funds utilized for the implementation of individual schemes are quite meagre. This was attributed to the untimely release of

funds as well as lack of sufficient groundwork for implementing the programmes. The unspent balance for different schemes seeking revalidation explains the problems in the implementation of the schemes. We also came across a few cases where funds were released for the implementation of the scheme but they were not utilized. For instance, in 2000-2001, an amount of Rs 10 lakhs and Rs 14 lakhs were released to Hallikar Cattle Breeding Station, Kunikenahalli, and Buffalo Breeding Station,Tegur, respectively for the strengthening of State farms for production of fodder seed and fodder respectively. However, the respective farms could spend only Rs. 2.00 lakhs and 4.57 lakhs respectively from the released funds. Similarly, for increasing bio-mass production and development of grassland including grass reserves under the scheme of Establishment of Silvipasture System, Rs. 25.00 lakhs each had been sanctioned and released to Amruthmahal Kavals at Birur, Ramgiri, Hullenahall, Rayasandra, Chickmagalur, Gunderi, Chickkaemmignur, Hesaraghatta and Kunikenahalli farms. The specific CS and CSS implemented by different State livestock breeding farms is shown in Table 2.21. But the amount was not fully used.

2.5.4 Unspent Balances

The Department of Animal Husbandry sends utilization details of the revalidated funds as well as fresh proposals for five CSS schemes for the next year. In 1998-99, proposals were sent for revalidation of three programmes with State share of Rs. 6.83 lakhs and central share of Rs. 10.48 lakhs under the three CSS Programmes. Similarly, proposals were sent for revalidation of central share of Rs.64.00 lakhs in 1999-2000, under all the five programmes. This was approved subject to the conditions that the State Government should provide matching grant of Rs. 12.00 lakhs. But, again, the amount released during 2000-2001 was not utilized as the five schemes were not implemented due to changes in the procurement policies (ie., The Karnataka Transparency in Public Procurement Act 2000 which came into force during the year 2000-2001). As such, the unspent amount of Rs. 93.00 lakhs released for the year 2000-2001 had been proposed for the utilization during 2001-02. This amount excluded State's share of Rs. 6.00 Lakhs. This was approved by the Centre with a direction to spend the amount in 2001-2002 and submit the utilization certificate.

In 2001 – 2002, a total amount of Rs. 37.77 lakhs was utilized and the rest was left unspent. These balances amounting to Rs. 48.32 lakhs and the State's Rs. 3.98 lakhs were revalidated for utilization in the year 2002-2003. In addition, the Centre released Rs.13.55 lakhs for the establishment of fodder banks, and Rs. 25.00 lakhs for enrichment of straw and Cellulosic Waste and State's share of Rs. 4.51 lakhs, totally amounting to Rs. 43.06 lakhs for the implementation of the scheme in 2002-03.

2.5.6 Physical Targets and Achievement

The available data on physical targets and achievements made under each CS and CSS are inadequate to make any meaningful analysis. Based on the available information it can be said that the physical achievements fell short of targets set under each scheme in each year (Table 2.22). It can be both due to the infeasible targets or implementation bottlenecks. As against the target of 400 MT's seed production, only 150 to 200 MT's seeds were produced under Strengthening of Seed production on the Farm. The purchase of dry fodder was about 120 to 200 MT's against the target of 300 to 500 MT's. Similarly, The targets fell short in the case of Enrichment of straws and Grassland Development in 1997-98 and 1999-2000, and only 4,000 and 6,000 demonstrations were executed. However, to some extent, the targets were achieved under the Establishment of Silvipasture System.

Table 2.17: Financial Allocation and Release of Funds under CS & CSS For Feed and Fodder Development Programmes in Karnataka

(Rs. in Lakhs)

Name of the Scheme	1995-96		1996-97		1997-98		1998-99		1999-2000		2000-2001		2001-2002		2002-2003		Grand Total		Rel as % Alloc
	Alloc-ation	Rele-ase	Alloc-ation	Rele-ase	Alloc-ation	Rele-ase	Alloc-ation	Rele-ase	Alloc-ation	Rele-ase	Alloc-ation	Rele-ase	Alloc-ation	Rele-ase	Alloc-ation	Rele-ase	Alloc-ation	Rele-ase	
1. Strengthening of State Farms for Fodder Seed Production	20	NA	Revalidation		20	16	20	No	20	20	20	7.5	20	10	0	0	120	53.5	44.58
2. Establishment of Fodder Bank	20	NA	Revalidation		20	13.8	28	7.9	28	28	28	10.5	28.1	14	28	18.1	180.1	92.26	51.22
3. Enrichment of Straws and Cellulosic Waste	NA	NA	NA	NA	30	30	30	30	40	3	50	25	50	25	50	25	250	138	55.20
4. Grassland Development Including Grass Reserves	NA	NA	NA	NA	50	13.6	30.3	30	40	11	50	25	50	25	0	0	220.3	104.6	47.49
5. Establishment of Silvipasture System	NA	NA	NA	NA	30	30	30	30	40	11	50	25	50	25	0	0	200	121	60.50
Grand Total	40	0	0	0	150	103	138.3	97.9	168	73	198	93	198.1	99	78	43.1	970.4	509.4	52.49

Note: NA – Not Applicable

Table 2.18a: Time Taken for the Clearance of the Proposal and Release of Funds under CS & CSS – 1995-96 and 1997-98

Year 1995 -96	From GOI to GOK, GOK to Dep.	Strengthe-ning of Fodder seed	Fodder Bank	Enrich-ment of Straws	Grassland Develop-ment	Silvipasture.
a)	Proposal Dept to G.O.K.	Proposal sent on 22-7-1995 22-7-1995	Proposal sent on 22-7-1995	N.A	N.A	N.A
b)	Proposal G.O.K. To G.O.I.	39 Days	39 Days	N.A	N.A	N.A
c)	G.O.I. Released	126 Days	126 Days	N.A	N.A	N.A
d)	G.O.K. Released to Dept.	68 Days Released on 15-3-1996	68 Days Released on 15-3-1996	N.A	N.A	N.A
e)	No Days taken from Proposal to approval	233 Days	233 Days	N.A.	N.A.	N.A.
1996-97 1. No fresh approval. 2. GOI released the revalidation amount on 9-9-96. 3. GOK released to Dept. 14-11-1996. 4. Time taken was 65 days. 5. NA – Not Applicable						
1997 -98 a)	Proposal Dept to G.O.K.	11-4-1997	22-4-1997	29-4-1997	11-4-1997	29-4-1997
b)	Proposal G.O.K. To G.O.I.	49 Days	37 Days	37 Days	38 Days	48 Days
c)	G.O.I. Released.	157 Days	158 Days	154 Days	164 Days	140 Days
d)	G.O.K. Released to Dept.	47 Days Released on 23-12-1997	46 Days Released on 22-12-1997	46 Days Released on 22-12-1997	46 Days Released on 22-12-1997	47 Days Released on 23-12-1997
e)	No of Days taken from proposal to approval	253 days	241 Days	237 Days	248 Days	235 Days

Table 2.18b: Time Taken for the Clearance of the Proposal and Release of Funds under CS & CSS – 1998-99 and 1999-2000

Year 1998-99	From GOI to GOK, GOK to Dep.	Strengthening of seed farms	Fodder Bank	Enrichment of Straws	Grass Land Development	Silvipasture
a)	Proposal Dept to G.O.K.	24-8-98	24-8-98	24-8-98	24-8-98	24-8-98
b)	G.O.K. To G.O.I.	35 Days	35 Days	35 Days	35 Days	35 Days
c)	G.O.I. Released	149 Days	182 Days	N.A	N.A	N.A
d)	Released by GOK to Dep.	26 Days 25-3-99	Not Released	N.A	N.A	N.A
e)	Days taken from Proposal to approval	210 Days	Not Released	Not Released.	Not Released.	Not Released.
1999-2000 1. Fresh releases 2. Released only revalidated amount of previous year RS. 64 Lakhs.						
2000-01 a)	Proposal Dept to G.O.K.	19-8-2000	19-8-2000	19-8-2000	19-8-2000	19-8-2000
b	G.O.K. To G.O.I.	12 Days	12 Days	12 Days	12 Days	12 Days
c)	G.O.I. Released	125 Days	125 Days	125 Days	125 Days	125 Days
d)	G.O.K. Released to Dept.	76 Days Released on 23-3-2001	76 Days Released on 23-3-2001	76 Days Released on 23-3-2001	76 Days Released on 23-3-2001	76 Days Released on 23-3-2001
e)	No. Days taken from proposal to approval	213 Days	213 Days	213 Days	213 Days	213 Days
2001-2002 1.No. fresh releases. 2.Only revalidated amount released by GOI to GOK on16- 8- 01. 3.GOK released to the Dept of Animal Husbandry, on 15-9-2001. 4. No. days taken to release (30 Days)						
2002-2003. 1.No fresh releases. 2.Only Revalidated amount of the previous year released by GOK to the Dept. on 31-10-2003 3. N.A. – Not Available						

Sources: Animal Husbandry Veterinary Sciences

Table 2.19a: Annual Statement of Accounts for Feed and Fodder Development in Karnataka From 1995-2003

(Strengthening of State Farms for Fodder Seed Production)

(Rs.in Lakhs)

Name of the Scheme	Date of inception	Sharing	Year	Amount released		Total	Expendi-ture	Balance
		Central/ State		Central	State			
Strengthening of State Farms for fodder seed production	1985-86	75: 25	1995-96	15.0	5.0	20.0	16.0	4.0
			1996-97	3.0	1.0	4.0	4.0	0.0
			1997-98	15.0	5.0	20.0	16.0	4.0
			1998-99	18.0	6.0	24.0	NA	NA
			1999-00	15.0	5.0	20.0	20.0	0.0
			2000-01	7.5	2.5	10.0	NA	10.0
			2001-02	7.5	2.5	10.0	2.0	8.0
			2002-03	6.0	2.0	8.0	NA	NA
			Total	**87.0**	**29.0**	**116.0**	**58.0**	**26.0**

Table 2.19b: Annual Statement of Accounts for Feed and Fodder Development in Karnataka From 1995-2003

(Establishment of fodder Bank)

(Rs.in Lakhs)

Name of the Scheme	Date of inception	Sharing	Year	Amount released		Total	Expendi-ture	Balance
		Central/ State		Central	State			
Establishment of fodder Bank	1993-94	75:25	1995-96	15.0	5.0	20.0	12.3	7.7
			1996-97	5.8	1.9	7.7	7.7	0.0
			1997-98	15.0	5.0	20.0	11.7	8.3
			1998-99	21.0	7.0	28.0	0.0	0.0
			1999-00	21.0	7.0	28.0	28.0	0.0
			2000-01	10.5	3.5	14.0	NA	14.0
			2001-02	10.5	3.5	14.0	4.6	9.4
			2002-03	13.5	4.5	18.6	0.0	0.0
			Total	112.3	37.4	150.3	64.3	39.4

Table 2.19c: Annual Statement of Accounts for Feed and Fodder Development in Karnataka From 1995-2003

(Enrichment of Straws and cellulosic waste)

(Rs in . Lakhs)

Name of the Scheme	Date of inception	Sharing	Year	Amount released		Total	Expen-diture	Balance
		Central/ State		Central	State			
Enrichment of Straws and cellulosic waste	1993-94	100	1995-96	20.0	0.0	20.0	13.8	6.2
			1996-97	6.2	0.0	6.2	6.2	0.0
			1997-98	30.0	0.0	30.0	30.0	0.0
			1998-99	30.0	0.0	27.0	30.0	3.0
			1999-00	3.0	0.0	3.0	3.0	0.0
			2000-01	25.0	0.0	25.0	NA	25.0
			2001-02	25.0	0.0	25.0	0.0	0.0
			2002-03	50.0	0.0	50.0	23.8	0.0
			Total	189.2	0.0	186.2	106.8	34.2

Table 2.19d: Annual Statement of Accounts for Feed and Fodder Development in Karnataka From 1995-2003

(Grassland development including Grass reserves)

(Rs. Lakhs)

Name of the Scheme	Date of inception	Sharing	Year	Amount released		Total	Expen-diture	Balance
		Central/ State		Central	State			
Grassland development including Grass reserves	1993-94	100	1995-96	14.0	0.0	14.0	4.3	9.8
			1996-97	9.8	0.0	9.8	9.8	0.0
			1997-98	15.0	0.0	15.0	15.0	0.0
			1998-99	30.0	0.0	30.0	16.0	14.0
			1999-00	14.0	0.0	14.0	14.0	0.0
			2000-01	25.0	0.0	25.0	NA	25.0
			2001-02	25.0	0.0	25.0	14.1	10.9
			2002-03	10.9	0.0	10.9	0.2	NA
			Total	143.6	0.0	143.6	73.3	59.6

Table 2.19e: Annual Statement of Accounts for Feed and Fodder Development in Karnataka From 1995-2003

(Establishment of Silvipasture System)

(Rs. In Lakhs)

Name of the Scheme	Date of inception	Sharing	Year	Amount released		Total	Expen-diture	Balance
		Central/ State		Central	State			
Establishment of Silvipasture system	1993-94	100	1995-96	19.5	0.0	19.5	5.9	13.6
			1996-97	13.6	0.0	13.6	13.6	0.0
			1997-98	30.0	0.0	30.0	30.0	0.0
			1998-99	30.0	0.0	30.0	19.0	11.0
			1999-00	11.0	0.0	11.0	11.0	0.0
			2000-01	25.0	0.0	25.0	NA	25.0
			2001-02	25.0	0.0	25.0	24.8	0.2
			2002-03	NA	NA	NA	NA	NA
			Total	154.1	0.0	154.1	104.3	49.8

Table 2.19f: Annual Statement of Accounts for Feed and Fodder Development in Karnataka From 1995-2003

(Fodder Seed Production through Registered Growers)

(Rs. in Lakhs)

Name of the Scheme	Date of inception	Sharing	Year	Amount released		Total	Expen-diture	Balance
		Central/ State		Central	State			
Fodder Seed Production through registered growers	1995-96	25:75	1995-96	10.5	31.5	42.0	NA	NA
			1996-97	10.5	31.5	42.0	27.5	14.5
			1997-98	3.6	10.9	14.5	9.5	5.0
			1998-99	NA	5.0	5.0	5.0	0.0
			1999-00	NA	5.0	5.0	5.0	0.0
			2000-01	NA	NA	NA	NA	NA
			2001-02	NA	NA	NA	NA	NA
			2002-03	NA	NA	NA	NA	NA
			Total	24.6	83.9	108.5	47.0	19.5

Table 2.19g: Annual Statement of Accounts for Feed and Fodder Development in Karnataka From 1995-2003

(Sample Survey for Area, Production & Requirement of Fodder)

Name of the Scheme	Date of inception	Assistance	Year	Amount released		Total	Expendi-ture	Balance
				Central	State			
Sample Survey for Area, Production & requirement of fodder	1996-97	100	1995-96	NA	NA	NA	NA	NA
			1996-97	2.0	NA	2.0	1.4	0.6
			1997-98	0.6	NA	0.6	0.6	0.0
			1998-99	NA	NA	NA	NA	NA
			1999-00	NA	NA	NA	NA	NA
			2000-01	NA	NA	NA	NA	NA
			2001-02	NA	NA	NA	NA	NA
			2002-03	NA	NA	NA	NA	NA
			Total	2.6	0.0	2.6	2.0	0.6

Table 2.19h: Annual Statement of Accounts for Feed and Fodder Development in Karnataka From 1995-2003

(Grand Total of All the CS and CSS Schemes Given Above)

Scheme	Year	Amount released		Total	Expenditure	Balance
		Centre	State			
All CS and CSS	1995-96	94.00	41.50	135.50	52.25	41.25
	1996-97	50.83	34.43	85.25	70.15	15.10
	1997-98	109.23	20.88	130.10	112.80	17.30
	1998-99	129.00	18.00	144.00	70.00	28.00
	1999-00	64.00	17.00	81.00	81.00	0.00
	2000-01	93.00	6.00	99.00	0.00	99.00
	2001-02	93.00	6.00	99.00	45.47	28.53
	2002-03	80.41	6.52	87.47	23.97	0.00
	Total	713.46	150.32	861.32	455.64	229.18

Remarks:

1) Sl. Nos.1&2: 1999-2000 only revalidation
2) Sl. Nos.3, 4 & 5: 1999-00 revalidation only, no fresh release was received from GOI
3) During the years 96-97 and 99-00 no grants were received from GOI. Only revalidation amount of the previous years were spent during these years
4) The schemes could not be implementd during the year 2000-01 due to time constraint due to introduction of Karnataka Transparency Act for expenditures to be undertaken by the government departments.
5) During 2000-02 and 2002-03 revalidated amounts of the previous years were spent during these years

Source: Department of Animal Husbandry and Veterinary Sciences, Govt. of Karnataka, Bangalore

Table 2.20: Revalidation of CS & CSS for Fodder Development

(Rs. In Lakhs)

Year	Sharing of Amount	Strengthe-ning of Fodder Seed Production Farm	Fodder Bank	Enrichment of Straws and Cellulosic Wastes	Silvi-pasture	Grassland Develop-ment	Fodder Seed Produc-tion through Reg. Seed Growers.	Total
1996-97	Total	4	7.7	6.2	9.8	13.6	NA	41.3
1997-98	Total	NA	NA	NA	NA	NA	NA	115
1998-99	Center	3	6.23	NA	NA	NA	3.75	12.98
	State	1	2.08	NA	NA	NA	1.25	4.33
	Total	4	8.3	NA	NA	NA	5	17.3
1999-00	Center	15	21	3	11	14	NA	64
	State	5	7	NA	NA	NA	NA	12
	Total	20	28	3	11	14	NA	76
2000-01	Center	7.5	10.5	25	25	25	NA	93
	State	2.5	3.5	NA	NA	NA	NA	6
	Total	10	14	25	25	25	NA	99
2002-03	Center	6	7.45	25	NA	10.87	NA	49.32
	State	2	1.98	NA	NA	NA	NA	3.98
	Total	8	9.43	25	NA	10.87	NA	53.29
Grand Total	Center	31.5	45.18	53	36	49.87	3.75	219.29
	State	10.5	14.55	NA	NA	NA	1.25	26.3
	Total	42	59.73	53	36	49.87	5	401.89

NA : Not Applicable
Source: Department of Animal Husbandry and Veterinary Sciences

Table 2.21: Fodder Farms Implementing CS & CSS for the Development of Fodder in Karnataka During the years 1995-96 to 2000-2001

Name of the Scheme	Farms covered during 1995-96	Farms covered during 1996-97	Farms covered during 1997-98 Revalidation of Rs.115 Lakhs spent during previous year	Farms covered during 1998-99 No fresh releases	Farms covered during 1999-2000 Revalidation of previous year amount spent
Strengthening of Seed Production Farm	1. Koila 2. Munirabad 3. CLF&RS HESARAGHATTA	1. CLF & RS Hesaraghatta	CLF & RS Hesaraghatta	Bankapura	R.D.P. Hesaraghatta
Establishment of Fodder Bank	1. Kurikuppe 2. Birur 3. Ajjampura	Ajjampura	Aajjampura	Koila	1.Birur 2.Tegur
Silvipasture Scheme	Amrithmahal-kaval, 1. Ajjampura 2. Hassan 3. Chitradurga	Ajjampura	1.Kunikenahalli 2.Tegur 3.Ajjampura 4.Kurikuppa	Amritha-mahalkaval 1.Chiradurga 2.Tumkur	Amrithamahal kaval 1.Chickmagalur 2.Chitradurga 3.Hassan.
Grass Development & Storage	1.Amritmahal-kaval, Ajjampura	Amritmahal-kaval, Ajjampura	1.Kunikenahalli 2.Kurikuppa	1. Koila 2. Ajjampura 3. Tegur	Amrithamahal kaval 1.Chickmagalur 2.Chitradurga 3.Bellary 4.Dharwad

Table 2.22: Physical Targets and Achievements of CS & CSS of Feed and Fodder Development Schemes

Name of the Scheme	Year	Target	Achievements	Remarks
Strengthening of State Seed Farms	1995-96*	NA	NA	*Infrastructure facilities were created in the form of Tractor/ Trailors, Borewells, Sprinkler irrigation sets, Seed graders, etc. These were provided to develop 40 hect of land for seed production
	1996-97**	NA	NA	
	1997-98	NA	150 Mt fodder seed production.	
	1998-99	NA	200 MT	
	1999-00	400mt (40 Hect. Land Dev)	150 MT	
	2000-01	400 MT	NA	** Processing plant established, all equipments purchased..
	2001-02	400 MT	50 MT	
Establishment of Fodder Bank	1995-96	NA	NA	
	1996-97	NA	NA	
	1997-98	NA	120 mt.fdr procured.	
	1998-99	NA	300 mt fdr procured	
	1999-00	500 tonnes dry fdr collected	285 mt fdr, procured	
	2000-01	300 " "	NA	
	2001-02	300 " "	NA	
Enrichment of Straws and Cellulosic Waste	1995-96	NA	NA	
	1996-97	NA	NA	
	1997-98	8,000	4,000 Demonstrations	
	1998-99	NA	4,000 " "	
	1999-00	8,000	6,000 " "	
	2000-01	5,000	NA	
	2001-02	5,000	NA	
Establishment of Silvipasture System	1995-96*		NA	*Fodder, Trees/Peninnal Legumes were established
	1996-97		NA	
	1997-98	NA	40 Gra Vana 400hect	
	1998-99	NA	40 Gra Vana 400hect	
	1999-00	46 Gram vanas of 10 hect	38 Gram vana 138.5 hect	
	2000-01	38.5 (G.V)38.5 hect	NA	
	2001-02	38.5 (G.V)38.5 hect	138.5Hect.	
Assistance for grass land Development/ Grass Reserves	1995-96*	NA	NA	*Development ,of grassland, grass reserves taken up to build grass reserves, in 30 Hect in Chitradurga, Chickmangulur
	1996-97	NA	NA	
	1997-98	NA	40 hect Land Developed	
	1998-99	NA	65 "	
	1999-00	10.72 hect gra reserves	40 "	
	2000-01	90 hect (each unit 10hec	NA	
	2001-02	90 hect (each unit 10hec	40 "	

CHAPTER III

IMPLEMENTATION OF FODDER DEVELOPMENT SCHEMES

3.1 Introduction

It is amply clear that all the farms do not implement all the Central or Centrally Sponsored Schemes simultaneously. Farms are allocated funds to implement a specific number of schemes during one year and a totally different scheme in the following year. Thus, there is a lack of continuity in the implementation of the schemes on the farms. We had canvassed a questionnaire to seek information about different CS and CSS schemes implemented by the farms to gather information about total expenditure incurred, machinery and implements purchased, etc. However, the data received from five of the 11 farms either was incomplete or inconsistent when compared with the information gathered from the Department of animal husbandry, Government of Karnataka, Bangalore. However, data from seven livestock farms were used for an in-depth analysis. Wherever possible, details about other farms (even with scanty data) have been provided in the annexure tables. There are two broad typologies in the scheme. The first type of schemes is designed to strengthen the farms along with infrastructure whereas the second type involves beneficiary-oriented schemes.

3.2 Farm Equipment Purchased Out of Funds Released under CS & CSS

One of the objectives of the CS and CSS schemes is to strengthen the infrastructure facilities like agricultural implements and farm machinery on the farms. Based on the information provided by the deputy directors/ Assistant directors of the livestock farms, there were a total of 602 implements on the 11 farms, which worked out to more than 55 farm implements and machinery per farm. More than 81 per cent of these implements were sprinkler sets followed by seed bins, ploughs and tractors (Table 3.1). A large proportion of these (66.20 per cent) was purchased under Central and Centrally Sponsored Schemes (Table 3.2). Some of the livestock farms purchased Jeeps under the financial provision made in the fodder bank scheme. Most of the farm equipments and machinery were purchased during 1993-94 through 1999-2000 (Table 3.3). The amount spent for purchasing implements was to the tune of Rs. 62.7 Lakhs

(Table 3.4). Almost all the agricultural implements purchased under various CS and CSS are functioning except jeeps, fire fighting equipment and seed thresher. The seed threshers are not at all being used (Table 3.5).

Table 3.1: Total Agricultural Implements and Machinery on the Farms

(in numbers)

Implements and Machinery	Farm codes*											
	1	2	3	4	5	6	7	8	9	10	11	All
Tractor	3	2	1	2	2	2	2	8	2	5	3	32
Land Leveler	2	2	1	1	0	1	0	3	2	1	1	14
Plough	3	2	1	4	1	2	6	4	3	2	2	30
Cultivator	0	0	0	0	1	2	0	0	0	0	0	3
Electric Pump	2	6	7	7	4	7	2	9	12	0	3	59
Diesel Pump	2	0	0	1	1	0	0	2	0	0	0	6
Diesel Generator	0	1	0	3	0	2	0	0	2	0	1	9
Sprinkler Sets	2	55	30	1	5	16	140	50	65	0	60	422
Seed Grading	0	0	0	0	1	0	0	0	1	0	0	2
Seed Cleaner	0	1	0	0	0	0	1	0	0	0	2	4
Seed Bin	0	1	6	30	0	7	1	11	7	0	0	63
Seed Thresher	0	0	0	0	0	1	0	0	0	0	0	1
Bailing Machine	0	0	0	1	0	1	1	0	0	0	0	3
Chaff Cutter	1	2	2	2	2	1	1	2	1	0	0	12
Tiller	0	0	0	0	0	0	0	0	0	0	3	3
Seed Drill	0	0	0	0	0	0	0	0	0	1	0	1
Slushier	0	0	0	1	0	0	0	0	0	0	0	1
Disc-plough	0	0	0	1	0	0	0	0	0	0	0	1
Jeep	0	0	0	2	0	0	0	0	0	0	0	2
All	15	72	48	56	17	42	154	89	95	9	75	668

* Code Numbers used for the State livestock farms

Code Number	Name of the state livestock farm
1	Livestock Breeding & Training Centre, Kurikuppe
2	Cattle Breeding & Training Centre, Munirabad
3	Livestock Breeding Centre, Dharwad
4	Buffaloes Breeding Centre, Tegur
5	Khillar Cattle Breeding Centre, Bankapur
6	Hallikar Cattle Breeding Centre, Kunikenahalli
7	Livestock Breeding & Training Centre, Koila
8	Amruthamahal Cattle Breeding Farm, Ajjampura
9	Jersey Cattle Breeding Farm, Kudigi
10	State Livestock Breeding & Training Centre, Hesaraghatta
11	Livestock Breeding Farm, Hesaraghatta

Table 3.2: Agricultural Implements and Machinery Purchased under CS & CSS

(in numbers)

Implements and Machinery	Farms*											
	1	2	3	4	5	6	7	8	9	10	11	Total
Tractor	1	1	1	1	0	1	1	1	1	0	0	8
Land Leveler	0	1	0	0	0	0	0	0	1	0	0	2
Plough	1	1	1	0	1	0	0	4	1	0	0	9
Cultivator	0	0	0	0	0	1	0	0	0	0	0	1
Electric Pump	0	3	0	0	0	0	0	0	0	0	0	3
Diesel Generator	0	1	0	0	0	2	0	0	2	0	1	6
Sprinkler Sets	1	55	0	0	5	16	75	50	65	0	60	327
Seed Grading	0	0	0	0	0	0	0	0	1	0	0	1
Seed Cleaner	0	1	0	0	0	0	1	0	0	0	2	4
Seed Bin	0	1	6	0	0	2	1	11	9	0	0	30
Seed Thresher	0	0	0	0	0	1	0	0	0	0	0	1
Chaff Cutter	0	0	0	2	0	0	0	2	0	0	0	4
Slushier	0	0	0	1	0	0	0	0	0	0	0	1
Jeep	0	0	0	2	0	0	0	0	0	0	0	2
Total	3	64	8	6	6	23	78	68	80	0	63	399

* Codes used for farms as in Table 3.1

Table 3.3: Purchase of Agricultural Implements and Machinery under CS & CSS by Years

Name of the Implements	Farms*										
	1	2	3	4	5	6	7	8	9	10	11
Tractor	1995-96	1995-96	1993-94	1994-95	0	1993-94	1996-97	1998-99	1994-95	0	0
Land Leveler	0	1995-96	0	0	0	0	0	0	1999-2000	0	0
Plough	1995-96	1995-96	1993-94	0	1999-2000	0	0	1995-96	1994-95	0	0
Cultivator	0	0	0	0	0	1997-98	0	0	0	0	0
Electric Pump	0	1995-96	0	0	0	0	0	0	0	0	0
Diesel Generator	0	1995-96	0	0	0	1993	0	0	1994	0	1997-98
Sprinkler Sets	1995-96	1995-96	0	0	1999-2000	1997-98	1996-97	1995-96	1994-95, 2000	0	1997-98
Seed Grading	0	0	0	0	0	0	0	0	1994-95	0	0
Seed Cleaner	0	1995-96	0	0	0	0	1995-96	0	0	0	1997-98
Seed Bin	0	1995-96	1993-94	0	0	1997-98	0	1995-96	1994-95	0	0
Seed Thresher	0	0	0	0	0	1997-98	0	0	0	0	0
Chaff Cutter	0	0	0	1994-95	0	0	0	1998-99	0	0	0
Slushier	0	0	0	2001-02	0	0	0	0	0	0	0
Jeep	0	0	0	1994-95	0	0	0	0	0	0	0

*** Codes used for farms as in Table 3.1**

Table 3.4: Total Cost of the Agricultural Implements and Machinery Purchased under CS & CSS

(Rs. in Lakhs)

Implements and Machinery	Farms*											
	1	2	3	4	5	6	7	8	9	10	11	All
Tractor	2.16	3.49	2.24	3.5	0	2.97	2.33	2	3.91	0	0	22.6
Land Leveler	0	0.13	0	0	0	0	0	0	N.A	0	0	0.13
Plough	0.12	0.38	0.15	0	0.09	0	0	0.13	N.A	0	0	0.87
Cultivator	0	0	0	0	0	0.25	0	0	0	0	0	0.25
Electric Pump	0	0.58	0	0	0	0	0	0	0	0	1.48	2.06
Diesel Generator	0	0.5	0	0	0	0.97	0	0	1.5	0	0.9	3.87
Sprinkler Sets	1	3.5	0	0	N.A	2	4.5	0.3	5.98	0	8	25.3
Seed Grading	0	0	0	0	0	0	0	0	0.64	0	0	0.64
Seed Cleaner	0	0.76	0	0	0	0	1	0	0	0	0	1.76
Seed Bin	0	0.24	0.055	0	0	0.02	N.A	0.037	0.64	0	0	1
Seed Thresher	0	0	0	0	0	0.25	0	0	0	0	0	0.25
Chaff Cutter	0	0	0	0.3	0	0	0	1	0	0	0	1.3
Slushier	0	0	0	0.39	0	0	0	0	0	0	0	0.39
Jeep	0	0	0	2.3	0	0	0	0	0	0	0	2.3
Total	3.28	9.58	2.445	6.49	0.09	6.46	7.83	3.467	12.67	0	10.4	62.7

- **Codes used for farms as in Table 3.1**

Table 3.5: Status of Agricultural Implements and Machinery Purchased under CS & CSS

(Functioning 1 and not functioning 2)

Implements and machinery	Farms*													
	1	2	3	4	5	6	7	8	9	10	11	Func-tioning	Not func-tioning	Total
Tractor	1	1	1	1	0	1	1	1	1	0	0	8	0	8
Land Leveler	0	1	0	0	0	0	0	0	1	0	0	2	0	2
Plough	1	1	1	0	1	0	0	1	1	0	0	6	0	6
Cultivator	0	0	0	0	0	1	0	0	0	0	0	1	0	1
Electric Pump	0	1	0	0	0	0	0	0	0	0	1	2	0	2
Diesel Generator	0	1	0	0	0	0	1	0	1	0	1	4	0	4
Sprinkler Sets	1	1	0	0	1	1	1	1	1	0	1	8	0	8
Seed Grading	0	0	0	0	0	0	0	0	1	0	0	1	0	1
Seed Cleaner	0	1	0	0	0	0	1	0	0	0	0	2	0	2
Seed Bin	0	1	1	0	0	1	1	1	1	0	0	6	0	6
Seed Thresher	0	0	0	0	0	3	0	0	0	0	0	0	1	1
Chaff Cutter	0	0	0	1	0	0	0	1	0	0	0	2	0	2
Slushier	0	0	0	1	0	0	0	0	0	0	0	1	0	1
Jeep	0	0	0	2	0	0	0	0	0	0	0	0	1	1
All	3	8	3	4	2	5	5	5	7	0	3	43	2	45

- Codes used for farms as in Table 3.1

3.3 Assets and Inputs Purchased under CS and CSS

3.3.1. Strengthening of Seed Production Farms.

Under the Strengthening of Seed Production on the farm Scheme there has been provision for RS 20 Lakhs. The grants / financial assistance was aimed at strengthening the infrastructure facilities on the farm. However, it is observed that utilization of the total amount as well as component-wise utilization has fallen short of provision except purchase of Seed Bin, Seed Cleaner/Grader, and Fencing. In Kunikenahalli Farm, the overall utilization of funds was 49.65 per cent of the total provision (Table 3.6).

The expenditure on development of Irrigation facilities on Munirabad farm was RS. 4 Lakhs. This was substantially lower than the provision of Rs. 7 Lakhs. Similarly, the expenditure on agricultural equipments as well as on seed cleaning equipment was about Rs. 4 lakhs and Rs. 1 lakh, respectively. Here, again, expenditures were lower than the provisions made for Rs. 8 lakhs and Rs. 2 lakhs, respectively (Table 3.7). There is no specific provision for solar powered fencing under the scheme. However, there is provision for land development. Under this, solar fencing might have been carried out on the farm. The condition and utilization of infrastructure is not effective. For instance, the Solar Fencing does not exist in any farm. It is reported that the system worked for a few years, thereafter the strangers had cut the wires. At present, only stone poles exist on the farm. Most of the farms had purchased diesel generator for lifting / pumping of water in case of power failure. However, this has been continuously used for Semen Bank.

The story of Dharwad Farm is similar to that of Munirabad Farm. In this farm also the generator purchased under the strengthening of seed farm scheme is being used for Semen Bank. The investment made on agricultural equipment was Rs. 3.28 lakhs as against the provision of Rs. 8 lakhs. Similarly, the expenditure on irrigation facilities was Rs.4.44 lakhs as against the provision of Rs. 7 lakhs.

In Hesaraghatta farm, a large portion of the grants has been spent on development of irrigation facilities. The amount spent on development of irrigation as well as fencing exceeded the provision made in the plan. Perhaps the provision made for

miscellaneous items might have been utilized for land development works. On the whole, about 16 Lakhs have been spent on the Farm, which is less than the provision of RS. 20 Lakhs made in the scheme (Table 3.6).

Table 3.6: Assets and Inputs Purchased under Strengthening of Fodder Seed Production Farms

(Rs. in Lakhs)

Farm Name	Particulars	1993-94	1995-96	1997-98	2001-02	Total
Kunikenahalli	Tractor & other equipments	2.97				2.97
	Purchase Honda Power Set	1.00				1.00
	Generator	0.47				0.47
	Sprinkler sets	2.87				2.87
	Barbed wire fencing				2.00	2.00
	Seed Bin & Seed Cleaner & Grader.	0.34				0.34
	Seeds	0.16				0.16
	Total	7.82	0	0	2.00	9.82
Munirabad	Tractor & other equipment's		4.00			4.00
	Generator		0.50			0.50
	Sprinkler sets		3.50			3.50
	Solar Power Based Fencing		1.00			1.00
	Seed Bin & Seed Cleaner & Grader.		1.00			1.00
	Total	0	10.00	0	0	10.00
Dharwad.	Tractor & other Equipment's	2.97				2.97
	Plough and Kurige	0.03				0.03
	Purchase Honda Power Set	0.97				0.97
	Generator	0.47				0.47
	Sprinkler Sets	3.00				3.00
	Harvesting Machine	0.29				0.29
	Seeds	0.18				0.18
	Fertilizer	0.09				0.09
	Total	8.00	0	0	0	8.00
Hesaraghatta.	Purchase Honda Power Set			1.48		1.48
	Generator			0.80		0.80
	Sprinkler Sets			8.00		8.00
	Digging of Borewell			1.48		1.48
	Solar Power Based Fencing			3.00		3.00
	Seed Cleaner & Seed Bin			1.00		1.00
	Fuel			0.11		0.11
	Total	0	0	15.87	0	15.87
Grand Total		15.82	10.00	15.87	2.00	43.69

3.3.2 Fodder Bank Scheme

Fencing has been done in Kunikenahalli Farm under the Fodder Bank scheme. However, it is not at all functioning. Barbed wires have been cut at many places. Another interesting point is that an amount of Rs. 2.99 lakhs was spent on the purchase of jeep, exceeding the provision of Rs. 2.74 Lakhs. The sprinkler sets were also purchased at a cost of Rs. 1 Lakh for which there was no provision under this scheme. It was expected to utilize the entire amount earmarked for purchasing fodder. But very little amount was spent on this item (Table 3.7).

In Tegur Farm the fire fighting equipments was purchased under the scheme as a safety measure. It was reported that it could not be used even when there was a fire in the Silvipasture farm as no proper pipeline was available for carrying water. A part of the fodder bank scheme funds were used for desilting of the tank, which was not envisaged under the scheme. The total amount spent on this during 2001-02 was Rs. 4.42 Lakhs (Table 3.7).

The guidelines provided for setting up fodder bank does not have provision for expenditure on medicine. However, medicines worth Rs. 2.62 lakhs were purchased by Amrutmahal Breeding Farm, Ajjampura, out of the funds earmarked for fodder bank. Further, an amount of Rs. 5 Lakhs was spent on fencing as against the provision of Rs. 1 Lakh. It is surprising to note that the purchase of fodder fell short of targets in all farms. This indicates that less quantities of fodder were collected from the forest as well as from the farmers. The Fodder Bank scheme was implemented on Amruthmahal Kavals Farm again in 1997-98. A large proportion of the amount (Rs. 1 lakh) was spent on barbed wire fencing. The pesticides were purchased at the cost of Rs. 2.61 lakhs, which were hardly used (Table 3.7). Surprisingly, there was no investment on agricultural implements and stockyard with platform and AC sheets as expected as per the scheme guidelines.

Table 3.7: Assets and Inputs Purchased under Fodder Bank Scheme

(Rs in Lakhs)

Farm Name	Particulars	1994-95	1995-96	1996-97	1997-98	1999-2000	2000-01	2002-03	Total
Karikuppe	Tractor & accessories	0.00	2.99	0.00	0.00	0.00	0.00	0.00	2.99
	Jeep	0.00	2.30	0.00	0.00	0.00	0.00	0.00	2.30
	Sprinkler sets	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00
	Fertilizer	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.50
	Agri equipments	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.30
	Vehicle repair	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.06
	Fuel	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.50
	Fodder	0.00	0.06	0.32	0.00	0.00	0.00	0.00	0.38
	Tractor spare parts.	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.25
	Other expenses	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	Total	**0.00**	**7.71**	**0.56**	**0.00**	**0.00**	**0.00**	**0.00**	**8.28**
Tegur	Tractor & accessories	3.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00
	Purchase Power Set	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.18
	Grass Cutter.	0.60	0.00	0.00	0.00	0.00	0.39	0.00	0.99
	Water Tank	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.58
	G.I. Pipe.	0.00	0.00	0.00	0.00	0.00	1.75	0.00	1.75
	Jeep	0.00	2.04	0.00	0.00	0.00	0.00	0.00	2.04
	Solar Fencing	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.99
	Medicine	0.00	0.00	0.00	0.00	0.00	0.72	0.00	0.72
	Fuel	0.00	0.18	0.00	0.00	0.00	0.13	0.04	0.35
	Sprinkler sets	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00
	Fodder	0.09	0.68	0.00	0.00	0.00	0.00	0.00	0.77
	Fire Fighting equpmt	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
	Minerals and Vitamins	0.00	0.00	0.00	0.00	0.00	0.36	0.39	0.75
	Removal of Tank Silt	0.00	0.00	0.00	0.00	0.00	0.34	0.00	0.34
	Insurance for Jeep	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.04
	Sign Board	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01
	Pumpset repair	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.05
	Tender	0.00	0.00	0.00	0.00	0.00	0.14	0.02	0.16
	Other expenses	0.00	0.03	0.00	0.00	0.00	0.09	0.08	0.20
	Total	**5.68**	**4.03**	**0.00**	**0.00**	**0.00**	**4.69**	**0.53**	**14.93**
Ajjampura	Grass Cutter.	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
	Barbed wire Fencing	0.00	0.00	0.00	5.00	0.00	0.00	0.00	5.00
	Fire Fighting equpmnt	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00
	Medicine	0.00	0.00	0.00	2.62	0.00	0.00	0.00	2.62
	Fuel	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.10
	Fodder	0.00	0.00	0.00	1.60	1.49	0.00	0.00	3.09
	Forest Grass Cutting Labour charges	0.00	0.00	0.00	1.40	0.00	0.00	0.00	1.40
	Total	**0.00**	**0.00**	**0.00**	**13.72**	**1.49**	**0.00**	**0.00**	**15.21**
Grand Total		**5.68**	**11.74**	**0.56**	**13.72**	**1.49**	**4.69**	**0.53**	**38.42**

3.3.3 Silvipasture Scheme

Gramavana and Kisanvana are two components of the Silvipasture scheme. As the farmers as well as the village community have not come forward to take up these facilities, the farms have implemented these schemes on their own lands. The information available from the farms indicates that an amount of Rs. 52.58 Lakhs was spent since 1995-96 (Table 3.8). But the investment made under the scheme is grossly misplaced. The infrastructure created such as fencing, does not exist. There are no plants on the land developed. Added to these, spare parts for tractor and medicines were purchased for which there was no provision under the programme. This is clear violation of guidelines. There is budgetary provision for watering of the plants after planting but watering of the plants was never done. As a result we do not find Silvipasture (either as Gram van or Kisan van) on any farm where the scheme was implemented. Karikuppe Farm, which has access to canal water in addition to open wells could not irrigate the saplings planted under the Silvipasture scheme. This shows indifference of the concerned Farm Managers towards the investment made to raise the perennial fodder source.

Ajjampura sub-Farms namely, Chickemmignur, Ramgir, Rayasandra, Basur, Hullenahalli and Birur are not different from that of Kurikuppe Farm. In Chickhemiganu, a sub-centre of Amruthmahal Kaval, only pits have been dug for the planting saplings but planting of trees has not taken place till date. On Rampur Farm, we were told that they had planted a few trees under the Silvipasture scheme. However, there were no plants on the land developed for the purpose. Presumably, the samplings planted might have perished in the absence of watering. The surprising fact is that TV and VCR were purchased from the funds earmarked for this scheme (see Table 3.8).

In Kunikenahalli farm also, there were no plants and no solar fencing except trenches. One thing is clear that heavy purchase of chemical fertilizers were made under these schemes though the farms produced lot of Farm Yard Manure with the livestock on the farms. There is also a possibility of purchasing of fertilizers for the other farm activities out of the funds earmarked for other purposes. The same is the case with the purchase of pesticides.

Table 3.8: Assets and Inputs Purchased under Silvipasture Scheme

(Rs in lakhs)

Farm Name	Particulars	1995-96	1996-97	1997-98	2001-02	Total
Karikuppe	Seeds	0.00	0.00	1.00	0.00	1.00
	Solar Power based Fencing	0.00	0.00	1.00	0.00	1.00
	Removal of Bushes & Shrubs	0.00	0.00	0.45	0.00	0.45
	Fertilizer	0.00	0.00	0.25	0.00	0.25
	Medicine	0.00	0.00	0.10	0.00	0.10
	Agri. work on contract basis	0.00	0.00	0.25	0.00	0.25
	Tractor spare parts.	0.00	0.00	0.25	0.00	0.25
	Total	**0.00**	**0.00**	**3.29**	**0.00**	**3.29**
Ajjampura	Agri. equipment's	1.17	0.00	0.00	0.00	1.17
	Live Fencing	0.00	2.40	0.00	0.00	2.40
	Digging of land up to 1 mt for 100 hec of land	0.00	2.48	0.00	0.00	2.48
	Land Development or C.P.T Trench work	0.00	0.00	0.00	14.98	14.98
	Seeds	2.42	0.00	0.00	2.81	5.23
	Fertilizer	1.76	0.00	0.00	2.00	3.76
	Medicine	0.00	0.15	0.00	0.00	0.15
	Agree work on Contract basis	0.00	0.00	0.00	3.99	3.99
	TV,VCR	0.50	0.00	0.00	0.00	0.50
	Amount Spent on fertilizer transport	0.02	0.00	0.00	0.00	0.02
	Vehicle repairing	0.00	0.00	0.00	0.99	0.99
	Total	**5.88**	**5.02**	**0.00**	**24.77**	**35.67**
Kunikenahalli	Land Development or C.P.T Trench work	0.00	0.00	0.25	0.00	0.25
	Removal of Bushes & Shrubs	0.00	0.00	0.45	0.00	0.45
	Solar Power Based Fencing	0.00	0.00	2.99	0.00	2.99
	Seeds	0.00	0.00	3.00	0.00	3.00
	Fertilizer	0.00	0.00	1.38	0.00	1.38
	Medicine	0.00	0.00	0.10	0.00	0.10
	Generator	0.00	0.00	0.50	0.00	0.50
	Sprinkler Sets	0.00	0.00	1.00	0.00	1.00
	Seed Thresher	0.00	0.00	0.25	0.00	0.25
	Total	**0.00**	**0.00**	**9.92**	**0.00**	**9.92**
Tegur	Land Development or C.P.T Trench work	0.00	0.00	0.70	0.00	0.70
	Solar Power Based Fencing	0.00	0.00	1.00	0.00	1.00
	Agriculture Equipment	0.00	0.00	0.25	0.00	0.25
	Seeds	0.00	0.00	1.00	0.00	1.00
	Fertilizer	0.00	0.00	0.35	0.00	0.35
	Other Expanses	0.00	0.00	0.40	0.00	0.40
	Total	**0.00**	**0.00**	**3.70**	**0.00**	**3.70**
All	**Grand Total**	**5.88**	**5.02**	**16.91**	**24.77**	**52.58**

3.3.4 Grassland Development Scheme

Four Farms have furnished the detailed data on the utilization of the funds allotted for implementation of grassland development including grass reserves since 1996-97. The scheme was implemented for a year in each of the 4 Farms. The total amount released was Rs 30 lakhs against the provision of Rs. 50 lakhs in the scheme. The release of funds and utilization by the farms have been shown in Table 3.8.

Karikuppe farm received an amount of Rs. 7.48 lakhs (as against the provision of Rs.25 lakhs) for the implementation of grassland development including grass reserves. If we look at the expenditure both on capital as well as recurring expenditure, we find that the expenditure exceeded the provisions under a few components and under-utilized in the other cases. The amount spent on development of irrigation facilities was expected to be Rs.2.15 lakhs and that exceeded by Rs. 0.35 lakhs (Table 3.9). Similarly, in the case of construction of farm shed and solar fencing the expenditure exceeded the provision. This is only one side of the story. Another side of the story is that the grassland developed is no more existent. It was reported that it was in good condition for 1 or 2 years and later, it become barren due to the failure of rains for the last 3 consecutive years. But the reality is that the farm had not given adequate attention to maintain the grassland developed despite there was assured canal irrigation within the farm. The fencing done in the farm is also not at all existent. Only the stone pillar remains without wire. Similarly, a substantial amount (Rs. 24,955) was spent to buy medicines for which there was no provision in the scheme.

Ajjampura Farm received grants for grassland development during 1996-97 and 2001-2002. It had spent this amount on its various sub-centres such as Habbanakatta, Chickkaemignur, Ramgiri, Birur and, Lingadahalli. An amount of Rs. 7.30 lakhs in 1996-97 and Rs.12.42 lakhs in 2001-02 were spent on both capital investment and non-recurring items (Table 3.9). The trench work as well as live fencing was undertaken on these farms and investment on this accounted for a major portion of the total allocation made for the scheme. About Rs. 5 lakhs were spent for the scheme exceeding the provision of Rs. 2 lakhs in 2001-02. Fencing was undertaken for the fodder plots than the grassland land developed under the scheme. Livestock from most of the sub-centres of Ajjampura farm were transferred to Shimoga forests for grazing, as there was no fodder on these farms.

Table 3.9: Assets and Inputs Purchased under Grass land Development including Grass Reserves Scheme

(Rs in Lakhs)

Farm Name	Particulars	1996-97	1997-98	2001-02	Total
Kurikuppe	Honda Power Set	0.00	1.00	0.00	1.00
	Sprinkler Sets	0.00	1.00	0.00	1.00
	Agricultural Equipments	0.00	0.24	0.00	0.24
	Digging of Borewell	0.00	0.50	0.00	0.50
	Construction of Farm shed.	0.00	1.50	0.00	1.50
	Solar Power based Fencing	0.00	1.00	0.00	1.00
	Seeds	0.00	1.50	0.00	1.50
	Medicine	0.00	0.25	0.00	0.25
	Agri work on Contract basis	0.00	0.25	0.00	0.25
	Removal of Bushes & Shrubs	0.00	0.25	0.00	0.25
	Total	**0.00**	**7.48**	**0.00**	**7.48**
Ajjampura	Agricultural equipments	0.40	0.00	0.78	1.18
	Live Fencing	1.00	0.00	0.00	1.00
	Land Develop/C.P.T Trench work	0.00	0.00	4.14	4.14
	Digging of Borewell	0.80	0.00	1.20	2.00
	G.I. Pipe.	0.29	0.00	0.00	0.29
	Construction of Farm shed.	1.10	0.00	0.70	1.80
	Barbed Wire Fencing	0.00	0.00	1.39	1.39
	Live Fencing & Digging of Borewell	2.80	0.00	0.00	2.80
	Fencing & Digging of Borewell	0.80	0.00	0.00	0.80
	Seeds	0.00	0.00	2.04	2.04
	Fertilizer	0.00	0.00	1.40	1.40
	Vehicle repair	0.00	0.00	0.13	0.13
	Fuel	0.11	0.00	0.60	0.70
	Stationery	0.00	0.00	0.05	0.05
	Total	**7.30**	**0.00**	**12.43**	**19.73**
Kunikenahalli	Cultivator	0.00	0.22	0.00	0.22
	Purchase Honda Power Set	0.00	1.00	0.00	1.00
	Sprinkler Sets	0.00	1.00	0.00	1.00
	Land Development or C.P.T Trench work	0.00	0.50	0.00	0.50
	Digging of Borewell	0.00	0.40	0.00	0.40
	Construction of Farm shed.	0.00	1.50	0.70	2.20
	Barbed Wire Fencing	0.00	0.00	0.40	0.40
	Solar Power Based Fencing	0.00	1.00	0.00	1.00
	Seeds	0.00	1.50	0.58	2.08
	Fertilizer	0.00	0.25	0.00	0.25
	Sprayer	0.00	0.02	0.00	0.02
	Total	**0.00**	**7.37**	**1.68**	**9.06**
All	**Grand Total**	**7.30**	**14.86**	**14.11**	**36.27**

The expenditure pattern for the amount received for the development of grassland by Kunikenahalli Farm was similar to that of Karikuppe farm (Table 3.9). It has been reported that the fodder seeds purchased were utilized. However, we find growth of weeds and other bushes everywhere and it was difficult to locate the land

developed under the grassland development scheme. The barbed wire fencing has disappeared due to poor maintenance.

Altogether, Rs 36 lakhs have been utilized in 3 farms since 1996-97. None of the infrastructure created except the shed constructed, trenches made and irrigation facilities are existing. The solar fencing and barbed fencing have disappeared due to poor monitoring and maintenance. At present there are no grass lands, which were developed under the scheme. Many farm managers intended to use them for growing other fodder crops. Even though there is no provision for purchase of sprinkler sets in this scheme, sprinklers have been purchased and used for other plots. The common explanation that the farm managers provided for the failure of the scheme was the scanty and insufficient rains during the last 3 years. However, it is difficult to accept this excuse as at the same time bore wells were dug and sprinkler sets were purchased under the scheme. On the whole, the grassland development has not made any impact in supplementing the fodder on the farm.

The overall utilization of funds against the releases across the farms and the schemes indicate that an amount of Rs. 213.73 lakhs were utilized in six farms covering 4 schemes accounting for 67.69 per cent of the allocation (Table 3.10). The balance was either revalidated for the subsequent years or surrendered to the government. These trends indicate that the farms had not effectively implemented the schemes.

As far as the physical achievements are concerned, solar fencing to the extent of 8,000 feet with 380 stone poles covering an area of 40 to 120 hectares was executed on each farm which received funds for the implementation of the scheme on Strengthening of Seed Farm. Similarly, fencing of 15 acres of area with barbed wire was completed by the farms, which received allocation for the establishment of fodder bank. The trenches or fencing was undertaken under Silvipasture and Grass Land Development Scheme covering an area of about 100 hectares under each scheme in each farm which have implemented these programmes. The creation of most of these infrastructure facilities on the farms was assigned to the government managed Land Army and the Karnataka Ago-Industries Corporation. However, the recurring expenditure on the farms were incurred from the funds available to the farms under different schemes.

Table 3.10: Total Allocation and Expenditure of Central Schemes and Centrally Sponsored Schemes in Seven Farms

(Rs. In Lakhs)

Farm Name	Name of the Scheme	Year	Allocation	Expenditure	Exp as % to allocation	Balance	Remarks
Ajjampura	Silvipasture	1995-96	19.00	5.88	30.94	13.12	N.A
		1996-97	13.60	5.02	36.94	8.58	N.A
		2001-02	25.00	24.77	99.09	0.23	N.A
	Grass Land Development	1996-97	9.75	7.80	79.99	1.95	N.A
		2001-02	15.71	12.43	79.15	3.28	N.A
	Fodder Bank	1997-98	20.00	13.72	68.58	6.28	N.A
		1999-00	2.00	1.49	74.63	0.51	N.A
	Total	**Total**	**105.06**	**71.12**	**67.69**	**33.94**	NA
Tegur	Fodder Bank	1994-95	10.00	5.68	56.80	4.32	Revalidated
		1995-96	4.32	4.03	93.28	0.29	Surrendered
		2001-02	7.50	4.69	62.57	2.81	N.A
		2002-03	0.53	0.53	99.82	0.00	N.A
	Silvipasture	1997-98	3.70	3.70	99.91	0.00	N.A
	Total	**Total**	**26.05**	**18.63**	**71.51**	**7.42**	NA
Hesaraghatta	Strengthening of Seed Farm	1997-98	**16.00**	**15.87**	**99.19**	**0.13**	N.A
Dharwad	Strengthening of Seed Farm	1993-94	**8.00**	**8.00**	**100.00**	**0.00**	N.A
Kunikanahalli	Silvipasture	1997-98	11.20	9.92	88.56	1.28	N.A
	Grass Land Development	1997-98	7.50	7.37	98.32	0.13	N.A
		2000-01	5.79	0.00	0.00	0.00	Not Utilized
		2001-02	5.79	1.68	29.06	4.11	N.A
		2002-03	4.14	0.00	0.00	4.14	Not Utilized
	Strengthening of Seed Farm	1993-94	8.00	7.82	97.70	0.18	N.A
		2000-01	20.00	0.00	0.00	20.00	Not Utilized
		2001-02	10.00	2.00	20.00	8.00	Revalidated
		2002-03	8.00	0.00	0.00	8.00	Not Utilized
	Total	**Total**	**80.42**	**28.79**	**333.63**	**45.84**	N.A
Munirabad	Strengthening of Seed Farm	1995-96	**10.00**	**10.00**	**99.96**	**0.00**	N.A
Karekuppe	Grass Land Development	1997-98	7.50	7.48	99.77	0.02	N.A
	Silvipasture	1997-98	3.70	3.29	88.95	0.41	N.A
	Fodder Bank	1995-96	11.15	7.71	69.18	3.44	N.A
		1996-97	3.85	0.56	14.67	3.29	N.A
	Total	**Total**	**26.20**	**19.05**	**272.57**	**7.15**	NA
Grand Total			**271.73**	**171.45**	**63.10**	**100.27**	NA

Note: N.A. – Not Available

3.4 Beneficiary-Oriented Schemes

3.4.1 Enrichment of Straw and Cellulosic Waste.

The scheme for enrichment of the straw and cellulosic waste is useful to those who have sufficient dry fodder/hay. The veterinary doctors demonstrate the application of urea solution to a group of farmers in the village and distribute the material (rose can, plastic sheet and urea) to the interested farmers. In most of the villages the number of farmers interested in getting the material exceeds the supply. Hence, the veterinary doctors sometimes distribute the urea among the interested farmers and advice to share the rose can among the group of farmers. It is observed that about 46 per cent of the small and 27 per cent each of the medium and large farm households received material under the Enrichment of Straw and Cellulosic Waste Scheme (Table 3.11). However, the proportion of households receiving material/inputs varied across the districts. The number of farmers receiving material under the enrichment of straw and cellulosic waste by farm size category has been presented in table 3.11. About 45 per cent of the beneficiaries belong to small farmer group. The pattern of distribution is more or less similar across farms but Haveri Farm stands out as a unique case with 93 per cent of the beneficiary belonging to large farmer group.

Table 3.11: Category of Farmers benefited from Enrichment of straw and cellulosic waste Scheme

Sample districts	Farm Size Category			
	Small	Medium	Large	Total
Koppal	33.33	40.00	26.67	100
Gadag	40.00	20.00	40.00	100
Haveri	6.67	0.00	93.33	100
Kolar	53.33	26.67	20.00	100
Bangalore(R)	66.67	26.67	6.67	100
Chitradurga	53.33	33.33	13.33	100
Chickmaglur	66.67	20.00	13.33	100
Mysore	46.67	46.67	6.67	100
Total	45.83 (55)*	26.67 (32)	27.50 (33)	100 (120)

* Figures in parenthesis indicate actual number of beneficiaries

3.4.2 Materials received under fodder programs.

The effectiveness of the programme can be seen only when all the components of the programmes are supplied to the beneficiaries. However, only a few components have been distributed to the beneficiaries under the Enrichment of Straw and Cellulosic Waste programme. About 91 per cent of the 120 sample beneficiaries received all the three components, i.e., urea, rose can and polythene sheet which are essential for treating the straw. However, they have not received wage component for chaffing dry fodder/hay as provided in the scheme. There are also instances where the beneficiaries received only urea or rose can or both. It can be seen from Table 3.12 that about 3.33 per cent of the beneficiary farmers received only rose cans whereas, another 0.83 per cent of the farmers received only urea. However, 91 per cent of the farmers received all the three inputs except labour wages. Only 5 per cent of the sample beneficiaries reported receipt of labour wages as envisaged in the scheme. The explanation for not including all components comes mainly from the increases prices of the components, making the allocated funds insufficient for operating the scheme. It was also reported that the beneficiaries wanted a larger coverage of recipients than going for the `labour wage' component. They were ready to forego wages in lieu of the material components.

The quantity of urea distributed under the scheme in the sample districts varied from 5 kg to 25 kg per beneficiary of Enrichment of Straw and Cellulosic Waste Scheme (Table 3.13). About 6 per cent of the beneficiaries received only 5 kg urea whereas 7 per cent got 25 kg urea. About 28 per cent and 58 per cent of the beneficiaries received 10 and 20 kg urea, respectively. None of the sample farmers from Haveri and Chitradurga district received 25 kg urea. In other districts, around 7 per cent of the farmers received 25 kg urea except in Koppal where almost one fifth of the beneficiary farmers reported receiving 25 kg urea.

Table 3.12: Number of Beneficiaries Receiving Inputs under the Enrichment of Straw and Cellulosic Waste Programme

(in percentage)

District	Details of Scheme	Farmer Size			
		Small	Medium	Large	Total
Koppal	Rose can	0.00	6.67	0.00	6.67
	Urea	0.00	0.00	6.67	6.67
	Rose can, Urea, Polythene Sheet	33.33	33.33	20.00	86.67
	Total	33.33	40.00	26.67	100.00
Gadag	Rose can	0.00	6.67	0.00	6.67
	Rose can, Urea, Polythene Sheet	33.33	13.33	26.67	73.33
	All (1-4)	6.67	0.00	13.33	20.00
	Total	40.00	20.00	40.00	100.00
Haveri	Rose can, Urea, Polythene Sheet	6.67	0.00	73.33	80.00
	All (1-4)	0.00	0.00	20.00	20.00
	Total	6.67	0.00	93.33	100.00
Kolar	Rose can, Urea, Polythene Sheet	53.33	26.67	20.00	100.00
	Total	53.33	26.67	20.00	100.00
Bangalore (R)	Rose can, Urea, Polythene Sheet	66.67	26.67	6.67	100.00
	Total	66.67	26.67	6.67	100.00
Chitradurga	Rose can, Urea, Polythene Sheet	53.33	33.33	13.33	100.00
	Total	53.33	33.33	13.33	100.00
Chickmagalur	Rose can	6.67	0.00	0.00	6.67
	Rose can, Urea, Polythene Sheet	60.00	20.00	13.33	93.33
	Total	66.67	20.00	13.33	100.00
Mysore	Rose can, Urea, Polythene Sheet	46.67	40.00	6.67	93.33
	Rose can	0.00	6.67	0.00	6.67
	Total	46.67	46.67	6.67	100.00
Total	Rose can	0.83	2.50	0.00	3.33
	Urea	0.00	0.00	0.83	0.83
	Rose can, Urea, Polythene Sheet	44.17	24.17	22.50	90.83
	All (1-4)	0.83	0.00	4.17	5.00
	Total	45.83	26.67	27.50	100.00

Table 3.13: Number of Beneficiaries Receiving Varying Quantity of Urea under Enrichment of Straw and Cellulosic Waste Programme

District	Farmer size	5 Kgs	10 Kgs	15 Kgs	20 Kgs	25 Kgs	Total
Koppal	Small	0.00	0.00	0.00	20.00	13.33	33.33
	Medium	0.00	0.00	6.67	33.33	0.00	40.00
	Large	0.00	0.00	0.00	20.00	6.67	26.67
	Total	0.00	0.00	6.67	73.33	20.00	100.00
Gadag	Small	0.00	13.33	0.00	26.67	0.00	40.00
	Medium	0.00	13.33	0.00	6.67	0.00	20.00
	Large	0.00	0.00	0.00	33.33	6.67	40.00
	Total	0.00	26.67	0.00	66.67	6.67	100.00
Haveri	Small	0.00	0.00	0.00	6.67	0.00	6.67
	Medium	0.00	0.00	0.00	0.00	0.00	0.00
	Large	26.67	6.67	0.00	60.00	0.00	93.33
	Total	26.67	6.67	0.00	66.67	0.00	100.00
Kolar	Small	13.33	0.00	0.00	40.00	0.00	53.33
	Medium	0.00	0.00	0.00	20.00	6.67	26.67
	Large	0.00	0.00	0.00	20.00	0.00	20.00
	Total	13.33	0.00	0.00	80.00	6.67	100.00
Bangalore (R)	Small	0.00	26.67	0.00	33.33	6.67	66.67
	Medium	0.00	20.00	0.00	6.67	0.00	26.67
	Large	0.00	0.00	0.00	6.67	0.00	6.67
	Total	0.00	46.67	0.00	46.67	6.67	100.00
Chitradurga	Small	0.00	46.67	6.67	0.00	0.00	53.33
	Medium	0.00	33.33	0.00	0.00	0.00	33.33
	Large	0.00	6.67	0.00	6.67	0.00	13.33
	Total	0.00	86.67	6.67	6.67	0.00	100.00
Chickamagalur	Small	0.00	0.00	0.00	60.00	6.67	66.67
	Medium	0.00	0.00	0.00	20.00	0.00	20.00
	Large	0.00	0.00	0.00	13.33	0.00	13.33
	Total	0.00	0.00	0.00	93.33	6.67	100.00
Mysore	Small	0.00	33.33	0.00	13.33	0.00	46.67
	Medium	6.67	13.33	0.00	20.00	6.67	46.67
	Large	0.00	6.67	0.00	0.00	0.00	6.67
	Total	6.67	53.33	0.00	33.33	6.67	100.00
Total	Small	1.67	15.00	0.83	25.00	3.33	45.83
	Medium	0.83	10.00	0.83	13.33	1.67	26.67
	Large	3.33	2.50	0.00	20.00	1.67	27.50
Grand Total		5.83 **(7)***	27.50 **(33)**	1.67 **(2)**	58.33 **(70)**	6.67 **(8)**	100.00 **(120)**

* Figures in parenthesis indicate actual number of sample farmers

3.4.3 Minikit Programme

All categories of farmers are eligible to get the minikits under the scheme There are, of course, stipulations about covering women and SC/ST beneficiaries. The coverage of recipients belonging to women and SC/ST categories as per the guidelines was not strictly followed in the implementation of the schemes. The reason attributed was that beneficiaries belonging to these groups did not own any land. Similarly, the

women beneficiaries covered, actually did not own any land, bur their family members owned it. However, that does not satisfy the stipulations.

Hardly any effort was made to publicize the utility of the fodder trees, perennial and seasonal exotic grasses. Many farmers are not aware of these. The district level officials associated with the implementation of mini-kit scheme were not sure whether it was State or Centrally sponsored scheme. They also had not maintained separate records for State and Centrally sponsored minikits programme. Out of 120 sample beneficiaries, more than 47 per cent were small farmers. However, the number of beneficiaries of minikit programme was higher in large farm category when compared to their other counterparts in Gadag and Haveri districts (Table 3.14). The proportion of small farmers receiving minikits was more than 70 per cent of the total beneficiaries from Bangalore Rural and Chitradurga districts.

Table 3.14: Beneficiaries of Minikit Scheme by Farm Size Category

(in percentage)

District	Farm Size category			
	Small	Medium	Large	Total
Koppal	40.00	40.00	20.00	100.00
Gadag	6.67	13.33	80.00	100.00
Haveri	13.33	20.00	66.67	100.00
Kolar	66.67	26.67	6.67	100.00
Bangalore (R)	73.33	26.67	0.00	100.00
Chitradurga	80.00	20.00	0.00	100.00
Chickamagalur	53.33	40.00	6.67	100.00
Mysore	40.00	33.33	26.67	100.00
All	46.67 (56)	27.50 (33)	25.83 (31)	100.00 (120)

***** Figures in parenthesis indicate actual number of sample farmers

3.4.4 Materials received under Fodder Programmes

We observed unequal distribution of seeds under the minikit programme. The beneficiary farmers received fodder seeds ranging from half kg of seed of Chinese Cabbage (Small farmer) from Kolar district to 70 kgs of African Tall Maize (ATM) seeds by large farmers from Haveri and Mysore districts (Table 3.15). It was observed that African Tall Maize was supplied in large quantities to the farmers through Minikit programme. On an average, 71 per cent of the beneficiaries received 5 kg seeds of African Tall maize. The distribution across districts show that Mysore, Bangalore and Chitradurga received relatively higher quantity of seeds.

Table 3.15: Beneficiaries Receiving Seeds under Minikit Programme

(Beneficiaries in percentage)

District	Quantity of Seed (in kgs)	FARMER SIZE			
		Small	Medium	Large	Total
Koppal	5 kg SATM	33.33	26.67	13.33	73.33
	2 1/2 kg Red Sorghum	6.67	0.00	0.00	6.67
	3 kg SATM	0.00	13.33	0.00	13.33
	5 kg MP Chari	0.00	0.00	6.67	6.67
	Total	**40.00**	**40.00**	**20.00**	**100.00**
Gadag	5 kg SATM	6.67	6.67	60.00	73.33
	3 kg SATM	0.00	6.67	13.33	20.00
	3 kg Wheat	0.00	0.00	6.67	6.67
	Total	**6.67**	**13.33**	**80.00**	**100.00**
Haveri	5 kg SATM	6.67	13.33	26.67	46.67
	2 1/2 kg Red Sorghum	0.00	0.00	6.67	6.67
	5 kg MP Chari	6.67	0.00	26.67	33.33
	40 kg Sorghum seeds	0.00	6.67	0.00	6.67
	70 kg ATM	0.00	0.00	6.67	6.67
	Total	**13.33**	**20.00**	**66.67**	**100.00**
Kolar	1/2 kg China Cabbage	13.33	0.00	0.00	13.33
	5 kg SATM	13.33	6.67	0.00	20.00
	1 kg Lucerne	6.67	6.67	0.00	13.33
	2 1/2 kg Red Sorghum	6.67	0.00	0.00	6.67
	1 kg Sorghum Seeds	26.67	13.33	6.67	46.67
	Total	**66.67**	**26.67**	**6.67**	**100.00**
Bangalore (R)	5 kg SATM	53.33	26.67	0.00	80.00
	5 kg Sorghum	20.00	0.00	0.00	20.00
	Total	**73.33**	**26.67**	**0.00**	**100.00**
Chitradurga	5 kg SATM	66.67	13.33	0.00	80.00
	3 kg SATM	6.67	0.00	0.00	6.67
	5 kg Sorghum	6.67	6.67	0.00	13.33
	Total	**80.00**	**20.00**	**0.00**	**100.00**
Chickmagalur	5 kg SATM	53.33	40.00	6.67	100.00
	Total	**53.33**	**40.00**	**6.67**	**100.00**
Mysore	5 kg SATM	40.00	33.33	20.00	93.33
	70 kg ATM	0.00	0.00	0.00	6.67
	Total	**40.00**	**33.33**	**26.67**	**100.00**
All	5 kg SATM	34.17	20.83	15.83	70.83
	2 1/2 kg Red Sorghum	1.67	0.00	0.83	2.50
	3 kg SATM	0.83	2.50	1.67	5.00
	5 kg MP Chari	0.83	0.00	4.17	5.00
	3 kg Wheat	0.00	0.00	0.83	0.83
	40 kg Sorghum Seeds	0.00	0.83	0.00	0.83
	70 kg SATM	0.00	0.00	0.83	1.67
	1/2 kg China Cabbage	1.67	0.00	0.00	1.67
	1 kg Lucerne	0.83	0.83	0.00	1.67
	1 kg Seeds	3.33	1.67	0.83	5.83
	5 kg Sorghum	3.33	0.83	0.00	4.17
Grand Total	Total	46.67 (56)*	27.50 (33)	25.00 (30)	100.00 (120)

- Figures in parenthesis indicate actual number of beneficiary farmers,
  SATM / ATM – South African Tall Maize

Table 3.16: Quantity of Seed Received (in Kgs) by Minikit Beneficiaries

District	Seed/kit (in kgs)	FARM SIZE			
		Small	Medium	Large	Total
Koppal	5 kg SATM	25	20	10	55
	2 1/2 kg Red Sorghum	2.5	0	0	2.5
	3 kg SATM	0	6	0	6
	5 kg MP Chari	0	0	5	5
	Total	27.5	26	15	68.5
Gadag	5 kg SATM	5	5	45	55
	3 kg SATM	0	3	6	9
	3 kg Wheat	0	0	3	3
	Total	5	8	54	67
Haveri	5 kg SATM	5	10	20	35
	2 1/2 kg Red Sorghum	0	0	2.5	2.5
	5 kg MP Chari	5	0	20	25
	40 kg Sorghum Seeds	0	40	0	40
	70 kg ATM	0	0	70	70
	Total	10	50	112.5	172.5
Kolar	1/2 kg China Cabbage	1	0	0	1
	5 kg SATM	10	5	0	15
	1 kg Lucerne	1	1	0	2
	2 1/2 kg Red Sorghum	2.5	0	0	2.5
	1 kg Seeds	4	2	1	7
	Total	18.5	8	1	27.5
Bangalore (R)	5 kg SATM	40	20	0	60
	5 kg Sorghum	15	0	0	15
	Total	55	20	0	75
Chitradurga	5 kg SATM	50	10	0	60
	3 kg SATM	3	0	0	3
	5 kg Sorghum	5	5	0	10
	Total	58	15	0	73
Chickmagalur	5 kg SATM	40	30	5	75
	Total	40	30	5	75
Mysore	5 kg SATM	30	25	15	70
	70 kg ATM	0	0	0	70
	Total	30	25	15	140
Total	5 kg SATM	205	125	95	425
	2 ½ kg Red Sorghum	5	0	2.5	7.5
	3 kg SATM	3	9	6	18
	5 kg MP Chari	5	0	25	30
	3 kg Wheat	0	0	3	3
	40 kg Sorghum Seeds	0	40	0	40
	70 kg ATM	0	0	70	140
	1/2 kg Chinese Cabbage	1	0	0	1
	1 kg Lucerne	1	1	0	2
	1 kg Seeds	4	2	1	7
	5 kg Sorghum	20	5	0	25
Grand Total		244	182	202.5	698.5

* SATM – South Asian Tall Maize

Those having irrigation facilities got good yield and on rainfed farms the yield was less than the 20 per cent of the average yield due to the shortage of rainfall. The Beneficiaries who had milk animals preferred South African Tall Maize (SATM) seeds and other beneficiaries preferred Sorghum and Oats etc. The SATM yielded less fodder compared to other fodder varieties as it offered only one cutting. However, it is more nutritious and when fed to milking cows, the milk yield is enhanced significantly. The department of Animal Husbandry and Veterinary Sciences distributed around 700 kgs of fodder seed through Minikits to the sample farmers. Among the beneficiary farmers, large farmers shared 39 per cent of the total seed followed by 35 per cent by small farmers and remaining 26 per cent of the total seed by medium farmers (Table 3.16).

3.4.5 Households Benefiting More than Once from the Same Scheme

Data were collected from the beneficiary farmers about the number of times they got inputs/material under Minikit and Enrichment of Straw and Cellulosic Waste Schemes. The analysis reveals that about 79 per cent of the sample farmers received Minikits for the first time whereas, 19 per cent received it for the second time and just 2 per cent for the third time (Table 3.17). On the other hand all the 120 sample farmers selected for Enrichment of Straw and Cellulosic Waste received the inputs for the first time. The beneficiaries who had benefited once from the Minikit programme would have purchased fodder seed from the market instead of depending on govt. for fodder seeds.

3.4.6 Households Availing Benefits under Different Schemes.

The beneficiaries of Minikit and Enrichment of Straw and Cellulosic Waste Schemes had not availed any other fodder development programs as Silvipasture (fodder trees programme) or Kisanvan etc. However, the beneficiaries of enrichment of straw and cellulosic waste scheme availed the Minikits. So also, the beneficiaries of Minikit scheme benefited from enrichment of straw and cellulosic waste scheme (Table 3.18). About 6 per cent of the total 120 sample households who received minikits of fodder seeds also got inputs for enrichment of straw and cellulosic waste. Similarly, 20 per cent (24 households) of the 120 sample farmers benefiting from enrichment of straw and cellulosic waste scheme received Minikits from the state department of Animal Husbandry. The proportion of farmers receiving benefits from both enrichment of straw and cellulosic waste, and Minikit programmes was higher in Koppal district when compared to other district included in the present study.

Table 3.17: Households Benefiting More than Once from the Same Scheme

District	Category	Minikits				Enrichment			
		1 Time	2 Times	3 Times	Total	1 Time	2 Times	3 Times	Total
Koppal	Small	6	0	0	6	5	0	0	5
	Medium	4	2	0	6	6	0	0	6
	Large	2	1	0	3	4	0	0	4
	Total	12	3	0	15	15	0	0	15
Gadag	Small	0	1	0	1	6	0	0	6
	Medium	0	1	1	2	3	0	0	3
	Large	8	4	0	12	6	0	0	6
	Total	8	6	1	15	15	0	0	15
Haveri	Small	1	1	0	2	1	0	0	1
	Medium	3	0	0	3	0	0	0	0
	Large	8	2	0	10	14	0	0	14
	Total	12	3	0	15	15	0	0	15
Kolar	Small	9	1	0	10	8	0	0	10
	Medium	4	0	0	4	4	0	0	4
	Large	1	0	0	1	3	0	0	1
	Total	14	1	0	15	15	0	0	15
Bangalore (R)	Small	11	0	0	11	10	0	0	10
	Medium	3	0	1	4	4	0	0	4
	Large	0	0	0	0	1	0	0	1
	Total	14	0	1	15	0	0	0	15
Chitradurga	Small	12	0	0	12	8	0	0	8
	Medium	2	1	0	3	5	0	0	5
	Large	0	0	0	0	2	0	0	2
	Total	14	1	0	15	15	0	0	15
Chickmaglur	Small	6	2	0	8	10	0	0	10
	Medium	4	2	0	6	3	0	0	3
	Large	1	0	0	1	2	0	0	2
	Total	11	4	0	15	15	0	0	15
Mysore	Small	4	2	0	6	7	0	0	7
	Medium	4	1	0	5	7	0	0	7
	Large	2	2	0	4	1	0	0	1
	Total	10	5	0	15	15	0	0	15
Total	Small	49	7	0	56	55	0	0	57
	Medium	24	7	2	33	32	0	0	32
	Large	22	9	0	31	33	0	0	31
Grand Total		95	23	2	120	120	0	0	120

Table 3.18: Number of Beneficiaries Availing More than One Scheme

District	Category	Minikit/ Enrichment	Enrichment/ Minikit	Both
Koppal	Small	0	2	2
	Medium	0	3	3
	Large	0	2	2
	Total	**0**	**7**	**7**
Gadag	Small	0	1	1
	Medium	0	1	1
	Large	0	0	0
	Total	**0**	**2**	**2**
Haveri	Small	0	0	0
	Medium	0	0	0
	Large	0	4	4
	Total	**0**	**4**	**4**
Kolar	Small	0	1	1
	Medium	0	1	1
	Large	0	0	0
	Total	**0**	**2**	**2**
Bangalore(R)	Small	3	0	3
	Medium	1	0	1
	Large	0	0	0
	Total	**4**	**0**	**4**
Chitradurga	Small	1	0	1
	Medium	0	0	0
	Large	0	0	0
	Total	**1**	**0**	**1**
Chickmaglur	Small	2	1	3
	Medium	0	2	2
	Large	0	1	1
	Total	**2**	**4**	**6**
Mysore	Small	1	2	3
	Medium	0	3	3
	Large	0	0	0
	Total	**1**	**5**	**6**
Total	Small	7	7	14
	Medium	1	10	11
	Large	0	7	7
Grand Total		**8**	**24**	**32**

3.4.7 Inputs/ Materials Received by the Beneficiaries

The beneficiaries under both the programmes had revealed that the programmes were good. However, the minikits scheme seemed to be more beneficial when compared to the Enrichment of Straw and Cellulosic Waste. Most of the beneficiaries did not practice enrichment process, as it required more labour and time. Moreover, some of the farmers reported that there was shortage of dry fodder, which was coming in the way of non-practising the enrichment process.

About 40 per cent (95 beneficiary farmers) of 240 sample beneficiaries from both enrichment of straw and cellulosic waste as well as Minikit programmes revealed that they received less quantity than the required (Table 3.19). A large proportion of these belonged to minikit beneficiaries. There was a complaint that regular supply of seeds was non-existent. Under enrichment, it was reported that less quantity of urea had been distributed. The polythene sheets supplied by the department were also smaller in size. It was reported that it hardly covered an office table of standard dimensions. This has been further examined by collecting information regarding the materials received by each respondent.

3.4.8 Training of the beneficiaries.

Training or Demonstration is required for proper utilization of the schemes. It was expected that all the beneficiaries should have been imparted training about enrichment of straw/hay. However, it was found that only about three fourth (91 farmers) of the 120 beneficiary farmers received training or participated in the demonstration for enrichment of straw and cellulosic waste (Table 3.20). The beneficiaries, those who attended the demonstration of enrichment of fodder, accounted for 78, 66, and 82 per cent of the farmers from small, medium and large farm category, respectively. The beneficiaries of the enrichment of straw and cellulose programme were given training either in the village or on farm or at the veterinary hospitals (Table 3.21). The duration of training was supposed to be for one day however, training programmes were of one hour or less duration. Beneficiaries of the Minikit programme also received some guidance and training about the cultivation of fodder crops.

Table 3.19: Responses of the Beneficiaries on the Material Distributed

District	Scheme	Farm Size	Less quantity of seeds	Less quantity of urea	Less quantity of Polythene sheets	No regular supply of seeds	No Response	Total
Koppal	Enrichment	Small		1			4	5
		Medium		3			3	6
		Large		1			3	4
		Total		5			10	15
	Minikits	Small	4				2	6
		Medium	5				1	6
		Large	1				2	3
		Total	10				5	15
Gadag	Enrichment	Small		2	1		3	6
		Medium		1			2	3
		Large		1			5	6
		Total		4	1		10	15
	Minikits	Small					1	1
		Medium	2					2
		Large	2				10	12
		Total	4				11	15
Haveri	Enrichment	Small					1	1
		Large		2			12	14
		Total		2			13	15
	Minikits	Small					2	2
		Medium					3	3
		Large	2				8	10
		Total	2				13	15
Kolar	Enrichment	Small					8	8
		Medium					4	4
		Large					3	3
		Total					15	15
	Minikits	Small	5				5	10
		Medium	1				3	4
		Large	1					1
		Total	7				8	15
Bangalore Rural	Enrichment	Small			7		3	10
		Medium			4			4
		Large					1	1
		Total			11		4	15
	Minikits	Small	6			1	4	11
		Medium	2			2		4
		Total	8			3	4	15
Chitradurga	Enrichment	Small			3		5	8
		Medium		1	2		2	5
		Large			1		1	2
		Total		1	6		8	15
	Minikits	Small	4			3	5	12
		Medium	1				2	3
		Total	5			3	7	15

Continued...

Table 3.19 (Contd)

District	Scheme	Farm Size	Less quantity of seeds	Less quantity of urea	Less quantity of Polythene sheets	No regular supply of seeds	No Response	Total
Chickmaglur	Enrichment	Small			1		9	10
		Medium					3	3
		Large	1			1		2
		Total	1		1	1	12	15
	Minikits	Small	1				7	8
		Medium	4				2	6
		Large					1	1
		Total	5				10	15
Mysore	Enrichment	Small		1	4		2	7
		Medium			2		5	7
		Large					1	1
		Total		1	6		8	15
	Minikits	Small	3			1	2	6
		Medium	4				1	5
		Large	2				2	4
		Total	9			1	5	15
Total	Enrichment	Small	0	4	16	0	35	55
		Medium	0	5	8	0	19	32
		Large	1	4	1	1	26	33
		Total	1	13	25	1	80	120
	Minikits	Small	23	0	0	5	28	56
		Medium	19	0	0	2	12	33
		Large	8	0	0	0	23	31
		Total	50	0	0	7	63	120
Grand Total			51	13	25	8	143	240

Table 3.20: Responses of the Beneficiaries on Attending Training and Demonstration

District	Scheme	Farm size	Training received	Training not received	Total
Koppal	Enrichment	Small	5		5
		Medium	3	3	6
		Large	2	2	4
		Total	**10**	**5**	**15**
	Minikits	Small		6	6
		Medium	1	5	6
		Large		3	3
		Total	**1**	**14**	**15**
Gadag	Enrichment	Small	5	1	6
		Medium	2	1	3
		Large	6		6
		Total	**13**	**2**	**15**
	Minikits	Small		1	1
		Medium		2	2
		Large		12	12
		Total		**15**	**15**
Haveri	Enrichment	Small	1		1
		Large	14		14
		Total	**15**		**15**
	Minikits	Small		2	2
		Medium		3	3
		Large	1	9	10
		Total	**1**	**14**	**15**
Kolar	Enrichment	Small	8		8
		Medium	4		4
		Large	3		3
		Total	**15**		**15**
	Minikits	Small		10	10
		Medium		4	4
		Large		1	1
		Total		**15**	**15**
Bangalore (R)	Enrichment	Small	8	2	10
		Medium	4		4
		Large		1	1
		Total	**12**	**3**	**15**
	Minikits	Small	3	8	11
		Medium	1	3	4
		Total	**4**	**11**	**15**

Continued .....

Table 3.20 (Contd)

District	Scheme	Farm size	Training received	Training not received	Total
Chitradurga	Enrichment	Small	4	4	8
		Medium	3	2	5
		Large	1	1	2
		Total	**8**	**7**	**15**
	Minikits	Small	1	11	12
		Medium		3	3
		Total	**1**	**14**	**15**
Chickmaglur	Enrichment	Small	6	4	10
		Medium	2	1	3
		Large	1	1	2
		Total	**9**	**6**	**15**
	Minikits	Small	2	6	8
		Medium		6	6
		Large		1	1
		Total	**2**	**13**	**15**
Mysore	Enrichment	Small	6	1	7
		Medium	3	4	7
		Large		1	1
		Total	**9**	**6**	**15**
	Minikits	Small		6	6
		Medium		5	5
		Large		4	4
		Total		**15**	**15**
Total	Enrichment	Small	43	12	55
		Medium	21	11	32
		Large	27	6	33
		Total	**91**	**29**	**120**
	Minikits	Small	6	50	56
		Medium	2	31	33
		Large	1	30	31
		Total	**9**	**111**	**120**
Grand Total			**100**	**140**	**240**

Table 3.21: Place of Training for Enrichment of Straw & Cellulosic Waste

District	Farm size	Place of Training				
		Own Village	Farm	Field land	DD/Hospital	Total
Koppal	Small	4				4
	Medium	3				3
	Large	2				2
	Total	6				6
Gadag	Small	3			2	5
	Medium	3				3
	Large	1			5	6
	Total	7			7	14
Haveri	Small				1	1
	Large	11	2		1	14
	Total	11	2		2	15
Kolar	Small	7		1		8
	Medium	4				4
	Large	3				3
	Total	14		1		15
Bangalore (R)	Small	11				11
	Medium	4		1		5
	Large	1				1
	Total	16		1		17
Chitradurga	Small	2		2		4
	Medium	1		1		2
	Large				1	1
	Total	3		3	1	7
Chickmaglur	Small	1	1	4	2	8
	Large			1		1
	Total	1		5	2	8
Mysore	Small		2	5	1	8
	Medium			3		3
	Total		2	8	1	9
Total	Small	28	3	12	6	49
	Medium	15	0	5	0	20
	Large	18	2	1	7	28
Grand Total		61	5	18	13	97

3.5 Merger of CS and CSS for Fodder Development

The transfers/ devolution of resources from centre to the states are taking place through three channels viz., (i) the Finance Commission (FC), (ii) the Planning Commission (PC), and (iii) the Central Ministries and Departments. Under the last

category, there are two types of schemes, for which the central government provides finances and the states, implement the schemes through their agencies. They are Central Schemes (CS) and Centrally Sponsored Schemes (CSS). The Central Schemes are formulated and finalized by the central government in consultation with the concerned ministry and the Centrally Sponsored Schemes are formulated after seeking the views on the feasibility, programme content, funding pattern and economic benefits etc of the states. In the case of CSS, the state governments would prepare district-wise plans/sub-plans, in accordance with the guidelines, keeping in view the quality and component wise fund requirements for the approval of the central government (See Annual Plan 1987-88, GOI, PC, P.60).

The central schemes are fully supported by the central resources and the centre and the states share the centrally sponsored schemes. The contribution or sharing proportions by the central and state governments vary depending upon the nature of the schemes. Under Animal Husbandry and Dairy Development, several feed and fodder development programmes have been implemented by the state government, and the centre supplements the states where they are not capable of providing support for the cattle development.

3.6 Debate on Limiting the CS & CSS:

The central ministries draw the Central and Centrally Sponsored Schemes and the state governments implement these through their agencies. The intention of the central government to implement these schemes is to maintain a minimum standard in certain activities, which may not receive much attention by the states. Over the years, the numbers of CS and CSS have grown. The proliferation of these schemes was noted by the Administrative Reforms Committee (ARC) in 1967 and Ramamurti Committee (1984). Ramamurti Committee recommended that the number of schemes should be kept to minimum, some of the schemes should be merged and the schemes which were not allocated adequate funds should be discontinued. However, CS and CSS continued to grow over the years in all the sectors including Animal Husbandry. Several programmes were implemented for the development of feed and fodder by this department. Many of the schemes were either modified or scrapped and a few new schemes were introduced and implemented from time to time. Many of these schemes were provided with meagre outlays. The State Governments also failed to provide

matching grants to facilitate effective implementation of the CSS schemes. In this context, an attempt has been made to examine the possibility of merger of various fodder schemes in the state.

There are several CS and CSS for the fodder development and these were being implemented since 1993-94 and continued till 2001-2002. These were implemented through the livestock breeding /training farms which were under the administrative control of the State Department of Animal Husbandry. Some of the schemes/programmes were implemented through the District Animal Husbandry Department.

On account of non-effectiveness and inadequate allocations, two schemes were discontinued in 2000-2001 and another three programmes were discontinued in 2001-2002. Right now, only 2-3 schemes are in operation. In this kind of situation, suggesting merger of CS and CSS is not appropriate. As an alternative, one can suggest that the Department can transfer all State and CS and CSS programmes for fodder development to an independent agency. The newly created Livestock Development Agency may not be able to implement fodder development programmes effectively, as right now, the agency is engaged in many livestock development programmes. As such, a separate body called Feed and Fodder Supply Corporation Limited can be created. The present functions of Fodder and Fodder Seed Production of Farm and Animal Husbandry Department may be transferred to this Corporation.

3.7 Problems and Prospects of the CS & CSS

Various problems and policy suggestions were presented in this chapter. These have emerged from the field observations and discussions with the implementing agencies. Some of these refer to the overall fodder development programmess and some others refer to specific schemes.

3.8 Overall Weakness of the Fodder Schemes

The following are the weaknesses of the schemes implemented at the farm level:

- No objective criteria were used in the selection of farms for the implementation of various programmes.

- The Farms have poorly maintained the records pertaining to the CS and CSS fodder Schemes.
- The amount allocated to most of the Farms have not been utilized. This is evident from the revalidation of allocations. There were instances where the revalidated amount was not allotted to the same farm in the subsequent year.
- Under the CSS, most of the components were purchased at the state level and supplied to the farms and the expenditure towards components were shown against the farms.
- The farm managers reported that the guidelines framed by the Centre were very old. These created problems in the effective implementation of CS/CSS.
- The government rules like the Karnataka Transparency Act as well as the release of the amount at the fag end of financial year made it difficult to utilize the funds for implementing the various schemes. The only alternative was to seek revalidation.
- The revalidation comes through in the month of September/October and it becomes difficult to implement the programme as so many formalities such as sanctioning, tender for any investment more than Rs. one lakh etc. needs to be completed.

3.8.1 Scheme-wise Weaknesses

3.8.1.1 Silvipasture

- Kissan Vanas and Grama Vanas are supposed to be implemented outside the farms on private land and village commons, respectively. The Farms implemented silvipasture schemes on their farms.
- However, there were no plants in the silviculture plots. It was reported that the plants had not survived due to wild animals menace, fire and failure of rains.
- The solar fencing erected under Silvipasture were not functioning in any farm. The farms had not taken any steps to maintain them, as they did not have resources.
- All the investment made on silvipasture development went waste as it was not in existence in any farm. Surprisingly, silvipasture scheme has a provision for watering plants by hand for a year and to hire a watchman.

3.8.1.2 Grassland Development

- The grassland developed under the scheme has wild bushes and weed growth. It was reported that seeds of Stylo Xanthes Heameta was broadcast on the area but failed due to drought conditions.

- Wherever the silvipasture and grassland development schemes were implemented, those areas remained as wastelands with jungle growth. These two schemes should be entrusted to the NGOs. The schemes might succeed with people's participation.

3.8.1.3 Fodder Bank

- The Jeeps purchased under the fodder bank scheme are not in running condition due to lack of resources to maintain them.
- The Fire fighting equipment sets provided under the same scheme has been hardly used. They have almost rusted. Wherever some attempts were made to use them, they had not succeeded due to lack of overhead tank to get enough force to sprinkle the water to extinguish the fire.
- The Sheds built under the fodder bank programme on most of the farms were empty as they neither purchased fodder from farmers regularly nor grew extra fodder on the farm due to lack of resources.

3.8.1.4 Strengthening Seed Production Programme

- In many farms, fencing has been done with solar energy to prevent theft of grass or stray cattle entering the fodder farms. However, there is no trace of fencing (wires) or its remnants now.
- Under Strengthening of Seed Production farms, generators were purchased at Hesaraghatta Farm and Dharwad Farm were being used for semen banks. This is clear violation of guidelines.

3.8.1.5 Minikit and Enrichment of Straw

- The department has no coordination with other departments to create awareness about the minikit and enrichment programmes.
- Providing of minikit is restricted to 5 Kgs of seed for planting quarter of an acre land.
- Preference given to the farmers having access to irrigation facilities.

3.8.1.6 Enrichment of Straw

- Lower targets and achievements have been observed in recent years compared to earlier years under enrichment of straws programme. This is due to increase in the cost of enrichment materials and non-allocations of more funds in relation to increase in prices.

- Labour charges paid to the beneficiaries were lower than the prescribed amount due to diversion of funds to purchase inputs/material due to their prices.
- The quantity of urea supplied under the scheme was reduced to increase the number of beneficiaries. Similarly, labour wages to be paid to the beneficiary farmer were used for purchasing inputs or to meet the increased cost of the material.
- Farmers did not continue the scheme after the initial year as the process required lot of labour, raw materials such as urea, space to store chaffed fodder and that most of the farmers did not have hay.
- The demonstrations were not properly conducted. The local Veterinary Doctors had just briefed the farmers on how to enrich the straw.

3.9 Drought/Crisis Management

Unfortunately, in our country, the problem of fodder shortage is realized only in scarcity conditions and drought periods instead of having a long-term policy. Karnataka is experiencing scanty rains and drought for the last three years. Central funds have come in the big way to mitigate the drought. About Rs. 9.75 crores were provided to the state Department of Animal Husbandry for fodder development and other activities. Of this, Rs 6.75 crores were meant for fodder development activities and the rest Rs. 3 crores for the purchase of veterinary medicines. A substantial proportion of the central relief fund i.e., Rs 2.27 crores were provided for fodder development in government farms belonging to the department of Animal Husbandry, Forest, Horticulture and Karnataka Sheep & Sheep Product Development Board to undertake fodder cultivation in 1,500 acres (Table 3.22).

In addition to this, an amount of Rs. 1 crore for the Minikit programme, Rs 3 crores for the establishment of Fodder Banks and Rs.0.48 crore for Transportation of fodder were released under the CRF in the state. The district administration is empowered to handle the amount. The district collector sought the information form each Govt. farm, forest, Horticulture, sheep farms etc. on the fodder situation and the amount required for fodder production programmes to overcome the shortage of fodder. Based on these requests and assessing the proposals, the district administration provided finances for the implementation of fodder schemes. The animal husbandry departments in each district have already received funds and have started implementing the programmes.

Table 3.22: Allocation of Calamity Relief Funds by the Government for the Production of Fodder During 2003-2004

Farm	Area (Acres)	Rs. Crores
Animal Husbandry	415	0.80
Forest	340	0.68
Horticulture	645	0.64
Sheep Board	100	0.15
Total	1500	2.27

In many districts, the department of animal husbandry has procured the seeds from various sources such as marketing federations, fodder seed growers in Andhra Pradesh and Tamil Nadu to distributes to the farmers in the form of minikits. The department is also making arrangements to buy the fodder from the available sources with in the state and outside the state and distributing the same to the needy farmers. In some cases, they request the forest department to collect the dry fodder and supply to the department of a particular district. The livestock Farms have initiated action for digging of bore wells out of funds allotted under CRF. It may not be appropriate to spend the fund on these items, as the situation requires immediate fodder supply to the animals. Such things may be covered in the usual process. Otherwise, the very purpose of relief is defeated and they grow the fodder when the drought period is over. It is learnt that Rs. 56 lakhs from CRF has been used to buy about 265 tonnes of fodder from Punjab and Haryana and has been distributed to the farmers in Kolar, Chitradurga, Tumkur and Gadag. Goshals and fodder banks have been opened for the distribution of fodder in districts.

CHAPTER IV

ESTIMATION OF FODDER DEMAND FOR KARNATAKA

4.1 Introduction

Animal husbandry is one of the important economic activities in Karnataka. The sector provides six per cent of the State Domestic Product (2000-01) and employs 3.27 per cent of the workforce (1991 Census). The animal husbandry sector has witnessed a gradual change in its contribution to the State income in response to the changes that took place during the late seventies. The contribution of 'Operation Flood', made a big difference in the composition and structure of the livestock economy. Animal Husbandry, which was traditionally operating as an allied agricultural activity assumed the status of an independent economic activity. Earlier animal husbandry was taken as a supporting activity for agriculture, providing draught power, manure and milk. It was largely borne on the crop residues and fodder available from the village common lands as well as from the farm bunds and other waste lands. But the metamorphosis of the sector took place due to the forceful implementation of the 'Operation Flood'. The density of cattle increased sharply. The composition of the cattle population underwent a dramatic change. The ratio of female cattle to female buffaloes changed from 1.77 to 1.95 and so also the male counterparts. Along with that, the demand for feed, fodder, veterinary and other services also increased. The demand for fodder, feed and green fodder came not only from cattle and buffaloes but also from the small ruminants, which formed an important component in the demand estimation.

4.2 Livestock Density in Karnataka

The density as well as composition of livestock in Karnataka changed significantly over the livestock censuses. Even though there are no discernible time trends in this pattern of growth, there are a few interesting aspects of this change. The 1961 livestock census had put the total cattle population at 72.4 lakhs, of which 37.28 lakhs were male cattle and 35.12 lakhs female cattle. This number went up to 96.84 lakhs during the next Census, but suddenly dropped to 74.79 lakhs due to the severe drought of 1972-73. The decline was more severe in the case of male buffaloes (57.2 per cent). Among the cattle population the decline of female cattle (23.7 per cent) was slightly higher than

the male cattle (21 per cent). This severe loss could not be fully recovered during the subsequent five years, and the number of cattle went up to 75.55 lakhs. A significant change, however, came during 1977-1983, to record the cattle population at 112.99 lakhs, at an average increment of 8.26 per cent per annum. That was unprecedented in the history of Karnataka. The growth rate in the cattle population decelerated during the subsequent census. The succeeding livestock census recorded a population of cattle at 131.74 lakhs at an average annual increase of 2.37 per cent per annum. This showed that the population of cattle and buffaloes in Karnataka did not depict any inherent time trend and fluctuated intermittently over the censuses.

Table 4.1: Population of Cattle and Buffaloes in Karnataka - Total

Census Years	Cattle		Buffaloes	
	Male	**Female**	**Male**	**Female**
1961	37,28,926	35,12,587	3,30,486	16,81,620
1966	48,63,917	48,21,364	7,12,731	23,31,199
1972	38,01,559	36,78,090	3,05,285	18,01,750
1977	38,77,557	36,78,188	2,96,963	20,75,269
1983	54,07,450	58,92,773	6,35,003	30,12,964
1992	63,04,331	68,70,293	7,39,955	35,10,947

Source: Livestock Census of Karnataka, for Various years

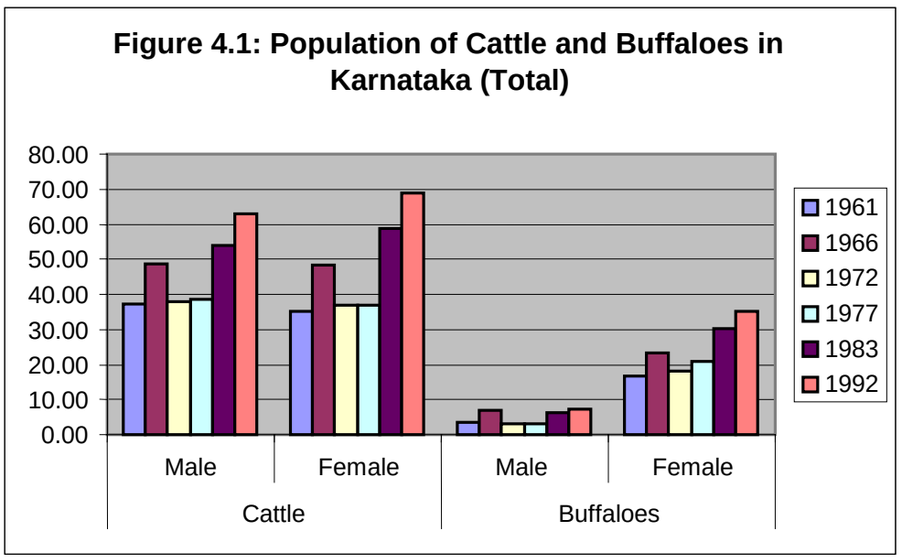
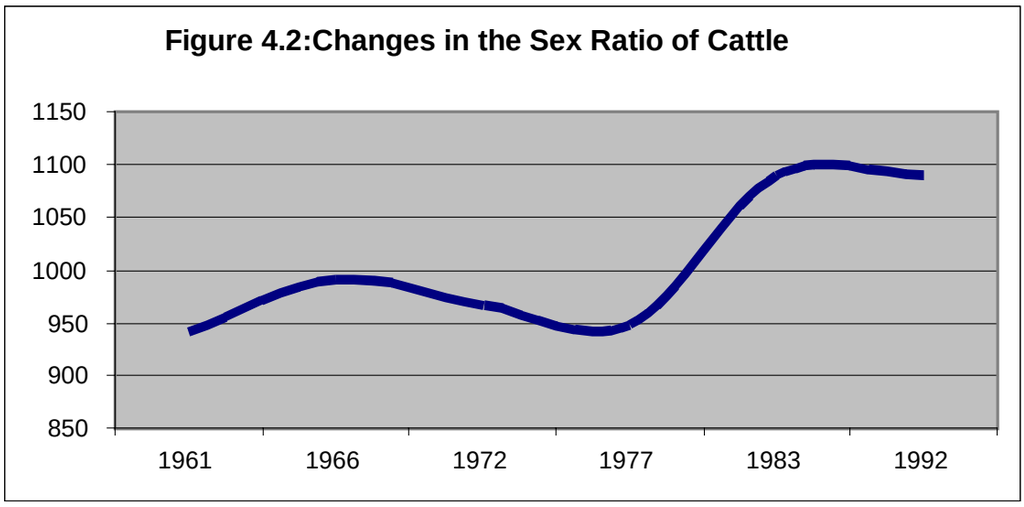


Table 4.2 : Population of Cross-bred and Indigenous Cattle in Karnataka

Type of Cattle		1983	1992
Crossbreed Cattle			
	Male	1,27,314	1,48,435
	Female	4,10,192	4,78,242
	Total	5,37,506	6,26,677
Indigenous			
	Male	52,80,136	61,55,896
	Female	54,82,581	63,92,051
	Total	1,07,62,717	1,25,47,947

The emergence of exotic varieties of cows and buffaloes in Karnataka can be traced back to the force of operation flood. It was during this period that most of the State owned and operated livestock farms started functioning. The most popular breeds in the state are Holstein, Red Dane and Jersey. Among the local breeds of cattle Hallikar, Amrit Mahal, Malnad Gidda and Khillar are favoured breeds. The Murra, Dharwad and Jafarbadi buffaloes receive preference over others. Each of these breeds have different dietary requirements and that changes according to the condition (lactating, dry, Pregnant Cows and Buffaloes, servicing, drought conditions for bulls and he Buffaloes).

Gender composition of the livestock population also has a significant impact on its growth pattern and implications for the overall economy. It is necessary to understand the changing gender composition as the fodder and feed requirement of male and female livestock differ significantly. Higher density of female cattle and buffaloes show the intensity of dairy activities and higher feed demand, whereas the density of male cattle indicates the availability of draught power. The sex ratio also changed due to the popularisation of the exotic varieties of cattle. The changes are also not uniform across districts and regions. The changes in the sex ratio are shown in the figure 4.2. It can be seen that the ratio changed significantly in favour of female cattle during 1977-83 and stayed at the same level in the subsequent census. The changes in the sex ratios of buffaloes are exactly different. It had increased to 6,988 female buffaloes to 1,000 male buffaloes but came down and stabilised at 4744 females per thousand males.



4.3 Other Small Ruminants

Karnataka has a significant presence of small ruminants. This is quite an expected phenomenon in a state that is frequently visited by drought. Small ruminants help like an additional income source or as an insurance against drought. Small ruminants sector alone requires about one third of the fodder. The population of this group has increased more than double during the last 40 years and the increase is sharper among goats than among sheep. It is interesting to observe that population of female goats did not decrease during 1972 as that of the cattle but the male goats as well as sheep population declined very sharply. It took longer time to get back to normal level. But the fluctuations dominate the small ruminant sector too.

Table 4.3: Population of Small Ruminants

Years	Goats		Sheep	
	Females	Males	Females	Males
1961	17,01,719	4,61,575	31,32,103	6,77,361
1966	21,00,602	6,78,127	34,83,460	12,64,441
1972	22,67,823	3,12,957	26,86,268	6,27,411
1977	20,02,472	2,58,960	27,38,238	5,97,983
1983	34,88,426	10,58,502	37,19,864	10,71,786
1992	48,21,971	14,63,143	42,16,576	12,14,901

4.4 Need for Fodder Forecasting

Karnataka has the dubious distinction of having the second largest share of the drought-prone areas of the country. Weather has not been very kind and dependable in the state and drought like conditions occur without any previous warning throwing the entire administrative structure only on one mission and that is to ameliorate the conditions of the drought-affected population. Recent three consecutive years' failure of monsoon bears testimony for this. Drought manifests itself, in the present understanding, due to the interaction of the climatological factors with the crop husbandry. Agriculture is the most significant vocation that is affected by drought. In a situation of drought the fodder availability gets altered differentially across seasons and regions. The impact of an early kharif season drought on fodder production is likely to be different than a drought spell during crop growth period and followed by a rabi season drought. Hence, one can visualise the impact on two axes namely the ` Climate and season' on one axis and `Land Condition' on the other. We give below a tentative outline of such impact but this cannot be generalised as the impact parameters vary according to the responses to drought.

Table 4.4: Fodder Situation According to Occurrence of Drought

Drought Specifications		Kharif Season Drought			Rabi Season Drought		
		Early Season	Mid Season	Late Season	Early Season	Mid Season	Late Season
Rainfed	Drought Tolerant Fodder	LA	SA	MA	MA	SA	MA
	Susceptible	SA	SA	SA	SA	SA	SA
Protectively Irrigated FF		LA	MA	MA			
Irrigated FF		LA	LA	LA	MA	MA	MA
Commercial FF		SA	MA	MA	MA	MA	MA

Note: SA-Severely affected; MA-Moderately Affected; LA-Least Affected; FF-Fodd**er Farm**

The loss incurred in fodder production sector manifests in various forms and it begins with the reduction of area under fodder cultivation thereby affecting the aggregate production. If some sort of protective irrigation is available there are chances

of obtaining some fodder. The early kharif drought also reduces the availability of moisture and thereby affects the productivity of fodder on fields as well as on the pasture land. If the crops are already sown then the situation is retrievable slightly, from the crop residues, depending on the week of sowing and rainfall receipt. A mid-season drought endangers crop production but provides sufficient crop residues and that saves the fodder scarcity. Therefore, a mid season drought and a kharif-rabi combined drought affects the farm sector with higher intensity but does not affect fodder sector with the same intensity. However, an early kharif or Rabi season drought can cause severe fodder shortages. Assessment of fodder availability and its likely demand is therefore quite crucial. An estimate of such requirement will help the state to keep in a position of preparedness.

Fodder availability is subject to various factors and climate is the most crucial among these. On the supply side, climate, composition of cropping pattern (according to fodder residues of the crops), area under fodder cultivation, green fodder available from forest lands and other specific land use categories (cultivable wastes, other fallows, land under farm bunds, land put under permanent pastures and other grazing lands) are the major determinants. The area under green fodder in the State is only about 8.4 lakh hectares or 0.7 per cent of the gross cropped area but the area under other land uses categories providing fodder is substantial. Forest constitutes 16 per cent of the Total Geographical Area (TGA), whereas, pastures and other grazing lands share 5.3 per cent of TGA. The total land area providing (or capable of providing) fodder is about one third of the geographical area and these categories include forest (16.0 per cent), cultivable waste (2.3 per cent), pasture and other grazing land (5.3 per cent), current and other fallow lands (9.3 per cent). In addition to this, the area under field bunds as estimated by agricultural statisticians is about 5 lakh hectares.

The State is not self-sufficient in fodder availability. One of the recent estimates of total demand for fodder places green fodder requirement at 36.29 mill. MT and the availability at 24.20 mill MT (Alpha Agrotech 1998). That leaves a gap of 12.09 mill MT or about one third shortage. The estimation of Dry Fodder requirement was flagged at 23.99 mill. MT and the availability was 19.16 mill MT, leaving a shortage of more than 4 Mill MT. The shortage is also not covered by the output from feed industry. In Karnataka, there were 88 feed manufacturing units with 12 lakh tonnes installed capacity in 1998-99. However, the actual production was only 5 lakh tonnes, of which

cattle feed was about 2.5 lakh tonnes and the rest is poultry feed. Over the period, the units as well as the production has increased. The number of units has gone to 94 with 15 lakh tonnes of additional installed capacity and present (2002-03) production of 3.8 tonnes. The Quantity of cattle feed produced was 1.9 tonnes and the rest was poultry feed in 2003 (GOK Department of Animal Husbandry).

The clear position of availability of fodder and feed in Karnataka is not far from being called as precarious. The question that comes immediately in front of us is : when the gap in supply and demand is so wide then why the crisis has not emerged boldly all these years? The situation is managed through deliberate and not so deliberate options. First, fodder is purchased from various agencies and from the suppliers across state borders. No estimates of these can be prepared. Second, the stall-feeding is not very common and the preference is more towards open grazing. Therefore, the shortage is met out of open grazing which is quite common. Third, the shortage of fodder and feed bears a clear testimony when one observes the cattle. Nutritionally, the cattle is not well fed and this can be seen in the field. Therefore, in order to manage the situation carefully we must have estimates of fodder requirement and its availability so that a phased programme can be worked out and the state machinery can be put on alert.

4.5 Forecasting Fodder Demand: A Search for Method

Forecasting demand of a commodity is accomplished through the set procedures in the econometric literature. Essentially there are five approaches followed in obtaining a forecast and these are:

- Demand Theory Approach
- Consumption Approach
- Time Series Forecasts
- Normative Approach
- Structural Equation Forecasts

Demand theory postulates a relationship between the price of the product and the quantity demanded or supplied. It is used in the case of commodities for which the markets are well established. The approach involves estimating a demand equation of the following type:

$$Q_{di} = \alpha + \beta_i \{X_{ij}\} + \varepsilon_i$$

Where Q_{di} is the quantity demanded (or supplied) of the commodity in question, here, Fodder. α is the demand shift parameter (in the case of fodder demand there can be sudden change in the preference for a particular fodder type or shift in the demand or supply function). β_{ij} are the slope coefficients or the parameters dictating increase/decrease in the demand or supply of a commodity. In the case of fodder these are the parameters that dictate the change in fodder demand or supply with respect to the variables denoted by X_{ij} . In these type of equations there is always a possibility of incurring measurement, specification or other random (sampling and non-sampling) errors. These are represented by ε_i , and that comes with the usual statistical assumptions. The variables that can be used in this approach are the price of fodder, quality of fodder, relative price of fodder with that of the alternative, area productivity of fodder and the other related variables related with fodder production. The equation is estimated using the data matrix on time-series or in a cross section. We do not have systematic and reliable data at the State level and therefore, this approach becomes difficult.

The consumption approach is a variation of the demand equation approach and most often the two are used synonymously. This approach is used quite often in the forecasting of food grain demand. As the data on quantity demanded or supplied are not easily available, proxy variables are used to represent the two. Consumption surveys conducted by the National Sample Survey Organisation at regular intervals help to get the data on consumption of food and other commodities at the household level. Engel Curve, Modified Engel Curve, Linear Expenditure System, Addi-log Model and other variants of the Expenditure system equations are used for forecasting future consumption requirements. The basic equation is as follows:

$$C_{ij} = \xi + \psi X_{ij} + \mu_{ij}$$

Here, in the equation, C_{ij} represents the consumption of the commodity I at a time j or by household j. ξ represents the shift parameter as indicated above causing a shift in the consumption function. Unlike the Demand and supply equations expenditure on the item/s of consumption or income are the important determinants of the equation. These and other variables are represented by X_{ij} , for the i^{th} commodity and j^{th} time/household. The slope or rate of change in the consumption is represented by ψ_{ij}. The random error term is represented by μ_{ij}. In the case of fodder consumption the question of expenditure and income does not arise and similarly the relative prices are

also not relevant in this case. However, the consumption equation approach can be suitably modified to understand the fodder forecasts.

The forecasts using time-series analysis are relatively simple. Here, different time trends are assumed to be dictating the behaviour of the variables. The most commonly used trend functions are the following:

Linear time trend $LP_{ij} = \xi + \psi T_{ij} + e_{ij}$

Semi Log function $\text{Log } LP_{ij} = \xi + \log \beta T_{ij} + e_{ij}$

Double Log Function $\text{Log } LP_{ij} = \xi + \log \beta T_{ij} + e_{ij}$

In the above equations, **LP** is the livestock population of the livestock type I (Cattle, buffaloes, crossbreed, age specific etc.) at time/of region j. T is the time in continuous chronological form and the ξ , β, are the estimated parameters representing shift and slope of the function. The random error term is represented by e_{ij}. After arriving at the population of livestock in a medium term perspective the estimated figures are used with the normative requirements given by the veterinary dieticians. The time series approach is easier as it assumes a large number of difficulties, but, therefore, not dependable in the case of fodder forecasting.

Normative approach is an easier but dependable version among the methods of forecasting in the context of fodder forecasts. This method utilises the results of the livestock population forecasts arrived at by using any other approach and using the normative multipliers given by the veterinary dieticians the forecasts are arrived at. The major difference between this and the time-series approach is that the time- series approach assumes a specific growth trend in the series of livestock population, whereas, sufficient flexibility is available in this approach for taking the estimates of livestock population. Here, one can have different realistic assumptions or various scenarios about the livestock population. Even the Life Table Approach also can be used for projecting the population wherein the growth behaviour of the age group as well as fertility and mortality rates are used to arrive at age distribution of livestock population. This requires the age group-wise distribution in addition to fertility and mortality rates by age group.

The structural equation approach is a flexible approach used in forecasting. A structural equation is specified of the following generalised form:

$$FC_i = \xi + \psi X_{ij} + \mu_{ij}$$

Here, **FC** represents the fodder utilised in the livestock enterprise in the i^{th} household and X_{ij} are the variables determining such consumption for i^{th} household and j^{th} variable. In this equation also ξ, ψ and μ_{ij} have the same function as in the above models.

4.6 What is the Right Approach?

The review of various methods above is to indicate the possibilities of the analysis and that leads to the process of right choice in projections of fodder demand. We have compared the methods reviewed above in table 4.5. We tried to highlight only the main positive and inhibiting factors. That makes a decision about the choice of technique more complex. Among the methods, the Normative approach and the Structural Equation Approach seem to be more acceptable for the present purpose.

Table 4.5: Comparison of Various Methods of Forecasts

Sl No	Method of Forecasting	Advantages (+) and Disadvantages (-) in Forecasting Fodder Requirement
1	$Q_{di} = \alpha + \beta_i \{X_{ij}\} + \varepsilon_i$	(+) This has a complete theoretical background and the results are stable. (-) Fodder market is not so well developed and there is a large area, which operates under non-market conditions. Therefore, it is difficult to obtain the data on price variable.
2	$C_{ij} = \xi + \psi X_{ij} + \mu_{ij}$	(+) Theoretically well defined models and have robust interpretative capabilities. (-) The specification of the variables entering in the model is difficult. There is no consumption survey data. Income and consumption relation is fragile.
3	$\text{Log } LP_{ij} = \xi + \log \beta T_{ij} + e_{ij}$	(+) Assumes the previous growth trend and the method is most commonly used. (-) The livestock population does not depict any trend and on the basis of time trend analysis the growth obtained is unimaginably high/low to be used for future forecasts.
4	**Normative Approach**	(+) Presumes nutritional security and easy to operate for updating or changes. (-) Provides unreachable forecasts as the livestock sector is unorganised and nutrition is not a deciding factor in scarcity conditions.
5	$FC_i = \xi + \psi X_{ij} + \mu_{ij}$	(+) Takes into consideration all the structural variables and therefore the coefficients are stable in the long run. (-) The data on many important variables are simply not available and even with a field based study such data are not possible to collect.

The analysis is further marred by several factors but five of these are quite significant. First, the data on livestock are available only at distinct points of time as the census is conducted at these points of time. That makes the time-series projections fragile as we get only three degrees of freedom. Any statistical trend with those small degrees of freedom cannot be used for forecasting. Further, there is hardly any type of trend in the data on livestock obtained from the livestock census. We have presented the percent growth across the livestock censuses in table 4.6. It can be seen that there is no discernible trend in the growth of livestock in Karnataka. That behaviour is also not unexpected in a state like Karnataka where the drought- prone area predominates, animal husbandry is used largely as a subsidiary activity of agriculture, and fodder scarcity is always threatened. The first indicator of economic scarcity is reflected in the fluctuations of livestock and that also acts as the first cushion while protecting the household economic condition.

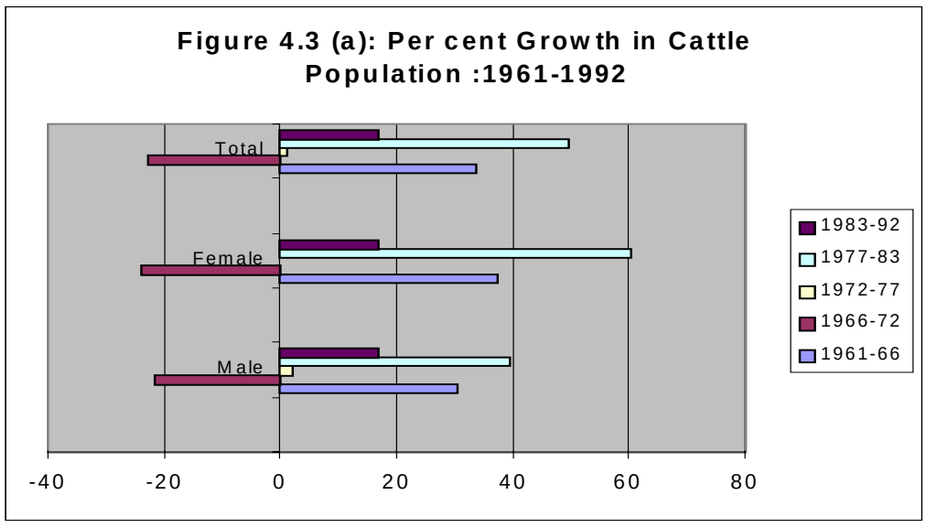
Table 4.6: Per cent Growth of Livestock Population of Karnataka: 1961-1992

Sl No	Livestock	1961-66	1966-72	1972-77	1977-83	1983-92
A	**Cattle**					
1	Male	30.44	-21.84	2	39.46	16.59
2	Female	37.26	-23.71	0	60.21	16.59
3	Total	33.75	-22.77	1.02	49.56	16.59
B	**Buffaloes**					
1	Male	115.66	-57.17	-2.73	113.83	16.53
2	Females	38.63	-22.71	15.18	45.18	16.53
3	Total	51.28	-30.78	12.59	53.78	16.53
C	**Sheep**					
1	Male	86.57	-50.38	-4.69	79.23	13.35
2	Female	11.22	-22.89	1.93	35.85	13.35
3	Total	11.22	-22.89	1.93	35.85	13.35
D	**Goats**					
1	Male	46.92	-53.85	-17.25	308.75	38.23
2	Female	23.44	7.96	-11.7	74.21	38.23
3	Total	28.45	-7.12	-12.37	101.06	38.23

Source: Based on the Livestock Census data

Second difficulty in the attempt for projections comes from the fact that open grazing is the most prevalent method in livestock feeding. There are some commonly used factors to estimate the fodder consumed in the process of open grazing, but these vary not only across regions (Malnad as against Northern or Southern Maidan), but also

across seasons and type of animals. More than that, largely, the livestock population of Karnataka depends on open grazing. Stall-feeding is emerging strongly. Third problem is associated with the fluctuations of the livestock population across censuses. Figure 4.3 shows the fluctuations and quite interestingly the per cent increase between 1983 and 1992 census does not seem to be realistic. The increments are the same between male, female and total livestock. The fluctuations in the series inhibit any trend-based projections and those will be certainly unrealistic.



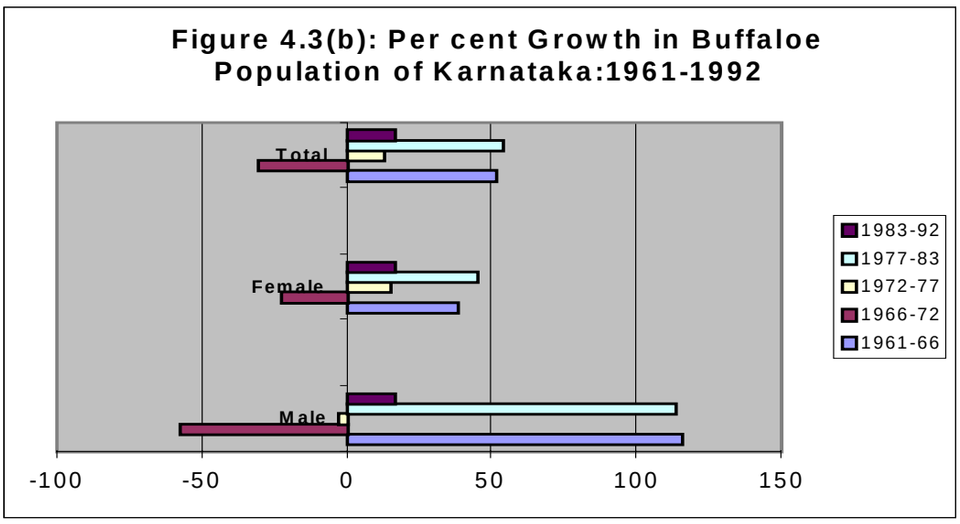


Figure 4.3©: Per cent Growth in Sheep Population of Karnataka:1961-92

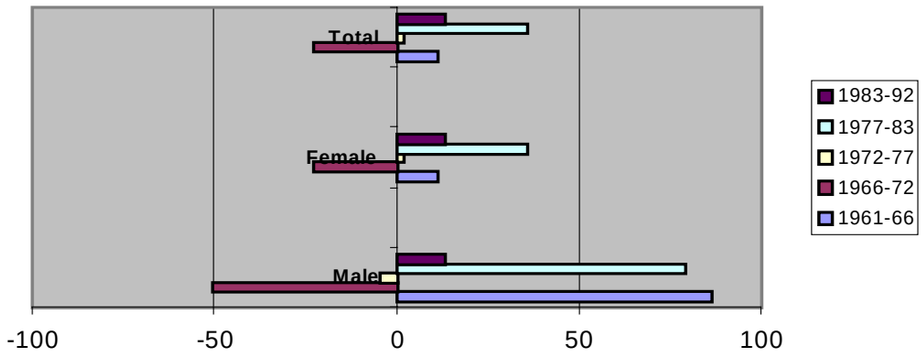
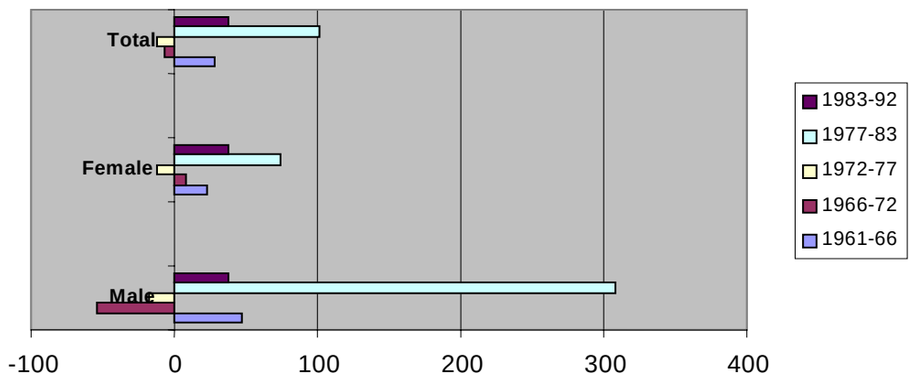


Figure 4.3 (d): Per cent Growth in Goat Population of Karnataka: 1961-92



The fourth issue relates to the numerosity of the variables that determine the supply and demand equations. It is not that the variables are many but the empirical data on many of them are simply not available even at the household level. That makes the specification of the consumption function or structural equations difficult. Lastly, even at the household level, information on some of the crucial variables is difficult to obtain correctly. For example, the data on consumption of green or dry fodder by the local/cross-breed animals is absolutely based on guess and no farmer feeds the animals carefully to keep track of consumption. This is mainly due to the fact that Animal

Husbandry is emerging only recently as an economic activity and it is yet to carve a clear niche for itself.

4.7 Estimating Fodder Availability

Fodder is available through four major sources. First, it is available through the land categorised under pastures and other grazing lands, cultivable wastelands, other fallows and area under fodder crops. The quality and use of these lands differ significantly across the State. Being Common Property Resource, the lands are used most uneconomically and the productivity is going down significantly. Presently, the State has 1.02 million hectares land classified as land under permanent pastures and other grazing land. This land use category is declining very fast and at a long-run rate of decline of 1.64 per cent per annum. The land is either being brought under cultivation or transferred to other non-agricultural uses.

Table 4.7: Compound Growth Rates in Land Use in Karnataka -1955-56 TO 1995-96

Land use categories	% Area^{+}	G.Rate$^{@}$	R^2
Forests	16.10	0.42*	0.91
Barren and uncultivable waste land	4.19	-0.35*	0.75
Land put to non agricultural uses	6.25	1.28*	0.97
Cultivable waste	2.33	-1.24*	0.93
Permanent pastures and other grazing land	5.71	-1.64*	0.93
Land under misc. Tree crops and groves not included in net area sown.	1.66	-0.40*	0.45
Current fallows	5.86	1.04*	0.35
Other fallows	2.27	-0.84*	0.3
Net area sown	55.62	0.12*	0.24

Note: * Statistically significant at 10 per cent level. + - Per cent to Total Geographical Area. Average of 1990-93; @ Growth Rates are based on actual land use data

Source: Deshpande and Bhende (2003)

Barren and uncultivated wastelands also provide fodder for the livestock. The small ruminants largely use these areas for open grazing, as the type of fodder is of quite low quality and availability is quite low. Cultivable wastelands and other fallow lands provide another source of fodder. The land under cultivable waste and other fallows is about 0.88 million hectares. These land use categories are also showing a continuous decline in their area share. The area is either getting under cultivation or for

non-agricultural uses. Forest lands also provide fodder and these account slightly above 16 per cent of the geographical area of the State. There is a slight increase in the area share of forest lands and that is reflected in the Table 4.8. Presently, the State has 3.08 mill hectares area under forest (legally categorised as land under forest). All these land-use categories as well as crop residues from the crop lands provide fodder to the livestock sector.

Table 4.8: Projections of Land under Various Land Use Categories in Karnataka

	2005	2010	2015	2020
Forests	3.33	3.36	3.43	3.48
	17.4	17.6	17.9	18.2
Barren and uncultivable land	0.706	0.694	0.632	0.620
	3.7	3.6	3.3	3.2
Cultivable waste	0.301	0.230	0.260	0.241
	1.6	1.2	1.4	1.3
Permanent pastures and	0.698	0.589	0.584	0.534
Other grazing land	3.6	3.1	3.0	2.8
Land under miscellaneous	0.304	0.298	0.242	0.236
Other fallow land	0.408	0.365	0.348	0.332
	2.1	1.9	1.8	1.7
Net Sown Area	10.699	10.764	10.828	10.893
	55.8	56.1	56.4	56.8

Note: Figures are in million hectares and those in the Second row are percentages to the total geographical area.

Source: Govt. of Karnataka (2001)

The projections of land under different land use categories were prepared by a team of experts for the Government of Karnataka (Govt. of Karnataka, 2001). This projection exercise took into consideration the various contemplations about the policy as well as the land capability and over-exploitation. It is well accepted that regression-based extrapolation of land use, with the help of growth rates may lead to a very spurious result in view of the land capability and classification. The scenario accepted here from the report of the Government of Karnataka (2001) is, therefore, the most feasible scenario. These are presented in table 4.8. The projections are available for a longer time period but for the future fodder forecasting, such long term projections are neither needed nor desired. In fact, the reliable projections can be of a medium term nature and feasible till 2010. We obtained the productivity figures of fodder from the publications of Agricultural Universities. No scientific data are collected for the estimation of fodder from other land use categories; therefore, one has to suffice with these available productivity figures. We have assumed that the productivity will remain

constant in the coming decades as no efforts are made either to enhance productivity, and on the other side, land degradation is causing impact on fodder availability for the other land uses.

The projection of fodder availability from the land use categories are presented in Table 4.9. It can be seen that about 19 million tonnes fodder will be available from the lands Forests. Fodder available from other land use categories will be :Barren and Uncultivable Land (0.247 mts), Cultivable Waste(1.54 mts), Permanent pastures and Other Grazing Land (3.17 mts), and Other Fallow Lands (0.63 mts). The land mass under all these land use categories is declining (except forests and that too has a very skimpy increment). The factors restraining the supply are heavily weighed as against those encouraging the fodder supply from these lands. And, therefore, it was inevitable that fodder availability from these lands should be increased with special efforts. The scenario presented here is only the likely potential of these categories of land.

Table 4.9: Projections of Fodder Availability under Land Use Categories

(In mill M tonnes)

Land use categories	**2005**	**2010**
Forests	18.65	20.68
Barren and uncultivable land	0.247	0.243
Cultivable waste	1.542	1.498
Permanent Pastures and other grazing land	3.166	2.998
Other fallow land	0.632	0.599
Total	24.237	26.018

Note: Based on the Land use Projections and Fodder Productivity
Govt of Karnataka (2001)

In order to arrive at the fodder availability from crop residues we have projected the two variables separately, namely, the area under the crops and the productivity of different crops (See, Appendix tables 4.7(a) and (b)). The estimates of crop residues are available as proportion of productivity. These are standardised for using in the State Domestic Product and once again has little scientific or rational basis. But there is no other source of data and, therefore, this is the best available source. These are given in Appendix table 4.8). The projections of crop residues are obtained using these crop residue multipliers. The results are presented in table 4.10. It can be seen that cereals and millets as a group has larger share of fodder. The new varieties of cereal introduced have less foliage in relation to grains. This has adversely affected the fodder grain ratio and that is going down significantly. It has been reported that the introduction of these

varieties has contributed to the fodder shortages (Shiva 1991) and the situation became worse when the demand for better quality fodder increased due to the new exotic varieties of livestock. The crop residues will provide about 2.40 lakh tonnes for fodder during 2005-06 and 2.55 lakh tonnes in 2010-11. It is quite possible that the profitability of dairy enterprise may provide incentives to the farmers to allocate more area towards fodder crops. The trends are already visible in Karnataka towards such change.

Table 4.10 : Forecasts for Crop Residues: Karnataka State

(In thousand tonnes)

Sl No	Crops	2005-06	2010-11
1	Rice	51.62	64.55
2	Jowar	45.93	47.22
3	Ragi	49.06	65.02
4	Maize	55.82	27.58
5	Bajra	7.60	12.45
6	Wheat	4.08	7.53
7	M.Millets	1.21	1.19
8	Tur	1.83	3.53
9	Bengalgram	1.68	2.54
10	Horsegram	2.84	3.60
11	Blackgram	0.64	1.16
12	Greengram	1.56	3.15
13	Cowpea & others	0.04	0.04
14	Avare	0.35	0.42
15	Groundnut	12.82	12.31
16	Sesamum	0.31	0.35
17	Sunflower	1.21	0.68
18	Castor	0.02	0.03
19	Niger	0.04	0.04
20	Soyabean	0.40	0.75
21	Safflower	0.41	0.27
22	Linseed	0.07	0.07
23	Cotton	0.15	0.15
24	Sugarcane	0.12	0.25
25	Total	239.79	254.88

Fodder Availability from other sources includes fodder supplied by the fodder development farms under various schemes, green fodder grown by the framers on the private lands, fodder grown on farm bunds and fodder purchased from other regions. It

is quite difficult to get time series of the estimates of fodder made available through these sources. Fodder farms have been producing green and dry fodder (See table 4.11). The fodder produced is largely used on the farm itself and there is hardly any surplus. But the farms have a capacity to produce about 15 thousand tonnes of green fodder and 1.5 thousand tonnes of dry fodder. The farms are also geared up to produce and distribute fodder seeds and during the last five years the farms have produced about 200 quintals of fodder seeds every year (See table 4.12).

Table 4.11: Fodder Produced on the State Farms During the Last Six Years

Year	Number of farms	Green Fodder			Dry Fodder			
		Quantity (in Tonnes)	Average rate per tonnes	Total value (Rs.in Lakhs)	Number of farms	Quantity (in tonnes)	Average rate per tonnes	Total value (Rs.in Lakhs)
1997-98	8	5175	500	25.97	5	900	810	7.29
1998-99	10	6970	503	35.07	7	556	821	4.56
1999-00	10	6237	533	33.24	9	406	825	3.35
2000-01	10	6912	528	36.49	9	647	834	5.39
2001-02	10	7206	594	42.8	10	495	922	4.56
2002-03	11	6340	677	42.92	11	973	1065	10.36

Source: Data collected from the State Farms, Department of Animal Husbandry and Veterinary Sciences.

Table 4.12: Fodder Seed Used and Distributed under the Strengthening of Fodder Seed Production Farm Scheme During the Last Six Years

(In quintals).

Year	Number of Farms	Fodder seed varieties on the farm										
		SAT Maize		Sorghum		Bajra		Ragi		Total		
		Used	Distri	Used	Distri	Used	Distri	Used	Distri	Used	Distri	Total
1997-98	5	8.15	175.7	0	0	0	0	0	0	8.15	175.7	183.85
1998-99	3	11.25	104.8	0	22	1	0	0	0	12.25	126.8	139.05
1999-00	5	12.8	240.6	0	0	0	0	0	0	12.8	240.6	253.4
2000-01	5	20.2	335.9	0	0	0	0	0	0	20.2	335.9	356.1
2001-02	5	30.6	161.9	0	0	0	0	0	91	30.6	252.9	283.5
2002-03	5	11.65	171	0	0	0	0	0	20	11.65	191	202.65
Grand total		**94.65**	**1190**	**0**	**22**	**1**	**0**	**0**	**111**	**95.65**	**1322.9**	**1418.55**

Source: Data collected from the State Farms, Department of Animal Husbandry and Veterinary Sciences.

The area under pure fodder crop is very meagre in the State and if the present time trend in the area under pure fodder is assumed, it is likely to decline further. Therefore, it is better to consider a target that will provide about 18 lakh tonnes of green fodder and 22 lakh tonnes of dry fodder by 2005. The State fodder farms have a capability of producing about 15 thousand tonnes of green fodder and 1.5 thousand

tonnes of dry fodder and that may add to the total fodder availability. This capacity can be further enhanced. The fodder available from field bunds is estimated at 24 lakh tonnes and by 2005 it is estimated to touch 30 lakh tonnes, and by 2010 that is expected to touch 40 lakh tonnes.

Table 4.13: Projections of Fodder Availability from Various sources

(In lakh tonnes)

	2005-06			2010-11		
Source	**Green**	**Dry**	**Total**	**Green**	**Dry**	**Total**
Land use categories	145	97.4	242.4	155.4	104.8	260.2
Farm bunds	20	10	30	28	12	40
Crop residues	1.5	0.89	2.39	1.55	1	2.55
Private farms	18	22	40	20	25	45
Purchased from outside the State	23	22	45	28	27	55
State arms	0.15	0.015	0.165	0.2	0.02	0.22
Total	207.65	152.305	359.955	233.15	169.82	402.97

4.8 Demand Forecasts

The Demand for fodder is dictated by various factors. The prominent among these are the livestock breed, the main purpose of the animal husbandry activity, age distribution of the livestock, the position of the livestock economy in the overall household economy and the number of hours of open grazing. It is difficult to get at a demand equation as theoretically it is infeasible to define and empirically not possible to estimate in the absence of the data. Therefore, we have adopted two distinct approaches. First deals with the normative requirement of the livestock as recommended by the veterinarians. The second approach is based on the survey data. We have conducted a wide - spread sample survey covering 245 households. The survey provided quite valuable data. However, as animal husbandry is still treated as subsidiary activity, the quality of the data is questionable. A simple example will illustrate the point. We asked the Head of the household about stall-feeding and the answer was that “Any one member of the household puts the straw and we do not count the straw bundles every day”. The estimates are based on the data obtained after careful interviews.

The first task to arrive at the demand projections requires estimates of future increase in the livestock. Taking the long run growth rate of livestock would have been disastrous as the fluctuations are wide and erratic. A better approach is the ‘Life Table’ approach used by Demographers, but that requires age distribution and reliable

estimates of fertility and mortality rates. These are not available. Therefore, we adopted the 'Most Feasible Growth Rate Approach' and that gives reliable estimates. The projections are based on the livestock population of the last two censuses. We have presented the forecasts of Livestock populations in Table 4.14. It is expected that by 2005 we may have 153 lakh cattles and that number may go up to 179 lakhs by 2010.

Table 4.14 Forecasts of Livestock Population in Karnataka

(Nos in lakhs)

		2005	**2010**
Cattle	**Male**	73.500	85.690
	Female	80.100	93.387
	Total	153.599	179.077
Buff	**Male**	8.623	10.048
	Female	40.912	47.674
	Total	49.535	57.722
Goat	**Female**	66.653	92.133
	Male	20.225	27.956
	Total	86.878	120.089
Sheep	**Female**	47.796	54.178
	Male	13.771	15.610
	Total	61.567	69.788

Note: Forecasts based on Most Feasible Growth Rates during 1983-92.

The buffalo population will be reaching 49.5 lakhs and that may further go up to 57.7 lakhs by 2010. The increase in the goat and sheep population has also been shown in the table. We have also estimated the population of sheep and goat in the state by 2005 and 2010. Based on the norms given in appendix table 4.9 we have estimated the demand for fodder of various types of livestock. Certain assumptions have been resorted to, in order to arrive at the best realistic estimates. These include the proportion of crossbreed livestock, age/ condition specific requirements, similar diet to different categories of livestock (once it is categorised as crossbreed and local) irrespective of the use, hours of open grazing etc. Therefore, the demand forecasts are fraught with many difficulties and thus, may give more an interval forecast than a point forecast. In other words, the forecast values have to be taken with 10 per cent margin on either side. We have presented the demand forecasts in table 5.15. It can be seen from the Table that by the year 2005-06 we may require 40.1 mill tonnes of green fodder, 28.9 mill tonnes

of dry fodder and 5.66 mill tonnes of concentrate. This will go up to 50.8, 33.59, and 7.65 mill tonnes for Green fodder, Dry fodder and Concentrate in the year 2010-11, respectively.

Table 4.15: Demand Forecasts of Fodder: 2005-06 and 2010-11

(In lakh tonnes)

Livestock		2005-06			2010-11		
		Green Fodder	Dry fodder	Concen-trate	Green fodder	Dry fodder	Concen-trate
Cattle	**M**	82.884	59.736	4.73	97.332	70.074	5.60
	F	90.33	65.1	5.15	106.08	76.368	6.11
	T	173.214	124.83	9.88	203.412	146.436	11.71
Buff	**M**	10.59	7.2	0.62	12.342	8.388	0.73
	F	50.262	34.152	2.95	58.566	39.798	3.44
	T	60.852	41.352	3.58	70.914	48.186	4.17
Goat	**M**	1.116	1.542	0.12	6.222	1.17	0.67
	F	3.672	5.076	0.38	20.37	3.732	2.14
	T	4.788	6.618	0.50	26.532	4.842	2.78
Sheep	**M**	0.762	0.858	0.08	3.498	0.816	0.38
	F	2.634	2.988	0.28	12	2.688	1.27
	T	3.396	3.846	0.35	15.444	3.45	1.63
	M	94.998	68.652	5.51	116.67	80.088	7.09
Total	**F**	145.86	105.222	8.65	188.646	121.542	12.08
	T	240.858	173.874	14.16	305.208	201.522	19.12

Note: M –Male; F – Female and T - Total

The projections of the normative demand for fodder in 2005-06 and 2010 indicate a clear gap between the two. Even though we have the best flexible assumptions the gap will be in the range of about 15 per cent of the present availability. The difference between the availability and requirement is sharp in terms of green fodder. That cannot be met through bulk purchases from outside the State. Further, the gap is likely to increase in future and that will be almost double of the 2005-6 level in the first decade i.e., by 2010-11. The concentrates are available from the production plants. Their installed capacity is of the order of 22.6 lakh tonnes per annum. In Karnataka, there were 94 feed manufacturing units with 15 lakh tonnes installed capacity in 1998-99. However, the actual production is slightly above 5 lakh tonnes. Over the period, the manufacturing units as well as the production is increasing. But the gap between the requirement and availability is huge to meet through the resources and therefore, the exotic livestock have to be fed more with indigenous fodder.

4.9 Conclusions.

The success of any forecasting exercise hinges greatly on the type of data available and the authenticity of the undergone assumptions. The ground realities pose severe challenges to such exercises and therefore amendments have to be made through assumptions. The test of the exercise depends on the closeness of these assumptions matching with the ground realities. We have reviewed here various available methods of forecasting and after keeping in view the available data (and quality of such data), we chose the best alternative available across the shelf. Given the fluctuations in the time-series of livestock and the scanty data on the fodder productivity on different land use categories, any regression based projection exercise would have been disastrous. Further, any projection exercise indicates only the trends in the future and should not be taken as point estimates. Therefore, our estimates are more indicative of the likely scenario. We estimated the availability of fodder through land put under various land use categories, fodder harvested from farm bunds, crop residues, fodder produced on privately owned farms and state farms. We have also arrived at the estimates of fodder purchased from outside the state based on some indicators. The demand (requirement) is arrived through the available norms as well as based on the field data collected from the households. The gap between the demand and supply comes to be about 15 per cent of the availability during 2005-06. That increases further to 20-30 per cent range by 2010-11. It is sharper in the green fodder and concentrates.

A few policy imperatives stem out for bridging this gap. First, it is necessary to step up supply of fodder from the various land use categories. Fodder grasses like *Cenchrus ciliaris, Penicum antidotale, Rhodes,Styylosanthus, Marvel, Setaria* and other such species may be recommended and seeds can be made available. This can be supplemented with fodder from trees like *Soobabul, Albizzia amara/ lebbach, Sesbania egyptica, glandiflora, Caliandra* etc. The fodder availability from forest needs to be enhanced substantially. Second, there should be good storage facilities for green and dry fodder; the fodder banks must function in the true sense of the terminology. Third, there is a need to recognise and promote livestock industry as an independent economic activity that will certainly give a boost to the sector. Fourth, incentives can be provided to the farmers who prefer to grow pure fodder crop on the lands un-suitable for other crops. This can be purchased by the state farms and sold to the needy farmers. The

data on livestock census as well as fodder availability needs quick attention. That will help in arriving at realistic and quick estimates. Lastly, the fodder farms have to play a dual role as a nodal fodder development agency as well as the extension institution for popularising fodder cultivation.

CHAPTER V

SUMMARY AND POLICY IMPLICATIONS

5.1. Introduction

Livestock provides livelihood to landless as also it helps to augment farm income for farming households. Livestock has an unique place in the farming system as it functions both as complementary as well as supplementary farm activity. Livestock plays important role for improving food and nutritional security by providing nutritious food. This sub-sector having strong forward and backward linkages of with other sectors in the economy has vast employment potential. In Karnataka, the gross value of output from this sub-sector is estimated at Rs. 70667 million in 2000-2001 compared to Rs. 5381 million in 1980-81 (GOK 2002). The value of output from livestock accounted for more than one fifth of the value of output from agriculture sector in the 1990s.

The farmers have to maintain livestock in good health by feeding the animals with nutritious feed and fodder. Most of the cereals, pulses and oil seed crops provide valuable feed and fodder in the form of crop residue/byproducts. Over time, the traditional method of grazing animals in the open has declined and the fodder has become a scarce item on account of various reasons. Decline in the arable and non-arable land due to increased industrialization and urbanization, expansion of housing, roads and other infrastructure also have adversely affected the fodder production. The most important reasons are: shrinkage and degradation of grazing lands, frequent droughts, changing cropping pattern, etc. Moreover, plant breeding research focused more on increasing grain yield with little or no consideration for by-product yield and quality. The emphasis on grain production has impinged on the production of fodder after the introduction of dwarf high yielding crop varieties in the farming systems. The shift from food crops (which has a sizable component of fodder) to cash crops or commercial agriculture has resulted in reduced production of byproducts which hitherto were used as fodder for milch and draught animals.

Large gap exits between the requirement and the actual availability of feed and fodder at the national level. The deficiency in feed and fodder is more conspicuous in arid and semi-arid regions. As per the Ministry of Environment and Forest, Government

of India (1993), India is short in dry fodder by 31 per cent, green fodder by 23 per cent and concentrates by 47 per cent. It is estimated that Karnataka would require 373.83 lakh MT of green fodder and 238.01 lakh MT of dry fodder by 2002. According to the trend up to now, Karnataka may face shortage of fodder in the coming years.

The thrust of the Government policy has been on increasing production of fodder crops and pasture grasses/legumes by using foundation/certified seeds of high yielding varieties, modern technology and improved agronomic practices. To reduce shortage of fodder, the Central Government has initiated two schemes a) Setting up of regional stations to grow fodder seeds and distribute to states and "Assistance to States for Feed & Fodder Development" to supplement efforts of State Governments in this sphere. Under the latter scheme, the Central assistance is provided to states to supplement their efforts for development of fodder to support livestock economy.

The Central government provides detailed guidelines to State governments for availing funds to implement CS/CSS related to fodder development programme. However, there are quite a few impediments or constraints in proper implementation of these schemes by the state governments. There are instances of laxity in the release of funds from Central government and therefore, delay in implementation of certain components of the schemes became an inevitable outcome. The government of Karnataka assigned the task of evaluating the Centrally sponsored feed and fodder schemes to the Institute for Social and Economic Change (ISEC), Bangalore, with the following objectives:

5.2 Objectives:

- To assess the effectiveness of all the schemes in improvement of fodder production
- To estimate fodder requirements in the livestock sector in a medium term perspective
- To look into the effectiveness of the schemes from the point of view of multiplicity of schemes with their objectives and explore possibilities of merger into a few effective programmes
- To evaluate the fodder development process and locate the growth inhibiting factors in fodder sector and

- To suggest ways and means to make the schemes more effective and serving the objectives set forth.

5.3 Methodology

The study used secondary as well as primary data. The secondary data were collected from the Department of Animal Husbandry and Veterinary Services, government of Karnataka and Annual Reports of various schemes operating in the Department of Fodder Development. The list of Livestock Breeding Farms /Training Centers in the state was obtained from the State Department of Animal Husbandry and Veterinary Services, Bangalore. The secondary data relating to financial allocations, actual releases and expenditure for each scheme were collected from 1995-96 to 2002-2003. The land use pattern at the district level from 1990-91 to 2000-2001 and Livestock census from 1961 to 1997 were collected to analyze the trends in area available for grazing and projection of fodder respectively.

Primary data were collected from various stakeholders by canvassing pre-tested structured schedules and questionnaires. The required data were collected from livestock breeding centres/farms, Beneficiary households and villages. Information were collected from (i) Livestock Breeding & Training Centre, Kurikuppe, (ii) Cattle Breeding & Training Centre, Munirabad, (iii) Livestock Breeding Centre, Dharwad, (iv) Buffaloes Breeding Centre, Tegur, (v) Khillar Cattle Breeding Centre, Bankapur, (vi) Livestock Breeding & Training Centre, Koila, (vii) Amrutmahal Cattle Breeding Farm, Ajjampura, (viii) Hallikar Cattle Breeding Station, Kunikenahalli, (ix) Jersey Cattle Breeding Farm, Kudigi, (x) State Livestock Breeding & Training Centre, Hesaraghatta and (xi) Livestock Breeding Farm, Hesaraghatta

The information was collected on various aspects like land use, infrastructure, fodder seed and fodder production, details about the financial and physical targets achieved in respect of feed and fodder schemes, etc. We also held discussions with the officials of the livestock breeding farms to ascertain the constraints faced by them in the implementation of schemes and suggestions for the effective implementation of CS/CSS of feed and fodder development.

5.4 Findings

5.4.1 About the Farms

- Some of the Livestock breeding farms in the state are about 400 years old. The Amrutmahal Cattle Breeding Farm at Ajjampur was established by the then Mysore Maharaja way back in 1617. Similarly, Buffalo Breeding Centre at Tegur was established in 1910 whereas the Khillar Cattle breeding station at Bankapur (Haveri) came up during 1919.
- A major objective of these livestock farms was to maintain the pure breed cattle and supply pure bred stock to the farmers for breeding purpose.
- Most of the farm had more than 100 cows/buffaloes and a large number of breeding bulls in the past. However, the number of cows as well as bulls on the farm has declined drastically due to change in priorities and objectives. Now the emphasis is on collection of semen for artificial insemination.

5.4.2. Land use on Livestock Farms

- Based on the information furnished by the livestock farms in the state, the total area under the control of State Livestock Farms and Amrutmahal Kawal was to the tune of 15,833 ha.
- The total area with the State Livestock Farms ranged from 55.64 ha at Khillar Cattle Breeding Center, Bankapur to more than 13,500 ha with the Amrutmahal Cattle Breeding Farm at Ajjampura.
- The overall cultivable area accounted for little more than 7 per cent of the total area and area under fodder was (2.86 per cent) less than 3 per cent.
- The cultivable area ranged from 2.49 per cent of the total area on Amrutmahal kaval farm, Ajjampura to 88 per cent of the area on the State livestock breeding and Training Farm, Hesaraghatta.
- Proportionate area under fodder was the highest (78 per cent) on livestock Breeding Farm, Dharwad, and the lowest least (1.02 per cent) on Ajjampur farm.
- Area for grazing cattle on Munirabad, Kunikenahalli, Koila and Ajjampura farms was around 30 or more than 30 per cent of the total area of the respective farms.
- Most of the farms have more than enough land under their control. However, lack of resources, man-power and proper planning leads to inefficient use of available land.

- Almost all the sub-centres of Amrutmahal Kawal, Ajjampur, Livestock breeding Farm, Kurikuppe, Hallikar Cattle Breeding Station, Kunkenhalli, etc. have lot of land which is not being used properly.
- The area irrigated during 2002-2003 on all the farms was 210.6 ha and it ranged from 4 ha on Jersey Cattle Breeding Farm, Kudige, to more than 30 ha on Munirabad and Hesaraghatta Farms.
- The rain-fed area under cultivation was almost nil on Kurikuppe and Munirabad farms when compared with more than 120 ha on Amrutmahal Cattle Breeding Farm, Ajjampura Livestock Breeding Farm, Hesaraghatta.

5.4.3. Livestock on the Farms

- Bankapur and Kunikenhalli Livestock farms have 24 Khillar and Hallikar cows whereas Ajjampura farm has 204 cows of Amrutmahal breed. Munirabad, Tegur and Koila Farm has 19, 39 and 6 murrrah/surti buffaloes.
- There are a total of 163 bulls on the livestock farms of which 50 bulls are on State Livestock Breeding and Training Farm, Hesaraghatta, and 34 on Livestock Breeding Farm, Hesaraghatta.
- Natural breeding is followed on Tegur, Bankapur, Kunikenhalli, Ajjampura farms for maintaining pure line breeds of Surti buffaloes, Khillar, Hallikar and Amrutmahal cattle breeds, respectively.

5.4.4. Fodder Seed and Fodder Production on Livestock Farms

- It appears that the Farms have continued their seed production programme in a routine manner without any change even after the implementation of CS and CSS programmes.
- Seed production activity on most of the farms is confined to South African Tall Maize. Only 4 to 5 per cent of the seed produced have been used on the farm and the rest was distributed to farmers in the form of minikits.
- Distribution of root slips of perennial grasses to farmers hovered around 14 to 15 lakhs till 2000 but drastically declined from 2001 (less than 5 lakhs)
- The total fodder production was 7,702 tonnes in 2001-2002 as against 6,096 tonnes during 1997-98.

- The green fodder produced on various State Livestock Breeding Farms during 2002-2003 ranged from 115 tonnes on Amrutmahal Cattle Breeding Farm, Ajjampura to 1,251 tonnes on the State Livestock Breeding and Training Centre, Hesaraghatta
- Dry fodder/hay produced at different farms during 2002-03 ranged from 20 tonnes at the Munirabad Livestock Farm to 390 tonnes on the Ajjampura farm.

5.5 Feed and Fodder Development Programmes

Various Central Schemes (CS) and Centrally Sponsored Schemes (CSS) of fodder development are being implemented in the state since 1993-94. Most of the schemes are implemented by the State Department of Animal Husbandry and Veterinary Science on the State livestock farms. The feed and fodder development schemes implemented in Karnataka are:

- Strengthening of State Fodder Seed Farms,
- Establishment of Fodder Bank
- Establishment of Silvipasture System
- Grassland Development including Grass Reserves
- Enrichment of Straw and Cellulosic Waste and
- Distribution of Minikits (fodder seeds)

5.5.1 Allocations and Releases

- In most of the schemes, the amount released both by the Centre and State has been less than the allocation made.
- The government released little more than 52 per cent of the allocations since 1995-96 to 2002-2003. Moreover, the actual expenditure incurred was less than the amount released resulting in huge unspent balance under some of the schemes.
- Among the schemes, the amount released was relatively less in respect of enrichment of straws and cellulose waste and grassland development including grass reserve schemes when compared to other schemes.
- The implementing agencies could not utilize the released funds as these were released at end of financial year (in the month of March) and sufficient time was not available for the implementation of the scheme.
- It is interesting to note that the State government took on average of 36 to 47 days to approve the proposals prepared by the State Department of Animal Husbandry.

Similarly, the Central government took 127 days to 245 days to accord sanction to the proposals sent by the state government.

- The unspent balances have been revalidated for the subsequent years. However, sometimes the revalidated amount also could not be used for the implementation of the scheme due to delay in the actual release of funds. In a few cases, revalidated amount was diverted to some other farm/s.

5.5.2 Implementation of CS/CSS and Utilization of Funds

- The grants / financial assistance provided under the specific CS/CSS was not spent as per the guidelines provided for the schemes
- Most of the assets created under CS/CSS are in good condition and functioning except jeeps due to lack of maintenance grants.
- Many farms have spent for solar powered fencing but it is not functioning on any of the farms.
- Schemes like Development of Silvipasture System was implemented on the state livestock farms, but without any outcome.
- Though the scheme like Development of Silvipasture System has provision for watering of plants and hiring of watch and ward staff, none of the farms followed this and ultimately the saplings planted withered due to lack of watering and absence of protection from stray animals.
- It is surprising that though the livestock farms produce tonnes of Farm Yard Manure, and they still spend lacks of rupees for the purchase of chemical fertilizers
- There are some instances where items like Television and VCR are also purchased from the funds meant for the implementation of silvipasture system
- The pits and trenches were dug for planting fodder trees under the silvipasture scheme but the saplings were never planted
- The area on the farms which was developed under grassland development scheme has not been maintained properly and wild growth and bushes occupy the area.
- Most of the sub-centres of Amrutmahal kawal have large area (arable and non-arable) under their control. The watch and ward staff i.e., so called Kawaldars are also in place. Despite this they could not collect the required hay and store it for emergencies. The cattle from many of these sub-centres were sent to forest area in Shimoga due to lack of fodder.

- None of the state livestock farm has stocked dry fodder/hay to meet the emergencies.
- As per the guidelines beneficiary farmer should get a Minikit containing 5 kg of fodder seed. However, there are cases where a few large farm households received 70 kg of fodder seed through Minikit scheme.
- The inputs/material supplied under the Enrichment of Straw and Cellulosic Waste was not as per the guidelines stipulated for the scheme. It was observed that urea distributed to the beneficiary farmers was less than envisaged in the scheme.
- The Enrichment of Straw and Cellulosic Waste scheme has a provision to provide labour wages for chaffing of hay but these were disbursed rarely.

5.5.3 Demand for and Supply of Fodder

- We have reviewed here various available methods of forecasting and after keeping in view the available data (and quality of such data),
- Projection exercise indicates only the trends in the future and should not be taken as point estimates. Therefore, our estimates are more indicative of the likely scenario.
- We estimated the availability of fodder through land put under various land use categories, fodder harvested from farm bunds, crop residues, fodder produced on privately owned farms and state farms.
- We have also arrived at the estimates of fodder purchased from outside the state based on some indicators.
- The demand (requirements), is arrived through the available norms as well as based on the field data collected from the households.
- The gap between the demand and supply comes to be about 15 percent of the availability during 2005-06. That increased further to 20-30 percent range by 2010-11. It is sharper in the green fodder and concentrates.

5.6 Measures for Overall Development of Fodder Suggestions

- The lands available with the State Livestock Farms are massive in area and needs proper land use planning.
- The land which cannot be managed by the Farms particularly lands with the sub-centres of Amrutmahal Kawal can be developed into social forestry/forestry by involving people from the nearby villages and the local NGOs.

- The participant households can be provided incentives like sharing the revenue generated from the activity. The venture can be on the lines of Joint Forest Management Committees.
- Fodder trees may be planted in the surplus land than is required to maintain the existing livestock on the farms taking the assistance of Forest Department, if necessary.
- The land use on Kurikuppe farm and total production of fodder with access to canal irrigation is totally disgusting despite the fact that the farm has around 40 D class employees and couple of tractors.
- There should be some mechanism to evaluate the performance of the farm/farm manager and the government should fix the responsibility for the failure of schemes. The farm managers should be provided some autonomy to take the important decisions.
- It should be emphasized that livestock farms should become self-sustaining using available land, water and manpower resources.
- Most of the Deputy directors/Assistant Directors incharge of the livestock farms expressed that the allocation provided for diesel is very low and hence unable to cultivate more area. Moreover, supply of electricity or load shedding also impinges upon the production of fodder, as area under irrigation is limited.
- In some of the farms, proportion of D class employees is too high and it seems it is difficult to extract work from them. In such a situation, government may think of offering Voluntary Retirement from the services. The further employment should be through out sourcing of manpower.
- If not all, at least important positions like agricultural officer/agricultural assistant should be field up so as to stream line fodder production.
- The guidelines provided for implementing the schemes should be strictly followed.
- The money spent on implementation of schemes like development of silvipasture and development of grassland including grass reserve on the farms is a colossal waste. However, this scheme has been dropped in recent years.
- The schemes like Kisan van and Gram van under the development of silvipasture system and development of grassland and grass reserves schemes can be implemented in better way by involving the local NGOs and peoples participation as in the case of watersheds.
- The livestock farms engaged in seed production purchase certified seeds from different agencies for multiplication of seed to be distributed through Minikits. These

farms should try to produce the required quantities of certified seeds on the farms by procuring foundation seeds. So that they will be able to save good amount of money.

- Distribution of grazing lands, forest and other wastelands to landless should be stopped.
- There should be active cooperation and coordination among the Department of Animal Husbandry, forest, agriculture and horticulture while implementing schemes like silvipasture system and development of grassland and grass reserves.
- Development of Common pool resources like community pasture/gomal lands/ waste and problem soils should be taken up with active participation of the village panchayat and the households.
- The fodder procurement and distribution may be undertaken on the lines of public distribution system. The organisation and administration of the programme may be entrusted to newly created Livestock Development Board.
- As crop production is not reliable due to frequent failure of rainfall the species such as Prosopis, Acacia, and Salvadora etc. may be grown to solve the fodder problem which withstand long dry spells and several weeks of flooding.
- The seeds suitable for growing fodder in dry conditions should be developed and distributed to the farmers.
- Periodical monitoring of Minikit and Enrichment Programmes should be undertaken by the Department of Animal Husbandry and Veterinary Sciences to see the utilisation of these schemes by the beneficiaries and prevent mis-use of the components provided under the schemes.
- All the tank bunds strengthened under the rejuvenation of tanks under World Bank programme at present have to be used for the raising of the fodder. Rootslips should be provided to water users association to plant on the bunds. The ongoing massive tank rehabilitation under World Bank assistance should have component of fodder scheme. Under this scheme all the tank bunds to be planted with root slips. This may be carried through the Tank Water Users Association (TUA.s). This will not only strengthen the bund also generates income through the sale; auction of fodder.
- The fodder growing can be encouraged by assuring better of buy back arrangement as practiced in the case of registered fodder seed growers. They have to be educated in growing conservable fodder and palatable PN grass.

- Development crop varieties with emphasis on fodder component needs emphasis. Crop diversification should be encouraged for maintaining fodder security for animals.
- Develop new technologies to grow fodder under rain-fed conditions.

REFERENCES

Alpha Agrotech Consultants (1998). Survey of Fodder and Feed Resources in Karnataka State – 1997-98, Report submitted to the Department of Animal Husbandry and Veternary Services, Govt of Karnataka, Bangalore.

Birthal, Pratap (2000). Technological Change in India's Livestock Sector and Its Impact. In Pratap Birthal, Anjani Kumar and Laxmi Tiwari (eds.,) Conference Proceedings of Livestock in Different Farming Systems in India. *Agricultural Economics Research Review*, 13-35.

Deshpande, R.S. (1988). Medium Term Perspective for Karnataka Agriculture. In Karnataka: Perspective Plan 2001, Report of the Expert Group (L C Jain Committee), Vol. II. Bangalore: Government of Karnataka.

Deshpande, R.S. (1996). Demand and Supply of Agricultural Commodities: A Review, Indian Journal of Agricultural Economics 51 (1 & 2) (Golden Jubilee issue).

Deshpande, R.S. and M.J. Bhende (2003). Land Resources and Policy in Karnataka, Working Paper No 132. Bangalore: Institute for Social and Economic Change, August 2003.

Deshpande, R.S. and K.V. Raju (2001). Rural Policy for Growth and Poverty Reduction. Bangalore: Agricultural Development and Rural Transformation Unit, Institute for Social and Economic Change.

Government of India (1985), Report of the Export Committee on the Role of the Centrally Sponsored Schemes in the Seventh Plan (Chairman, Ramamurti Committee 1985). New Delhi: Government of India. Mimeo.

Government of India (1987-88), Annual Plan- 1987-88. New Delhi: Planning Commission.

Government of Karnataka (1993). Report of the Expert Committee on Stagnation of Agricultural Productivity in Karnataka During 1980s (Chairman: T R Satishchandran). Bangalore: Government of Karnataka.

Govt. of Karnataka (2001). Perspective Land use Plan for Karnataka – 2025. Bangalore: Institute of Agriculture Technology, State Land Use Board, Govt. of Karnataka.

Shiva, Vandana (1991). *The Violence of the Green Revolution*. Penang: Third World Network.

Singh, P. and A.B. Mazumdar (1992). Current Status of Feed and Fodder Management of Livestock. *Agricultural Situation in India*, August. pp 375-382.

World Bank (1996). *India Livestock Sector Review: Enhancing Growth and Development..* Washington, D. C.: The World Bank.

Annexure 5: Financial Allocation and Expenditure for Strengthening of Fodder Seed Production Farm

(Rs. in lakhs)

Year	Name of the farms	Land development & fencing	Purchasing agricultural equipments	Installation of Borewells	Sprinkler irrigation facilities created	Others	Total
1993-94	L.B.C.D & H.C.B.C.K	0 (0)	6.79 (6.79)	0.97 (0.97)	0 (0)	0.26 (0.26)	8.02 (8.02)
1994-95	J.C.B.F.K	0.99 (0.99)	4.9 (4.9)	0.38 (0.38)	2.98 (2.98)	0.6 (0.6)	9.85 (9.85)
1995-96	L.B.T.C.K, C.B.T.C.M & L.B.T.C.K	8.75 (8.75)	8.25 (16.25)	0.5 (0.5)	2 (2)	6 (6)	25.5 (33.5)
1997-98	L.B.F.H	3 (3)	1 (1)	2.96 (2.96)	8 (8)	0.9 (0.9)	15.86 (15.86)
1998-99	L.B.T.C.K	0 (0)	0 (0)	0 (0)	0 (0)	10 (10)	10 (10)
1999-2000	K.C.B.C.B & J.C.B.F.K	3 (1)	0.5 (0)	3.43 (1.93)	4 (0)	1 (0)	11.93 (1.93)
2000-01*	H.C.B.C.K & L.B.T.C.K	8 (2.81)	1 (0)	1.5 (0)	4.5 (0)	1 (0)	16 (2.81)
2001-02*	H.C.B.C.K	2 (2)	1 (0)	1.5 (0)	4.5 (0)	1 (0)	10 (2)
2002-03*	H.C.B.C.K	0 (0)	1 (0)	1.5 (0)	4.5 (0)	1 (0)	8 (0)
Total		25.74 (17.55)	24.44 (28.94)	12.74 (6.74)	30.48 (12.98)	21.76 (17.76)	115.16 (83.97)

(Figures in Parentheses indicate expenditure)

1999-00* : Farm no 9 expenditure booked at the directorate office, Rs. 1 lakh spent at this office
2000-01: Rs.10 lakh revalidation in Kunikenahalli Farm
2001-02: Rs.8 lakhs revalidation in Kunikenahalli farm
2002-03: Rs.8 lakhs revalidation in Kunikenahalli farm

Name of the Farms	Abbreviations
Livestock Breeding & Training Centre, Kurikuppe	L.B.T.C.K
Cattle Breeding & Training Centre, Munirabad	C.B.T.C.M
Livestock Breeding Centre,Dharwad	L.B.C.D
Buffaloes Breeding Centre, Tegur	B.B.C.T
Khillar Cattle Breeding Centre, Bankapur	K.C.B.C.D
Hallikar Cattle Breeding Centre, Kunikenahalli	H.C.B.C.K
Livestock Breeding & Training Centre, Koila	L.B.T.C.K
Amruthamahal Cattle Breeding Farm, Ajjampura	A.C.B.F.A
Jersey Cattle Breeding Farm, Kudigi	J.C.B.F.K
State Livestock Breeding & Training Centre, H'ghatta	S.L.B.T.C.H
Livestock Breeding Farm, H'ghatta	L.B.F.H

Annexure 6: Physical Achievements in Strengthening of Fodder Seed Production Farm

Year	No. of Farms	Land development & fencing (in ha.)	Purchasing agricultural equipment (in Nos)	Drilling Borewells (Nos.)	Irrigation facilities (in ha.)	Others
1993-94	L.B.C.D & H.C.B.C.K	0	Tractor, Plough, Tiller, Seed bin,Sprinkler sets,	5(3)	0	24(2.5tonnes)
1994-95	J.C.B.F.K	6	Tractor, Seed grading, Seed bin,Sprinkler sets	0	0	0
1995-96	L.B.T.C.K,C.B.T.C.M & L.B.T.C.Ko	46	Tractor, Land leveller,Plough, Diesel generator, Sprinkler sets, Seed grading, Seed cleaner, Seed bean	2	8	0
1997-98	L.B.F.H	120	Seed cleaner	5(3)	24	7(1)
1999-2000	K.C.B.C.B & J.C.B.F.K	6	Electric pump & Sprinkler sets	6	0	0
2000-01	H.C.B.C.K & L.B.T.C.K	24	0	0	0	0
2001-02	H.C.B.C.K	9	0	0	0	0

Note: During 1997-98, 120 ha. fencing, 3 drilling Bore-wells, 3 pump-sets and 1 generator

Annexure 7: Fodder Seeds Produced and Distributed on the Farms During the Last Six Years

(in quintals)

Year	Number of farms	SAT maize		Sorghum		Bajra		Ragi		Total		Total
		Used	Distri	Used	Distri	Used	Distri	Used	Distri	Used	Distri	
1997-98	5	8.15	175.7	0	0	0	0	0	0	8.15	175.7	183.85
1998-99	3	11.25	104.8	0	22	1	0	0	0	12.25	126.8	139.05
1999-00	5	12.8	240.6	0	0	0	0	0	0	12.8	240.6	253.4
2000-01	5	20.2	335.9	0	0	0	0	0	0	20.2	335.9	356.1
2001-02	5	30.6	161.9	0	0	0	0	0	91	30.6	252.9	283.5
2002-03	5	11.65	171	0	0	0	0	0	20	11.65	191	202.65
Grand total		94.65	1190	0	22	1	0	0	111	95.65	1,322.9	1,418.55

Annexure 8 : Root Slips Distributed under the Strengthening of Fodder Seed Production Scheme

Year	Number of farms	Root slips (in lakhs)	Value (in Rupees)
1997-98	6	11.23	33,630
1998-99	5	14.55	44,030
1999-2000	6	14.35	43,050
2000-01	6	14,62	43,860
2001-02	6	5.1	15,580
2002-03	6	3.98	15,020

Annexure 9: Total Expenditure on Different Items under Fodder Bank Scheme.

(Non-recurring)

(Rs. in lakhs)

S.No.	Name of the items	1	2	3	4	5	6	7	8	9	10	11	Total
1	Shelter	0	0	0	0	0	0	0	0	0	0	0	0
2	Jeep	2.3	0	0	2.03	NA	0	0	0	0	0	0	4.33
3	Fire equipment	0	0	0	1	0	0	4.99	2	0	0	0	7.99
4	Equt for urea molasses crocks	0	0	0	0	0	0	0	0	0	0	0	0
5	Godown for storage of mash	1.5	0	0	0	0	0	0	0	0	0	0	1.5
6	Watchman room	0	0	0	0	0	0	0	0	0	0	0	0
7	Chaff cutter	0	0	0	0.6	0	0	0	1	0	0	0	1.6
8	Chaff cum grinder	0	0	0	0	0	0	0	0	0	0	0	0
9	Molasses store tank	0	0	0	0	0	0	0	0	0	0	0	0
10	Borewells with pipelines	0	0	0	0	0	0	0	0	0	0	0	0
11	Tractor	0	0	0	3	0	0	0	5	0	0	0	8
12	Fencing	0	0	0	0	0	0	0	0	0	0	0	0
13	others	0	0	0	0	0	0	0	0	0	0	0	0
Total		3.8	0	0	6.63	0	0	4.99	8	0	0	0	23.42

Annexure 10: Status of Infrastructure created Under the Establishment of Fodder Bank Scheme
(Functioning -1 and not functioning-2)

Name of the items	1	2	3	4	5	6	7	8	9	10	11	Total
Shelter	0	0	0	0	0	0	0	0	0	0	0	0
Jeep	1	0	0	2	1	0	0	0	0	0	0	4
Fire equipment	1	0	0	2	1	0	0	0	0	0	0	4
Equt for urea molasses crocks	0	0	0	0	0	0	0	0	0	0	0	0
Godown for storage of mash	1	0	0	0	0	0	0	0	0	0	0	1
Watchman room	0	0	0	0	0	0	0	0	0	0	0	0
Chaff cutter	0	0	0	1	0	0	0	1	0	0	0	2
Chaff cum grinder	0	0	0	0	0	0	0	0	0	0	0	0
Molasses store tank	0	0	0	0	0	0	0	0	0	0	0	0
Borewells with pipelines	0	0	0	0	0	0	0	0	0	0	0	0
Tractor	0	0	0	1	0	0	0	1	0	0	0	2
Fencing	0	0	0	0	0	0	0	0	0	0	0	0
other	0	0	0	0	0	0	0	0	0	0	0	0

Annexure 11: Financial Allocation and Expenditure for the Purchase of Fodder under the Fodder Bank Scheme (Recurring)

(Rs. in lakhs)

Year	No. of Farms	Components/Particulars					Total
		Quantity of dry F purchased from farmers	Jowar, maize straws purchased from farmers	Minerals & Vitamins purchased	Lying of pipeline	Others	
1997-98	A.C.B.F.A &L.B.T.C.K	0 (0)	1.95 (1.92)	2.51 (2.51)	0 (0)	1.65 (1.65)	6.11 (6.08)
1999-00	L.B.T.C.K & A.C.B.F.A	0 (0)	2 (1.49)	4.34 (4.34)	0 (0)	0.8 (0.790	7.14 (6.62)
2001-02	B.B.C.T & K.C.B.C.B	0 (0)	0 (0)	1.6 (1.58)	1.75 (1.75)	1.75 (1.26)	5.1 (2.84)
2002-03	B.B.C.T	2.4 (0)	0 (0)	0.53 (0.53)	0 (0)	0 (0)	2.93 (0.53)
Grand Total		2.4 (0)	3.95 (3.41)	8.98 (8.96)	1.75 (1.75)	4.2 (3.7)	21.28 (16.07)

(Figures in Parentheses are expenditure)

Annexure 12: Physical Achievements under the Fodder Bank Scheme

Years	Number of Farms	Components/Particulars				Total
		Quantity of dry fodder purchased from farmers (in tonnes)	Jowar, maize straws purchased from farmers (in tonnes)	Minerals & Vitamins purchased (in tonnes)	Pipeline	
1997-98	A.C.B.F.A &L.B.T.C. K	0	245	3.86	0	**Tube-2, Tyres-4 &200***
1999-2000	L.B.T.C.K o & A.C.B.F.A	0	150	4.5	0	136*
2001-02	B.B.C.T & K.C.B.C.B	0	0	1.4	428mtr	Electric pump, Slushier, Water tank & 50*
2002-03	B.B.C.T	0	0	19.44	0	0

Note:
1997-98 200* tonnes collected fodder
1999-2000 136* harvesting fodder
2001-02 50* tonnes collected fodder

Annexure 13: Financial Allocation and Expenditure for the Establishment of Silvipasture System

(Rs. in lakhs)

Components	Allocation			Expenditure		
	1997-98	2001-02	Total	1997-98	2001-02	Total
Name of the Farm	L.B.C.D, B.B.C.T& H.C.B.C.K	A.C.B.F. A		L.B.C.D, B.B.C.T& H.C.B.C.K	A.C.B.F. A	
A. Kisanvan						
Trench & Aguve Fencing	1	0	1	1	0	1
Land Development	0.45	0	0.45	0.45	0	0.45
Purchased fodder seeds & plants	1	0	1	1	0	1
Fertiliser	0.25	0	0.25	0.25	0	0.25
Labour	0.25	0	0.25	0.25	0	0.25
Training for Silvipasture	0	0	0	0	0	0
Pesticides	0.1	0	0.1	0.1	0	0.1
No.of trees	0	0	0	0	0	0
Others	0.25	0	0.25	0.25	0	0.25
Total	3.3	0	3.3	3.3	0	3.3
B.Gramvan						
Trench & Agare Fencing	4	12	16	4	12	16
Land devt	0.9	3	3.9	0.9	2.98	3.88
Purchased Fodder Seeds & plants	4	3	7	4	2.81	6.81
Fertiliser	1.5	2	3.5	1.5	1.99	3.49
Cost of labour	0.5	4	4.5	0.5	3.99	4.49
No.of trees	0	0	0	0	0	0
Pesticides	0.2	0	0.2	0.2	0	0.2
Agri-equipments	0.5	0	0.5	0.49	0	0.49
Diesel generator	0.5	0	0.5	0.5	0	0.5
Sprinkler sets	1	0	1	1	0	1
Others	0.4	1.98	2.38	0.4	1.98	2.38
Total	13.5	25.98	39.48	13.49	25.75	39.24
Grand total	20.1	25.98	46.08	16.79	25.75	42.54

Annexure 14: Financial Allocation and Expenditure for the Grassland Development Including Grass Reserves
(Rs. in lakhs)

Years	Name of the farm	Components									Total
		Land develop-ment	Sheds	Fencing	Borewell, pumps & pipeline	Purchase of agri. implements	Purchased fodder seeds	Purchased fertilizer	Labour	Other	
1997-98	A.C.B.F.A	0.25 (0.25)	1.5 (1.5)	1 (1)	2.5 (2.4)	0.25 (0.22)	1.5 (1.5)	0.25 (0.25)	0.25 (0.25)	0 (0)	7.5 (7.37)
1998-99	L.B.T.C.K	0.5 (0)	2.5 (2.5)	1 (0)	3.5 (2.5)	0 (0)	2 (2)	0 (0)	0.5 (0)	0 (0)	10 (7)
2000-01	H.C.B.C.K	0.6 (0)	0.7 (0)	0 (0)	2 (0)	0.22 (0)	0 (0)	0.4 (0)	0.6 (0)	0.27 (0)	4.79 (0)
2001-02	H.C.B.C.K & A.C.B.F.A	4.8 (4.13)	2.1 (1.4)	1.8 (1.8)	8.9 (1.2)	1 (0.78)	2.99 (2.99)	1.8 (1.4)	0.6 (0)	0.27 (0.78)	24.26 (14.48)
2002-03	H.C.B.C.K	0.6 (0)	0 (0)	0 (0)	2 (0)	0.22 (0)	0 (0)	0.4 (0)	0.65 (0)	0.27 (0)	4.14 (0)
Total		6.75 (4.38)	6.8 (5.4)	3.8 (2.8)	18.9 (6.1)	1.69 (1)	6.49 (6.49)	2.85 (1.65)	2.6 (0.25)	0.81 (0.78)	50.69 (28.85)

(Figures in Parentheses indicate expenditure)

Annexure 15: Physical Achievement of the Grassland Development Including Grass Reserves

Years	Number of Farms	Components								
		Land development (ha.)	Sheds (No's)	Fencing (ha.)	Borewell, pump & pipeline (No's)	Purchased agricultural equipment (No's)	Purchased fodder seeds (in tonnes)	Purchased fertilizer (in tonnes)	Labour	other
1997-98	H.C.B.C.K	30	1	4500 r.ft	1,2,1	1	4.28	6.6	0	0
1998-99	L.B.T.C.K	0	1	0	3	0	5.7	0	0	0
2001-02	H.C.B.C.K A.C.B.F.A	90	2	1651 ft	2	257 units	6.58	2.25	0	2992litres

Note: 1997-98 1-borewell, 2-pumps & 1-pipeline

Annexure 16(a): Population of Male Cattle (Rural & Urban) in Karnataka from 1961-92

District	Rural						Urban					
	1961	1966	1972	1977	1983	1992	1961	1966	1972	1977	1983	1992
Bangalore(R)	136,025	205,670	151,009	146,250	204,532	181,447	9,171	12,453	4,991	4,804	9,353	7,947
Bangalore(U)	0	0	0	0	0	53,882	0	0	0	0	0	4,282
Belgaum	247,614	293,043	250,240	260,736	320,466	394,631	11,448	12,612	13,248	13,668	16,072	18,082
Bellary	165,767	183,589	167,028	151,155	243,429	331,515	10,128	1,7662	10,887	12,812	20,211	24,543
Bidar	120,737	185,365	93,369	88,409	156,541	166,985	4,207	3,498	3,999	2,944	5,326	9,670
Bijapur	205,130	301,272	214,707	227,112	297,599	370,167	8,827	9,892	14,328	15,643	17,415	16,815
Chickmaglur	141,626	190,478	157,069	171,504	210,932	249,177	6,287	6,428	5,245	5,926	6,549	6,679
Chitradurga	226,576	258,278	225,053	243,772	354,410	330,238	6,499	8,981	7,087	4,501	6,127	6,882
D. Kannada	160,213	241,501	151,617	142,198	206,361	224,217	1,540	4,826	2,197	2,815	7,697	8,505
Dharwad	276,132	340,826	283,823	301,848	392,465	490,257	25,460	31,770	27,488	34,022	43,660	43,410
Gulburga	276,443	340,446	264,152	239,280	412,857	503,335	8,710	22,781	10,256	12,254	15,776	28,309
Hassan	197,605	246,204	184,588	191,419	351,024	324,533	3,746	5,606	3,615	3,467	6,799	4,951
Kodagu	69,086	36,843	70,149	77,923	92,689	101,026	156	39,778	1,218	1,292	1,837	1,418
Kolar	178,443	227,811	188,535	197,229	235,686	264,606	9,587	7,501	5,239	4,572	5,295	5,802
Mandya	122,153	178,382	139,408	130,547	150,934	158,784	4,125	5,923	4,881	5,550	5,805	5,130
Mysore	259,557	357,994	266,812	273,435	348,948	444,860	14,310	23,343	11,494	8,451	16,192	13,208
Raichur	216,434	248,841	217,562	227,893	353,169	432,365	11,213	11,103	12,630	10,151	14,290	16,730
Shimoga	226,505	314,515	269,133	261,467	370,526	438,832	12,349	16,404	12,423	10,006	12,984	12,172
Tumkur	232,254	288,326	217,516	241,104	291,545	356,346	4,697	8,023	4,338	5,636	6,221	5,409
U. Kannada	114,146	164,248	130,246	139,074	186,537	236,222	4,020	11,701	3,979	6,688	9,191	10,962
Grand Total	**3,572,446**	**4,603,632**	**3,642,016**	**3,712,355**	**5,180,650**	**6,053,425**	**156,480**	**260,285**	**159,543**	**165,202**	**226,800**	**250,906**

Annexure 16(b):Total Population of Male Cattle in Karnataka from 1961-92

District	1961	1966	1972	1977	1983	1992
Bangalore (R)	145,196	218,123	156,000	151,054	213,885	189,394
Bangalore (U)	0	0	0	0	0	58,164
Belgaum	259,062	305,655	263,488	274,404	336,538	412,713
Bellary	175,895	201,251	177,915	163,967	263,640	356,058
Bidar	124,944	188,863	97,368	91,353	161,867	176,655
Bijapur	213,957	311,164	229,035	242,755	315,014	386,982
Chickmaglur	147,913	196,906	162,314	177,430	217,481	255,856
Chitradurga	233,075	267,259	232,140	248,273	360,537	337,120
D. Kannada	161,753	246,327	153,814	145,013	214,058	232,722
Dharwad	301,592	372,596	311,311	335,870	436,125	533,667
Gulburga	285,153	363,227	274,408	251,534	428,633	531,644
Hassan	201,351	251,810	188,203	194,886	357,823	329,484
Kodagu	69,242	76,621	71,367	79,215	94,526	102,444
Kolar	188,030	235,312	193,774	201,801	240,981	270,408
Mandya	126,278	184,305	144,289	136,097	156,739	163,914
Mysore	273,867	381,337	278,306	281,886	365,140	458,068
Raichur	227,647	259,944	230,192	238,044	367,459	449,095
Shimoga	238,854	330,919	281,556	271,473	383,510	451,004
Tumkur	236,951	296,349	221,854	246,740	297,766	361,755
U. Kannada	118,166	175,949	134,225	145,762	195,728	247,184
Grand Total	3,728,926	4,863,917	3,801,559	3,877,557	5,407,450	6,304,331

Note: For the Census Years 1983 & 1992, separate data are available for Cross-breed and Indigenous breeds Here, we have taken the total of the two for these years to retain comparability.

Source: Livestock Census of Karnataka, for various Years

Annexure 17(a): Number of Female Cattle (Rural & Urban) in Karnataka from 1961-92

Districts	Rural						Urban					
	1961	**1966**	**1972**	**1977**	**1983**	**1992**	**1961**	**1966**	**1972**	**1977**	**1983**	**1992**
Bangalore (R)	368,037	440,392	370,042	378,826	477,885	142,917	24,207	36,750	46,646	46,053	56,564	25,317
Bangalore (U)	0	0	0	0	0	393,442	0	0	0	0	0	10,125
Belgaum	122,617	171,922	126,559	135,350	204,800	233,409	6,768	9,669	7,847	8,804	12,836	14,149
Bellary	102,735	139,348	116,408	106,518	191,980	246,111	7,140	14,643	7,858	11,742	20,333	22,887
Bidar	108,158	140,060	94,885	76,260	166,233	165,050	2,754	2,572	3,632	2,668	5,613	10,408
Bijapur	129,966	228,284	141,108	148,248	245,559	269,547	5,440	7,565	9,869	10,769	16,238	16,062
Chickmaglur	142,342	193,294	160,117	175,085	231,351	284,721	6,908	9,716	8,571	8,720	11,346	9,869
Chitradurga	161,112	208,702	155,469	154,199	244,156	244,029	6,704	9,813	6,974	5,772	8,815	8,819
D .Kannada	195,052	305,775	226,132	234,197	411,591	565,617	11,888	18,782	18,734	19,444	30,225	38,165
Dharwad	150,632	219,282	167,179	186,277	277,103	293,028	10,907	18,538	14,579	19,482	32,555	28,765
Gulburga	185,701	284,649	189,040	158,270	358,042	440,523	5,495	15,944	7,862	8,682	16,273	28,075
Hassan	252,360	327,950	248,415	249,503	336,824	418,385	6,951	9,491	7,344	7,214	13,587	11,721
Kodagu	56,381	34,955	2,747	64,422	86,295	97,325	956	42,190	2,747	2,672	3,868	2,710
Kolar	216,120	266,340	212,316	223,173	314,625	355,528	16,036	11,625	9,745	7,496	15,971	9,931
Mandya	149,872	186,914	144,291	154,254	243,634	307,388	6,132	8,532	7,264	7,747	10,756	11,492
Mysore	333,414	419,287	348,968	277,058	561,622	633,950	22,249	34,223	23,356	16,504	62,473	29,533
Raichur	117,498	176,120	136,716	141,678	260,303	335,991	6,570	6,550	9,408	6,361	12,490	15,861
Shimoga	200,418	316,348	272,448	272,841	390,466	451,738	13,293	18,211	14,696	12,935	18,471	21,352
Tumkur	255,060	306,534	227,399	201,507	336,187	417,953	6,210	10,462	5,285	5,538	8,701	7,003
U. Kannada	92,499	151,836	118,664	122,550	182,130	234,125	6,005	18,096	6,770	9,369	14,872	17,272
Grand Total	**3,339,974**	**4,517,992**	**3,458,903**	**3,460,216**	**5,520,786**	**6,530,777**	**172,613**	**303,372**	**219,187**	**217,972**	**371,987**	**339,516**

Note: As in AnnexureTable 5.1 (a)

Annexure 17(b): Population of Female Cattle in Karnataka from 1961-92

District	1961	1966	1972	1977	1983	1992
Bangalore (R)	392,244	477,142	416,688	424,879	534,449	168,234
Bangalore (U)	0	0	0	0	0	403,567
Belgaum	129,385	181,591	134,406	144,154	217,636	247,558
Bellary	109,875	153,991	124,266	118,260	212,313	268,998
Bidar	110,912	142,632	98,517	78,928	171,846	175,458
Bijapur	135,406	235,849	150,977	159,017	261,797	285,609
Chickmaglur	149,250	203,010	168,688	183,805	242,697	294,590
Chitradurga	167,816	218,515	162,443	159,971	252,971	252,848
D. Kannada	206,940	324,557	244,866	253,641	441,816	603,782
Dharwad	161,539	237,820	181,758	205,759	309,658	321,793
Gulburga	191,196	300,593	196,902	166,952	374,315	468,598
Hassan	259,311	337,441	255,759	256,717	350,411	430,106
Kodagu	57,337	77,145	5,494	67,094	90,163	100,035
Kolar	232,156	277,965	222,061	230,669	330,596	365,459
Mandya	156,004	195,446	151,555	162,001	254,390	318,880
Mysore	355,663	453,510	372,324	293,562	624,095	663,483
Raichur	124,068	182,670	146,124	148,039	272,793	351,852
Shimoga	213,711	334,559	287,144	285,776	408,937	473,090
Tumkur	261,270	316,996	232,684	207,045	344,888	424,956
U. Kannada	98,504	169,932	125,434	131,919	197,002	251,397
Grand Total	**3,512,587**	**4,821,364**	**3,678,090**	**3,678,188**	**5,892,773**	**6,870,293**

Annexure 18(a): Population of Male Buffaloes (Rural & Urban) in Karnataka from 1961-92

District	Male Buffaloes												
	Rural						Urban						
	1961	1966	1972	1977	1983	1992	1961	1966	1972	1977	1983	1992	
Bangalore(R)	4183	14654	4913	3223	11456	13955	244	1774	3100	136	939	529	
Bangalore(U)	0	0	0	0	0	4978	0	0	0	0	0	804	
Belgaum	23667	57456	20233	22367	61592	71966	673	2400	528	667	2426	2611	
Bellary	3479	86731	2968	2728	15733	25921	454	11213	933	412	1866	1690	
Bidar	6049	19010	5452	1982	16858	16940	68	556	173	62	827	1174	
Bijapur	3018	30911	3063	3170	27095	36782	362	1380	355	373	1864	2511	
Chickmaglur	11400	17245	10517	10900	18477	26285	576	603	84	160	509	683	
Chitradurga	11560	29378	8271	9968	38215	40896	501	1908	217	87	1159	1116	
D. Kannada	142098	138286	124161	128802	141397	127699	2418	2603	6219	6354	5190	4449	
Dharwad	8184	38278	7064	7399	29565	31455	452	3015	576	814	18799	2784	
Gulburga	14488	35657	7185	6092	27362	32204	694	2523	451	501	1871	3160	
Hassan	6134	15551	4913	4940	19659	37703	76	1565	75	37	565	588	
Kodagu	17597	9616	16616	19914	24156	27272	126	5258	100	207	385	273	
Kolar	7259	20982	5227	4947	18624	22267	224	1077	155	148	485	602	
Mandya	2590	16758	2422	2915	13982	21463	97	627	91	179	541	481	
Mysore	4509	15725	6605	4640	13068	20625	231	2566	685	180	529	1457	
Raichur	4933	26389	8233	4022	22886	28252	540	1753	571	226	1035	1669	
Shimoga	18189	37464	19380	17841	35799	52521	270	1576	330	754	1031	2179	
Tumkur	10925	24908	10826	6474	26161	34289	225	1078	140	73	977	698	
U Kannada	20847	32642	21828	22643	30722	35209	1146	1615	625	626	1198	1815	
Grand Total	**321109**	**667641**	**28987 7**	**284967**	**592807**	**708682**	**9377**	**45090**	**1540 8**	**11996**	**42196**	**31273**	

Source: Livestock Census of Karnataka, for various Years.

Annexure 18(b): Population of Male Buffaloes in Karnataka from 1961-92

District	Male Buffaloes Total					
	1961	1966	1972	1977	1983	1992
Bangalore (R)	4,427	16,428	8,013	3,359	12,395	14,484
Bangalore (U)	0	0	0	0	0	5,782
Belgaum	24,340	59,856	20,761	2,3034	64,018	74,577
Bellary	3,933	97,944	3,901	3,140	17,599	27,611
Bidar	6,117	19,566	5,625	2,044	17,685	18,114
Bijapur	3,380	32,291	3,418	3,543	28,959	39,293
Chickmaglur	11,976	17,848	10,601	11,060	18,986	26,968
Chitradurga	12,061	31,286	8,488	10,055	39,374	42,012
D. Kannada	144,516	140,889	130,380	135,156	146,587	132,148
Dharwad	8,636	41,293	7,640	8,213	48,364	34,239
Gulaburga	15,182	38,180	7,636	6,593	29,233	35,364
Hassan	6,210	17,116	4,988	4,977	20,224	38,291
Kodagu	17,723	14,874	16,716	20,121	24,541	27,545
Kolar	7,483	22,059	5,382	5,095	19,109	22,869
Mandya	2,687	17,385	2,513	3,094	14,523	21,944
Mysore	4,740	18,291	7,290	4,820	13,597	22,082
Raichur	5,473	28,142	8,804	4,248	23,921	29,921
Shimoga	18,459	39,040	19,710	18,595	36,830	54,700
Tumkur	11,150	25,986	10,966	6,547	27,138	34,987
U. Kannada	21,993	34,257	22,453	23,269	31,920	37,024
Grand Total	**330,486**	**712,731**	**305,285**	**296,963**	**635,003**	**739,955**

Source: Livestock Census of Karnataka, for various Years.

Annexure 19(a): Population of Female Buffaloes (Rural & Urban) in Karnataka from 1961-92

District	Female Buffaloes											
	Rural						Urban					
	1961	1966	1972	1977	1983	1992	1961	1966	1972	1977	1983	1992
Bangalore (R)	92417	114737	93934	103588	132029	106561	11797	14249	16664	173114	15079	4269
Bangalore (U)	0	0	0	0	0	28089	0	0	0	0	0	5632
Belgaum	185985	282483	228655	254013	408989	488710	11947	15616	17097	17070	28492	29379
Bellary	69406	101520	69668	63135	105851	146035	5517	13271	6394	10183	16450	17899
Bidar	57347	77308	57462	54209	115801	123233	2996	3153	3842	3234	6467	10286
Bijapur	105185	177615	114074	126293	208603	254197	7499	9889	11985	13023	18859	18451
Chickmagalur	38144	46122	35312	40108	62761	88891	3699	4427	7387	3174	4441	5016
Chitradurga	114611	153174	123201	136339	193601	229040	7049	10890	8519	7380	10513	10305
D. Kannada	48763	61304	41643	42846	59737	55695	2623	2899	2608	2687	2879	2284
Dharwad	136741	193133	136758	154308	221392	231293	16072	25044	21163	24332	29648	27780
Gulburga	83066	114705	75444	63565	127751	160129	5023	12929	5404	7859	12873	13510
Hassan	77805	83145	73182	81872	126998	166444	2648	6561	3121	2882	4746	6592
Kodagu	10977	5401	12247	13728	21547	27794	622	7124	952	1142	1013	868
Kolar	65847	92668	81322	92746	151727	142979	5880	5579	5837	5826	6768	5431
Mandya	101460	134929	98495	100947	176046	206972	3441	4178	4422	5092	6180	5777
Mysore	92341	109232	89692	91823	126938	148228	8023	11051	3526	4277	5371	4812
Raichur	68545	102283	79194	83600	137650	177571	5812	7168	8468	6790	10167	13225
Shimoga	89120	127775	103247	99320	161398	227036	8563	10579	9215	7208	8903	10015
Tumkur	88161	120237	99620	124287	208527	217934	4188	6415	4771	5772	7903	6376
N. Kannada	39542	57496	44842	43826	63697	80752	2758	4910	2383	3671	5169	5457
Grand Total	**1565463**	**2155267**	**1657992**	**1770553**	**2811043**	**3307583**	**116157**	**175932**	**143758**	**304716**	**201921**	**203364**

Source: Livestock Censes of Karnataka, for various Years.

Annexure 19(b): Total Population of Female Buffaloes in Karnataka from 1961-92

District	Female Buffaloes					
	Total					
	1961	1966	1972	1977	1983	1992
Bangalore (R)	104,214	128,986	110,598	276,702	147,108	110,830
Bangalore (U)	0	0	0	0	0	33,721
Belgaum	197,932	298,099	245,752	271,083	437,481	518,089
Bellary	74,923	114,791	76,062	73,318	122,301	163,934
Bidar	60,343	80,461	61,304	57,443	122,268	133,519
Bijapur	112,684	187,504	126,059	139,316	227,462	272,648
Chickmagalur	41,843	50,549	42,699	43,282	67,202	93,907
Chitradurga	121,660	164,064	131,720	143,719	204,114	239,345
D. Kannada	51,386	64,203	44,251	45,533	62,616	57,979
Dharwad	152,813	218,177	157,921	178,640	251,040	259,073
Gulburga	88,089	127,634	80,848	71,424	140,624	173,639
Hassan	80,453	89,706	76,303	84,754	131,744	173,036
Kodagu	11,599	12,525	13,199	14,870	22,560	28,662
Kolar	71,727	98,247	87,159	98,572	158,495	148,410
Mandya	104,901	139,107	102,917	106,039	182,226	212,749
Mysore	100,364	120,283	93,218	96,100	132,309	153,040
Raichur	74,357	109,451	87,662	90,390	147,817	190,796
Shimoga	97,683	138,354	112,462	106,528	170,301	237,051
Tumkur	92,349	126,652	104,391	130,059	216,430	224,310
U. Kannada	42,300	62,406	47,225	47,497	68,866	86,209
Grand Total	**1,681,620**	**2,331,199**	**1,801,750**	**2,075,269**	**3,012,964**	**3,510,947**

Source: Livestock Census of Karnataka, for various Years.

Annexure 20(a): Population of Male Goats (Rural & Urban) in Karnataka from 1961-92

District	Male Goats											
	Rural						Urban					
	1961	1966	1972	1977	1983	1992	1961	1966	1972	1977	1983	1992
Bangalore (R)	40,778	49,037	23,356	16,527	66,008	70,503	1,285	920	519	542	2,312	1,722
Bangalore (U)	0	0	0	0	0	23,421	0	0	0	0	0	1,498
Belgaum	16,709	47,461	9,711	12,978	53,339	106,393	1,093	2,444	537	630	3,637	5,394
Bellary	16,816	29,640	17,200	7,435	42,316	73,593	1,496	2,081	876	817	3,986	3,437
Bidar	12,992	15,970	8,850	5,730	24,254	30,923	456	405	196	332	1,291	2,155
Bijapur	31,010	59,135	18,995	18,579	76,088	129,756	1,959	1,748	1,270	1,193	6,727	7,248
Chickmaglur	8,986	12,148	7,913	7,710	20,325	31,057	472	482	969	494	575	1,122
Chitradurga	27,424	43,206	19,965	12,493	88,608	90,090	914	1,610	598	337	1,638	1,622
D. Kannada	3,649	6,202	2,548	2,718	9,871	10,456	466	835	253	361	1,065	1,155
Dharwad	17,548	37,454	15,706	14,803	53,925	91,866	2,783	3,814	4,031	3,859	6,394	15,849
Gulburga	40,519	39,169	20,403	22,830	88,506	105,094	820	2,906	963	1,340	3,330	5,859
Hassan	27,366	45,071	16,398	13,389	53,373	71,100	425	1,189	301	161	969	743
Kodagu	1,458	307	792	933	3,607	4,352	10	1,132	125	101	295	259
Kolar	44,673	63,550	28,637	18,811	109,496	88,506	2,569	2,150	975	965	4,544	5,489
Mandya	21,142	32,404	11,794	11,440	59,959	75,247	510	550	187	223	1,380	1,520
Mysore	46,777	41,759	32,023	32,620	74,272	136,122	2,107	2,263	837	606	1,893	1,908
Raichur	23,015	41,117	12,565	10,374	54,474	74,259	1,039	3,483	1,231	413	2,273	3,597
Shimoga	15,166	22,105	17,632	12,479	35,885	47,473	959	619	659	357	1,084	1,711
Tumkur	44,949	60,905	31,813	22,402	92,765	131,258	671	1,131	623	502	1,611	2,167
U. Kannada	480	1,545	1,319	1,292	5,875	6,615	84	180	187	184	552	604
Grand Total	**441,457**	**648,185**	**297,620**	**245,543**	**1,012,946**	**1,398,084**	**20,118**	**29,942**	**15,337**	**13,417**	**45,556**	**65,059**

Source: Livestock Census of Karnataka, for various Years.

Annexure 20(b): Total Population of Male Goats in Karnataka from 1961-92

District	Male Goats Total					
	1961	**1966**	**1972**	**1977**	**1983**	**1992**
Bangalore (R)	42,063	49,957	23,875	17,069	68,320	72,225
Bangalore (U)	0	0	0	0	0	24,919
Belgaum	17,802	49,905	10,248	13,608	56,976	111,787
Bellary	18,312	31,721	18,076	8,252	46,302	77,030
Bidar	13,448	16,375	9,046	6,062	25,545	33,078
Bijapur	32,969	60,883	20,265	19,772	82,815	137,004
Chickmaglur	9,458	12,630	8,882	8,204	20,900	32,179
Chitradurga	28,338	44,816	20,563	12,830	90,246	91,712
D. Kannada	4,115	7,037	2,801	3,079	10,936	11,611
Dharwad	20,331	41,268	19,737	18,662	60,319	107,715
Gulaburga	41,339	42,075	21,366	24,170	91,836	110,953
Hassan	27,791	46,260	16,699	13,550	54,342	71,843
Kodagu	1,468	1,439	917	1,034	3,902	4,611
Kolar	47,242	65,700	29,612	19,776	11,4040	93,995
Mandya	21,652	32,954	11,981	11,663	61,339	76,767
Mysore	48,884	44,022	32,860	33,226	76,165	138,030
Raichur	24,054	44,600	13,796	10,787	56,747	77,856
Shimoga	16,125	22,724	18,291	12,836	36,969	49,184
Tumkur	45,620	62,036	32,436	22,904	94,376	133,425
U. Kannada	564	1,725	1,506	1,476	6,427	7,219
Grand Total	**461,575**	**678,127**	**312,957**	**258,960**	**1,058,502**	**1,463,143**

Source: Livestock Census of Karnataka, for various Years.

Annexure 21(a): Population of Female Goats (Rural & Urban) in Karnataka from 1961-92

District	Female Goats											
	Rural						Urban					
	1961	1966	1972	1977	1983	1992	1961	1966	1972	1977	1983	1992
Bangalore (R)	106,622	152,156	148,217	10,832	191,906	184,658	2,626	2,301	2,337	1,578	3,734	3,570
Bangalore (U)	0	0	0	0	0	48,670	0	0	0	0	0	1,834
Belgaum	137,720	184,610	210,694	222,233	324,414	476,736	9,324	10,525	13,229	14,296	19,304	30,054
Bellary	81,696	84,761	121,763	88,083	181,410	281,303	3,833	6,742	4,541	5,945	12,192	17,895
Bidar	40,029	40,962	25,085	50,493	68,967	111,800	908	1,521	1,466	1,570	2,613	8,770
Bijapur	185,830	266,931	288,634	298,226	470,554	677,513	7,708	8,438	16,695	16,650	24,791	37,288
Chickmaglur	27,069	39,288	40,238	31,665	48,781	82,572	1,308	1,444	2,002	2,107	1,345	1,565
Chitradurga	103,668	145,339	163,339	104,859	210,325	296,548	2,313	4,642	4,603	2,074	3,949	4,059
D. Kannada	7,040	12,397	8,805	8,922	16,708	17,084	2,094	3,103	1,974	1,683	1,984	1,665
Dharwad	86,177	127,546	159,901	167,077	228,360	361,982	9,936	13,695	15,408	21,244	23,100	36,752
Gulaburga	129,888	141,547	171,811	209,566	299,541	380,679	2,514	8,316	5,892	7,331	10,482	19,207
Hassan	67,754	75,007	80,597	74,506	90,176	163,327	803	939	967	662	1,543	2,231
Kodagu	2,202	637	2,484	3130	5,479	8,599	25	2,874	327	460	643	496
Kolar	147,258	142,479	140,693	97,732	262,562	204,096	6,336	5,694	5,035	3,686	8,707	8,605
Mandya	81,541	104,519	81,797	78,439	147,783	215,678	1,417	1,499	1,990	1,374	2,441	4,050
Mysore	114,878	144,904	144,544	132,630	194,898	284,264	3,865	5,275	2,307	2,355	3,045	12,923
Raichur	108,443	104,929	133,141	124,719	254,357	340,758	4,276	4,789	7,023	4,751	7,618	13,626
Shimoga	42,485	51,592	69,840	60,400	87,344	115,806	2,174	1,428	2,948	1,379	2,401	3,876
Tumkur	166,619	190,470	180,154	142,256	258,828	342,003	1,786	3,051	2,528	1,894	3,715	6,238
U. Kannada	1,271	3,677	4,222	4,776	11,051	11,868	283	575	592	889	1,375	1,323
Grand Total	**1,638,190**	**2,013,751**	**2,175,959**	**1,910,544**	**3,353,444**	**4,605,944**	**63,529**	**86,851**	**91,864**	**91,928**	**134,982**	**216,027**

Source: Livestock Census of Karnataka, for various Years.

Annexure 21(b): Total Population of Female Goats in Karnataka from 1961-92

District	Female Goats Total					
	1961	1966	1972	1977	1983	1992
Bangalore (R)	109,248	154,457	150,554	12,410	195,640	188,228
Bangalore (U)	0	0	0	0	0	50,504
Belgaum	147,044	195,135	223,923	236,529	343,718	506,790
Bellary	85,529	91,503	126,304	94,028	193,602	299,198
Bidar	40,937	42,483	26,551	52,063	71,580	120,570
Bijapur	193,538	275,369	305,329	314,876	495,345	714,801
Chickmaglur	28,377	40,732	42,240	33,772	50,126	84,137
Chitradurga	105,981	149,981	167,942	106,933	214,274	300,607
D. Kannada	9,134	15,500	10,779	10,605	18,692	18,749
Dharwad	96,113	141,241	175,309	188,321	251,460	398,734
Gulburga	132,402	149,863	177,703	216,897	310,023	399,886
Hassan	68,557	75,946	81,564	75,168	91,719	165,558
Kodagu	2,227	3,511	2,811	3,590	6,122	9,095
Kolar	153,594	14,8173	145,728	101,418	271,269	212,701
Mandya	82,958	106,018	83,787	79,813	150,224	219,728
Mysore	118,743	150,179	146,851	134,985	197,943	297,187
Raichur	112,719	109,718	140,164	129,470	261,975	354,384
Shimoga	44,659	053,020	72,788	61,779	89,745	119,682
Tumkur	168,405	193,521	182,682	144,150	262,543	348,241
U. Kannada	1,554	4,252	4,814	5,665	12,426	13,191
Grand Total	**1,701,719**	**2,100,602**	**2,267,823**	**2,002,472**	**3,488,426**	**4,821,971**

Source: Livestock Censuses of Karnataka, for various years

Annexure 22(a) : Crop-wise Area under Principal Crops in Karnataka State: 1996-97 To 2000-01

(Area in lakh hects)

Sl No.	Crops	1996-97	1997-98	1998-99	1999-2000	2000-01	2005-06@	2010-11@
1	Rice	13.59	13.54	14.27	14.50	14.82	14.84	16.74
2	Jowar	19.99	18.97	18.50	20.24	17.81	18.46	16.99
3	Ragi	10.35	9.39	10.31	9.16	10.21	9.77	9.52
4	Maize	4.45	5.61	5.12	6.06	6.69	6.61	3.25
5	Bajra	4.17	3.02	4.17	4.22	4.42	4.34	5.44
6	Wheat	2.48	2.51	2.69	2.61	2.66	2.68	3.12
7	M.Millets	0.92	0.75	0.90	0.66	0.68	0.67	0.46
	Total Cereals:	55.95	53.79	55.96	57.45	57.29	15.00	40.28
1	Tur	4.45	4.22	4.75	5.08	5.83	5.59	8.04
2	Bengalgram	3.48	3.37	3.55	3.19	3.69	3.50	3.61
3	Horsegram	3.21	3.42	3.24	3.56	2.95	3.19	3.29
4	Blackgram	1.49	1.47	1.43	1.31	1.46	1.39	1.28
5	Greengram	3.18	2.55	3.28	3.93	4.52	4.30	2.65
6	Cowpea & others	1.13	0.99	1.08	1.36	1.17	1.23	1.49
7	Avare	0.83	0.80	0.87	0.77	0.99	0.90	1.06
	Total Pulses:	17.77	16.82	18.20	19.20	20.61	20.13	24.94
	Total Foodgrains:	73.72	70.61	74.16	76.65	77.90	77.49	85.31
1	Groundnut	12.85	10.40	12.30	11.20	10.63	10.76	9.24
2	Sesamum	1.14	1.16	1.15	1.06	0.98	1.01	0.83
3	Sunflower	8.81	9.29	8.33	4.94	4.82	4.81	1.92
4	Castor	0.23	0.21	0.27	0.26	0.30	0.29	0.42
5	Niger	0.44	0.39	0.42	0.44	0.37	0.39	0.35
6	Mustard	0.07	0.06	0.07	0.06	0.06		0.05
7	Soyabean	0.49	0.68	0.65	0.65	0.63	0.68	0.85
8	Safflower	1.78	1.31	0.98	1.00	0.93	0.85	0.39
9	Linseed	0.25	0.22	0.20	0.21	0.17	0.18	0.12
	Total Oilseeds:	26.06	23.72	24.37	19.82	18.89	19.00	12.59
	Annual Crops:							
1	Cotton	6.60	5.02	6.36	5.46	5.60	5.50	4.87
2	Sugarcane	2.82	3.09	3.39	3.73	4.21	4.16	6.83
3	Tobacco	0.70	0.71	0.84	0.75	0.70	0.75	0.77
	Total	109.90	103.15	109.12	106.41	107.30	105.89	106.79

Note: @- Projected area based on Growth of crops.

Source: Directorate of Economics and Statistics, Government of Karnataka, Bangalore.

Annexure 22(b) : Crop-wise Yield of Agricultural Crops in Karnataka State 1996-97 To 2000-01

(Yield in Kg.per hect., Sugarcane yield in tonnes per hect.)

No.		1996-97	1997-98	1998-99	1999-2000	2000-01	2005-06@	2010-11@
1	Rice	2,488	2,499	2,698	2,699	2,654	2,716	3,010
2	Jowar	1,000	696	935	931	966	939	1,049
3	Ragi	1,520	1,428	1,771	1,611	1,946	1,860	2,530*
4	Maize	3,272	2,833	3,434	2,783	3323	3,126	3,146
5	Bajra	683	463	715	628	767	715	935
6	Wheat	807	498	859	877	963	939	1,487
7	M.Millets	458	537	487	450	714	601	858
	Total Cereals:	1597	1,476	1,740	1,651	1,830	1,787	2,165
1	Tur	541	246	490	600	464	504	675
2	Bengalgram	587	359	600	578	680	640	941
3	Horsegram	495	501	496	459	635	558	685
4	Blackgram	257	249	373	346	425	422	822
5	Greengram	200	149	219	360	421	403	1,318
6	Cowpea & other	315	319	296	266	306	286	253
7	Avare	228	230	226	230	234	232	238
	Total Pulses:	428	311	432	465	495	484	684
	Total Foodgrains:	1,316	1,198	1,419	1,354	1,477	1,448	1,728
1	Groundnut	940	715	1,020	722	1,047	917	1,026
2	Sesamum	411	333	426	515	448	477	647
3	Sunflower	432	293	333	428	506	449	636
4	Castor	1,159	906	898	812	927	835	633
5	Niger	189	192	196	185	197	194	198
6	Mustard	260	262	271	277	285	284	320
7	Soyabean	823	732	1133	963	1,064	1,090	1,616
8	Safflower	718	473	634	796	809	784	1,146
9	Linseed	291	219	342	355	384	384	646
	Total Oilseeds:	709	506	722	633	839	752	996
	Annual Crops:							
1	Cotton	274	226	275	218	313	271	304
2	Sugarcane	87	99	108	106	108	112	144
3	Tobacco	854	925	742	622	804	742	545

Source: As in the earlier Table; @ Indicates the projected yield rates based on the earlier data.

Appendix 23 : Multipliers for Crop Residues in Karnataka State

(In terms of Proportion of Yield)

Sl No	Crops	Dry fodder	Tops	Husk and bran	Broken	Grain
1	Rice	1.25	-	0.021	-	0.01
2	Jowar	2.60				0.05
3	Ragi	1.25	-	-	-	0.05
4	Maize	2.50	-	-	-	0.20
5	Bajra	2.40	-	-	-	0.05
6	Wheat	1.60	-	0.06	-	0.02
7	M.Millets	2.00	-	-	-	0.05
8	Tur	0.50	-	0.10	0.05	-
9	Bengalgram	0.50	0.10	0.10	0.05	-
10	Horsegram	0.50	1.00	-	-	0.10
11	Blackgram	0.25	0.70	0.10	0.05	-
12	Greengram	0.25	0.50	0.10	0.05	-
13	Cowpea & others	0.50	0.50	-	-	0.05
14	Avare	0.50	1.00	0.10	0.05	-
15	Groundnut	0.75	0.10	-	0.449	-
16	Sesamum	0.25	-	-	0.394	-
17	Sunflower	0.25	-	-	0.317	-
18	Castor	0.25	-	-	0.317	-
19	Niger	0.25	-	-	0.394	-
20	Soyabean	0.25	-	-	0.295	-
21	Safflower	0.25	-	-	0.359	-
22	Linseed	0.20	-	-	0.67	-
23	Cotton	-	-	-	0.10	-
24	Sugarcane	-	0.25	-	-	-

Annexure 24 : Normative Fodder Requirement of the Livestock

(In Kgs Per animal per Day Average of Seasons)

Sl No	Breed	Age/Condition	Green fodder	Dry fodder	Concentrate
A	Cattle Cross-breed				
1	Female	Lactating	20.0	6.5	2.75
2	Female	Dry	10.0	6.0	2.0
3	Female	Above 1 yr	5.0	5.0	1.0
4	Female	Below 1 Yr	2.0	1.5	0.5
5	Male	Above 2.5 Yrs	5.0	7.5	1.5
6	Male	1 to 2.5 Yrs	3.5	5.0	0.5
7	Male	Below 1 Yr	2.0	1.5	0.25
B	Local Cattle				
1	Female	Lactating	10.0	5.0	1.0
2	Female	Dry	7.5	5.0	0.5
3	Female	Above 1 yr	5.0	3.0	0.5
4	Female	Below 1 Yr	2.0	1.5	0.25
5	Male	Above 2.5 Yrs	5.0	6.0	1.5
6	Male	1 to 2.5 Yrs	3.0	3.0	0.5
7	Male	Below 1 Yr	2.0	1.5	0.25
C	Buffaloes				
1	Female	Lactating	15.0	6.0	2.0
2	Female	Dry	6.0	5.0	1.0
3	Female	1-3 Yrs	5.0	3.0	0.50
4	Female	Below 1 Yr	2.0	2.0	0.25
5	Male	Above 3 Yrs	6.5	5.5	1.0
6	Male	1 to 3 Yrs	3.0	3.5	0.5
7	Male	Below 1 Yr	1.5	1.5	0.25
D	Other Ruminants				
1	Sheep	-	@	0.20	0.25
2	Goat	-	@	0.20	0.25

Note: @ : Feed on tree leaves