

CROP DIVERSITY AND RURAL EMPLOYMENT IN SOUTHERN TRANSITION ZONE OF KARNATAKA : PROBLEMS AND PROSPECTS

S. Ranganadhan*

Southern Transitional Zone (STZ) is situated between hilly zone nine and dry zone six. The cropping system is mainly tobacco based. Tobacco is grown in an area of 6.1 lakh ha out of 1.2 m.ha of net cropped area of the zone. The study focussed on four taluks of Mysore district which mainly consists of tobacco agro-ecosystem with tobacco in kharif and rabi crops like paddy, pulses, ragi and maize grown commonly. During kharif cereals (40.0%) followed by commercial crops (39.5%) occupied major area and generated 27.1 and 57.6% on-farm employment. The Pulses occupied major area during rabi and generated employment (84.9%). The Pulses occupied major area during rabi and cereals in summer and generated employment. Though Gibbs-Martin index suggested diversity, tobacco being labour intensive crop employed more number of farm labourers in the area. The average person days required for the cultivation of different commercial crops on an average was in the range of 56-351/ha with maximum being in tobacco. The average farm employment in tobacco was in the range of 36.8 to 82.5% in the district. Thus tobacco was found to be the bread earner for many. Plans to reduce the crop size by government of India being signatory to WHO-FCTC may result in un-employment to rural youth of this area. There is a need for involvement of corporate houses and other stake holders to help government in redeploying the vast human resource in a suitable manner. In this direction domains for social investments were discussed.

Key Words: Location quotient, Farm-employment, Corporate Social Responsibility

INTRODUCTION

Agriculture is a predominant occupation in India contributing to the economy. The rural socio-economic conditions are directly related to the farm income and farm employment. Several studies have been conducted on the diversification of land use, efficient cropping pattern and agri-based activities to boost the rural economy and on-farm rural employment (Shaik Haffis et al 1990; Singh, 1963). It is seen that diversification directly reflected on the farm employment and economic gains to farmers (Bhatia and Tiwari, 1990). Tobacco is an important commercial crop grown in Southern Transitional Zone (STZ) of Karnataka. The crop is life line for >40,000 farmers. The crop being labour intensive offers lot of employment for both men and women. There is a need for development of strategies for sustainable agricultural practices (Anupa Ghosh and Joyashree Roy, 2006) involving cultivation of high value crops and value addition at farmer level to boost the economy. This in turn helps in augmenting the rural employment base to improve the socio-economy of the villages. Under the decisions at "WHO-Framework Convention on Tobacco Control (FCTC)", India is under obligation to reduce tobacco cultivation in the country by 2020. Any attempt in this direction should look at the problem of rural unemployment and socio-economic issues resulting out of reduced crop and farm employment. Planned programmes are necessary to offer sufficient employment as tobacco crop offers lot of rural employment. Social investments by stakeholders of tobacco crop in the area

*Management Scholar Centre of Excellence, Gopala Swamy, Institute of Professional studies, Industrial Suburb, Ashokapuram, Mysore-570 011, Karnataka, India. www.csrcoe.asia ; email: sranganadhan@gmail.com

under CSR rules may play synergistic role in redeploying the human resource. The study was done on the crop diversity *vis-a-vis* its importance on rural employment in Mysore district of Karnataka and attempts were made to identify domains for social investments by stakeholders.

MATERIALS AND METHODS

The case study was done in the major tobacco area of the district covering taluks, H.D.Kote, Hunsur, Periyapatna and Hunsur which contribute major share of tobacco for export. Secondary data on crop particulars was collected for an ideal season 2004-05 from published literature and governmental organizations. The cropping pattern was studied by considering the crop area under different crops in each taluk. The data analysis was done on the following lines.

Location Quotient

Location quotient (LQ) for different crops was derived to know the extent of crop cultivation in relation to the total cultivable land available and specific concentration of a particular crop in particular area. L.Q is an index comprising the value accounting the crop area in the taluk, overall area in the district for that crop and overall crop area in the district.

Location Quotient:

$$\frac{\sum \text{Total area under X}^1 \text{ crop in the district} / \text{Total area under x}^1 \text{ crop in the Tq}}{\sum \text{Total area under X}^n \text{ crop in the district} / \text{Total area under X}^n \text{ crop in the Tq}}$$

Crop Diversity

Crop diversity which denotes cropping pattern was derived to know the extent of different crops being grown. Gibbs-Martin index (1962) Index of Crop Diversification was measured through quantitative measure that reflects how many different types of crops. The value of a diversity index increases both when the number of types increases and when [evenness](#) increases. The crops occupying >10% were considered for the study (Shaikh Haffis *et al* 1990).

$$1 - \frac{\sum X^2}{\sum (X)^2}$$

Where 'X' is the percentage of total cropped area under an individual crop.

Farm Employment Generation

Employment generation in tobacco crop *vis-a-vis* other crops grown in the area was studied by considering the average engagement of farm labourers in different crops as suggested by Sathyapriya and Govinda Raju (1990). On-farm employment index was derived from average person days involved per ha cultivation of particular crop for the proportion of the particular crop in the area.

RESULTS AND DISCUSSION

The area spread over four taluks viz., H.D.Kote, Hunsur, Periyapatna and K.R.Nagar accounts 2,68,074 ha cultivated land excluding area under horticultural crops. The data suggested that cereals (41.4%), pulses (20.9%), oil seeds (3.5%) and commercial crops including tobacco (34.2%) contributed to the area of 3,22,242 ha. of cultivation activity during the season (Sreenivas, 2008). In the entire season cereals and commercial crops accounted 75.6% of the area in the district. During

kharif season cereals and tobacco accounted 80%, while during *rabi* season cereals (47.5%) and pulses (44%) contributed major area. During *khari* season cereals and tobacco accounted 40%, while during *rabi* season cereals (47.5%) and pulses (44%) contribute major area. In H.D.Kote taluk the area under different crops was in the range of 11.1 to 61.4% with a cultivated area of 65092 ha. The area contributed cereals (25.0%), pulses (11.1%), oil seed (2.5%) and commercial crops (61.4%). In Hunsur taluk the different crops were in the range of 5.5 to 41.5% of the agricultural land with cereals followed by tobacco (29.0%). In K.R.Nagar taluk, the area under different crops constituted a range of 1.0 to 58.1%. The crops constituted cereals followed by pulses (21.3%). In Periyapatna taluk the maximum area was under commercial crops (54.7%) followed by cereals (35.8%). The area under tobacco cultivation in the Mysore district was in the range of 5.3 to 54.3 of the land (Table 1,2 &3).

Table: 1, Different Crops Cultivated in Kharif Seasons (in ha)

Crops	H.D.Kote	Hunsur	K.R.Nagar	Periyapatna
Cereals				
Paddy	6280	13931	26135	5260
Hy.Jowar	486	455	1292	4
Ragi	9180	16500	6120	6648
Maize	387	5090	371	8263
Total	16333	36111	34525	20201
Pulses				
Redgram	1121	1047	201	93
Horsegram	2270	10235	3599	112
Blackgram	340	510	622	78
Greengram	580	705	700	99
Cowpea	1667	4250	7305	835
Fieldbean	1250	4240	264	2565
Total	7228	20987	12691	4782
Oil seeds				
Groundnut	482	1398	605	27
Sesame	715	2648	1528	33
Sunflower	44	5	2	-
Castor	259	680	212	138
Niger	160	-	116	380
Total	1660	4731	2463	578
Commercial				
Cotton	35921	10670	210	165
Sugarcane	514	987	1200	43
Tobacco	3436	13697	8330	30611
Total	39871	25354	9740	30819
Gross total	65092	87183	59419	56380

Table: 2, Different Crops Cultivated in Rabi Seasons (in ha)

Crops	H.D.Kote	Hunsur	K.R.Nagar	Periyapatna
Cereals				
Paddy	-	-	-	-
Hy.Jowar	-	-	12	-
Ragi	142	6605	2085	11025
Maize	-	2545	95	150
Total	142	9150	2192	11175
Pulses				
Redgram	0	-	-	-
Horsegram	4500	7055	3255	295
Blackgram	31	165	31	61
Greengram	42	179	51	24
Cowpea	105	835	828	1105
Fieldbean	74	1450	546	330
Total	4750	9684	4711	1815
Oil seeds				
Groundnut	-	-	-	-
Sesame	-	20	-	-
Sunflower	-	20	-	-
Castor	-	-	28	-
Niger	95	955	440	180
Total	95	995	468	180
Commercial				
Cotton	-	-	-	-
Sugarcane	680	240	1300	88
Tobacco	-	-	-	-
Total	680	240	1300	88
Gross total	5667	20069	8671	13258

Table: 3, Different Crops Cultivated in Summer Seasons (in ha)

Crops	H.D.Kote	Hunsur	K.R.Nagar	Periyapatna
Cereals				
Paddy	617	671	1075	310
Hy.Jowar	-	-	-	-
Ragi	-	138	266	29
Maize	8	300	24	90
Total	625	1109	1365	429
Pulses				
Redgram	-	-	-	-
Horsegram	-	-	-	-
Blackgram	-	29	18	17
Greengram	-	46	22	14
Cowpea	-	110	292	37
Fieldbean	-	-	-	-
Total	-	185	332	68
Oil seeds				
Groundnut	-	5	8	-
Sesame	175	-	-	-
Sunflower	-	50	2	+
Castor	-	-	-	-
Niger	-	-	-	-
Total	175	55	10	-
Commercial				
Cotton	-	-	-	-
Sugarcane	726	280	1104	40
Tobacco	-	-	-	-
Total	726	280	1104	40
Gross total	1526	1629	2811	537

The data suggested diversification of crops in a given taluk. During *kharif* Hunsur and Krishnaraja Nagar had low LQ for cereals (1.2) and pulses (0.5), while Hunsur and Periyapatna had low LQ for oil seed crops (0.1). Among the taluks Heggadadevakote and Periyapatna had low LQ for commercial crops. The value of LQ is inversely proportional to per cent area occupied by the particular crop in the district. Gibbs-Martin Indexing was made by classifying the area in to Low (<40); Medium (<41-60); High (<61-80) and Very High (>80) of the diversity. The crop diversity was very high during Kharif season in all the taluks due to monsoonic conditions. During *rabi* H.D.Kote and Periyapatna taluks had no diversity while, Periyapatna alone showed nil diversity in summer crops (Table 4).

Table: 4, Location Quotient of Different Crops and Diversity Index in Different Taluks

Crop/Taluk	Cereals	Pulses	Oil seeds	Commercial crops	Total	GMI*
Kharif						
H.D.Kote	2.6(25.0)	1.1(11.1)	0.2(2.5)	1.1(61.4)	65092	82.12
Hunsur	1.2(41.5)	0.5(24.0)	0.1(5.5)	1.7(29.0)	87183	96.99
K.R.Nagar	1.2(58.1)	0.6(21.3)	0.1(4.1)	4.3(16.5)	59419	89.7
Periyapatna	2.2(35.8)	1.6(8.5)	0.6(1.0)	1.4(54.7)	56380	89.6
Rabi						
H.D.Kote	76 (2.5)	1.9(83.8)	0.7(1.7)	0.2(12.0)	5667	0.0
Hunsur	1.2(45.6)	0.9(48.2)	0.6(5.0)	0.5(1.2)	20069	87.3
K.R.Nagar	4.9(25.2)	5.0(54.3)	0.1(5.5)	0.009(15.0)	8671	92.3
Periyapatna	0.9(84.2)	5.0(13.7)	0.3(1.4)	1.3(0.7)	13258	0.0
Summer crops						
H.D.Kote	3.1(41.0)	-	0.05(11.5)	1.0(47.5)	1526	74.8
Hunsur	1.8(68.0)	0.3(11.4)	0.2(3.4)	2.6(17.2)	1629	86.8
K.R.Nagar	1.4(48.5)	0.2(11.8)	0.9(0.4)	0.6(39.3)	2811	75.0
Periyapatna	4.6(79.9)	0.8(12.7)	-	17.9(7.4)	537	67.4

Figures in Parenthesis are % crop area out of total area of the taluk

*Gibbs-Martin Index

The actual impact of diversification in an area reflects on the generation of on-farm employment. During *kharif* cereals (40.0%) followed by commercial crops (39.5%) occupied major area and generated 27.1 and 57.6% on-farm employment. Pulses occupied major area during *rabi* and generated employment (84.9%). Cultivation of cereals like paddy, maize, jowar and ragi supported farm employment in the range of 0.1 to 74.8% in different taluks. The actual person days involved in cereal cultivation was in the ranged of 44-110 on an average. Cultivation of pulse crops like, redgram,

blackgram, greengram, cowpea and fieldbean generated 4.6 to 87.7% employment generation. The average person days involved cultivation of pulse crops on an average was 125 days. Oil seed crops generated 0.1 to 3.7 with an average of 200 person days/ha for cultivation. Commercial crops like sugarcane cotton and tobacco occupied a major area. The area in *kharif* was in the range of 16.5-61.4% of the total cultivated area in the district. A major area in H.D.Kote taluk was occupied by cotton (55.2%) and other commercial crops like tobacco and sugarcane in small area, while tobacco occupied major area (54.3%) in Periyapatna taluk.

Table: 5, Farm Employment Matrix in Different Crops (X1000 person days)

Crop/Taluk	Cereals	Pulses	Oil seeds	Commercial crops	Total
Kharif					
H.D.Kote	1738 (29.0)	903 (15.2)	60 (1.0)	3281 (54.8)	5984
Hunsur	3591 (30.0)	2623 (22.0)	163 (1.4)	5528 (46.4)	11906
K.R.Nagar	3621 (44.4)	1586 (18.2)	86 (1.0)	3085 (36.8)	8379
Periyapatna	1673 (12.8)	597 (4.6)	10 (0.1)	10759 (82.5)	13040
Rabi					
H.D.Kote	0.142 (0.1)	593 (87.2)	1.9 (0.2)	85 (12.5)	680
Hunsur	118 (8.5)	1210 (87.7)	20 (1.5)	30 (2.3)	1379
K.R.Nagar	6.7 (1.0)	588 (76.8)	8 (1.0)	162 (21.2)	766
Periyapatna	17.6 (6.8)	226 (87.4)	3.6 (1.4)	11 (4.4)	259
Summer crops					
H.D.Kote	68 (41.5)	-	6.1 (3.7)	90 (54.8)	165
Hunsur	81 (57.4)	23 (16.3)	2.1 (1.5)	35 (24.8)	141
K.R.Nagar	119 (39.8)	41 (13.7)	0.48 (1.4)	138 (46.1)	299
Periyapatna	38 (74.8)	8.5 (15.7)	-	51 (9.5)	97.5

Figures in parenthesis are % out of total farm employment

The average person days required for the cultivation of these crops on an average was in the range of 56-351/ha with maximum being in tobacco. Thus tobacco employed more number of farm labourers in the area. The average employment of farm labourers was in the range of 36.8 to 82.5% in the district. Thus tobacco was found to be more labour intensive crop (Thimaiah and Nageswara Rao, 2000) (Table 5). The On-farm employment index (OFEI) which is the product of average person days required for an hectare crop cultivation to the proportion of that particular crop in the area also, suggested differential employment opportunities. The OFEI of the district ranged from 2.34 to 332.73 in different seasons with average ranging from 92.0 to 126.0. During *kharif* the average OFEI was in the range of 16.2 to 58 (Table 6).

Table: 6, On-farm Employment Index (OFEI) for Different Crops of Mysore District

Crop/Taluk	Cereals	Pulses	Oil seeds	Commercial crops	Total	Mean
Kharif						
H.D.Kote	26.64	13.86	0.811	50.51	91.8	23.0
Hunsur	25.32	30.11	1.3	63.31	120	30.0
K.R.Nagar	17.4	14.24	6.16	27.15	65.0	16.2
Periyapatna	30.1	8.12	0.67	191.76	230	58.0
Total	99.46	66.33	8.94	332.73	506.8	126.0
Rabi						
H.D.Kote	2.75	103.48	0.34	1.5	108	27.0
Hunsur	41.23	60.37	-	1.5	103	26.0
K.R.Nagar	13.31	67.87	1.72	18.87	102	25.0
Periyapatna	37.82	17.11	0.28	0.87	56	14.0
Total	95.11	248.83	2.34	22.74	369	92.0
Summer crops						
H.D.Kote	44.99	-	-	59.5	105	26.0
Hunsur	62.77	1.32	4.1	21.5	90	22.0
K.R.Nagar	42.4	14.75	13.2	49.12	119	30.0
Periyapatna	71.91	14.99	0.42	8.87	96	24.0
Total	222.1	31.1	17.72	139.0	410	102.0

OFEI= Avg. person days for ha cultivation x proportion of that particular crop in that area.

Since, India is a signatory to the “WHO-Framework Convention on Tobacco Control (FCTC) it is under obligation to halve tobacco cultivation in the country by 2020. The seminar on Alternative tobacco crop held in 2011, has supported the view there is every need to continue to support tobacco farmers as they shift to alternative crops. There is a need to reduce tobacco cultivation and look at providing rehabilitation and compensation in a phased manner. This largely reflects on the on-farm employment and socio-economic issues in the area. Efforts to enlarge livelihood opportunity base in rural pockets has to be made through policy frame work (Ojha, 1994). There is a need for involvement of corporate houses and other stake holders to help government in redeploying the vast human resource in a suitable manner. In this direction it seen that social investments by companies can be made in the area so as to supplement the employment needs of the rural youth.

Corporate Social Responsibility (CSR) is a company’s commitment to operate in an economical, social and environmentally sustainable manner. The Bill, passed by the Lok Sabha in the winter session of Parliament, 2013 requires both public and private companies to comply with CSR regulations. The formal framework for social spending by corporate comes in force from 1st April 2014 by Companies with net worth over 500 crores or turnover of over 1000 crores or net profit of 5 crores. Two per cent of average profit of previous three years needs to be spent for social cause. The rule also, specified the areas like, livelihood enhancement and rural development projects, preventive health care and sanitation and protecting culture bio-diversity, environment.

The planned social investments in the area will boost the morale and help to sustain the income in a better manner as large population is dependent upon tobacco cultivation. The stakeholders should make baseline survey and plan programmes in an effective manner. Efforts should be to put the vast human resource in a better manner so as to maintain the rural economy. The various opportunities for CSR activities can be Training, small scale industries, supporting SHG's, providing avenues for value addition to the farm produce, information through *e-seva* and portals, investments in infrastructure development and providing market avenues. A protocol for possible areas CSR has been drawn (Fig.1).

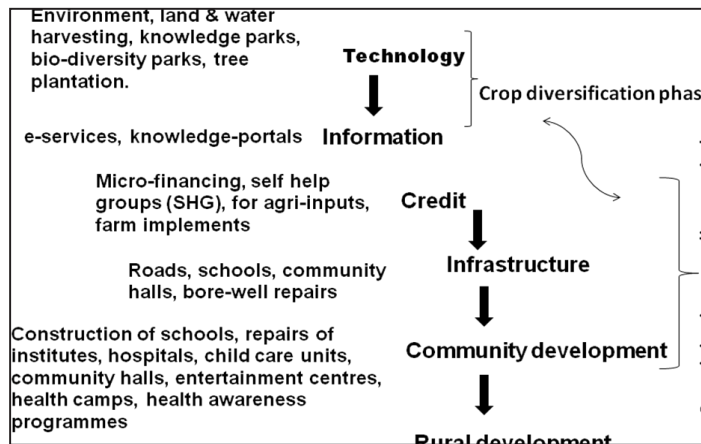


Fig.1: Matrix for possible areas of CSR activities

In conclusion it seen that tobacco being labour intensive crop any attempt to reduce the crop will reflect on the un-employment to larger section of youth in the area. The situation opens up lot of scope for social investments by stakeholders to protect the interest of the people in the area. Proper planning to make their social investments will go a long way in maintaining the rural economy and socio-economic conditions in the area.

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