

TRENDS IN CROPPING INTENSITY IN KARNATAK : A REGIONAL PROFILE

T. C. SHARMA, Belgaum

ABSTRACT : This study shows that inspite of a 205 per cent increase in area sown more than once during the period 1966-90, Karnataka remains one of the least intensively cropped states in India. Paucity of irrigation appears to be the main reason for low cropping intensity in the State. A massive expansion in irrigated area raising it to over 48 per cent of cropped area only can make any significant difference in the situation as assured moisture supply is required for rabi/summer as well as kharif crops over most of the State. It would also be essential to restrict the cultivation of sugarcane and rice in the drought-prone Maidan as these crops consume excessive moisture quantities and thus virtually prevent the cultivation of several rabi and summer crops for want of moisture supply. The first crop, it should be noted matures in 10-18 months compared to 3-5 months in the case of most others.

In the quest for a strategy for maximising agricultural production and for providing more work and income to farmers, multiple cropping i.e., raising more than one crop in a sequence during an agricultural year on a unit of cropland, holds a vast potential in most agricultural regions of India in view of a favourable weather prevailing throughout the year, reasonably good soils, and abundance of farm labour. So far, it must be noted, only about 26 per cent of the net sown area is sown more than once in this country compared to 90 per cent in China and 60 per cent in neighbouring Bangladesh. The scope for expanding the net sown area having already reached a saturation level and the potential for raising the yield nearly exhausted in many crops and regions, stepping up of the incidence of multiple cropping will be necessary to augment agricultural production (Hayami et al, 1971).

The strategy for expansion of multiple cropping should begin with identification of the areas

with a low proportion of the cropped area sown more than once and a careful study of the lacunae that thwart this development in these areas. Measures to remove these lacunae should then be taken on the basis of these surveys. The present inquiry aims at analysing the growth patterns in multiple cropping and the role of some important factors responsible for the spatial disparity in these patters in the State of Karnataka and its four geographical regions for the period from 1966-67 to 1989-90. The presumption underlying this inquiry is that the recent up-trend in crop yields, besides an increased demographic pressure and expansion in irrigated area, has worked as an additional incentive and there has been a considerable increase in the incidence of multiple cropping in the State since the launching of the High Yielding Varieties Programme (HYVP) in the late 1960s. As the trend since the last year of the study period has been continuous, its results remain relevant and useful. The exercise covers all the 175 taluks, 19 districts and 4 geographic

regions, which comprised the Karnataka State in 1966-67. The extreme disparity in the agricultural development within the State and its relatively large cropped area and production in the all-India context are the two weighty reasons behind this inquiry.

METHODOLOGY

Cropping intensity is a statistical measure for expressing the total cropped area as proportion of net sown area in per cent as :

$$C_{ii} = \frac{\text{Total cropped area}}{\text{Net sown area}} \times 100,$$

where C_{ii} is the index of cropping intensity.

Indices of cropping intensity computed for the first and last trienniums of the study period for all taluks in the four regions are given in the appendix at the end of this analysis.

A multiple (step-wise) regression exercise with intensity of cropping as the dependent 'Y' variable and four explanatory (independent) variables as 'X1', 'X2', 'X3' and 'X4' has been carried out to assess their role in the spatial disparity in the index values for the last triennium. The results of the exercise are given in tables 1 - 6.

The independent variables included here are the irrigated per cent of net cropped area (X1), land holding size (X2), number of agricultural workers per hectare of cropped area (X3) and annual rainfall index (actual/normal X 100, X4). These factors are considered significant contributors in the process of multiple cropping. Their role is often complementary and synergistic (Coutinho and Sharma, 1991). Irrigation is a sine qua non for raising crops in dry weather in winter and summer seasons. The size of land holdings often decides the financial status of the farmers upon which depends their capacity to invest in irrigation and other essential infrastructural development

and inputs. The number of agricultural workers is an important factor as multiple cropping requires labour in abundance (Boserup, 1965; Narain, 1980). Rainfall has a complementary role along side irrigation in multiple cropping in many areas (Savant, 1975).

DEVELOPMENT IN KARNATAKA

With only 13.25 per cent (14.11 lakh hectares) of the net sown area sown more than once during the last triennium of the study period, Karnataka's cropped area remains highly under-utilised when compared to the situation in India as a whole (27.5 per cent) and several other more intensively cropped states, specially Punjab (70 per cent), Haryana (56 per cent) and West Bengal (54 per cent). The situation in the neighbouring states of Karnataka, of course, remains equally dismal. Also the growth in Karnataka (of 9 lakh hectares in the last triennium over the first) is qualitatively less significant as it involved mostly low yield crops (coarse cereals, pulses and oil seeds) grown dry farmed in winter and summer seasons.

REGIONAL ANALYSIS

Currently within the State, the cropping intensity index shows a spatial variation from less than 101 per cent in Madikeri (Kodagu), Tiptur (Tumkur) and Hangal (Dharwad) taluks to as high as 177 per cent in Mangalore. As the accompanying figure shows the relatively higher intensity is often confined to small pockets with favourable conditions, while large tracts of more than 90 taluks have the index below State-average. The Coastal region has the index value (129 per cent) much higher than the other three regions, South Madian (113.5 per cent), North Madian (112.4 per cent) and Malnad (111.5 per cent) inspite of a higher increase in all the three during the study period. The spatial variation is no less disparate within

KARNATAKA Cropping Intensity 1987 - 1990

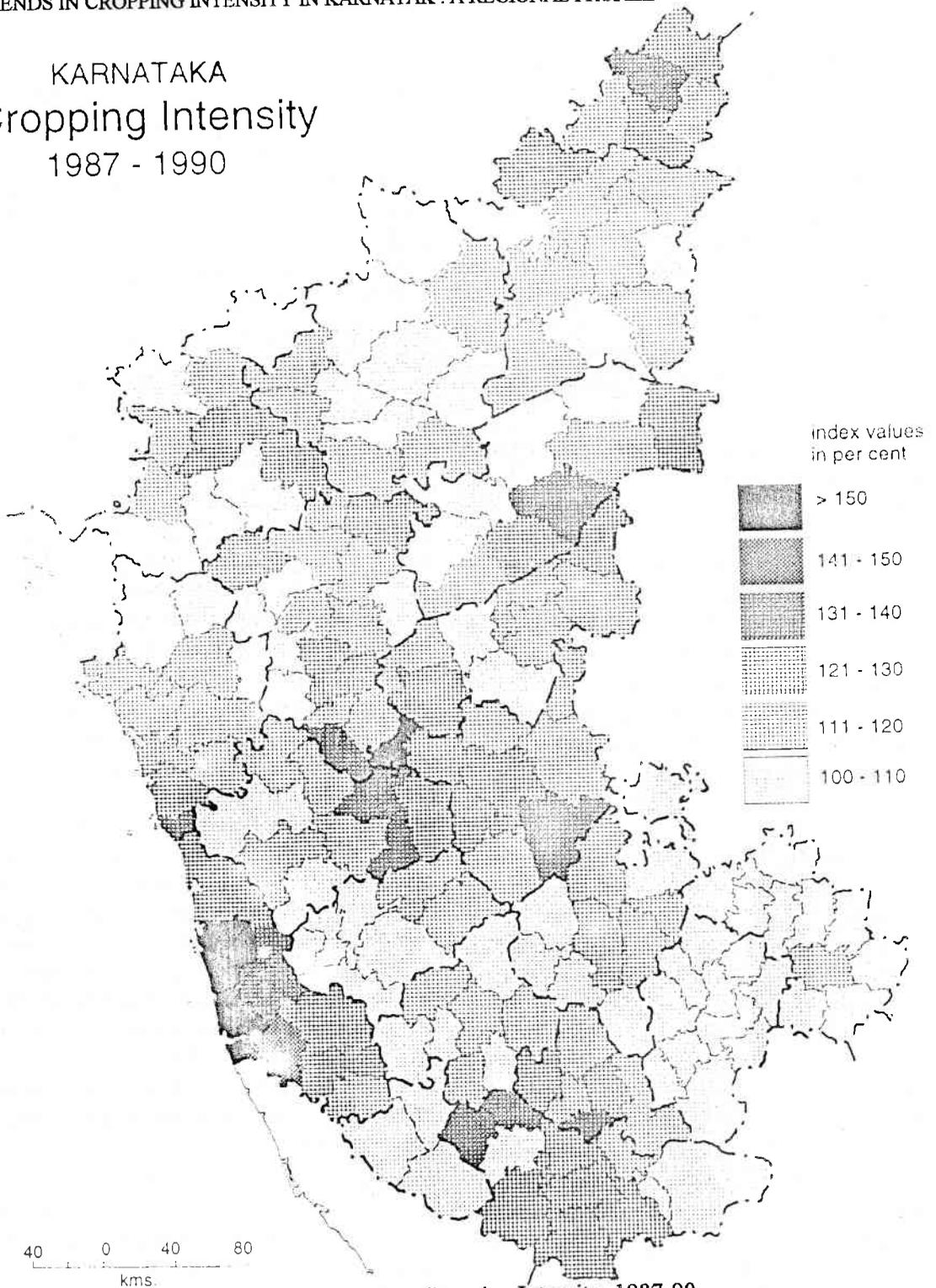


Fig. : Karnataka - Cropping Intensity, 1987-90

each one of these regions and the gap if any thing has widened during this period.

Coastal lowlands

The Coastal region had an intensity of 128 per cent in the first triennium which rose to 129 per cent by the last. The region is endowed with a relatively more level relief, a high rainfall, smaller holdings, a larger agricultural work force, and much larger proportion of net sown area under irrigation, which ensure cultivation of several rabi and summer season crops - mostly rice and some pulses.

The intensity is particularly high in the Coastal taluks, where the ecological conditions appear more favourable. Mangalore has the highest cropping intensity in State (177 per cent) and it is followed by Udupi (151 per cent), Bantwal (143 per cent) and Karkal (139.5 per cent) in Dakshin Kannada district and Bhatkal (136 per cent) in Uttar Kannada. Only Sullia has a below State average situation in the former district, whereas Karwar and all the interior taluks from Supa to Mundgod have it in the latter.

Malnad

The Malnad region with a rugged terrain, larger holdings and smaller area under irrigation, except in Shimoga district, has a below State-average cropping intensity position currently (111.5 per cent compared to the first triennium's 105.3 per cent). Summer rice and pulses are the chief crops of the second season here. Only Shimoga district has an above State-average situation (C I index 119.8 per cent) and its bigger endowment in assured irrigation (43 per cent of NSA) appears to be mostly responsible for this. Irrigation intensity (gross irrigated area as proportion of net irrigated area in per cent) seems to control the pattern in the district. Its five eastern taluks, Bhadravati, Honnalli, Channagiri, Shikaripur

and Shimoga, have a much higher cropping intensity (115.5 - 133.9 per cent) than the western taluks because mainly of a higher irrigation intensity, only Kadur and Tarikere in Chikmagalur district and Belur, Hassan and H. Narsipur in Hassan district, have an intensity position slightly above State-average (C I index 113.3 - 117.1 per cent). All the remaining taluks have a below State-average intensity. Lack of irrigation appears to be the chief reason for the low incidence of multiple cropping in the region, except a few taluks of Shimoga district.

NORTH MAIDEN

The North Maidan currently has about 112 per cent of cropping intensity compared to 102 per cent in the first triennium, rabi Jowar, Wheat, Bengal gram and rabi groundnut and Safflower are the chief crops of the second cropping season. All these crops are raised dry farmed on black soils and most of the available irrigation in the region is provided to crops like sugarcane, rice, maize and other kharif crops. It has therefore, little impact on the cropping intensity patterns. The highest intensity in the region currently obtains in Bidar district (C I index 122.65 per cent after an increase of 78 per cent). All the five taluks of the district have an above State-average intensity, its extent varying from 115.6 per cent in Bidar to 130.4 per cent in Bhyalki. The district has a higher rainfall permitting the use of irrigation exclusively for rabi crops and a larger agriculture work force than the other North Maidan districts and moisture retentive black soils over a large area, which help in raising crops in the winter/summer season.

Dharwad district has 117.48 per cent of cropping intensity next only to Bidar mainly because of its moisture retentive medium/deep black soils on which rabi jowar, wheat and Bengalgram are grown dry-farmed. All the

eastern taluks from Nargund and Navalgund in the north to Renbennur and Hirekerur in the south have an above State-average cropping intensity index ranging from 113 to 138.6 per cent, the last mentioned taluks have a relatively lower level of multiple cropping.

Raichur is another important district with a CI index of 114 per cent currently compared to 101.6 per cent in the first triennium and the pattern herein is more or less fully explained by the irrigation coverage of netsown area with the Tungabhadra Left Bank Canal command area taluks with a higher irrigation coverage having above State-average cropping intensity (Sindhur 139 per cent, Gangavati 126 per cent, Manvi 119 per cent). Raichur taluk with deep black soils despite a poor irrigation base (17 per cent of NSA) has an above State-average cropping intensity because of a large area under rabi jowar, which is grown without irrigation support. All the other taluks have a below State-average position because mainly of poor irrigation development.

The remaining four districts of the North Maidan have a below State-average cropping intensity. However, there are several pockets of higher intensity in these districts due often to black soils and assured irrigation. The value of the index mostly remains below 115 in all. They include the heavily irrigated taluks of Mudhol, and Jamkhandi and Badami in Bijapur district; Belgaum, Gokak, Hukkeri, Raibag and Ramdurg in Belgaum district; Sirguppa, Bellary, Hospet and Kudligi in Bellary district; and Aland, Shorapur and Yadgir in Gulbarga district. A larger number of taluks in the North Maidan have a low level of cropping intensity (C I index below 110 per cent), specially in north-central Bijapur, northern Raichur and Northern and southern Belgaum. The small irrigation development which these taluks have is often used for raising moisture intensive

crops, specially sugarcane and maize and for protecting Kharif crops. Only a massive increase in irrigation (required for both kharif and rabi/summer crops) and restriction on sugarcane cultivation can improve the situation in the region.

South Maidan

In the South Maidan, the intensity level is only slightly above the State-average currently (C I index 113.8 per cent compared to 107.6 per cent in the first triennium) and most of this region's area sown more than once is found in the districts of Chitradurga, Mysore and Mandya. Chitradurga and Mysore have several taluks with adequate irrigation and deep/medium black soils, whereas Mandya's main asset is its high irrigation coverage. An above State-average situation obtains in the last two districts in the agricultural work force as the holdings are small. Harihar with nearly three - fourths of its cropped area under irrigation from the Bhadra project has the highest C I index (142.60 per cent) for the last triennium. It is followed by Hiriya with a C I index of 133.5 per cent. All the other taluks in the district have an above State-average C I index ranging from 113 to 129 per cent and generally associated with rabi jowar horse-gram and oil-seeds cultivation. Except Hunsur and Kollegar, all the other taluks of Mysore district have a higher than State-average cropping intensity (C I index 113.8 - 133.8 per cent) with summer cereals and horse gram being the chief crops of the second cropping season here. Mandya district should have a much higher cropping intensity but for a large area under sugarcane, a long duration moisture intensive crop. All taluks, except Malavalli, and Nagamangala, have an above State-average intensity, the index values ranging from 114 per cent in Pandavapura to 135 per cent in Stirangapatna. Summer rice, ragi and horse gram are the chief crops of the second cropping season.

Cropping intensity remains very low, much below the State average, in Bangalore, Tumkur and Kolar districts inspite of an increasing trend. The districts lack irrigation facilities and also their soils do not conserve adequate moistures for raising a second crop after kharif season. The C I index values vary from 102.9 per cent (Magadi and Nelamangala) to 107.7 per cent (Hoskote) in Bangalore and only Kolar (C I index 113 per cent) taluk in Kolar and Gubbi (C I index 119.6 per cent) in Tumkur district have a situation above the State-average.

FACTORS OF VARIATION : CORRELATION ANALYSIS

The simple correlation matrix exercise (tables 1 - 5) carried out for the whole State and for the four regions for scanning the role of the few explanatory variables shows some interesting results.

For the State as a whole, the matrix shows positive and significant correlation between cropping intensity and irrigated proportion of netsown area ($r=0.34$) and number of agricultural workers per hectare of cropland ($r=0.32$). Rainfall index had only a weak positive correlation ($r=0.11$) with cropping intensity and land holding size had a negative significant correlation ($r=0.21$).

Table 1

Coefficient of Correlation Matrix, State				
Variables	X ₁	X ₂	X ₃	X ₄
X ₁	1.00			
X ₂	-0.23 *	1.00		
X ₃	0.36 **	-0.79 **	1.00	
X ₄	0.13	0.17	-0.13	1.00
Y	0.34 **	-0.21 *	0.32 **	0.11

** Significant at 1%

* Significant at 5%

N = 175

At the regional level, irrigation had with cropping intensity a positive and significant correlation ($r=0.73$) for the Coastal region and for the Malnad region ($r=0.51$), and a weak positive correlation ($r=0.18$ each) for the North and South Maidan regions. Number of agricultural workers per hectare of cropland was found to be positively correlated with cropping intensity in three regions, though it was significant in only the Coastal region and North Maidan regions ($r = 0.65$ and 0.24 respectively), whereas the South Maidan showed a negative correlation ($r = -0.10$), but the coefficient is not significant either at 5 per cent or at 1 per cent. Rainfall index again indicated a positive correlation with cropping intensity in the Coastal Lowlands region ($r = 0.69$).

Table 2

Coefficient of Correlation Matrix, Coastal Region				
Variables	X ₁	X ₂	X ₃	X ₄
X ₁	1.00			
X ₂	-0.19	1.00		
X ₃	0.50 *	-0.34	1.00	
X ₄	0.49 *	-0.45 *	0.32	1.00
Y	0.73 **	-0.29	0.65 **	0.69 **

** Significant at 1%

* Significant at 5% N = 19

Table 3

Coefficient of Correlation Matrix, Malnad				
Variables	X ₁	X ₂	X ₃	X ₄
X ₁	1.00			
X ₂	-0.13	1.00		
X ₃	0.41 *	-0.65 **	1.00	
X ₄	0.10	-0.37 *	0.15	1.00
Y	0.51 **	-0.27	0.30	0.16

** Significant at 1%

* Significant at 5%

N = 27

Table 4**Coefficient of Correlation Matrix,
North Maidan**

Variables	X ₁	X ₂	X ₃	X ₄
X ₁	1.00			
X ₂	-0.24 *	1.00		
X ₃	0.27 *	-0.71 **	1.00	
X ₄	-0.19	-0.41 **	-0.34 **	1.00
Y	0.18	-0.22	0.24 *	-0.01

** Significant at 1%

* Significant at 5%

N = 70

Table 5**Coefficient of Correlation Matrix,
South Maidan**

Variables	X ₁	X ₂	X ₃	X ₄
X ₁	1.00			
X ₂	-0.14	1.00		
X ₃	0.36 **	-0.65 **	1.00	
X ₄	-0.17	-0.17	-0.14	1.00
Y	0.18	0.17	-0.10	0.10

** Significant at 1%

* Significant at 5%

N = 59

Landholding size was observed to have a negative correlation with cropping intensity in three of the four regions ($r =$ Coastal region $- 0.29$, Malnad $- 0.27$ and North Maidan $- 0.22$) but the coefficient is not significant either at 5 per cent or at one per cent. For the South Maidan the correlation is positive ($r = 0.17$) but not significant.

The study shows that though irrigation is an important factor affecting cropping intensity in several parts of the State, its role is only limited

due to the peculiar situation prevailing over large areas. In the Coastal region, where the intensity is high the irrigation coverage is also high and there is a high degree of complementarity between rainfall and irrigation coverage, the region's high rainfall being more than adequate for the kharif crops and the irrigation provision, which is the highest in the State ensuring rabi and summer crops over a large area. Irrigation is also an important factor in the Malnad region as irrigated rice is the chief crop of the rabi and summer seasons in this region, specially Shimoga district which has bulk of the region's area sown more than once.

The situation in the North and South Maidan is quite different. Irrigation provision is only limited in both these regions and it is used mostly for protecting kharif season crops and for growing moisture intensive crops like sugarcane and maize as rainfall during the season is both low and undependable as small farm size offers no advantage for multiple cropping due to lack of irrigation.

The third factor, agricultural workers per hectare of crop land is an important determinant with a positive correlation with cropping intensity at the State-level. It is highly contributory to multiple cropping in the Coastal region and Malnad, significantly positive in the North Maidan and an insignificant factor in the South Maidan, where taluks of large farms, specially in Chitradurga district show a higher intensity than taluks with small farms, specially in Bangalore, Kolar and Tumkur districts.

The State receives very little rainfall in the rabi and summer seasons and therefore, there is no direct contribution of this factor to multiple cropping. However, the factor (South-west monsoon rainfall) helps in the process indirectly

through the development of irrigation potential and moisture conserved in the soil, which help in the cultivation of rabi/summer crops. The factor shows a very weak insignificant positive correlation at the State-level, but a highly positive correlation in the Coastal region. Its impact in the other three regions is insignificant.

REGRESSION RESULTS

The results of the regression equation (using OLS method) are presented in table 5.6. These

results are found to be at variance with the correlation analysis to some extent.

Among the variables chosen, the irrigated proportion of net sown area (X^1), number of agricultural workers per hectare of cropland (X^3), and rainfall index (X^4) show a positive and significant impact on the cropping intensity in the Coastal region and in the State as a whole. In both these areas the R^2 value is significant at one per cent level. In the other regions the irrigated proportion of net sown area, except for the North Maidan, is the only

Table 6

Factors Affecting Cropping Intensity in Karnataka Multiple Regression Results

Regression Coefficients of Independent variables

Independent variables	Region I	Region II	Region III	Region IV	State
Constant term:	26.7930	101.1769	108.6831	107.5324	94.4868
X1	0.3882** (.1820621)	0.2037*** (.628057)	0.0572 (5.387839)	0.1637* (9.889151)	0.1588*** (4.454795)
X2	2.5499 (3.74918)	-1.8651 (-.629645)	-1.0099 (1.456112)	1.6170 (2.38649)	0.5189 (1.009162)
X3	20.0748** (8.281081)	-0.8485 (-.127967)	5.7495 (6.298115)	-3.2137 (6.819339)	8.1631*** (3.336701)
X4	0.6081*** (.2202655)	0.1349 (.8485006)	0.0389 (4.487175)	0.0423 (5.618726)	0.0485*** (.0357963)
R2	0.77 ***	0.32	0.09	0.08	0.19 ***
R2	0.71	0.20	0.03	0.01	0.17
F-Ratio	11.92	2.61	1.51	1.12	9.86
n =	19	27	70	59	175

(Figures in the bracket are standard errors of coefficients).

*** Significant at 1 per cent.

** Significant at 5 per cent.

* Significant at 10 per cent.

Source of basic Data : Directorate of Eco. and Statistics, Govt. of Karnataka.

variable, which shows a positive and significant impact on the cropping intensity. In the North Maidan region none of these variables shows an impact on the cropping intensity. The R² being low and not significant in the Malnad, North Maidan and South Maidan regions, the results suggest the need for further research on the investigation of the possible variables having a bearing on cropping intensity.

CONCLUSIONS

The Study reveals that in spite of a 205 per cent increase in the area sown more than once during the study period the intensity of cropping in the State remains only about half of the all-India average and only a small fraction of the level in more advanced states like Punjab, Haryana and West Bengal. Within the State, the Coastal region and its Dakshin Kannada district have the highest level with an index value of 129.33 and 137.05 respectively and Kodagu district and the Malnad region the lowest with index values of 102.27 and 111.57 respectively. Besides Kodagu, Chikmagalur, Hassan, Bijapur, Bangalore, Kolar and Tumkur

districts also have a low level. Paucity of irrigation is responsible for this low development. The recent expansion of irrigation in the North Maidan and Malnad has led to a faster growth (387 per cent and 163 per cent respectively) of multiple cropping in these regions, though the level still remains below the average. The South Maidan had a moderate growth (138 per cent) and the Coastal region only a marginal increase (of 7 per cent). Significant contribution of dry farmed crops to multiple cropping reflects in the low positive correlation between cropping intensity and irrigation on the one hand and lack of collinearity between irrigation intensity, size of land holdings, number of agricultural work force per hectare of cropped area and rainfall on the other.

NOTE

This paper is a part of the final report of the research project 'Green Revolution in Karnataka : A Spatial Analysis' recently completed by the author with financial assistance from the ICSSR.

REFERENCES

- Boserup, Easter (1965) : *The Conclusions of Agricultural Growth*. Aldene, Chicago.
- Coutinho, O. and Sharma, T.C. (1991) : 'Cropping Intensity in Uttar Pradesh - A Regional Analysis', *Agricultural Situation in India*, March 1991, pp 821-25.
- Hayami, Y., and Ruttan, V.W. (1971) : *Agricultural Development, an International Perspective*, The John Hopkins University Press, Baltimore.
- Narain, Dharm and Roy, Shyamal (1980) : *Impact of Irrigation and Labour Availability in Multiple Cropping-A Case Study of India*, *Research Report 20*, International Food Policy Research Institute, Washington.
- Sawant, S.D. (1975) : 'Extent of Multiple Cropping in Irrigated and Un-irrigated Areas of India - Some Implications for Usefulness of Irrigation Statistics', *Indian Journal of Agricultural Economics*, Vol. 30, No.2 pp 47-53.

APPENDIX

Cropping Intensity and Explanatory Variables in Karnataka

Taluk/ Region	Cropping Index 1966-69	Intensity Index 1987-90	Gross irri. area as % of NSA X1	Land Holding size X2	Ag workers per ha of NSA X3	Rainfall Index X4
(1)	(2)	(3)	(4)	(5)	(6)	(7)
COASTAL REGION						
Mangalore	118.00	177.40	64.50	1.24	1.83	111.40
Udipi	141.30	151.20	41.20	1.71	1.87	97.20
Buntwal	140.60	143.60	54.90	1.45	1.46	95.40
Karkal	143.00	139.50	33.60	2.04	1.78	102.60
Bhatkal	117.50	136.00	23.30	0.68	1.74	92.60
Puttur	137.90	127.00	49.20	1.42	1.94	80.60
Honnarav	107.70	126.10	45.80	0.70	1.46	92.80
Coondapur	126.70	125.50	24.40	1.34	1.98	91.00
Belthangady	143.90	123.00	40.00	2.19	1.46	83.00
Kumta	110.70	121.40	27.60	0.78	1.66	81.20
Ankola	108.30	118.70	14.80	0.97	1.34	83.50
Sirsi	106.60	115.40	8.60	2.47	0.98	80.00
Siddapur	109.40	113.90	27.20	1.25	1.32	77.00
Sullia	122.40	112.50	43.50	1.77	1.01	100.00
Karwar	107.00	111.00	9.10	0.46	1.11	96.00
Yellapur	106.70	110.80	24.50	2.05	1.53	65.00
Haliyal	106.40	108.10	18.30	2.76	0.94	62.00
Mundgod	102.70	108.00	20.00	2.74	1.41	67.00
Supa	105.10	107.00	11.60	2.37	1.12	91.00
MALNAD						
Bhadravati	117.80	133.90	78.60	1.47	1.88	83.38
Honnali	113.20	131.60	32.80	2.34	0.97	75.60
Channagiri	104.70	121.70	24.60	2.15	1.01	83.30
Shikaripur	100.61	119.00	48.00	2.15	1.04	72.00
Hassan	105.10	117.10	6.50	1.34	1.22	85.70
Kadur	104.60	116.90	3.30	2.22	0.79	89.00
Shimoga	115.00	115.50	53.50	2.12	1.39	77.60
Belur	107.50	115.50	11.60	2.12	0.67	62.00
HNarsipur	105.20	113.80	16.40	1.46	1.14	117.19
Tarikere	103.50	113.30	12.20	2.21	0.94	95.00
Arkalgu	112.90	112.20	13.40	1.60	1.80	80.00
Hosanagar	100.00	111.60	37.40	2.23	1.34	77.00
Sorab	100.01	110.80	65.00	2.68	0.90	75.80
Sringere	100.00	108.90	10.70	1.84	1.64	99.00
Sagar	100.00	108.20	47.20	2.08	1.22	80.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Somwarpeth	105.40	106.70	10.30	3.34	0.51	92.00
Alur	107.80	106.60	19.50	2.06	1.22	83.00
Channarayapatna	103.20	105.80	4.90	1.61	0.88	75.40
Tirthalli	100.51	105.70	53.50	1.74	1.39	82.00
Arsikere	110.30	104.91	1.80	1.87	0.78	104.00
Chikamagalur	102.10	104.50	4.20	2.53	0.63	88.00
Koppa	100.00	103.70	13.70	2.72	0.63	90.00
N R Pura	100.00	103.10	19.90	3.27	1.06	62.00
Sakleshpur	101.60	102.50	20.24	3.30	1.22	77.00
Mudigere	100.18	101.40	1.60	3.69	0.41	74.00
Madikere	100.60	100.80	1.00	4.41	0.34	73.00
Virajpet	100.00	100.11	0.00	4.37	0.54	70.00

NORTH MAIDAN

Sindhur	107.57	139.10	62.10	3.82	0.77	94.80
Hirekerur	102.90	138.60	13.30	2.68	0.84	83.10
Bhalki	117.40	130.40	15.90	3.84	0.57	126.60
Savanur	na	128.50	4.00	3.71	0.69	84.75
Dharwad	07.27	127.20	4.00	3.53	0.69	73.50
Gangavati	107.90	126.20	56.60	3.02	0.92	92.00
Ron	103.60	125.60	12.20	3.70	0.55	61.00
Haveri	107.80	125.20	7.40	3.67	0.99	73.80
Sirguppa	105.30	124.60	51.50	3.15	0.76	74.00
Aurad	116.50	124.40	2.40	4.95	0.51	140.00
Ramdurg	102.03	124.20	24.50	4.14	0.53	71.60
Gokak	101.60	123.30	36.60	2.74	0.75	92.00
Humnabad	123.00	122.80	17.30	3.47	0.67	123.15
Raichur	101.30	120.70	16.80	4.07	0.45	83.60
Aland	101.23	120.50	6.10	5.38	0.47	118.00
Manvi	100.00	119.30	28.40	4.37	0.42	85.00
Yadgir	100.81	118.70	13.70	3.22	0.60	112.00
B Kalyan	108.00	117.90	8.80	4.04	0.69	100.00
Mudhol	100.89	116.80	51.10	3.94	0.59	106.00
Ranebennur	105.90	116.60	15.00	3.05	1.00	86.00
Navalgund	100.15	116.50	20.80	4.77	0.49	73.90
Raibag	101.50	116.00	67.30	3.43	0.78	91.40
Bidar	105.10	115.60	15.90	3.18	0.69	142.00
Hospet	102.60	115.20	68.30	1.82	1.56	67.00
Jamkhandi	102.07	115.10	55.30	3.74	0.67	0.96
Shorapur	100.95	115.00	51.30	4.52	0.42	53.60
Badami	103.30	114.80	10.10	3.36	0.54	79.00
Belgaum	105.60	114.80	9.90	1.68	0.48	87.30
Gadag	107.28	114.20	1.50	3.96	0.57	88.00
Hukkeri	106.60	114.10	15.40	2.08	1.03	93.80
Kudligi	100.86	113.80	10.90	3.04	0.65	73.70

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Nargund	101.76	113.70	67.10	3.97	0.52	88.10
Byadgi	108.80	113.30	11.00	2.83	0.90	67.00
Bellary	102.85	113.20	46.80	4.31	0.64	87.00
Chitapur	100.35	112.90	0.90	4.81	0.40	106.33
Kundgol	101.20	112.20	0.10	4.21	1.07	56.00
Shirahatti	100.00	111.80	4.80	3.87	0.61	62.00
Hadagali	100.07	111.50	15.70	3.43	0.61	74.00
Koppal	102.80	111.20	15.20	3.97	0.66	62.00
Bilgi	100.95	110.90	35.50	3.68	0.53	88.00
Gulbarga	101.64	110.80	4.30	5.62	0.40	120.00
Jevargi	101.68	110.80	4.80	6.14	0.34	84.00
Chincholi	101.11	110.70	4.30	4.89	0.57	93.00
Sindgi	101.57	110.60	10.30	6.02	0.36	155.00
Hungund	100.49	110.30	6.20	3.95	0.40	95.50
Harpanhalli	101.60	109.30	11.00	2.95	0.63	116.50
Deodurga	100.00	108.90	1.90	4.30	0.38	77.00
Bagalkot	101.24	108.60	12.40	3.80	0.53	95.00
Bailhongal	108.10	108.50	15.00	2.59	0.85	70.00
H. Bommanhalli	na	108.40	11.00	3.53	0.57	70.00
Soundatti	102.90	107.00	25.20	3.78	0.63	48.00
Lingsugur	100.00	106.70	26.30	4.82	0.45	51.00
Shiggaon	104.47	106.40	8.90	3.32	0.90	95.54
Chikodi	101.08	105.90	22.30	2.31	0.99	87.00
Yelburga	100.82	105.70	1.90	4.34	0.45	95.00
Sedam	102.50	105.40	2.30	3.95	0.43	120.00
Mundargi	101.10	105.30	10.80	4.19	0.52	79.00
Sandur	105.00	105.20	2.10	2.42	0.91	76.00
Shahpur	100.29	104.60	3.40	4.37	0.42	100.00
Bijapur	100.34	104.40	10.10	5.86	0.34	149.00
Afzalpur	101.40	104.30	4.80	6.06	0.45	92.00
Khanapur	100.31	103.40	24.60	2.53	0.85	79.00
Kalghatgi	103.20	103.20	12.60	3.34	0.69	62.00
Indi	101.07	102.80	14.10	5.85	0.34	152.00
Kushtagi	100.00	102.50	3.20	4.03	0.35	69.00
Muddebihal	100.55	102.20	3.20	5.07	0.34	128.00
Athani	100.50	102.10	28.80	4.40	0.48	100.00
Hubli	103.80	101.80	3.90	3.95	0.53	71.00
B. Bagewade	101.76	101.50	6.50	5.51	0.40	112.28
Hangal	100.51	100.50	35.20	2.65	0.94	73.00
Harihar	137.82	142.60	74.10	2.50	1.21	120.70
S R Patna	123.50	135.00	52.80	1.90	1.16	100.00
K R Nagar	104.10	133.80	51.90	1.20	1.35	38.40
Hiriyur	119.40	133.50	18.30	4.16	0.50	120.70
Periyapatna	127.30	132.70	10.40	2.06	1.02	96.80
Ch. Nagar	131.32	129.50	12.00	1.67	1.15	153.70

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Mysore	126.40	129.50	8.00	1.61	1.02	93.30
Chitradurga	108.50	129.00	13.20	2.66	0.64	83.10
Nanjangud	109.11	128.90	44.50	1.55	1.11	57.00
Mandya	104.30	126.60	54.50	1.50	1.64	89.30
Davangere	108.30	124.90	51.00	2.67	0.98	64.70
Yelandur	108.40	123.90	58.50	0.91	1.83	74.80
Gundlupet	113.46	123.80	12.00	2.05	1.04	98.90
K R Pet	102.50	121.60	32.90	1.05	1.07	93.20
Holalkere	107.70	120.90	6.90	2.67	0.64	99.70
H D Kote	102.30	120.20	12.30	1.86	1.02	65.30
Gubbi	105.38	119.60	13.40	1.58	0.64	87.00
Maddur	111.50	119.10	49.20	1.06	1.66	111.00
Jagalur	101.56	118.40	16.80	3.52	0.64	69.70
Hosdurga	106.70	114.50	1.20	2.66	0.63	183.30
Pandavapura	103.70	114.20	54.60	1.41	1.19	72.00
T Narsipur	112.00	113.80	61.40	1.23	1.29	79.00
Molakalmuru	105.40	113.10	24.20	4.38	0.62	89.90
Kolar	101.20	113.00	29.10	1.47	1.19	92.00
Challakere	116.28	112.90	18.20	5.07	0.57	101.00
Koratgere	102.00	112.80	17.80	1.86	1.13	112.00
Sira	107.30	111.70	19.60	2.63	1.11	105.00
Nagamangala	100.90	110.50	10.00	1.22	0.85	132.00
Madhugiri	105.00	109.80	62.00	1.62	1.21	96.60
Malavalli	111.40	109.80	3.50	0.99	1.19	108.00
Kollegal	102.70	108.90	0.20	1.58	1.21	97.00
Chintamani	101.58	108.10	23.10	1.80	1.19	68.00
Hoskote	104.25	107.70	22.70	1.79	1.12	94.00
Mulbagal	108.00	107.00	23.60	1.78	1.28	75.80
Sidlaghatta	101.20	107.00	23.30	1.56	1.58	61.00
Gauribidanur	103.40	107.00	36.30	1.71	1.54	85.00
Gudibanda	119.40	107.00	21.10	1.85	0.92	93.60
Hunsur	124.20	106.90	13.60	1.63	1.02	99.00
Chik Ballapur	104.80	106.50	24.90	1.37	1.49	72.00
Bagepalli	101.14	106.10	19.50	2.33	1.12	76.00
Bangalore South	102.50	106.10	18.60	1.73	1.17	95.00
Channapatna	104.20	10.10	21.90	1.25	1.63	104.00
Davanhalli	102.90	106.10	27.70	1.77	1.42	69.00
Kanakapura	106.30	106.00	13.80	1.79	1.17	98.00
Kunigal	103.39	106.00	20.90	1.55	0.84	8.19
Tumkur	106.18	104.90	18.90	1.48	1.11	84.00
Doddaballapur	101.09	104.80	15.30	1.90	0.83	69.00
Anekal	106.40	104.70	21.60	1.80	1.15	103.00
Turvekere	104.10	103.90	9.80	1.60	0.78	76.00
Ramanagaram	101.30	103.70	16.10	2.02	1.29	112.00
Srinivasapur	108.80	103.50	16.20	1.84	1.15	76.00

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Bangarpet	101.70	103.40	23.30	1.69	1.290	119.00
Malur	105.90	103.40	17.30	1.70	1.06	71.00
Bangalore North	101.50	103.20	21.00	1.63	0.98	97.00
Magadi	100.00	102.90	12.70	1.91	0.93	81.00
Nelamangala	100.00	102.90	13.10	2.41	0.71	98.00
Pavagada	101.60	102.60	8.40	4.47	1.11	117.00
Chikanaykanhalli	101.13	101.90	5.50	1.68	0.84	96.00
Tiptur	100.68	100.80	3.10	1.64	0.77	100.80

Source of data : Directorate of Eco. and Stat., Govt. of Karnataka.

ADDRESS OF THE AUTHOR

Dr T C Sharma

Former Principal, R.P.D. College, Belgaum,
950, Mahavir Nagar, Peeranwadi,
Belgaum 590 014 (Karnataka)