Short Communication

Mapping agricultural indicators of Himachal Pradesh and their trends

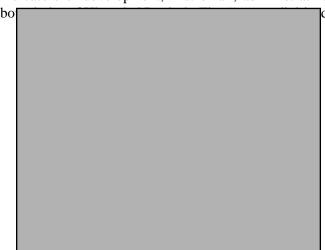
R.M. BHAGAT AND SHARDA SINGH*

Centre for Geo-informatics, CSK HPKV, PALAMPUR (H.P.) INDIA

In the modern development planning and policy decision making process, ready and quick availability of information is a pre-requisite. The developmental planning is best guided by the socio-economic data/information collected continuously over time and space. This information can provide a basis for preparing current status, future scenarios, trends and decision making. In Himachal Pradesh, some data/information on social and economic conditions is currently available. However, most of these data are in the form of either tabulated statistics or manually produced geographic information e.g. maps, charts and other static information.

These data can be accessed but can not be quickly compiled for multi-sector and problem oriented analysis. This results in long delays in decision making and increases the response time for the planners and decision makers. Hence, the packaging of socio-economic/development data into indicators is one way of simplifying the complex and detailed information contained within tabulated statistics. This paper is an endeavor to project the Indicators of Agricultural development (Area under Food crops, Average Land Holding Size, Cropping Intensity, Livestock Intensity, Fertilizer Consumption and Irrigation) in Himachal Pradesh for quick visualization and decision making.

In order to present spatial mapping of agricultural indicators of development, first of all, administrative



^{*} Author for correspondence.

and geo-referenced and put on GIS platform (Bhagat et. al. 2006)¹. Then data for agricultural parameters Area Under Food Crops, Area Under Irrigation, Average Land Holding Size, Cropping Intensity, Fertilizer Consumption, and Livestock Intensity was collected from secondary sources².3,4,5 and digitized. The whole data was put on GIS platform. Each parameter was joined with the attributes of spatial file of administrative boundaries of Himachal Pradesh. Then, parameters(Area under Food crops, Average Land Holding Size, Cropping Intensity, Livestock Intensity) were mapped on the state of Himachal Pradesh for the two/three available trend years(Fig 2). Other parameters can be mapped and visualized in same manner.

Area under Food crops was maximum in Shimla district followed by Kullu and Mandi in 1981. In 1991, Hamirpur district was at the highest, followed by Kinnaur and Shimla. Same pattern was seen in the year 1999 whereas district Kangra had the lowest area under Food crops in the all three trend years.

Average land holding size was maximum in Sirmaur (2.35 ha) followed by Solan (1.95 ha) in 1991. It was lowest in Kullu (0.81 ha). Expectedly, the size declined in all the districts by 1996. However, in 1996 the respective values for the same group of districts were 2.28 ha (Sirmaur), 1.85 ha (Solan) and 0.78 ha (Kullu).

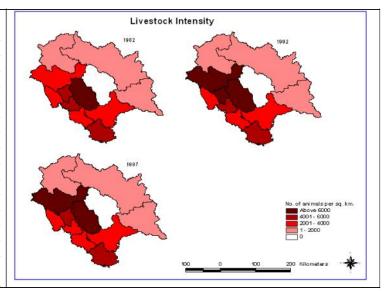
Cropping Intensity in 1981 was highest in Hamirpur district at 194.8. It was lowest in Lahaul Spiti at 100.0 as only one crop is taken in this district in a year due to the fact that it is snow covered for most part of the year. In other districts, it was low in Solan (154.5) and Chamba (150.7). During 1999, the value of CI increased marginally in Hamirpur to195.9. However, there was not much change during the 1981-1999, period in most of the districts except for Kangra where it increased from 157.7 to 187.3 and Kinnaur where it declined from 134.7 to 116.1 and Shimla (152.5 to 141.6).

Livestock intensity helps in knowing us the extent of pressure that livestock exert on the natural resources of any region. In order to have a broad idea, number of total animals per sq km of the effective geographical area

Fig. 2: Tables and Trend maps of Agricultural Indicators:

Area under	Food cr	ops ('000 l	hect)	Area Under Food Crops		
1980-				The state of the design of the state of the		
District	81	91	1998-99	1990-91		
Chamba	95.4	95.8	95.5			
Kangra	92	92.4	93.6			
Lahul-						
Spiti	98.3	93	95.4			
Kullu	98.7	98.6	98.7			
Mandi	98.3	98.5	98.3	77		
Hamirpur	97.3	99.4	99.4	1998-99		
Una	94.1	94.3	94.7			
Bilaspur	97.6	98.1	98.7			
Solan	93.7	95.5	94.6	1980-81		
Sirmaur	96.2	91.1	95.8	95 · 94 95 · 96		
Shimla	99.4	99.2	98.8	37 - 38		
Kinnaur	97.8	99.3	99.4			
Himachal		77.3		100 0 100 200 Kilometers		
Pradesh	96.5	96.2	96.9			
Average Land Holding Size (ha.)				Average Holding Size		
State/ Distr	rict	1991	1996	-		
Chamba		0.91	0.88			
Kangra		0.96	0.93	1991		
Lahaul-Spi	ti	1.61	1.63			
Kullu		0.81	0.78	min i min		
Mandi		0.98	0.95	I my		
Hamirpur		1.17	1.11			
Una		1.17	1.39			
Bilaspur		1.18	1.08			
Solan		1.95	1.85			
Sirmaur		2.35	2.28	Amerage Mobiling (1)m (th heet)		
Shimla		1.17 1.4		Above 1.8 10 - 2.0		
Kinnaur		1.43	1.48	64-1.0 19-10-1		
Himachal				4		
Pradesh		1.21	1.16	100 0 100 200 Kilometers		
	Cronning	g Intensity		Crop Intensity		
State/				OTOP III MOTIBILY		
District	1981	1 1991	1999	1998-91		
Chamba	150.7			1		
Kangra	157.7			The state of the s		
Lahaul-	13/.	101.2	107.3			
Spiti	100.0	160.3	102.9			
Kullu	160.4	_				
Mandi	174.6					
Hamirpur	194.8			1999-00		
Una	171.3	_				
Bilaspur	189.9			Crop Intensity (in %)		
Solan	154.8			Above 180.0		
Sirmaur	180.2			140.1- 160.0 120.1- 140.0		
	152.5	142.6	5 141.6	Up to 120		
Shimla	152					
Shimla Kinnaur	134.7		2 116.1	A.		
	_		2 116.1	100 0 100 200 Kilometers		

Livestock Intensity(No. of animals per							
sq. km.)							
State/Districts	1982	1992	1997				
Chamba	1860	1970	1908				
Kangra	3643	6103	7726				
Lahaul-Spiti	462	630	84				
Kullu	na	na	Na				
Mandi	6222	8134	6618				
Hamirpur	5623	6681	5604				
Una	3843	3360	2598				
Bilaspur	4118	4171	3328				
Solan	3064	2981	2639				
Sirmaur	4646	4832	4110				
Shimla	3920	2481	2087				
Kinnaur	940	222	351				
Himachal							
Pradesh	3264	3321	1989				



(including barren lands, culturable wastes, pastures and grazing lands and total fallows) was worked out 1982, 1992 and 1997. Livestock intensity in 1982 was highest in Mandi (6222 animals /Sq km) and was least in Lahaul Spiti (462). It was highest for Kangra (7226) and again lowest for Lahaul Spiti (84).

A significant overall development in the Agricultural sector was shown in the state of Himachal Pradesh in almost all the agricultural parameters. Although, population⁶ has increased manifolds in all the districts of Himachal Pradesh, yet a tremendous progress has been noticed in production of food-crops, cropping intensity, livestock intensity over a 30 year period.

REFERENCES

Bhagat, R.M., Singh, S. and Kumar, V. (2006). "Agroecological zonation of Himachal Pradesh-Agriculture System Information Development at micro-level" Project Report submitted to Director Agriculture, Govt. of Himachal Pradesh, Shimla (HP), India

Districts in Figures (2001). Department of Economics and Statistics, Himachal Pradesh, Shimla, India

Statistical Outline of Himachal Pradesh (various issues), Department of Economics and Statistics, Government of Himachal Pradesh, India

Himachal Pradesh, Human Development Report – 2002 http://www.censusindia.net

Census of India, 1981, 1991, 2001.

Received: October, 2006; Accepted: March, 2007