CHAPTER NO. V

LANDUSE AND SOIL

INTRODUCTION

From old time the land is used by man for various purposes. Use of the land was made according to his requirement and the technical aids. Use of land i.e. landuse for perticular purpose and the method of using land shows the socio-economic status of perticular society. It also indicates the status of the community which uses the land. The extent of landuse provides the information about the extent of exploitation of the land as a resource for the welfare of the individual and of community at large.

The landuse survey in agriculture provides the information about extent of landuse under each crop. It is useful for future planning of landuse. In country like India planning of landuse is made according to individual's dicisions. While planning most of cultivators take into consideration only the prices of agricultural products in market. Due to this there is possibility of failure of the plan. Therefore there is a need of changing views of cultivators while planning landuse.

The choice and combination of crops grown by individual cultivators depend on several factors. It primarily depends on the soil and climate, farmer's requirement of food

and fodder, market trends and prices, the availability of labour, capital and irrigation facilities. Of the primary factors climate is constant for a small region like part of sangli district. But there is a great variability in soil in a small area also. Some soils are fertile and productive while other may not be. fertile, soils gives more yield of crops compaired to infertile soils. Therefore while using land one must see the fertility of soil first and then think over suitability soils for a perticular crop for higher yield. As discussed in introductory chapter, in general soils of the sangli district except western part of shirala taluka are productive. The deep, alluvial soils along the river basins are most productive. Productive soil may not be fertile but fertile soils are productive. Therefore attempt is made in this chapter to find whether land in the Sangli district is used according to fertility of soil or not. Different soils contain different amount of main plant nutrients and also a nutritive element required by different crops is not same. Therefore attempt is also made to find whether the soils are used according to content of main plant nutrients in soil and nutrients required by crops (plants).

Requirement of Nutrients by Different Crops -

Fertility- determing main nutritive elements i.e. N, P and K are removed in greater quantity than the soil can supply. Because plants draw nutrients from the soil on which they grow. The requirement is generally met from nutrients

released from the mineral reserves of soil by the normal process of weathering. The nutrients removed by high yielding crops must be replaced by adding adequate quantities of fertilisers to ensure profitable farming. If this is not done the soil will get infertile and the yields will decline.

In country like India, crops are being taken year after year without replacing the stocks or without knowing the stock of N, P, K in the soil. The result of this is the fertility and productivity of the soil has reached a low level. Therefore there is a need of knowing the stock of N, P, K and adjust the crops according to this stock.

i) The crops like maize, sugar cane, potato, tobacco, Paddy and groundnut require large quantities of Nitrogen. Of these groundnut being a legume is capable of obtaining part of its N requirements from the atmosphere.

ii) The crops like, maize, potato, high yielding variety of paddy, wheat and cotton requires large amount of phosphorus.

iii) The crops like sugarcane, high yielding variety of paddy, potato, maize and bajari requires large amount of potassium.

iv) Potato compaired with tobacco requires more potash while later requires more nitrogen. Among cereale wheat needs the least potash and bajari the least P_2O5 followed by jawar.

Existing Landuse and soil -

It is clear that the perticular crop requires perticular main plant nutrient in more amount. Therefore the soil (land) used for perticular crop must be capable to supply sufficient amount of needed plant nutrients, so that the crop will give maximum yield. Otherwise production will be least. And this method of using soil (land) for perticular crop will be the best method of landuse. In this chapter attempt is made to seen whether the crops are taken according to availability of plant nutrients.

T A B L E NO. 5.1

THE TABLE SHOWING TALUKAWISE CROP COMBINATION IN SANGLI DISTRICT-1974-75.

Sr. No.	Taluka	Crop combination (Rankwise and cropwise)
1	Miraj	Six crop combination- Ja,Gn,Ba,Sc,Tu,Wh,
2	Tasgaon	Nine crop combination- Ja,Gn,Sc,Wh,Gr,Tu, Ba,Ma,Sp.
3	Khanapur	Ten crop combination- Ja,Ba,Gn,Ma,Wh,Tu, Sp.Gr.Su.Ch.
4	Atpadi	Three crop combination- Ba, Ja, Ma.
5	K-Mahankal	Three crop combination- Ja,Ba,Ma
6	Jat	Two Crop combination - Ja, Ba,
7	Walwa	Nine crop combination- Ja,Gn,Sc,Ki,Sp,Tu,
8	Shirala	Eleven ,, ,, -Ri,Gn,Ja,Sc,Gr.Wh,Sp,Ch,Tu, Wh,Gr.To. Pn,Ba

Source - Project Report, by J.B.Chaugule. pp 20.a

The talukawise crop combination with ranking derived for the year 1974-75 by J.B.Chougule (1981) is used to decide the important crops grown in each taluka. The talukawise crop combination with ranking is given in table No. 5.1.

The table No. 5.1 shows that the Jowar, Bajara, Groundnut, Sugarcane, Wheat, Mataki, Rice are grown in more amount from most of talukas of the district. The table No.5.2 given below also shows that the share of land used for above mentioned crops is more than other crops.

T A B L E NO. 5.2

PERCENTAGE OF AREA UNDER CROP TO THE TOTAL GROSS CROPPED AREA DURING THE YEAR:1974-75.

Sr.No.	Name of the crop	Percentage of area under crop to the gross cropped area during 1974-75
1	Rice	2.26
2	Wheat	3.35
3	Jowar	35.58
4	Bajara	17.12
5	Total pulses	12.59
6	Sugar-cane	3.26
7	Groundnut	8.04

Source - Ph D Thesis, R.N. Hardikar

Compiled by Hardikar pp - 209

"The sailent features of the cropping pattern

in the district can be stated as follows:

1) The total area under rice crop in Shirala, Islampur and Ashta Spatial units account for 75% of the total area under rice in the district.

ii) Sugarcane is mainly grown in the western part of the district, along the banks of Krishna and Warana rivers in Shirala, Islampur and Sangli-Miraj spatial units.

iii) Nearly 93% of the area under rabbi Jowar lies in the eastern drought-prone area.

iv) Bajara crop is mainly grown in Jat, K-Mahankal and Atpadi spatial units.

v) Tasgaon and vita sub-regions together accounts for 45% of the total area under termeric.

vi) Tabacco is mainly grown in the areas around Ashta, Sangli-Miraj and Tasgaon sub-retions."[1]

If we compare the use of land made by cultivators for different crops in different parts of the study region, with the fertility of soil in respect of pH, TSS, N, P and K. It is clear that the use of soil (land) for sugarcane in all parts mentioned above is not proper with respect to pH, TSS and N. Because the pH and TSS values are high for most of the soils which may be toxic to the growth of sugarcane. And availability of N in all strata is very small but actual requirement of it by sugarcane is more. Same is the condition found in respect of tobacco, paddy and groundnut.

Use of land by cultivators for rabbi Jowar in drought-prone area is a proper landuse. Because the soils

of this region have medium amount of P and the crop Jowar also requires the same amount of phosphorus for proper growth and high yield. But there is a fear of decreasing yield due to accumulation of salts near soil surface by capillary action in rabbi season.

The use of soil (land) for sugarcane, paddy and Bajara in different parts of the district mentioned above is proper in respect of potassium. Because the soils in all parts of the district have medium to high amount of potassium. And these crops also requires more amount of K.

Change in landuse and soil -

The cropping pattern of the region is generally referred to by the area under different crops grown in the region. The most of present cropping pattern in different regions has been more or less traditional. It is based on the suitability of crops to be grown in relation to the agro-climatic conditions in the region. It has been however observed that the rigidity in traditional cropping pattern is slowly breaking down partly with the onset of green revolution under Indian climatic conditions. It is because of irrigation which plays an important role in this context.

The impact of the trends in the prices of agricultural commodities is invariably seen in the landuse pattern in a region. The prices of agricultural commodities influence the economic condition of the farmer. In the agricultural country like India, the economic condition of

farmers have reflected the economic condition and pattern of country. There is a general tendancy of the people and as well as the farmers to produce those commodities in large amount which have more value in the market. Same is the case found in the sangli district. But it must be kept in mind by every farmer that the agricultural products will be sent in the market for sell only when the yield of crop per unit of land is more than sufficient i.e. surplus. The maximum yield of a crop per unit of land depends on several factors like climate, soil, use of pesticides, improved seeds, improved machinary etc. Soil is most important of them. The soil and climate are the first, while others are later, responsible for yield of crop. The climatic conditions in small area are some what same. Therefore change in yield from the field to field is only due to the soil fertility. The fertile soils are conducive for higher yields. Therefore attempt is made here to see whether there is a trend to select and use the land according to plant nutrients required by crop.

The change in cropping pattern from 1950-51 to 1974-75 is given in table No.5.3. The table shows that the Jowar is leading crop followed by Bajara. However percent increase in area under these crops is very less as compared to increase in the area under sugar-cane. The five sugar factories around sangli city are ready markets for sugarcane. Therefore with progress in sugar factories with the time, there is continuous increase in area under sugarcane from 1950-51

to 1974-75. The increase in percent area under sugarcane is + 2.82 percent in 1974-75 as compared to the area in 1950-51 and it is highest than any other crop in the district. It seems that the cultivation of sugarcane is market oriented. The decision of sugarcane cultivation is governed more by the location of the sugar factories, rather than availability of appropriate soil nutrients. This is rather less scientific. It is a case of improper utilization of the soil base.

T A B L E NO. 5.3

CHANGE IN CROPPING PATTERN FROM 1950-51 to 1974-75

Sr. No.	Name of the crop selected	Percentage of area under crop to the total gross cropped area during the year				Volume change % of cropped area involved in change
		1950-51	1960-61	1970-71	1974-75	
1	Rice	1.53	1.98	2.53	2.26	+ 0.73
2	Wheat	1.79	2.20	2.38	3.35	+ 1.56
3	Jowar	35.27	38.99	35.90	39.58	+ 0.31
4	Bajara	19.25	19.79	17.51	17.12	- 2.13
5	Total pulses	11.79	10.91	10.38	12.59	+ 0.80
6	Sugarcane	0.44	1.36	3.12	3.26	+ 2.82
7	Groundnut	9.25	12.47	12.23	8.04	- 1.21

Source: PhD thesis, by R.N. Hardikar

compiled by Hardikar pp 209

In case of wheat also, there is continuous increase in area under it from 1950-51 to 1974-75. The increase in percent area under wheat is + 1.56 percent in 1974-75 as compared to the area in 1950-51.

Out of the two crops mentioned above, the sugarcane requires large amount of N for higher yield while wheat requires large amount of P for higher yield. But actually the most of soils perticularly sugarcane and wheat growing soils lack in N and P or may not be sufficient for proper growth of these two crops. There is experience that production per unit of land of sugarcane is decreasing with the time. Therefore cultivators have to see the content of N and P while using the land for sugarcane, and wheat.

REFERENCES:

1. Hardikar R.N. - "An Inquiry Into Spatial Patterns In The Agricultural Landuse. Thesis submitted To Shivaji University, Kolhapur (1983) pp 149.