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AGRO-CALORIMETRIC TRIANGLE

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BACKGROUND AND OBJECTIVES:

For a developing country like India with an agro-based economy, land-particularly agricultural land is the key resource because it provides sustenance to nearly 70 percent of the total population of the country. With the continuously increasing population the competition for land (both agricultural and non-agricultural uses) is rising. As such the agricultural land is always under constant threat of being used for non-agricultural purposes and thereupon an increasing high cropping intensity to meet the food requirements for the growing millions. The cropping intensity has reached almost the saturation point with little scope left for further intensification. India has become almost self-sufficient in food production, yet in terms of land-productivity, the country lags far behind China, Japan, USA, Russia, France and many European countries despite the fact that the country is bestowed with plenty of highly fertile agricultural land and abundant monsoon rainfall. There may be several factors for the low productivity of land but the main factor is the improper and faulty planning in land utilization. For example, a piece of agricultural land which is most suitable for any particular crop e.g. paddy, is also being used for other less suitable crops like wheat, pulses, millets, maize, etc. This crop diversity often leads to productivity decline in the prevailing farming conditions in different regions of the country barring a few like Western U.P., Punjab, Haryana, etc. Where agricultural infrastructure conditions are much better. Thus in the present circumstances, the decisions for agricultural land use require serious attention and planning for improving the land productivity in such a way that it should keep pace not only with the accelerating growth of population but achieve the target of surplus production. It calls for the evaluation of agricultural land so that effective plans could be made for increasing the food production.

APPROACH AND METHODS:

Today the vital concern is whether food grain production is providing the adequate nutrition to the people at grass-root level. As such it becomes imperative to evaluate the agricultural land in terms of standard Nutrition Unit (SNU) which is expressed in terms of per annum calorie intake of a person on an average. In Indian conditions it comes to 800000 calories. The major objective of the paper is to quantify the nourishment level on the basis of varying SNU in different land classes at micro level to reach a logical conclusion.

The present paper intends to test the hypothesis that agricultural lands in India do not provide sufficient SNU and the problem becomes more acute from higher to lower land classes. For testing the hypothesis cartographically, three agricultural parameters – intensity of cropping, diversity of cropping and SNU per hectare have been projected on a single format. The index values of these three parameters have been plotted on the three axes on a suitable scale divided into High, Medium and Low. The points separating the High, Medium and Low values are at equal distances to make the comparative analysis more meaningful. By joining these three points, a triangle providing measures for the concerned attributes emerges. We have named this triangle as Agro-calorimetric Triangle. With the help of this triangle, one can easily visualize at a glance the existing agricultural scenario of an area.

For the purpose of the present study, a village Madhwapur in Siwan district of Bihar state, located in the intensely cultivated Middle Ganga Plain of India has been selected. The findings are based mainly on primary data obtained from an intensive field work. Secondary data for the present work has been collected chiefly from the revenue reports prepared by the Block Development Office. These data have been processed to prepare maps showing the land classes, soil types, land use and crop–association in the village. The Index values for the three concerned variables, namely intensity, diversity and land carrying capacity have been calculated based on different formulae. To get the index values for carrying capacity, the methods of Stamp, 1960, Shafi, 1960 have been used. An ideal agro-calorimetric triangle for the village has been drawn taking into account the present farming conditions. Another ideal agro-calorimetric triangle has also been suggested using the above-mentioned parameters. Deviations from the ideal conditions may lead to certain special situations found in areas of highly developed agriculture, crop-

specializations, developed agriculture and intensive subsistence commercial agriculture, etc. Agro-calorimetric triangles have also been drawn for the above-mentioned situations.

RESULTS:

Agro-calorimetric triangle drawn for the village shows a deficit of 28.15% in SNU production. Other land classes are also deficient in SNU production. This confirms the first part of the hypothesis. However agro-calorimetric triangles drawn for the different land classes of the area expose the paradoxical situation in agriculture at micro level. Lowest category lands supposed to have the minimum potential in terms of SNU production are actually producing the maximum which is contrary to the second part of the hypothesis.

CONCLUSION AND FUTURE PLANS:

With the help of this study it can be concluded that the higher classes of lands are not being harnessed properly. Imbalance between crop intensity and diversity has led to decline in crop productivity. Land evaluation with the help of agro-calorimetric triangles will be helpful for the agricultural planners in the country to suggest ways to improve the overall agricultural scenario and nutrition level.