LAND USE INTENSITY AND AGRICULTURAL PLANNING: A Case Study in Rural Bengal

Dr. Ranjit Kr. Ghosh

Associate Professor of Economics, Alipurduar College, Alipurduar

ABSTRACT   *There is no denying the fact that during the last decades of our national planning era India has appeared as or has thrown off portents to appear as a major agricultural power of the World. But what is still remaining unfortunate is that after knowing efficiently the production know-how by the farmers and available production environment in almost all parts of the country our national planners have still confined themselves only to some selected regions of our country in raising of the agricultural products. The government has already spent a lot of money and has taken a good number of programmes in its different Five Year Plans for the development of this sector but the ground reality is rather half-hearted. One of the most important reasons is that the nationally cheap input land is remained in the fold of underutilization in many parts of the country since the very beginning time of our planning exercise. This study will try to open up the path for proper agricultural planning in rural economies of the country by utilizing the nationally cheap input land appropriately.*

Keywords: *Planning era, underutilization, organic base, etc.*

INTRODUCTION

There is no denying the fact that during the last decades of our national planning era India has appeared as or has thrown off portents to appear as a major agricultural power of the World. But what is still unfortunate is that after knowing efficiently the production know-how by the farmers and available production environment in almost all parts of the country our national planners have still confined themselves only to some selected regions of our country in raising of the agricultural products. The government has already spent a lot of money and has taken a good number of programmes in its different Five Year Plans for the development of this sector but the ground reality is rather half-hearted. One of the most important reasons is that the nationally cheap input land is remained in the fold of underutilization in many parts of the country since the very beginning time of our planning exercise. Two main factors are generally responsible for this underutilization of land. **First** is the chronic negligence of our national planners in developing the agricultural sector accompanied by sound inputs and outputs markets in such a manner that each and every one of our farmer can able to get the necessary and qualitative inputs as and when they require and at the same time none one of our producer left in the output market with their produce unsold at the end of the day. **Second** one is the lack of development of the agricultural infrastructure on the part of the Republic particularly, the development of irrigational infrastructure and organic base of the rural economy.

We have already adopted the new production technology at the time of the initiation of what we have called the Green Revolution blindly without knowing the potentiality of the agrarian area of the country and just only relied on the political agenda of the strong farmer lobby operated the then political scenario. As a result, the vast area of our national economy remains outside the proximity of proper agricultural development agenda of the Republic. One important upshot of this motivated negligence that has been come out in the form of lower intensity value of use of land. Our area economy is also remained in the proximity of the neglected zone. So, the main task of this study is to divulge the ground reality of the extent of land use in this grass-root rural area economy in terms of number of days a particular plot of land is used or the number of crops a particular plot of land produces in an agricultural year and, also to suggest an autonomous agricultural plan based on existing or newly created resource-institutional-infrastructural set up of the economy.

STUDY AREA

For the purpose of this present study we have considered a local level economy which is made up with the villages around the village market town of **Baneswar** and the market town itself in **Cooch Behar District** of **West Bengal**. The two villages we considered for special study are **Hatiduba** and **Kaljani** under the **Baneswar Gram Panchayat**. We have considered these two villages due to their strong base in agricultural activities. The first village is nearer to the market town Baneswar and relatively more developed in all

respects than the second village. Again, the second village has the facility of ***River Lift Irrigation Water*** arranged by the government but the first village has no such facilities from the end of the government. So, our choice of these two villages may also show the effect of cheap irrigational facility in agricultural activities of the economy. Elsewhere these two villages will be termed as village-1 and Village-2. In fact, the whole Baneswar Gram Panchayat area is synonymous with the local level rural economy being studied. The sale town or market town of Baneswar is the centre of interaction of the activities of the villages around.

METHODOLOGY

Now we are in need of selecting a methodology that will be more suitable for our type of object. For measuring the land use intensity in our local level economy, we resort to a two-phase and one stage stratified sample. In the first phase, out of total 721 households, we have surveyed each and every household of the sample villages Hatiduba and Kaljani with a specially prepared household schedule. In the second- phase, for measuring the land use intensity we have rather confined our study on 200 sample households taking 100 households from each sample village. Selection of these 200 sample households has been done on the basis of stratified sampling taking farm size **[**Up to 2 Acres, 2-4 Acres, 4-6 Acres and Above 6 Acres] as strata. Out of these 200 households 133 were the farm households. Again, out of these 133 farm households 63 belong to our Hatiduba village and the rest belong to Kaljani village. We have used the simple mathematical and statistical measures for our purpose. All information is collected with a specially prepared activity schedule for the period of 2015-16 which is synonyms to our traditional agricultural year.

MEASURES OF LAND USE INTENSITY

We have already mentioned that the nationally cheap input land is remained in the fold of underutilization in many parts of the country since the very beginning time of our planning exercise. In explaining the extent of land use in an agricultural year in a rural economy, we use the concept of "**Land Use Intensity**". This concept will help us to determine the proportion of land remained unused in an agricultural year. We have adopted three methods to measure the land use intensity in our sample economy. The **first** is the ratio of number of days a plot was put to use to the total number of days in an agricultural year. So, on the basis of existing technology-mix available in our area economy if the lands are used for 365 days including thrashing and storing, the intensity is given as 1.00. If the plot of land is used for Aman paddy (150 days or more), intensity is calculated at 0.42. Similarly, if the plots of land are used for both Aman paddy and Ravi crops (240 days and more), the intensity value is calculated at 0.67, if the plots of land are used for Aman paddy, Ravi crops and Boro paddy (350 days or more), the intensity value is 0.96. However, if the said lands are used for Aman paddy, Ravi crops and Aus paddy/ Jute then the calculated intensity value will be 1.00. The **second** method is a traditional one and used by The Agricultural Department of our country. According to this method, intensity of use of land is simply the ratio of the Gross Cropped Area to Net Cultivable Area. If a plot of land has been used for the raising of two crops then the intensity value will be 2.00 and so on. In order to measure the land use intensity of **third** kind, we simply assume three HYV crops and a quick yielding vegetable are raised in a plot of land throughout the year. Therefore, according to this method, land use intensity is the ratio of number of crops raised actually in a plot of land during the agricultural year to the total number of crops could be raised during the same year.

Using these methods, we have calculated three land use intensity indices by farm sizes for total sample, sample village-1, sample village-2. In calculating the land use intensity indices we have carefully collected all information from the farmers regarding the number of crops produced in different plots of their land and the actual number of days taken to produce each crop including thrashing and storing by several friendly sitting with them. All are displayed in Tables 1 to 3.

Table 1: INTENSITY OF LAND USE OF TOTAL SAMPLE BY FARM SIZE

Operational Holding (Acres)	Amount of Net Cultivable Area (Acres)	Intensity Index- I	Intensity Index- II	Intensity Index- III
Up to 2	147.10	0.952	2.84	0.839
2-4	186.10	0.914	2.72	0.750
4-6	185.92	0.821	2.48	0.685
Above 6	114.43	0.766	2.25	0.641
Total	633.55	0.868	2.59	0.732

Field Survey: 2015-16

Table 2: INTENSITY OF LAND USE OF VILLAGE- 1 BY FARM SIZE

Operational Holding (Acres)	Amount of Net Cultivable Area (Acres)	Intensity Index- I	Intensity Index- II	Intensity Index- III
Up to 2	113.58	0.947	2.81	0.835
2-4	136.45	0.914	2.71	0.731
4-6	127.67	0.807	2.43	0.672
Above 6	71.59	0.753	2.21	0.618
Total	449.29	0.866	2.58	0.723

Field Survey: 2015-16

Table 3: INTENSITY OF LAND USE OF VILLAGE- 2 BY FARM SIZE

Operational Holdings (Acres)	Amount of Net Cultivable Area (Acres)	Intensity Index- I	Intensity Index- II	Intensity Index- III
Up to 2	33.52	0.967	2.92	0.855
2-4	49.65	0.915	2.74	0.804
4-6	58.25	0.852	2.58	0.713
Above 6	42.84	0.789	2.33	0.679
Total	184.26	0.875	2.63	0.755

Field Survey: 2015-16

We can see from the Table 2 and Table 3 that sample village-2 is in better position in case of intensity indices of land use in comparison to sample village-1. The three land use intensities for sample village-1 are 0.866, 2.58 and 0.723 respectively and for sample village-2, the said intensities are 0.875, 2.63 and 0.755 respectively. This is mainly due cheap irrigation facilities (River Lift Irrigation facility) in the village, small sizes of operational holdings and less scope of subsidiary occupations of the employed adults.

If the intensity rates would stand at 1.00 according to our first and third methods, we could say that there is no slack in respect of use of land at the level of present technology mix. As our calculated rates are less than 1 in both the sample villages, the slack in respect of land use is rather vast. Again the land use intensity indices, according to our second method, for sample village-1, sample village-2 and total sample economy are 2.58, 2.63 and 2.59 respectively. Our calculated figures of land use intensities show that nearly 28 percent land of the economy remains unused in an agricultural year leaving the fair scope of more output, income and employment in our local level economy.

SIZE OF FARMS AND LAND USE INTENSITY

Again Table 1 to Table 3 reveals clearly the inverse relationship between the farm size and the land use intensity as a general phenomenon in this grass-root rural area economy. This means that the farmers of relatively smaller farms use their lands more intensively than the farmers of the relatively larger farms. So, our present findings further strengthen the inference that smaller farms are better in respect of use of reproducible resources and output per acre (Sarkar and Kar 1986). The important factors which lead the smaller farms to use their lands more intensively are rather two. The **first** factor is the scarcity of land, and the **second** is the crisis of existence. However, some other factors like easy access of crop loans, Mini-kits, home labour, scope of irrigation from traditional sources, organic manures, etc. have also facilitated the small farmers to use their lands more intensively. Relatively larger farms, on the other hand, face the acute problems of getting better inputs at reasonable prices due to non-availability of established markets for inputs, required hired labour at reasonable wages during busy agricultural season, organic manures, etc. in our grass-root economy. But the most important factor is that they are not assured the opportunity of selling all their marketable outputs at fixed fair prices. All these factors are responsible for less land use intensity in case of relatively larger farms in our sample economy.

AGRICULTURAL PLANNING

When the planners at the local level i.e. the elected representatives, the experienced and efficient people of the area, administrative officials, entrepreneurs, etc., proceed to build up an autonomous agricultural plan taking all the information of the said economy and attempt to execute it appropriately within the economy with the financial and administrative support of the State and Central Governments, it will definitely succeed to utilize all the existing resources including the nationally cheap input land. For this, careful attempt should be taken by the planners to extend the facilities of irrigation at the cost of the government, storage, inputs and outputs markets from where all the farmers can purchase better quality inputs and the

producers can dispose of their marketable surpluses at reasonable prices, communication system, easy and cheap crop loans during the agricultural seasons, etc.

The planners should also take initiatives to create new ventures like, agro-based industries, other small scale industries depending upon the availability of raw materials and cheap labour power and upgraded the local traditional handicrafts for more employment generation especially to stop migration of people to other states during the off agricultural season. In this way the agricultural plan will lead to an increase in the level of output, income and employment within the economy by appropriate utilization of all existing resources. Thus the formulation of an autonomous agricultural plan for both short and long ranges based on the existing as well as newly created resource-institutional-infrastructural set up of the economy is our required agricultural plan which will make the economy self sufficient in all respects without over extraction of natural resources, and ultimately it will fulfill the goal of overall economic development of the economy with sustainability.

REFERENCES:
1. Agarwalla and Singh ed. (1958): The Economics of Underdevelopment; Oxford University Press; Oxford.
2. Arrow, K. J. (1983): Social Choice and Justice; Harvard University Press; Cambridge.
3. Babu, P.K. (1988): Regional Planning in India; Chough Publications, Allahabad.
4. Banerjee, M. (1988): Planning in India; Oxford Publications and IBH, New Delhi.
5. Bardhan, P. K. (1984): Land, Labour and Rural Poverty; Oxford University Press; Delhi.
6. Bhaduri, A. (1984): The Structure of Backward Agriculture; MacMillan India Limited; New Delhi.
7. Bharadwaj, K. (1974): Production Condition in Indian Agriculture- A Study Based on Farm Management Surveys; Cambridge University Press, London.
8. Bharadwaj, K. (1974): Production Conditions in Indian Agriculture, London; Cambridge University Press, [Google Scholar].
9. Bhat, L. S. (1972): Regional Planning in India; Statistical Publishing Society; Calcutta.
10. Dhaia, B.S. ed. (1982): Development Planning Models, Vol. I & II; Inter- India Publications, New Delhi.
11. Gilling, D. (1975): Regional Planning and Social Change: A Responsive Approach; Saxon House, West Mead.
12. Heady, E.O. (1952): Economics of Agricultural production and Resource Use; Prentice Hall, International, Englewood Cliffs.
13. Rao, H. (1984): Regional Disparities and Development in India; Ashis Publishing House, New Delhi.
14. Charnes, A. Cooper, W. W., Lewin, A. Y. & Seiford, L. M. (Eds.) (1994): Data envelopment analysis: Theory, methodology,and applications. Boston: Kluwer.
15. Chayanov, A.V. (1966): The Theory of Peasant Economy; Irwin Homewood.
16. Kar, S.C and Bhuimali, A (2014): Mainstreaming Indian Rural Economy and Policy, Abhijit Publishing House, New Delhi
17. Koopmans, T.C., (1951): Analysis of Production as an efficient combination of Activities; in T.C. Koopmans, ed. Wiley, New York
18. Koopmans, T.C. (1957): Three Essays on the State of Economic Science; McGraw Hill Book Company, New York
19. Rao, C. H. H. (1965): Agricultural Production Functions, Costs and Returns in India, London; Asia Publishing House. [Google Scholar]

JOURNALS & ABSTRACTS:
1. Arrow, Chenery, Minhas and Solow (1962): "Capital and Labour Substitution and Economic Efficiency"; Review in Economic Studies, XXIX.
2. Banker, R. D., Charnes, A., & Cooper, W. W. (1984): "Some models for estimating technical and scale inefficiencies in data envelopment analysis";Management Science, 30(9), 1078- 1092
3. Bardhan, P.K.1973: "Size, Productivity and Returns to Scale: An Analysis of Farm-Level Data in Indian Agriculture", Journal of Political Economy, 81(6) [Google Scholar]
4. Bharadwaj, K. (1974): "Notes on Farm Size and Productivity"; Economic and Political Weekly, March, 30.
5. Bronfenbrenner, M. (1944): "Production Function: Cobb-Douglas Inter-firm and Intra-firm"; Econometrica.
6. Charnes, A., Cooper, W. W., & Rhodes, E. (1978): "Measuring the efficiency of decision making units"; European Journal of Operational Research, 2, 429- 444.
7. Chattopadhyay, M. and Rudra, A. (1976), "Size- Productivity Revisited", Economic and Political Weekly, 11(39) Review of Agriculture) [Google Scholar]
8. Cobb, C. W. And Douglas, P.H. (1928): "A Theory of Production"; American Economic Review, March.
9. Koopmans, T.C. (1951): "Efficient Allocation of Resources"; Econometrica.
10. Rudra, A. (1968a): "Farm Size and Yield per Acre", Economic and Political Weekly, 3 Special Number [Google Scholar]