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A STUDY IN IDENTIFICATION AND MEASUREMENT OF ECONOMIC VIABILITY OF SMALL FARMERS UNDER SEMI-ARID CONDITIONS OF RAJASTHAN

Jagdeesh C. Kalla and Sheo R. Chaudhry*

SUMMARY

An attempt has been made in this study to evolve a methodology for identifying the small farmers economically and generate their economic viability in Pratappura village near Jobner town in Rajasthan. The results of the study show the fallacy of excessive dependence on the size of land as a criterion for the identification of the small farm from the large one. In addition to size, gross income, net income, consumption expenses and labour expenses go a long way to identify the small farmers. The study further revealed that the small farms are more viable since they are found to generate more income at lesser net worth, lesser consumption expenses and labour expenses on a given size of farm.

CRITERIA FOR IDENTIFYING SMALL FARMS—AN EMPIRICAL STUDY

K. S. Suryanarayana and P. B. Parthasarathy†

SUMMARY

An attempt is made in this paper to identify and locate the small farm on certain classifactory criteria such as (*i*) the value of gross output under traditional and improved technology, (*ii*) net income, (*iii*) farm investment, (*iv*) number of farm workers, (*v*) number of cattle pairs, and (*vi*) number of ploughs. For the purpose of the study, a sample of 20 wholly irrigated and 145 wholly unirrigated farms were selected from three taluks of Mahaboobnagar district of Andhra Pradesh. The results of the study are given below.

1. *Gross output criterion :* This was discussed under two heads, *viz.*, traditional methods of cultivation and improved technology. The gross value of output worth Rs. 2,400 per annum was considered as a measure in locating the small farm. Accordingly, the minimum area required to obtain Rs. 2,400 was estimated for different crops and types of holdings. It was observed that for paddy, jowar and *ragi* farms under traditional methods of cultivation, an area less than 6.9 acres, 32.5 acres and 16.2 acres respectively was regarded as small. For wholly irrigated an area of 7.5 acres and for wholly unirrigated 37.5 acres were regarded as small.

With regard to improved technology an area of 1.9 acres, 3.0 acres and 4.4 acres should be considered as small respectively for HYV paddy, HYV irrigated jowar and HYV rainfed jowar.

2. *Net income criteria :* In estimating the net income, the gross value of output including the by-products and the cost of cultivation excluding the imputed value of family labour were considered. The net income is related to the per capita income of the State. For 1966-67 it was Rs. 448.65. Taking the average size of household as 6 members, the total income required was estimated (Rs. 2,690). On this basis, the minimum area required was worked out and the area less than this was considered as small. The study revealed that an area less than 8.5 acres and 20.3 acres was regarded as small for local paddy and local jowar. In the case of high-yielding varieties, an area of 3.6 acres, 6.6 acres and 11.6 acres was regarded as small respectively for paddy, irrigated jowar and rainfed jowar.

3. *Investment criterion :* The average investment on fixed capital (excluding land value) was Rs. 2,225 for wholly irrigated and Rs. 840 for wholly unirrigated. This is taken as a standard measure to delimit the size of small farm. The corresponding average size of the farm from the distribution of farm assets was taken as the limit of the size of small farm. It was observed that an area less than 4.80 acres and 6.55 acres was regarded as small respectively for wholly irrigated and wholly unirrigated types.

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4. *On the basis of farm workers :* The number of farm workers in each family was taken as the basis. By taking the corresponding average size of the farm, the small farm was identified. It was seen that an area less than 1.28 acres for wholly irrigated and 9.55 acres for wholly unirrigated type was regarded as small.

5. *On the basis of number of work cattle :* Like that of the farm workers, the average farm size corresponding to the average number of work cattle was taken and the small farm was located. It was 1.42 acres for wholly irrigated and 9.48 acres for wholly unirrigated type of holdings.

6. *On the basis of number of ploughs :* On this basis, an area less than 1.43 acres and 10.96 acres was regarded as the size of small farms respectively for wholly irrigated and wholly unirrigated types.

The limits of small farm ranged from 5 to 9 acres under traditional conditions of farming for wet lands as represented by the major crop grown, *i.e.*, paddy. In the case of wholly unirrigated lands growing jowar as the major crop, it varied from 20.3 acres to 32.5 acres. Under improved technology, it would be around 2.00 acres to 4.00 acres for wholly irrigated land. This incidentally conforms to the new set of guidelines issued by Government of India to all State Governments, so far as the identification of small farms concerned under the SFDA Programmes during the Fifth Plan period.

VIABLE FARMS AND FACTORS AFFECTING VIABILITY IN WESTERN REGION OF UTTAR PRADESH

S. L. Shah, V. K. Pandey and P. K. Singh†

SUMMARY

An attempt has been made in this study to analyse the viability of small farms in the western region of Uttar Pradesh on the basis of customary level of living in the area as well as on the basis of the total cost of production criteria. The factors affecting viability have also been discussed in the study. The data used in the study pertain to a sample of 71 small farmers of the western region of Uttar Pradesh surveyed during the year 1973-74. The farmers were selected through a four-stage stratified random sampling design. Using the first criterion of the customary level of living to identify viability, the average household expenditure is found out, and all those farm households which have an annual net income from their farm business equal or above this level of expenditure are identified viable farms. Farm income, as worked out over all the variable expenses, depreciation, interest and repairs on farm assets, comprise of incomes from crops, livestock, wages earned in agriculture as well as outside agriculture, and by renting out bullocks, pump-sets, etc. Thus according to the average expenditure criterion of viability, farm households having an income below Rs. 3,302.44 are identified as non-viable. Based on this criterion, out of 71 small farm households, 28 are viable and 43 non-viable. It is found that crops are the main source of income contributing 63 per cent of the total income in the case of viable and about 40 per cent in the case of non-viable farms. The next important source is livestock.

The second criterion for defining viability is that a farm should be able to pay off all costs paid out as well as imputed. According to this criterion, if a farmer is able to meet the total costs, *i.e.*, cost C, from his farm enterprise, then he is considered as viable as he can stay in the farm business in the long run. Using this criterion, all those farms whose net farm income over cost C is either zero or positive are identified as viable farms, and those farms having net farm income over cost C as negative are identified as non-viable farms. According to this criterion 52 farms out of 71 selected for the present study are viable, and 19 farms are non-viable. The per farm expenditure on these viable farms worked to be Rs. 3,499.79, whereas their net farm income per farm amounted to Rs. 4,525.36. In the case of non-viable farms, the average household expenditure, worked to be Rs. 2,762.33 and the net farm income to be Rs. 1,317.97. Thus according to the second criterion, the number of viable farms is much larger compared to their number according to first criterion. The determinants of viability as considered in this study are those affecting farm business income. The income from crops is determined by operated area, area under HYV, per acre fertilizer use, percentage of irrigated area and cropping intensity. The income from animal husbandry is determined by the number of draught and milch animals kept on the farm. From the analysis, it is found that the viable farms under both the criteria have higher percentage area under HYV, higher expenditure on fertilizer, higher cropping intensity, high percentage utilization of family labour and more draught and milch cattle compared to the non-viable farms.

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COST ADVANTAGE ON SMALL FARMS AS COMPARED TO MEDIUM AND LARGE FARMS IN UTTAR PRADESH

S. L. Shah, V. K. Pandey and J. B. Singh*

SUMMARY

This study has made an attempt to work out and compare the costs and returns from major foodgrains and cash crops on the small farms vis-a-vis medium and large farms in three regions of Uttar Pradesh, *viz.*, western, central and eastern. Four important crops from the view-point of production and marketed surplus, *viz.*, paddy (HYV) and wheat (HYV) from major foodgrains and sugarcane and potato from major commercial crops are selected for the purpose. The data pertain to a sample of 264 farmers selected in three size-groups, *i.e.*, 0 to less than 5 acres as small, 5 to less than 10 acres as medium and 10 acres and above as large, from the three selected regions of the State during the year 1973-74. The cost concepts used in this study, *viz.*, Cost A_1, Cost A_2, Cost B and Cost C are those standarised and employed by the Directorate of Economics and Statistics, Government of India in their studies. Cost C which is used in the discussion includes all the items of costs, actual as well as imputed and represents all kinds of variable and fixed costs. On the basis of the various cost concepts as mentioned above, the cost per acre, cost per quintal and net returns per acre from the selected crops are worked out. The total cost per acre as well as per quintal and net returns per acre, as worked out from cost C concept from different crops indicated that the small farms in both the western and eastern regions of the State do not have any cost advantage over the medium and large farms, not even in the most important crops of these regions, *e.g.*, wheat in the western and paddy in the eastern region. But, in the central region the small farms, in general, have a definite cost advantage over the medium and large farms, particularly in major foodgrains and sugarcane crops. The results of the study also emphasize that no overall generalisation can be made in respect of the efficiency of the small farms at an aggregate level for a large State such as Uttar Pradesh. However, such generalisations do exist, and can safely be made, only on regional basis as the resource endowments and technological adoption vary significantly even among different agro-climatic regions within the State.

A STUDY OF FACTOR-PRODUCT RELATIONSHIPS, RESOURCE USE EFFICIENCY AND RETURNS TO SCALE IN THE SMALL-SCALE FARMINGS IN NORTH BIHAR (BAHADURPUR BLOCK—DARBHANGA DISTRICT)

S. P. Sinha, B. N. Verma and D. K. Sinha†

SUMMARY

In this paper an attempt has been made to derive the production elasticities of different input factors (denoting thereby the efficiency of different input factors in resource allocation) in Bahadurpur block of Darbhanga district in North Bihar, with the help of production function analysis. This paper also covers the analysis of "returns to scale" being operated in the sample under study and the marginal productivity levels of different input factors. On the whole, an attempt has been made to find out what are the input factors which explain the variability in the gross output of farmers and to what extent? Further, which input factors are being/not being used efficiently on farms? Lastly, in what manner farm output behaves when all input factors are increased or decreased simultaneously? In this analysis the Cobb-Douglas type of production function has been used. Three main factors, namely, land, labour and capital have been included in the production function. Other factors affecting farm production mainly rainfall have not been taken into account due to the non-availability of time-series data for the sample area. The elasticity of output to capital is high in Bahadurpur block because here agriculture is based on subsistence farming practices. Hence, an additional dose of capital in this area results in a greater increase in the output, whereas in West Godavari district in Andhra Pradesh under the HYV programme, greater capital investment in the form of advanced inputs is already prevalent and further additional dose of capital does not yield as much increase in output as in Bahadurpur.

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The second greater positive and significant value of the regression coefficient is that of labour input both in Bahadurpur (0.17) and in West Godavari (0.32). The value of regression coefficient of land has been found to be the lowest (—0.16) and negative but significant in the case of Bahadurpur block; whereas it is highest (0.45) and positive and significant in the case of West Godavari. This reflects the relative fertility level of land in both the areas. The sum of elasticities is just equal to unity, showing thereby the operation of constant return in the case of Bahadurpur area under study.

The findings of production analysis of Bahadurpur block, an undeveloped area, has been compared with the findings of an identical study of a developed area (under IADP), named 'upland area of West Godavari district'. Further, the findings of the "returns to scale" in the area under study have also been compared with the identical study of Mawana block and Sarurpur block (the two developed blocks of Meerut district adopting the HYV programme). The three input factors considered in the production functions explained 91 per cent of the variations in the value of output in the case of Bahadurpur block and 85 per cent in the case of West Godavari district. The margin of unexplained variations (9 per cent) is somewhat less in the case of Bahadurpur block, showing thereby that output is predominantly influenced by the three broader factors (land, human labour and fixed capital). In Bahadurpur block, the elasticity of output to capital is comparatively high and significant. On the contrary, in the case of West Godavari district the value of production elasticity of fixed capital has been found to be positive but minimum (0.04) and not significant while it is more than unity (by 0.11 and 0.24) in the case of Mawana and Sarurpur, the two progressive blocks, respectively, showing the operation of increasing returns to scale. The operation of constant returns in Bahadurpur block shows that agriculture in this area is tradition-bound. The present study indicates that capital (production elasticity being highest in this case) has a positive role to play in developing agricultural production in the Bahadurpur block in comparison to other factors. Efforts may, therefore, have to be made to provide adequate assistance on Governmental and institutional basis to develop capital resources and to fulfil the credit needs of the farmers in this area.

A COMPARATIVE ANALYSIS OF SMALL AND LARGE-SCALE FARMING IN DRY FARMING AREA OF MAHARASHTRA STATE

Jagannathrao R. Pawar and Rajshekhar J. Patil*

SUMMARY

An attempt is made in this paper to assess analytically the nature of farm business of small farms and large farms in one of the dry farming regions of Maharashtra State. The study is based on the sample survey data collected from a sample of 29 small farms and 28 large farms selected from Ahmednagar district by adopting two-stage random sampling design. It is observed from the study that the use of different resources, cost of crop production, gross returns as well as net returns depended on the farm size. However, when compared on per cropped hectare basis it is seen that the per cropped hectare use of different inputs excepting chemical fertilizers, cost of production and gross returns were relatively high on the small farms compared to those on the large farms. However, there was not any significant difference in the net returns. On the contrary the net returns over total cost, farm investment income and family labour income exceeded on the large farms. It is, however, true that the nature of technology and cropping pattern were almost the same on both the types of farms. The productivities of different resources, as estimated from the Cobb-Douglas production function, did not show significant differences. The study therefore concluded that both the types of farms are equally efficient in the use of different resources. Even there is limited scope for increasing gross returns through the increased use of different inputs of present type. Substantial change in the present profitability can be brought about through creation of irrigation resource, use of new forms of inputs and adoption of modern technology.

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PRODUCTION FUNCTIONS AND RESOURCE PRODUCTIVITY OF SMALL-SCALE FARMING IN ORISSA: A STUDY OF WATER MANAGEMENT

Praduman Kumar*

SUMMARY

An attempt has been made in this paper to study the influence of irrigation field channels in the river valley command area of Hirakud canal system on the use of farm inputs, production elasticities, resource productivity and allocative efficiency of farm inputs for the local and high-yielding varieties of paddy crop. For this purpose two sets of villages with and without field channels from Attabira block of Sambalpur district were studied in the agricultural year 1970-71. The sample consisted of 60 cultivators from the villages with field channels (improved villages) and 63 from the villages without field channels (control villages) selected randomly. The cultivated lands of each farmer has been classified into four types of topography, namely, *Att* (uplands), *Mâl* (the slopes), *Berna* and *Bahal* (the low lands) according to their location with respect to watershed. A logarithmic linear regression model with random coefficients was used to express the relationship between the inputs and output for paddy crop with respect to topography. The means of the random coefficients were estimated by the Generalized Least Squares method. The comparative study of villages with and without field channels revealed that the construction of field channels has increased the use of farm inputs, namely, manures, fertilizers and pesticides which resulted in an additional yield of 2.11 to 4.40 quintals per acre for both the high-yielding and local varieties of paddy. The crop inputs like land, human labour, plough unit, manures and fertilizers, and plant protection measures taken together explained about 88 to 98 per cent of the variation in yield. The responses of land and fertilizers were found positive and significant in all the estimated production equations. The elasticities of production were highest for land followed by manures and fertilizers in both sets of villages. The productivity analysis exhibited that the improved irrigation system has increased the scope of ut lization of manures and fertilizers. The productivity of pesticides was considerably higher than the fertilizers. Thus, more investment on manures, fertilizers and pesticides is needed for maximizing the benefits from field channels. The villages with improved irrigation system were in transitional period towards modernization and seems to be in a greater state of input allocative disequilibrium as compared to the villages with traditional irrigation method. The evidence presented in the study indicate that the land improvement has taken place as a result of the water management programme. Thus, the improved irrigation system has helped the small-scale farming potentially viable.

ECONOMIC ANALYSIS OF SMALL-SCALE FARMING IN SOUTHERN RAJASTHAN

S. S. Acharya and G. C. Shukla†

SUMMARY

This study was undertaken to examine the resource structure, pattern of input use and resource use efficiency in the small farm districts of Udaipur and Chittorgarh in Rajasthan, which are average in terms of HYV and mechanization. A list of all farms below 5 acres in size was prepared for six advanced villages of these two districts. Farmers with 50 per cent area (of maize and wheat) under HYV were categorised as participants (P) and the rest as non-participant (NP) farms. A random sample of 36 farms was ultimately selected. Information of these farms for 1971-72 was utilized for the purpose. The average operational holding was 3.09 acres, of which 80 per cent was irrigated. Irrigated area and cropping intensity are higher on P compared to NP farms. The participant farms have substituted HYV for other varieties of foodgrains and pulses. Twenty-two per cent farmers did not own bullocks and 11 per cent did not have any source of irrigation of their own. Investment in pumping sets and irrigation structure was higher on P compared to NP farms. There was one adult family labour unit for each acre of operational holding. Fourteen per cent of small farms, all belonging to P category hired permanent servants. Variable cost was 2.5 times and fixed cost was 1.5 times on P farms compared to NP category. Similarly, conventional and non-conventional costs were higher on P farms. The relative proportion of variable and non-conventional costs being higher on P farms reflected their relative dynamic and commercial character.

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Though the total cost on P farms was higher, gross income-total cost ratio was lower. Thus the cost of producing each rupee value of output is lower on P farms. More use of pumping sets for irrigation in P group did not lead to a reduction in bullock labour use. On an average, the participant farms used 76 per cent more human labour, 35 per cent of which was accounted for by HYV and 41 per cent by cropping intensity. The use of hired labour was also higher on P farms. Seasonal fluctuation in labour use was lower and peak season for labour use was different on P compared to NP farms. The level of labour use in each month separately was also higher on P farms.

Farm business analysis of these farms revealed that the net farm income was nearly double on P farms compared to NP farms. The participant farms earned a net farm income of Rs. 2,974 which was sufficient to account for the interest on capital investment and wages for the family labour and still left a profit of Rs. 815. The net farm income of the non-participants was Rs. 1,501 which was not sufficient to account for even the interest on fixed capital. This reveals that participation in the HYV programme increases the efficiency of use of farm resources.

The estimates of six Cobb-Douglas type of production functions and corresponding marginal value productivities revealed that total labour, family labour, hired labour, non-conventional capital, non-mechanical capital and variable expenses exerted a significant positive effect on output. The effect of land, fixed capital, conventional capital, input and machine input did not turn out to be significant. Different forms of capital input for which the production elasticities were significant had value of HYV seeds, fertilizers and insecticides as the common items. The variables for which the coefficients were not significant, did not include these items. The MVP of labour was estimated to be 4.42 which was twice the wage rate prevailing during the study period. Similarly, the MVP of capital (those variables which included HYV seeds, fertilizers and insecticides) was more than 1.5. The policy implication which emerges from this study is that the adoption of labour intensive HYV crops increase in intensity of cropping and use of fertilizers and insecticides are instruments for increasing the incomes of small farmers. Efforts should be directed towards educating the small farmers and helping them prepare and adopt new farm plans which incorporate multiple cropping, HYV and more use of fertilizers. Intensive use of labour can solve both employment and income problems of the small farmers.

RESOURCE USE EFFICIENCY ON SMALL SIZE FARMS VIS-A-VIS LARGE SIZE FARMS IN JAIPUR DISTRICT OF RAJASTHAN

R. C. Verma and S. N. Pareek*

SUMMARY

In this paper an evaluation of resource use efficiency has been made through production function analysis of the prevalent factor proportions in crop and livestock production, on a sample of Jaipur farms. These farms were classified as small and large on the basis of farm size and level of mechanization was used as an indicator for sub-classification into bullock operated, pump operated and tractor operated farms. Regression coefficients with respect to various input factors indicated that output was highly responsive to human labour and working capital on all categories of farms. A positive, high and significant elasticity of output with respect to human labour input was a bit surprising in the face of a popular assumption in economic literature about a very low marginal productivity of labour in under-developed countries. Irrigation was found under-utilized on the small farms. Increased cropping intensity was recommended to be a more effective way of raising farm incomes. The analysis also revealed under-utilization of tractor power on all farms and shortage of working capital on the small farms. In general, the present factor combinations are not optimal in nature and there is much scope for increasing resource use efficiency in the agriculture of Rajasthan specially of the small farms.

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PROSPECTS OF INCREASING FARM INCOMES ON SMALL FARMS UNDER EXISTING TECHNOLOGY IN JAIPUR DISTRICT (RAJASTHAN)

R. C. Verma and N. L. Agarwal†

SUMMARY

An attempt is made in this study to examine the possibilities of increasing farm incomes and resource use pattern on different types of small farms (having area upto 5.0 hectares) under the limited as well as under the relaxed capital condition in Jaipur district of Rajasthan. Linear programming technique was used for the optimization. In the optimum farm plan I the returns to fixed farm resources could increase by 44 per cent on mechanized small farms, by 35 per cent on partially mechanized small farms and by 45 per cent on non-mechanized farms by simply reallocation of farm resources with the existing supply of capital. With the relaxation of capital constraint in the optimum farm plan II, the returns to fixed farm resources could further increase by 40 per cent on mechanized small farms, by 16 per cent on partially mechanized small farms and by 25 per cent on non-mechanized small farms. Thus the results of the optimum farm plans with limited and unlimited capital indicate substantial potentialities for increasing farm incomes on all categories of small farms with the reallocation of farm resources. There was a distinct change in the enterprise combination in the optimum plans. In the *kharif* season, irrigated bajra was replaced by hybrid bajra and in the *rabi* season barley replaced Mexican and farmy wheat in optimum plan I. In plan II, when capital restriction was relaxed Mexican wheat occupied the place of barley. In the optimum plans, cash crops like *zeera, methi,* onion also got some place. The optimum plans provided better opportunities for the utilization of resources especially human labour. Therefore, if the small farmers are educated and trained in farm planning and arrangements are made for supply of capital, farm incomes can increase substantially and the weaker section of the farming community may also prosper.

ECONOMY OF SMALL FARMS IN UDAIPUR DISTRICT OF RAJASTHAN

B. S. Rathore*, B. M. Dixit* and M. L. Bariwal†

SUMMARY

In this study, an attempt has been made to examine the irrigation facilities, labour employment, assets, structure and income-expenditure pattern of 50 small farmers of Udaipur district. It is observed that an increasing percentage of irrigation induce more dependence of labour on the land and provide additional employment. The irrigated area reflects the cropping intensity in an increasing manner and substitution of *kharif* cereals with cash crops is also observed in the cropping pattern. The productivity of high-yielding varieties of different crops was more on the irrigated holdings than on the unirrigated ones. The ratio of gross income from cultivation and non-farm income was worked out and observed to be in decreasing order.

In order to compare the 'resource use efficiency' of irrigated area, variable capital expenditure and labour days employed on the irrigated and unirrigated holdings were estimated by using the Cobb-Douglas type of production function. The results are given below.

Unirrigated holdings

$$\text{Log } Y = \underset{(0.048)}{4.6214^{**}} + \underset{(0.017)}{0.1853^{**}} \text{ Log } X_1 - \underset{(0.033)}{0.6826^{**}} \text{ Log } X_2 + \underset{(0.0005)}{0.2831^{**}} \text{ Log } X_3$$

$$R^2 = 0.4283 \qquad F = 23.01$$

Irrigated holdings

$$\text{Log } Y = \underset{(0.026)}{9.7367^{**}} + \underset{(0.007)}{2.3042^{**}} \text{ Log } X_1 + \underset{(0.013)}{1.0787^{**}} \text{ Log. } X_2 - \underset{(0.004)}{4.3545^{**}} \text{ Log } X_3$$

$$R^2 = 0.7803 \qquad F = 5.69$$

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where Y = the gross income per holding from cultivation, X_2 = variable capital expenditure in rupees, X_3 = labour employed in man-days and X_1 for unirrigated holdings is area in hectares whereas X_1 for irrigated holdings is percentage of irrigated area to the total area.

On the unirrigated farms, an increase in the size of holding will not generate substantial income and production, but with the slight increase in irrigation facility the same holding can generate substantial production and income.

Size of holding and irrigation were observed to be efficient important independent variables whereas capital expenditure on the unirrigated holdings and labour employment on the irrigated holdings gave a negative coefficient, which means that labour is surplus on the irrigated holdings and an increase in the capital expenditure is meaningless on the unirrigated holdings. With the increase in irrigation facilities on the small farms there is a greater use of labour, *i.e.*, their working days were increased but on such holdings, the farmers were not able to make full use of their labour; rather, there was serious problem of under-employment. Under such a situation income and production per worker get reduced. Therefore, in addition to the development of irrigation facilities there should be a corresponding intensification of cattle rearing and milk production programme, in order to minimize the problem of under-employment and for maximization of income for the small farmers.

ECONOMIC ANALYSIS OF IMPROVED AGRICULTURAL TECHNOLOGY ON SMALL SIZED FARMS IN EASTERN RAJASTHAN

S. M. Soham and B. S. Rathore†

SUMMARY

The main objective of this study was to examine the impact of improved agricultural technology on the small sized farms by adopting various income and cost measures. For this purpose following methodology was used : The eastern region of Rajasthan State comprises of four districts, *viz.*, Alwar, Bharatpur Jaipur and Sawai Madhopur. From each district a *Panchayat Samiti* was selected and from each *Panchayat Samiti* a village was selected with PPS random sampling. A cluster of three villages was formed by selecting the nearby villages. A list of adopters and non-adopters was prepared from each cluster on the basis of the following criteria : The cultivator was considered as adopter if he adopted any three of the following improved agricultural practices : (*i*) 30 per cent of the total cropped area under irrigation, (*ii*) 25 per cent of the total cropped area under HYVs; (*iii*) 25 per cent of the total cropped area under fertilizers ; and (*iv*) 20 per cent of the total cropped area under chemical plant protection measures. From each list, 15 cultivators were selected with random sampling method. The sample consisted of 18 adopters and 25 non-adopters, having the size of holding below 5 acres. The data were collected by the survey method for the year 1970-71.

The main findings of the study are as follows : The percentage of irrigated area to the total cropped area on the adopter farms was 52.27 compared to 26.74 on the non-adopter farms, whereas the intensity of cropping was 153.88 and 120.65 on the respective farms. Bajra and wheat were the only crops grown on the sample farms for which HYV seeds were used. The area under HYV on the adopter farms was 44.96 per cent of the total cropped area, while it was only 4.01 per cent on the non-adopter farms. The total farm receipts on the adopter farm were Rs. 3,716.7 and on the non-adopter farms Rs. 1,698.60. The crop output on the adopter farms was more than double compared to the non-adopter ones. The contribution of livestock produce to the total produce was nearly 24 per cent on both the types of farms. An examination of farm expenses on the sample farms showed that the major contribution to the total farm expenses on the adopter farms was on improved agricultural inputs, whereas on the non-adopter farms it was on traditional inputs. giving the total farm expenses of Rs. 798.8 per farm and Rs. 221.9 per acre on the adopter farms and Rs. 427 and Rs. 137.7 on the non-adopter farms respectively. Depreciation was the major item of cost on both the types of farms. Farm business income as well as family labour income was more than double on the adopter farms compared to the non-adopter farms. Net profit on the adopter farms was Rs. 1,179.8 per farm and Rs. 327.7 per acre and it was Rs. 191.7 and Rs. 61.8 only per farm and per acre on the non-adopter farms. The input-output ratio was significantly higher on the adopter farms as compared to the non-adopter ones. It was 1 : 1.47 and 1 : 1.13 respectively. On the whole it is concluded that although the study is conducted in the technologically most advanced region of Rajasthan, the spread of improved agricultural technology is not equal and very little percentage of small farmers adopted improved agricultural technology. They are also not using the improved agricultural inputs upto the desired extent,

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although the improved agricultural input use in package proved profitable on the small sized farms. To increase the farm income of the cultivators having small size of holding, efforts should be made to provide them technological guidance, credit facilities, besides irrigation which seems to be the factor affecting the adoption of improved agricultural technology.

ECONOMIC EFFICIENCY OF SMALL-SCALE FARMING OF FARRUKHABAD DISTRICT, U.P.

V. Prasad*

SUMMARY

This paper attempts to assess and evaluate the efficiency of resources used in crop production by the small farmers in the Barhpur block of Farrukhabad district, U.P. The average size of holding of 100 sample farms came to 1.12 hectares. It varied from 0.41 hectare in the 0-0.50 hectare size-group to 2.95 hectares in the size-group 2 hectares and above. The main crops grown by the farmers were maize, potato, wheat and tobacco, in which potato occupied the largest area of 29.76 per cent, followed by maize 25.13 per cent, wheat 17.75 per cent and tobacco 8.24 per cent of the total cropped area. The area under cash crops like potato and tobacco was larger on the small farms in the size-groups 0.50 to 1.00 and 1.00 to 1.50 hectares, indicating that these farms try to maximize their income by growing more cash crops. The average intensity of cropping was 211.87 per cent, which was highest at 240.35 per cent in the size-group 1-1.50 hectares because of longer area under cash and vegetable crops. The input cost on farms, on an average, came to Rs. 2,383.92 per hectare. It varied from Rs, 2,437.43 per hectare in the 0-0.50 hectare size-group to Rs. 3,023.08 per hectare in the 1-1.50 hectare size group, due to increase in the intensity of cropping. Amongst input costs, human labour accounted for the highest share of 31.26 per cent followed by manure and fertilizers, 21.15 per cent, seed, 18.63 per cent and bullock labour, 12.07 per cent. Crops grown being labour intensive in nature, human labour accounted for as much as one-third of the total cost. The level of income on farms was associated with the intensity of cropping accompanied by greater prevalence of cash crops. The ouput value, net income, family labour income, farm business income and input-output ratio were found to be highest in the 1-1.50 hectare size-group of holdings where the respective values came to Rs. 7,570.40, Rs. 4,547.32, Rs. 5,030.39, Rs. 5,147.57 per hectare and 1 : 2.50 against the average values of Rs. 5,912.70, Rs. 3,528.78, Rs. 3,943.09, Rs. 4,030.81 per hectare and 1 : 2.42 respectively.

In order to appraise the resource productivity and efficiency in the use of farm resources, regression analysis with Cobb-Douglas type function was carried out at the aggregate level. All the resources included in the equation, *i.e.*, human labour, seed, manure and fertilizer, irrigation and intensity of cropping were found to have significant and positive impact on per hectare of farm return. The regression coefficients varied from 0.0576 (for irrigation) to 0.1619 (for human labour). An examination of MVP indicated that an additional rupee spent on human labour, seed, manure and fertilizer and irrigation would yield Rs. 1.28, Rs. 1.75, Rs. 1.76 and Rs. 1.55 worth of additional output respectively. To suggest resource adjustment, the optimum level of various inputs with their existing capital was calculated. The optimum level of human labour was lower than its existing level while that of manure and fertilizer and seed was higher and of irrigation nearly equal to its existing level. This suggests that the funds could be diverted from human labour to manure and fertilizers and seed in order to optimize the returns. The level of irrigation should not be disturbed as it already pays for itself. From this readjustment of funds, the returns per hectare could be increased by 17.03 per cent.

CROPPING PATTERN, EMPLOYMENT AND RESOURCE USE OF SMALL FARMERS (A CASE STUDY)

G. N. Singh and H. L. Srivastava†

SUMMARY

An attempt has been made in this paper to study the cropping pattern, employment and resource use of small farmers in Varanasi district, Uttar Pradesh. The findings, are based on an intensive enquiry of 50 small farmers, having a cultivated area of below 2 hectares, selected randomly from five villages of Pindara block in Varanasi district. The study was conducted during the period 1973-74 by the survey method. The findings of the study revealed that the average size of small

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farms was 1.50 hectares, of which, 40.12 per cent of the area was under irrigation. The main crops grown in the study area were maize and paddy in the *kharif* and wheat in the *rabi* seasons. Sugarcane and potato were the main cash crops grown in the locality. An examination of cropping pattern shows that the local and high-yielding varieties of paddy occupied 29.73 per cent of the total cropped area followed by the local and high-yielding wheat (27.93 per cent), and maize(10.81 per cent). The area covered by the high-yielding varieties of paddy and wheat together was 32.88 per cent. The intensity of cropping, on an average, came to 148 per cent. The investment in fixed capital per farm and per hectare was Rs. 14,825.27 and Rs. 9,883.51, respectively, of which the share of land alone was as much as 86.23 per cent of the total investment. Livestock constituted 7.12 per cent of the total investment followed by irrigation structure (2.49 per cent) and farm implements and machinery (2.13 per cent). The value of investment in fixed capital excluding land per farm and per hectare came to Rs. 2,026.07 and Rs. 1,350.71, respectively.

The availability of family labour, on an average, was estimated at 4,000 working hour units per farm. The employment of total human labour per farm and per hectare was 1,599 and 1,066 hour units, respectively, of which, family labour constituted 71.76 per cent. The employment of family labour to the total available family labour was 28.69 per cent only. It shows that the small farmers in the study area remained unemployed for the major part of the year.

The efficiency of farm business is judged by the level of resource use and farm income per unit of cultivated area. The input, output and net income per hectare, on an average, came to Rs. 1,037.11, Rs. 1,856.06 and Rs. 818.95, respectively. An examination of costs and return showed that the net income derived from farming was quite low due to poor investment on 'new inputs.' Out of the total expenditure of Rs. 1,037.11 per hectare, the percentage expenditure on human labour accounted for the highest being 41.11 per cent of the total cost followed by bullock labour (38.55 per cent), seed (7.98 per cent), fertilizers (4.08 per cent) and overhead costs (4.67 per cent). It clearly shows that the percentage of expenditure on cash inputs, like, high-yielding seeds, fertilizers and irrigation water was quite low. The input-output relationship was 1 : 1.71 only.

To work out the marginal value productivities of different capital inputs, production function analysis was done. Based on economic and statistical considerations, the Cobb-Douglas type of production function was used for final analysis as it gave the best fit. The results showed very high value of R^2 being 0.7934. The elasticities of production were positive for all the inputs and significant at the 5 per cent level. The sum of elasticities was positive and greater than unity, indicating thereby increasing returns to scale on the small farms in the study area. The marginal value products (MVPs) of capital inputs were worked out at their geometric mean level and were compared with their respective prices. The MVPs of fertilizers and irrigation were significantly greater than their respective prices. Therefore, the maximization of profits can be attained by shifting resources from items where its marginal value product is relatively lower to those where it is higher. Thus, in the present case, more use of fertilizers and irrigation on the small farms in the study area will result in higher profits.

ECONOMIC ANALYSIS OF FARM BUSINESS OF SMALL FARMERS OF VILLAGE TENDUI, VARANASI DISTRICT

B. N. Banerjee and A. S. Sirohi*

SUMMARY

The majority of the farmers have very small holdings in India and live near the subsistence level. But it has been proved by several studies that this group can do well in terms of productivity if modern inputs and production requisites are provided to them. It is also possible for a considerable proportion of the small farms to be converted into viable units. The present study is an attempt in this direction. The specific objectives of this paper were : (*i*) to estimate the size of viable farm, and (*ii*) to examine the effects of resource optimization with restricted and unrestricted credit facilities on farm incomes. Eastern Uttar Pradesh being dominated by the small and poor farmers has been chosen as the area for the present study. Village Tendui from district Varanasi was purposively selected and all the farmers were included in the study. The data on input-output coefficients of crops and dairy enterprises were collected by survey method from these farmers for the year 1971-72 by interviewing them with the help of a pre-tested questionnaire. Simple regression analysis and parametric programming was used

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to estimate the viable size of a farm. The basic criterion used for identifying the viable farm size was minimum farm family requirement expenditure which included the expenditures required to meet the minimum requirements of an average family of four adult units and the maintenance cost of a pair of bullocks. Based on this approach, the farm size for viability was estimated. The required size below which a farmer could be defined as a non-viable small farmer worked out to be 5.62 acres. In normative sense this figure stood at 5.4 acres. Linear programming technique was used to optimize the farm incomes of an average farmer in each category with and without availability of unrestricted borrowing facilities for crop and dairy enterprises. Optimal organization of crop and dairy enterprise increased the net returns on the non-viable small farms more than on the viable small farms. It was observed that extension of credit facilities to the farmers increased the net returns considerably on these farms. The increase was more marked in the case of non-viable small farms where the farm income increased by 59.61 per cent over the existing income. This indicated that income increasing effect of credit facilities was more on the non-viable small farms than on the viable farms. The importance of dairy enterprise particularly buffalo in augmenting the income of the small farmers was also clearly observed.

PROBLEMS OF SMALL-SCALE FARMING — A CASE STUDY OF TRIBALS IN UTTAR PRADESH

J. P. Bhati*

SUMMARY

Revolutionary changes have taken place in the field of Agriculture during post-green revolution period. The well-established hypothesis about inverse relation between farm size and productivity does not hold true under changed conditions. Why the small farmers have lagged behind in harnessing the scale-neutral technological gains made available by the modern inputs? It is in the context of this question that an attempt has been made in this paper to highlight the crucial problems of Tharu tribal agriculture with reference to size of holdings. This study is based on a 15 per cent random sample, comprising 18 small farms which were holding less than 3 hectares and 22 large farms (holding more than 3 hectares of land), drawn from four villages of Nainital Tarai. The data for the agricultural year 1970-71 were collected by the survey method. The results of the comparative analysis of small and large tribal farms regarding the structure and functioning of their agriculture, and the physical, economic and institutional problems encountered by them, are discussed under five heads :

1. *Adoption of modern farm technology :* It is observed that the adoption of new farm inputs was in its 'infancy' irrespective of the size of holdings. Most farms were totally unirrigated and cultivated on conservative lines with traditional implements and local varieties. The per hectare agricultural gross income was slightly higher on the small size farms. The main problems in adopting HYV seeds were reported to be (*a*) high cost to grow HYV seeds, and (*b*) inadequate and untimely supply of required inputs (including irrigation).

2. *Investment pattern and sources of finance :* However, the per farm borrowings were higher on the large farms but the per hectare borrowed amount was higher on the small farms. Borrowed funds accounted for 46.6 per cent of the total investment on the small farms and 20.9 per cent on the large farms. Overall, the investment per hectare of operated land was higher on the large farms. Co-operative societies were quite active and provided about 40 per cent of credit to both the types of farms. Government was providing help in the form of grant and loans to the small farmers but still they were under the hold of the local moneylenders. Commercial banks concentrated on the large farms only. Dis-savings of Rs. 181 were observed on the small farms, while a saving of Rs. 1,259 per household was estimated on the large farms.

3. *Cropping pattern and productivity :* Local varieties under the unirrigated conditions of paddy and wheat were dominating in the *kharif* and *rabi* seasons respectively and accounted for more than 50 per cent of the operated area. Commercial crops were negligible. Crop intensity was substantially higher on the small farms. The yields rates for all the crops were very low on both the types of farms.

4. *Marketing agencies and marketed surplus :* At least some proportion of each crop raised on these farms went to the market. Except paddy which accounted for more than 60 per cent of the total value of marketed surplus, others (about eight crops) accounted for very little on both the types of farms. Hence, their agriculture was not market-oriented and advantages of bulk selling were not obtained by them. Again, a major proportion of surplus production was sold in the village itself

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to the traders and hawkers and they received a price for their produce which was much less than the prevailing market rates.

5. *Dissemination of new ideas :* Due to the absence of proper roads and adequate transport facilities, the flow of agricultural information into this tribal community was considerably hampered. Mass media like radio had very little share in disseminating new ideas to the farmers. Only 25 per cent of the farmers, large as well as small, were in touch with the extension staff. It is observed that in Tharu tribal community the role of rural elite (local leaders) as a source of transmitting agricultural knowledge was most significant irrespective of farm size.

OPTIMUM CROPPING PATTERN FOR SMALL FARMS IN A MINOR IRRIGATION PROJECT AREA, TAMIL NADU

S. A. Radhakrishnan and B. Sridharan*

SUMMARY

An attempt has been made in this paper to find out whether the farmers have attained optimality in the cropping pattern and have realised maximum income when long-term loans are given for minor irrigation purpose and improvements are made in Kancheepuram taluk of Chingleput district in Tamil Nadu. The sample farms consisted of 45 small farmers (having less than 5 acres of land) who have availed of long-term loans from the State Land Development Bank. Linear programming technique is employed to work out the optimum cropping pattern, which a farmer can adopt in the pre-development and post-development situations. In the pre-development situation the farmers are having a part of their holding as wet lands and part of their holdings as dry lands. The cultivation of crop is limited to monsoon periods only. In the post-development situation wells are dug and electric motor pumpsets are installed. The dry lands are converted to irrigated agriculture. The wells also provide assured water supply to the wet lands. The constraint structure of the linear programming model consisted of (1) agricultural land, (2) agricultural labour, (3) capital and (4) irrigation water. The optimum programmes were compared with the existing plans of the farmers. The analysis revealed that in the pre-development situation, the income derived by the farmer under the existing cropping pattern was more or less equal to the income derived by adopting the optimum cropping pattern. The reason for this may be that the farmers, by tradition, might have adjusted towards optimality. However, if the farmers adopt the optimum cropping pattern, got by programming, they may augment employment opportunities. In the post-development situation, the farmer has not attained the optimality of income. This is because that the farmer has not adjusted himself for irrigated agriculture, using lift irrigation. This incidentally advocates the need for extension work as a follow-up to the issue of term loans. Operational capital constraints force the farmer to leave some area fallow, even though other limiting resources, *viz.*, labour and irrigation water are available. This may be avoided by increasing the scale of short-term loan for the small farmer or by issue of produce loans, particularly for the crops harvested in the second and third seasons. If more capital is available, the farmer may increase the area under crops and realise still higher profits.

ECONOMIC ASPECTS OF SMALL-SCALE FARMING

Tej Bahadur, S. Veerasamy and P. B. Parthasarathy†

SUMMARY

The specific objective of this paper was to assess the economic aspects of small farmers' economy with reference to land use pattern, source and availability of irrigation, cropping intensity, cropping pattern, the farm assets structure, the income pattern; and resource returns and returns to scale of the sample small farmers in South Arcot district of Tamil Nadu, where the Small Farmers' Development Agency (SFDA) scheme was introduced in 1970-71. The present study covered 80 small farmers identified and serviced (40 each under crop loan and minor irrigation beneficiaries) by the SFDA Project in Nellickuppam block, and another 40 non-serviced small farmers from the Kammapuram block in South Arcot district of Tamil Nadu were selected for a cross-sectional study. The relevant data thus were collected from 120 respondents in all, with 1973-1974 as the reference year. In order to examine

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the resource returns of the serviced and non-serviced small farmers, production function analysis was used as a tool of analysis. However, before doing so, the zero-order correlation matrix was worked out and the correlation coefficient were examined for multi-collinearity. For statistical consideration only the Cobb-Douglas type of production function could be selected for further economic analysis. The variables selected for study included land, human labour, fertilizers and chemicals and pesticides The analysis revealed that about 91 per cent, 97 per cent and 15 per cent of the total area were accounted by wet land respectively by crop loan beneficiaries, minor irrigation loan beneficiaries and non-serviced small farmers. The serviced small farmers had a high percentage of total area under bore-well irrigation whereas for the non-serviced farmers tanks and wells were the most important source. Cropping intensity was found to be the highest (190.40) among the minor irrigation beneficiaries, followed by crop loan beneficiaries (178.80) and non-serviced small farmers (161.10). Paddy, sugar-cane, groundnut and gingelly were found to be the most important crops among the selected small farmers. However, the serviced farmers by virtue of assured irrigation had gone in for multiple cropping, whereas the non-serviced small farmers had no choice but to go in for dry crops like gingelly, and wherever little irrigation possible, took to paddy. Whatever crops the sample respondents were raising, almost invariably they took to High-Yielding Varieties. The analysis clearly demonstrated that the small farmers had responded to intensive agriculture, despite the small size of farms, high cost of intensive agriculture and high risks associated with it. The farm assets structure and farm income both (per farm and per acre) had clearly indicated that selective approach by the SFDA will not only create a better asset structure but also generate sizable increase in both the gross and net returns per farm and per acre. With the result the per capita income of both the serviced and non-serviced small farmers were not only much higher than Tamil Nadu State figure, but also the all-India figure. Further, it was also seen that the coefficient of multiple determination (R^2) was high in the case of minor irrigation beneficiaries, and all the R^2 values were highly significant. This indicated that 87 per cent, 67 per cent and 57 per cent of variation in output were explained by the explanatory variables included in the functions respectively for minor irrigation farms, crop loan farms and non-serviced small farms. The sum of production elasticities, *i.e.*, the returns to scale, though more than one in the case of serviced farms and less than one in the non-serviced small farms, yet, only constant returns to scale was prevailing on all the farms as the sum of elasticities was not significantly different from unity. To conclude, except for human labour on crop loan farms, the production elasticities with respect to variables in all the functions indicated diminishing factor returns.

RELATIVE PERFORMANCE OF SMALL FARMS IN WEST BENGAL

P. K. Chatterjee*

SUMMARY

The paper makes an attempt to empirically examine the state of farm business of small farms in West Bengal. In considering the nature of returns and costs of small farms, their performance is compared with that of the larger farms. The study covered 238 selected farms in six districts of West Bengal for the year 1967-68. The principal findings are : (1) In respect of actual receipts per acre, the performance of the small farms is marginally better than that of the larger farms although there is no statistically significant correlation between the size of farm and actual receipts per acre. (2) There is statistically significant inverse relationship between the intensity of land use and the size of farm. (3) Among the farms operating under loss, the proportion of small farms is the highest but there is no statistically significant correlation between the size of farm and profit per acre. (4) The performance of a number of small farms is indicative of the great potentiality of small farms. Further, the farm business income per acre does not significantly vary with the size of farm. (5) The proportion of paid out cost tends to be smaller for the small farms and larger for the large farms. The association between the proportion of paid out cost and size of farm is statistically significant. (6) In respect of the most important crop (*Aman* paddy), there is no statistically significant association between the size of farm and cost of production.

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PROBLEMS OF SMALL FARMS IN THE CONTEXT OF NEW TECHNOLOGY IN THE DRYLAND AREA — INDORE

A. K. Chaudhari and B. N. Tripathi*

SUMMARY

The black soils of Indore constitute one of the major dry farming areas of Malwa plateau. Holdings under small farms are generally scattered. Only 7 per cent of the net cultivated area is irrigated. The average size of holding in the area is 6.9 hectares. Single cropping has been a deterrent factor in obtaining higher returns in the dry land farming area, thereby limiting the farmers' capacity to invest on modern inputs.

The main objective of this study is to analyse the small farms economy in the context of new technology and visualize the problems which inhibit adoption of new technology. A purposive selection of two villages—Jamboodi-hapsi and Nainode was made. These two villages are located at a distance of about 15 km. from the Indore city. In the sample villages almost the entire area is covered by food crops. Non-food crops occupy only a fractional area of 3.6 per cent in one of the two villages. In view of the fact that most of the area is under single cropping and receives only 980 mm. of rainfall distributed over the year, the farmers operating upto 4 hectares of land have been classified as "small." These have been further divided into two size-groups—below 2 hectares and 2-4 hectares. Of the total farms in these two categories, 33 per cent of the farms were selected on random basis for further investigation. A detailed investigation of 31 sample farms was made through the survey method. Inhibiting factors have been grouped into two—economic and non-economic. The specific problems of adoption of new technology on small farms in the dry farming area have also been studied. Tabular analysis was used to arrive at the conclusions. It was found that in holdings below 2 hectares size-group, the cropping intensity was higher (118 per cent) than the area average. In the second size-group of 2-4 hectares, the cropping intensity was still higher (129 per cent), and investment on farms, gross and net income per hectare worked to be much more than on the lowest group.

The inhibiting factors were observed as (A) (1) size of farm planted, (2) non-availability of certified seeds, (3) doses of fertilizers, (4) irrigation water, (5) infrastructure, (6) input prices, (7) risk bearing capacity, (8) capacity to invest and (9) agro-services: and (B) (1) knowledge of plant protection measures, (2) extension services, (3) social status, (4) farmer's attitude and (5) education and health. The farmers' response to these factors was highly significant. The specific problems of small farms under dry conditions were observed as (1) suitable crop varieties, (2) farmer's reluctance to shift from traditional farming, (3) soil and water management, (4) improved cultural practices, (5) methods of fertilizer use and (6) low productivity of land. It was found that new technology has enough scope and potential to increase the productivity on farms if proper diffusion takes place. Mixed cropping will increase the cropping intensity. If suitable improved varieties are sown and appropriate quantities of other modern inputs are judiciously applied, it would enhance the yields considerably. Small farms' operators need to be educated on proper cultivation methods of improved and high-yielding varieties. A few crop varieties, namely, wheat (Hy-101), safflower (EB-7), gram (Ujjain-24) and groundnut (Jyoti) have, lately, become quite popular because of its spectacular yields. Problems of soil and water management, and plant protection measures can be taken care of by appropriate agencies.

ECONOMICS OF DUGWELL IRRIGATION FOR MARGINAL FARMERS (A CASE STUDY IN THE DISTRICT OF BANKURA, WEST BENGAL)

Nakshatra Kr. Roy†

SUMMARY

The Marginal Farmers and Agricultural Labourers (MFAL) scheme was launched by Government of India to promote the economic viability of the marginal farmers who constitute the poorest section of the rural people. These farmers are no better than the agricultural labourers in Bankura which is one of the agriculturally backward districts of West Bengal. The poverty of this district is mainly due to the extremely poor soil fertility and scarcity of water. Therefore it was considered proper to concentrate digging wells in this drought-prone area. In all, 39 dugwells were studied spread over five villages at a radius of 5 miles from the Gangajalghati block in Bankura district. The marginal farmers held 88 per cent of the owned land whereas the leased-in land was only 12 per cent. On an aver-

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age, a dugwell provided irrigation to 0.44 acre of land for crop production. The success of dugwell was studied with reference to new crops introduced, the cropping pattern and the intensity of crops, input structure and income earned before and after dugwell. Before the dugwell was introduced, only paddy and very little of pulses were grown in the command area. After the irrigation facility was extended, crops like potato, onion, oilseeds, mesta and various tyes of vegetables were grown on the same area. The adoption of these larger number of crops not only ensured better utilization of land and labour but it had a great effect on income generation. The income from vegetables accounted for Rs. 9,000 which raised the average income per household by Rs. 230. The income after dugwell increased by five times. This increase is very fast because the benefit of dugwell enjoyed by the farms are coming forth only for two years. The intensity of cropping after the dugwells increased by 46 points. Among the inputs, oilcakes and cowdung are mostly favoured. Paucity of finance has barred them from using chemical fertilizer which is relatively valuable than the other inputs. Greater amount of fertilizer, oilcake and cowdung are used in land under the command area of the wells. The problem that the farmers face at present is in regard to the marketing of the vegetables which are their only surplus produce. Markets are situated at a great distance and as such most of the farmers are compelled to dispose of their vegetables at a lower price to the *paikers*.

ECONOMIC EMANCIPATION OF SMALL FARMERS

K. M. Udupa and B. Pramod*

SUMMARY

One of the basic problems hindering the economic emancipation of the small farmer is the non-availability of the wherewithal required for farming, such as credit, inputs, services and technical guidance, within easy reach. Various recommendations have been made to overcome this problem, the latest of which is the concept of "integrated credit services" recommended by the National Commission on Agriculture. Syndicate Bank has launched an operational research project to give shape to this concept in 1973, in Hosala village of South Kanara district. As part of the project, all farmers of the village will get the credit, inputs, services and technical advice needed by them under one roof. In order to encourage the small farmers and land based agricultural labourers, who stand at the lower rungs of the rural socio-economic ladder, to use these facilities and operate their land holdings efficiently, a pilot demonstration of efficient small farm management was organized. The concept of demonstration of efficient small farm management is a pioneering idea. Unlike the traditional extension demonstrations which concentrate on 'methods' or 'result' aspect of farming, the demonstration of efficient small farm management aims at a stabilized and maximized income from the whole farm unit. The demonstration, organized on the neglected one-acre farm of a woman agricultural labourer, produced eye opening results. It educated the small land holders of the village in efficiently managing their farms. More and more farmers are approaching the project authorities to help them in managing their farms.

ASSESSMENT OF SMALL FARMERS' EXPENDITURE ON MODERN INPUTS IN DISTRICT AMRITSAR (A CASE STUDY)

J. S. Chawla†

SUMMARY

One of the distinctive characteristics of small farmers is the meagre expenditure incurred by them on modern inputs. The present study attempts to estimate the expenditure on modern inputs such as seeds, fertilizers, insecticides and tubewell irrigation on the small farms as compared to the medium, large bullock operated farms and tractorised farms. Its principal objectives were to (*i*) analyse the crop plans of the small farms in comparison to the medium, large and tractorised farms, (*ii*) work out the per acre expenditure on modern inputs on the small farms as compared to other categories of farms and (*iii*) account for the sub-optimal use of these inputs, if any. The investigation covered 70 farmers, 16 small (with holdings below 7.58 acres), 34 medium (with holdings between 7.58 and 18.75 acres), 10 large bullock operated and 10 tractorised farms (with holdings above 18.75 acres) selected randomly from four randomly selected villages of Patti Block in Amritsar district in Punjab in the year 1972-73. Information was collected through a pre-tested schedule from the selected

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respondents. Enterprise budgets were used to compute the per acre expenditure on modern inputs. The source of irrigation on these farms was tubewells-cum-canals or canals alone. The cropping intensity varied inversely with the farm size; for the small, medium, large and tractorised farms, it was 1.96, 1.81 and 1.68 and 1.94 respectively. Due to the preponderance of family labour, the small farmers intensively cultivated their lands. Further, the area under foodgrains, non-foodgrains and fodders varied positively with the farm size. The small farmers put 63.44 per cent of the sown area under foodgrains as compared to 64.44, 65.40 and 61.02 per cent on the medium, large and tractorised farms. The area under non-foodgrains was 16.50 per cent on the small farms compared to 19.08, 22.22 and 29.59 per cent on the medium, large and tractorised farms. The percentage of fodders was 19.48 on the small farms in comparison to 15.74, 11.46 and 9.39 on the medium, large and tractorised farms respectively. The responsiveness of the small farmers to the adoption of high-yielding varieties was low. The area under high-yielding wheat, paddy and American cotton was 16.02, 6.14, and 0.95 per cent on the small farms as against 22.71 to 37.78, 11.20 to 12.72 and 2.84 to 12.52 per cent on the medium, large and tractorised farms respectively. A positive relation existed between per acre variable expenses and gross returns on all farms. On the small farms these expenses worked out to Rs. 313.81 as against Rs. 364.95 to Rs. 390.65 on other categories of farms. The per acre expenditure on seeds, fertilizers, insecticides and tubewell irrigation varied positively with the farm size. The per acre expenditure on seeds, fertilizers, insecticides and tubewell irrigation amounted to Rs. 55.31, Rs. 118.08, Rs. 0.00 and Rs. 9.10 respectively on the small farms as against Rs. 44.36 to Rs. 55.78, Rs. 125.47 to Rs. 165.72, Rs. 12.81 to Rs. 17.29 and Rs. 20.97 to Rs. 28.72 on different categories of farms. It is, therefore, evident, that the small farmers invested less in modern inputs due to low incomes. The per acre expenditure at the existing and recommended levels of technology showed that the small farmers were using these inputs at the sub-optimal level when compared with other categories. The per acre expenditure on seeds showed a shortage (difference between the existing and recommended levels) of Rs. 2.34 as against Rs. 5.10 to Rs. 9.82 on the medium, large and tractorised farms. The probable explanation for this discrepancy was that the farmers were not using the recommended doses of seeds of high-yielding varieties. In the case of nitrogenous nutrients, the per acre shortage was 17.42 kg. on the small farms as against 14.90 kg., 8.85 kg. and 12.14 kg. on the medium large and tractorised farms. In the case of phosphorous nutrients, the per acre shortage worked out to be 12.43 kg. on the small farms compared to 7.91, 5.93 and 10.81 kg. on other categories of farms respectively. The use of muriate of potash was less than the recommended level to the extent of 6.61 kg. per acre on the small farms as against 5.73, 6.20 and 5.91 kg. on the medium, large and tractorised farms respectively. The small farmers did not apply the recommended doses of fertilizers and irrigation due to low income, high prices and ignorance while other farmers reported difficulties with regard to power supply, diesel and repairs of tubewells which ultimately adversely affected the irrigation and hence the use of fertilizers. Since the small farmers did not spend on insecticides, these were not considered.

CAPITAL AND CREDIT REQUIREMENTS OF SMALL FARMS UNDER CHANGING AGRICULTURAL CONDITIONS IN THE LIFT CANAL IRRIGATED AREAS OF BHIWANI (HARYANA)

R. P. Singh and Vijay Kumar Bhayana†

SUMMARY

In the history of Indian agriculture, capital and credit requirements have never been as high as today, because agricultural technology is undergoing a change. Therefore, the owned resources of the small farms have to be supplemented through credit. Credit, today, has actually become the *sine-qua-non* of agricultural progress, when particularly the availability of the requisite credit facilities seems to have a close correspondence with the adoption of modern technology in farming. In Haryana 42 per cent of the operational holdings are below 4 hectares. Therefore, an attempt has been made to assess the capital and credit needs of small farms of Bhiwani district. The specific objective of the present study was "to assess the short and medium-term capital and credit needs of small farms for adoption of new agricultural techniques under changing agricultural conditions." Bhiwani district is vulnerable to chronic droughts and the people of the areas have received repeated blows of hardship year after year. Thus, the aptitude towards the introduction of new cropping patterns will have to be created among the farmers with intensive efforts and persuation by granting adequate financial assistance. On the other hand, with irrigation facilities available, the farmers are facing new problems. Most of the land of the area is unlevelled and full of sand dunes, therefore, the full advantage of irrigation can be taken only if levelling is done, improved seeds, manures and fertilizers are used. There is also need for lined channels so as to avoid seepage losses of water.

Bhiwani district was selected purposely and it was one of the districts of the State which had concentration of small farms with special problems. Again, Bhiwani Block which had irrigation faci-

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lities in both the seasons from the Jui Lift Canal was selected purposively. Finally a cluster of three villages was taken for the study. Twenty-eight farms were selected which had operational holdings upto 5 hectares. The average size of these farms came to 3 hectares. The data on existing pattern of resources use and cropping pattern were pooled and a synthetic farm situation was developed by averaging through budgeting technique. With the help of this synthetic farm situation, the capital and credit requirements under changing agricultural conditions for future planning were estimated. Medium loans were mostly advanced for five years, therefore, farm plans were proposed for the coming five years from 1974-75 to 1978-79. The data for the base year were collected for the year 1972-73 After identifying the weaknesses, different farm plans were developed and it was assumed that capital was not a restriction and the farmers could borrow the funds needed in addition to their own resources from the MFAL agency. The amount of capital availability for meeting the short-term investments was increased from previous years to succeeding years. The short-term credit requirement was Rs. 2,917.33, Rs. 2,729.96, Rs. 2,503.88, Rs. 2,289.83 and Rs. 2,064.40 in the different years of farm plans from 1974-75 to 1978-79, respectively. The short-term credit requirement was showing a declining trend in different succeeding years. The medium-term capital requirement was noted as Rs. 1,249.00, Rs. 1,450.00, Rs. 1,968.75, Rs. 2,963.00 and Rs. 5,260.00 from 1974-75 to 1978-79, respectively. The medium-term credit requirement was found to be Rs. 289.30, Rs. 317.34, Rs. 819.68, Rs. 1,146.29 and Rs. 3,436.35 in the different years from 1974-75 to 1978-79, respectively. There is a felt need to have a micro level approach to identify the weakness of their existing situations and plan their resources through formulating systematic farm plans.

A STUDY OF REQUIREMENT, AVAILABILITY, COST AND SOURCES OF CREDIT OF SMALL FARMERS IN BLOCK TANDA, DISTRICT FAIZABAD (U. P.)

Vipin Bihari, R. I. Singh and D. Singh†

SUMMARY

The main objectives of this study were to find out the total capital and credit requirement of the small farmers under existing technology and existing and optimum level of resource use and to examine the cost of credit and the role played by different agencies in supplying credit to the small farmers in Tanda block, Faizabad district in Uttar Pradesh during the year 1973-74. The main findings and results of the study are as follows : The input and output per hectare decreased with an increase in the size of holding, being Rs. 1,019.73 and Rs. 1,861.66 in the 0-1 hectare size-group and Rs. 912.46 and Rs. 1,480.43 in the 2-3 hectare size-group of holdings, respectively. The coefficient of correlation analysis was made between output and input per hectare and was found significantly positively correlated, the value of coefficient of correlation 'r' being 0.78. The amount of borrowed capital increased with an increase in the farm size which varied from Rs. 273.54 in the lowest size-group to Rs. 313.34 in the largest size-group. The proportion of borrowed credit in the total input per hectare was found to be higher in the higher size of farm, being 13 per cent in the 0-1 hectare and 23 per cent in the 2-3 hectare size-group of holding. The per hectare credit taken was found to be positively correlated with the size of holding. The value of coefficient of correlation (r) was found 0.81 which has been tested at 5 per cent level and found to be significant.

The study showed that the total capital and credit need of the farmers per holding increased with an increase in the size of farm. The recommended credit requirement per hectare varied from Rs. 797.81 to Rs. 1,089.18 in the 0-1 hectare and the 2-3 hectare size-groups respectively. The medium and long-term credit required per farm was found to be positively correlated with the size of farm.

The expected cropping pattern required more additional input per hectare amounting to Rs. 1,207.81 and Rs. 1,389.92 in the 0-1 and 2-3 hectare size of farm respectively. The availability and source of credit indicated that 62.29 per cent of the total short-term credit was met by the co-operatives in the case of the small size farm (0-1 hectare), 72.25 per cent in the 1-2 hectare and 79.89 per cent in the 2-3 hectare size-groups of farms, followed by relatives and moneylenders respectively. The medium and long term credit was mostly obtained from the Land Development Bank, *i.e.*, 97.08 per cent in the 0-1 hectare, 94.73 per cent in the 1-2 hectare and 53.46 per cent in the 2-3 hectare size-groups of farms, followed by others. Only few cultivators in the 2-3 hectare size-group of farms were benefited from the nationalized banks which provided 31.02 per cent of the total credit requirement of this size-group. The cost of loan is high because more amount is wasted in convenience and incidental expenses under the different size-group of holdings.

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BORROWING BEHAVIOUR OF SMALL FARMERS IN SFDA PROJECT, FATEHPUR, UTTAR PRADESH

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SUMMARY

This paper examines the borrowing behaviour of small viable farmers in SFDA Project, Fatehpur, Uttar Pradesh. The study covers the extent of borrowings and its utilization for the purpose for which it is taken and the extent of benefit obtained by the farmers from the programme at two points of time, *i.e.*, 1970-71 and 1972-73. Opinions of the farmers regarding problems faced during borrowings were also studied. The average size of holdings of 100 small sample farmers in the study area came to 1.50 hectares. Co-operative Societies, Commercial Banks and the Land Development Bank were the main agencies supplying credit to the small farmers. Short-term borrowings were made for crop development, while medium-term loans were taken for the purchase of milch cattle, implements and machinery, repair of wells and construction of *Bakhari*. Long-term loans were made for installation of tubewells/pumping sets. Both borrowings and the number of borrowers showed a significant increase in 1972-73 over the base year of 1970-71. The number of member-borrowers for short and medium-term credit in 1970-71 was 27 per cent and 15 per cent respectively which increased to 75 per cent and 37 per cent in 1972-73. The number of borrowers for long-term credit was one in the corresponding years. The short-term loan taken for crop development came to Rs. 386.30 per borrower in 1972-73 as against Rs. 250.70 per borrower in 1970-71. In the case of medium-term loan the amount per borrower came to Rs. 1,030 in 1972-73 against Rs. 684 in 1970-71, while long-term loan came to Rs. 7,000 and Rs. 5,000 per head in the corresponding years. So far as the utilization of loan on per unit basis is concerned, it came to Rs. 189.77 per hectare for crop development, Rs. 62.25 per hectare for irrigation structure and Rs. 52.98 per hectare for implements and machinery in 1972-73 against Rs. 44.36 and Rs. 34.08 for the first two items respectively in 1970-71. No loan was made for implements and machinery in 1970-71. In the case of milch cattle, the amount per borrower came to Rs. 1,500 in 1972-73 against Rs. 1,100 in 1970-71, while the amount for construction on '*Bakhari*' came to Rs. 633.33 and Rs. 592.85 in the corresponding years.

The impact of borrowings on the level of income of the farmers showed a significant increase in 1972-73 over 1970-71. The percentage of irrigated area increased from 50.20 per cent in 1970-71 to 55.61 per cent in 1972-73 leading to an increase in the intensity of cropping from 120.75 per cent to 124.44 per cent in the corresponding years. The number of milch cattle in the respective years increased from ½ to 1 per hectare. The input cost per hectare on crop and milch production which amounted to Rs. 1,081.50 in 1970-71 increased to Rs. 1,381.42 (27.73 per cent increase) in 1972-73. The net income of the farmers increased from Rs. 745.22 to Rs. 984.20 per hectare (32.11 per cent increase) at the two points of time. Among the main problems faced by the small farmers in getting credit, the process of getting loan itself was not easy and liberal. A farmer has to run a number of times to the Society or bank for completing the formalities. Further, the lending institutions are reluctant to advance medium and long-term loans due to poor repaying capacity. An advance payment of 25 per cent of the amount of long-term credit to a bank is also difficult for a small farmer. On the other hand, a certificate of identification is an essential part of loaning process which benefits only those farmers who are either relatives or favourites of *Sabhapati* or *Sarpanch*. In all these circumstanees most of the needy farmers are deprived of the benefits of the programme. For the achievement of better results the need is to make the loaning process more easy and liberal and to give guidance to the farmers regarding proper utilization of the loan for the purpose for which it is advanced.

SMALL FARMERS AND INSTITUTIONAL CREDIT—A CASE STUDY IN AKOLA DISTRICT

V. D. Galgalikar, N. A. Gadre and B. D. Bhole*

SUMMARY

In this paper an attempt has been made to study the role of institutional credit for alleviating the lot of the small farmers. The aspects studied *inter alia* include the sources of credit requirement and the cost of credit. The small farmer has been defined as one holding land upto 7.50 acres. The 'study is confined to two villages, *viz.*, Babulgaon and Dongargaon in Akola district. These are the 'adopted" villages of the Central Bank of India which is the Lead Bank for the district. The number

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of households in these two villages was 392 and 212 out of which the total number of cultivators was 164 and 126, respectively. The percentage of small farmers in these two villages was 57.82 and 48.41 and they held 23.38 per cent and 21.20 per cent of the total cultivated land of 1,989 and 1,288 acres. The membership of co-operatives was over 95 per cent in the former and 100 per cent in the latter village. For the purpose of study, 20 small farmers from Babulgaon and 36 from Dongargaon who were non-defaulters were selected. The data collected pertained to the year 1974-75. The Lead Bank had advanced Rs. 79,000 and Rs. 13,000 to 11 and 2 cultivators in the first and second villages, respectively in 1974-75 out of which 10.13 per cent and 100 per cent of the advances were given to the small farmers. The percentage of small farmers out of the total covered was 27.26 per cent and 100 per cent respectively. When loans advanced by the different institutions to the small farmers is considered, it is seen that the Lead Bank's share was 49.96 per cent and 40.77 per cent respectively in the two villages. Among other sources, relatives accounted for 6.87 per cent and 2.82 per cent, village moneylenders 2.50 per cent and 2.45 per cent, co-operatives 28.18 per cent and 46.69 per cent and the Land Development Bank 12.49 per cent and 6.27 per cent respectively in the two villages. About 80 per cent and 92 per cent of the borrowers had taken short-term loan for working capital the share of the loan being 37.55 per cent and 52.96 per cent respectively in the two villages while the remaining was long-term loan taken for developing irrigation facilities. Considering the requirement of credit (short-term), it is noted that the credit gap was to the extent of 66.73 per cent and 72.62 per cent respectively in these villages and this could have been bridged by the financing institutions as it was within the maximum credit limits. No discriminatory rate of interest was charged to the small farmers and in addition to the interest chargeable it is estimated that the cost of finance was to the extent of 3.82 per cent and 3.90 per cent for short-term loan and 6.55 per cent and 2.83 per cent for long-term loan in the two villages respectively. This is on account of the incidental expenses required to be incurred for getting the loans. The small farmers had to encounter many difficulties in securing loans from the the different institutions. In order that a small farmer becomes viable it is necessary that adequate and timely finance is made available to him and some supplementary enterprise like dairying, poultry or agro-based industry is created for him.

CREDIT NEEDS OF FARMERS IN RELATION TO MULTIPLE CROPPING IN DELHI AREA

B. M. Sharma and A. S. Sirohi†

SUMMARY

With the technological break through in Indian agriculture, the farmers are tempted to use more of capital to meet the cash requirements for different types of farm inputs. This need has increased considerably in the context of multiple cropping. The present study is an attempt to estimate the credit needs on farms with multiple cropping in the Union Territory of Delhi. The data from 38 farmers which were selected randomly on the basis of probability proportional to farm size were collected by survey method for the agricultural year 1971-72. Linear programming technique was used as the analytical tool to assess the credit needs under optimized resource situation. A large potential for increasing farm income through resource optimization was observed on the medium farms followed by the small farms. The large farms were found already using existing resources optimally. The effect of multiple cropping on increasing the farm income was more on the small farms compared to the medium and large farms. The credit facilities increased the farm income marginally in the absence of multiple cropping but the effect of credit was more visible with the use of multiple cropping. The use of credit increased the returns by about 14 per cent on the medium and large farms. On the small farms it increased the return only by 3 per cent. This revealed the fact that capital plays a more vital role under multiple cropping. On the basis of these results it may be concluded that capital availability is a constraint on almost all farms in the study area if returns to the fixed farm resources were to be maximized with multiple cropping. The need of credit increased with the use of multiple cropping. The provision of credit was financially feasible in all farm resource situations and the productivity of borrowed rupee was found to be the largest on the small farms with multiple cropping.

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MARKETABLE AND MARKETED SURPLUS IN PADDY AND GROUNDNUT ON SMALL FARMS

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SUMMARY

The main objectives of the paper were to estimate marketable and marketed surplus of paddy and groundnut on the small farms, and to examine the influence of size of family, size of farm and total production on the marketed surplus of paddy and groundnut. The study related to a single production year 1971-72. For this study a total of 96 cultivators in four villages of Nellore taluka of Nellore district in Andhra Pradesh was selected at the rate of 8 cultivators in each of the three farm size-groups, *viz.*, small (less than 5 acres), medium (5 to 10 acres) and large (10 acres and above) in each village. Marketable surplus was estimated by deducting from the total production, the genuine requirements of the cultivator for family consumption, seed, feed and wage payments for labour in kind and other wage kind payments to artisan, etc. While calculating the marketable surplus care was also taken to include in the total production if any stocks of the previous year left over. The marketed surplus was estimated by taking the quantity actually sold by the producers during the year under reference.

The influence of family size, farm size and total production on marketed surplus has been studied with the help of linear regression equations. Multiple regression model has also been fitted to study the influence of family size and total production together on marketed surplus. The results of the study are as follows : (1) The total quantity of paddy retained for home consumption, seed, feed and wage payments in kind constituted 52.9 per cent, 41.8 per cent and 31.9 per cent of the total production respectively for the small, medium and large farms with an overall average of 36.9 per cent for the sample as a whole. It is clear from this that the farm size and marketed surplus (as a proportion to total production) indicated an inverse relationship in paddy. In the case of groundnut no such perceptible trend was observed. The retention was 15.9 per cent, 17.1 per cent and 15.4 per cent of the total production respectively for the small. medium and large farms, and 16.1 per cent for the whole sample. (2) While marketable and marketed surplus (proportion to total production) in paddy showed a direct relationship with the farm size, only marketed surplus showed direct relationship with the farm size in groundnut. (3) The marketable surplus in paddy varied from 47.1 per cent on the small farms to 68.1 per cent on the large farms with an overall average of 63.1 per cent of the total production for the totality of farms. In the case of groundnut it varied from 82.9 per cent on the medium farms to 84.6 per cent on the large farms with 83.9 per cent for the whole sample. (4) The marketed surplus (proportion to total production) in paddy constituted 46.3 per cent on the small farms, 56.4 per cent on the medium farms, 63.7 per cent on the large farms with 59.9 per cent for the sample as a whole. With the respect to groundnut, it was 80.7 per cent, 81.1 per cent, 82.7 per cent and 81.8 per cent respectively for small, medium, large and totality of farms. (5) The influence of size of family on marketed surplus was almost negligible for both paddy and groundnut. (6) The farm size and total production are the most important factors which determine the marketed surplus in both paddy and groundnut. (7) In the case of paddy, an increase of one acre in area under the crop would result in an increase in the marketed surplus of 8.26 quintals on the small farms, 8.22 quintals on the medium farms and 9.14 quintals on the large farms with 8.47 quintals for the whole sample. With respect to groundnut, an increase of one acre under the crop would increase the marketed surplus to the extent of 4.29 quintals on the small farms to 5.21 quintals on the medium farms with an overall average of 4.89 quintals for the totality of farms. (8) An increase of one quintal in the total production of paddy would increase the marketed surplus by 68 kg., 71 kg. and 79 kg. respectively for the small, medium and large farms with 72 kg. for the whole sample. In the case of groundnut it would result in an increase of marketed surplus to the extent of 85 kg. on the small farms to 96 kg. on the large farms with an overall average of 89 kg. for the totality of farms. (9) When family size and total production are considered together to know the influence of these factors on marketed surplus, only total production turned out to be the significant factor in determining the marketed surplus.

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MARKETING PROBLEMS AND PRACTICES OF SMALL FARMERS IN RAJASTHAN

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SUMMARY

The main purpose of this study was to examine (*i*) the extent of production, marketed surplus and retention of wheat, (*ii*) the pattern of marketing and (*iii*) the extent of market dependence for consumption and seed purposes of the small farmers in Rajasthan. The data for the year 1970-71 of 58 small wheat producing farmers, selected randomly from eight major wheat growing districts of the State were used. For the purpose of analysis, the small farmers were divided into four sub-groups, *viz.*, very small (upto 2 hectares), moderately small (2.01 to 3 ha.), small (3.01 to 4 ha.), and not-so small (4.01 to 5 ha.). The results of the study showed that (1) the production of wheat per small farm varied from 11 to 27 quintals. Of the total stocks available for disposal, which include production, last year's balances and purchases, 32.5 per cent was marketed. On an average, 21.2 per cent of the stocks were retained by the small farmers. Amongst all small farmers, the smaller farmers sold and retained a greater proportion of wheat compared to others. (2) Sixty-five to 92 per cent of the small farmers have marketed surplus. (3) Only 14 per cent of the total small farmers sold wheat under distress, most of them belonging to very small and moderately small categories. (4) The smaller farmers were forced to sell a major portion of their marketed surplus (63.2 per cent) in the first quarter (April-June) immediately after harvest to meet their cash and debt obligations. (5) Out of 72.4 per cent of the small farmers who sold wheat, 31 per cent sold only in the village, 13.7 per cent sold only in the *mandi* and the remaining 27.4 per cent sold at both the places. However, the proportion of the total marketed surplus disposed in the *mandi* was higher (56.2 per cent) compared to the sales in the village. It is not the farm size but the quantity marketed, which determines the place of sale. The farmers with higher marketed surplus took the produce to the *mandi*. (6) Traders are the most important agency to whom the wheat is sold by the small farmers. They accounted for 78.5 per cent of the wheat sold. The retailers and consumers accounted for 7.3 per cent and 14.2 per cent of the marketed quantity, respectively. (7) The number of small farmers selling wheat in one lot was 41 per cent and those selling in two to five lots was 57 per cent. (8) Most of the small farmers used bullock cart as the means of transportation of wheat. (9) Of the total number of small farmers, 34.5 per cent purchased wheat, half of them for family consumption. Of the total quantity purchased, 80 per cent was for family consumption. Eighty-five per cent of the farmers depended on village sources, for purchasing wheat.

IMPACT OF SMALL FARMERS DEVELOPMENT AGENCY ON THE PRODUCTIVITY AND INCOME OF SMALL BENEFITED FARMERS IN DISTRICT PRATAPGARH, UTTAR PRADESH

J. S. Garg and K. N. Pandey†

SUMMARY

The main objectives of this paper were (*i*) to study the changes in the level of investment and cropping pattern on beneficiary farms, as a result of the Small Farmers' Development Agency (SFDA) programme in 1973-74 over 1970-71, (*ii*) to work out the utilization pattern of inputs as a result of SFDA activities, on the beneficiary farms at two points of time (1970-71 and 1973-74), and (*iii*) to examine the changes in the level of productivity of important crops, along with the factors associated with it and income, on the beneficiary farms in 1973-74 over 1970-71. The study covered 100 farmers spread over ten villages of two blocks, namely, Sadar and Mandhata of Pratapgarh district in Uttar Pradesh. Out of 100 cultivators, the detailed study was conducted on the farms of 36 cultivators which were benefited by the programme. The data were collected by the survey method on personal interview basis. The findings relate to the period from 1970-71 to 1973-74. As a result of the SFDA programme, the value of fixed capital in 1973-74 over 1970-71 increased by 29 per cent from Rs. 10,753.27 to 13,907.37 There was significant increase in the value of irrigation structure which increased by about 50 times in 1973-74 over 1970-71. The increase in the value of machinery

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at two points of time, was higher by four times. Tubewells and pumping sets were the main items of addition under irrigation structure and power threshers and storage bins under machinery. The cropping pattern also changed drastically. The less valued crop like bajra + *arhar* in *kharif* was replaced by HYV paddy and barley in the *rabi* was replaced by HYV and and local wheats. The percentage increase in HYV paddy, HYV wheat and local wheat was 59.56, 52.87 and 94.16 respectively in 1973-74 over 1970-71. The intensity of cropping increased by 13.14 per cent from 118.53 per cent in 1970-71 to 134.11 per cent in 1973-74. The percentage increase in the irrigated area to the cultivated area, consumption of fertilizers and number of irrigations in 1973-74 over 1970-71 was 80.19, 42.77 and 48.51, respectively. The consumption level of fertilizers per hectare increased from 27.56 kg. in 1970-71 to 39.35 kg. in 1973-74. However, the utilization of human and bullock labour decreased due to the use of tractors for the preparation of land and power thresher for *rabi* threshing, supplied to the farmers under custom and service programme by the Agency. The productivity in all the important crops increased within the range of 28 to 37 per cent at the two points of time. However, the productivity in the case of HYV wheat was not significant largely because of the bad weather accompanied by frosts and hail storms, untimely supply of seeds, causing late sowing, untimely application of fertilizers and irrigation. It is also observed that the input cost per hectare in 1973-74 over 1970-71 increased by 27.44 per cent. However, the value of output increased by 61.79 per cent in 1973-74 over 1970-71. The net income at the two points of time nearly doubled. The increase in family labour income and farm business income, however, was not in proportion to the increase in net income, which explains the lower utilization of family labour in 1973-74 compared to 1970-71. The input-output ratio in 1970-71 was 1 : 1.77 which increased to 1 : 2.24 in 1973-74.

AN EVALUATION OF THE FUNCTIONING OF SFDA AMRITSAR-FEROZEPUR (A CASE STUDY)

R. P. Singh and J. S. Chawla†

SUMMARY

The idea of Small Farmers' Development Agency (SFDA) and the Marginal Farmers and Agricultural Labourers Agency (MFALA) was conceived with a view to improving the economic conditions of the small farmers and agricultural labourers. For the purpose of these schemes, the terms 'small' and 'marginal' farmers have been defined as farming families having 2.5 to 7.5 acres and below 2.5 acres of agricultural land respectively. The agricultural labourers are those families who do not possess any agricultural land and earn their livelihood mainly by working in the fields of the farmers. The Amritsar-Ferozepur SFDA, the subject of our study, was registered as a society under the Societies Registration Act 1860 on March 16, 1971 with head office at Amritsar and was orginally designed to serve only the small farmers but with the passage of time, it had been called upon to serve all the three sections of the rural poor, thus its title 'SFDA' is a misnomer now. The evaluation of the functioning of the agency leads to the following conclusions : (*i*) The area (10,948 square kilometers) of the agency is too wide to be operated over. It should better coincide with a community development block. (*ii*) Identification is most incomplete. The agency has so far identified only 41,290 as small farmers and 372 as marginal farmers as against the actual number of such farmers according to the 1971 Census being 1,11,534 and 1,40,186 respectively. The agricultural labourers have not been identified at all. This basic task should have been completed long ago. (*iii*) Though the Agency has given top priority to arranging of tubewell loans which accounted for 60 per cent of the Agency's expenditure over the last four years, the absolute progress of only 6,913 cases of tubewell loans through the Agency, is quite meagre for an area having 3.48 lakhs of small and marginal farmers, of whom 60 per cent have recently been found to be without tubewells. (*iv*) The Agency appears to be operating in a casual manner with respect to arranging of crop loans and disbursing of subsidies for operations like levelling and reclamation of land, water-management and custom services, etc. The total expenditure for such operations over the last four years was Rs. 7.67 lakhs only, which is too small for 3.48 lakhs of farming families and for so many activities. (*v*) The development of dairy farming as a subsidiary occupation for all sections of the rural poor, is most desirable and suitable. It has also the potentials to flourish. But there is large-scale abuse of the Agency's scheme of granting low interest loans and subsidy for the purpose. The farmers usually enter into fictitious sales by pretending to buy their own buffaloes by offering them for sale through their relatives or friends. Sometimes animals are actually bought by the farmers in the names of the permanently attached labourers with them, who are entitled to a higher rate of subsidy. Steps should be taken to check such abuses of the scheme. (*vi*) Poultry farming as a subsidiary occupation is also equally desirable and easier too, to be adopted. But on account of the price situation of the poultry feed vis-a-vis that of eggs, poultry farming

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at present does not appear to have the chances to become popular among the rural poor due to its continuously dwindling margin of profit, On account of this, very few persons come forward to get loans for the purpose. The Agency's functioning needs to be more vigorous and fault-free for the achievement of its aims and objectives.

AGRICULTURAL SURPLUSES ON IRRIGATED FARMS OF KARNAL (IADP) DISTRICT, HARYANA

R. P. Singh and Lakshman Singh*

SUMMARY

An attempt has been made in the paper to identify and measure the agricultural surpluses generated on different sizes of irrigated farms of Karnal (IADP) district. Five villages situated within a radius of 40 km. from the district headquarters were selected randomly. Again, 40 farms, 20 from small, 12 from medium and 8 from large size-groups were selected with assured irrigation facilities for investigation. Farms below 4 hectares were classified as small, 4-7 hectares as medium and above 7 hectares as large size-groups. Production surplus was the excess of the value of farm production over the total farm expenses while investible surplus was the difference between income and expenses of the farm family. The net irrigated area as a proportion of the cultivated area was 100, 100, and 87.76 per cent on the small, medium and large farms, respectively. Wheat and paddy were the main crops and occupied nearly 70 per cent of the total cropped area on the small and medium farms while 62 per cent was found on the large farms. Looking to the whole cropping pattern it was interesting to note that the total area under foodgrains declined with an increase in the size of farm whereas commercial crops were grown only on the large and medium farms, no area was allocated to these crops on the small farms. On the whole, the levels of yield of almost all the crops were considerably higher than the district average because the selected farms devoted 75 per cent of the total cropped area under the high-yielding and improved crops. On an average, the per hectare production surplus of Rs. 1,675, Rs. 1,354 and Rs. 1,675 was measured on the small, medium and large farms, respectively. The reason for the minimum production surplus on the medium farms was due to excess use of family labour on them. On per hectare basis, the investible surpluses were as Rs. 893, Rs. 617 and Rs. 1,007 on the small, medium and large farms, respectively. Non-farm expenses were comparatively higher on the medium and small farms which ultimately reduced the investible surpluses on these farms.

With the adoption of new technology with assured irrigation, the small, medium and large farms had shown sufficient surpluses. Now it is right time to accept the challenges of new technology and avail the opportunity to give a big push to uplift the farming community by providing assured irrigation where the potential remains to be exploited. This would help in generating more and more surpluses for economic development of a region. These surpluses should properly be channelled for productive investments. As conditions prevail today, there is cool response from farming community towards public enterprises or funds; therefore, efforts should be made to search out possible avenues through private or co-operative enterprises. Besides, a favourable atmosphere may be created through a realistic price policy for the factors of production; otherwise most of the surpluses generated will be consumed lavishly and drained off. The extension agencies involved in the development of agriculture should also educate and help the farmers to mobilize the surpluses for economic projects like bio-gas plants, rice processing plants, co-operative milk unions, etc.

MARKETING (TRADING) AND PROCESSING PROBLEMS OF SMALL FARMERS (ROLE OF CREDIT AND ITS REQUIREMENT) : A STUDY OF HILL AREA

C. S. Raghubanshi, R. N. Tewari and R. Swarup*

SUMMARY

The commercialisation of vegetables farming in Himachal has introduced a new dimension due to the adoption of new technology. The technological revolution has contributed a number of changes in production, processing, marketing (trading) and distribution of vegetables. Every improvement in production has placed a premium on improvement in transportation, communication and credit for the purchase of fertilizers, insecticides and pesticides, quality seed, for employing casual labour, payment of irrigation charges, etc. The intensive application of these critical inputs resulted in

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higher productivity, which in turn increased the marketable surplus. The larger amounts of marketable surplus increased the credit requirement of the small farmers for sales promotion. Saproon Valley, the locale of this research, occupies a key position in growing tomato (as a summer crop)and cauliflower (seed production). The tomatoes were grown for table purposes, whereas cauliflower was grown for seed under the supervision of the National Seeds Corporation. Both the small and large farmers adopted the recommended technology to produce pure and quality seed of cauliflower. Also the growers felt no credit need from any source but arranged the critical inputs from their own resources. But for the cultivation of tomatoes, the small farmers required Rs. 81.20, Rs. 34.68 and Rs. 190.75 for the use of recommended doses of fertilizer, seed and insecticides/pesticides respectively, whereas the large farmers required Rs. 45.09 for the use of insecticides and pesticides only. The small farmers required credit which is a means to secure patronage and to increase the volume of sales. Due to the non-availability of timely and adequate credit, the farmers sold their tomatoes in the villages to primary wholesalers, realising a very low price for their produce. However, improvements in transportation in the valley area has made it possible to move the production to distant markets. The small farmers realised Rs. 99.62 per quintal for the village sales, whereas the large farmers received Rs. 160.55 per quintal for sales in Delhi market by taking a little more care of grading, packaging and transportation. They spent Rs. 30.87 per quintal as marketing cost. Our assumption is that the small farmers could have preferred sales in Delhi market to realise better returns, if credit was made available to them. If the small farmers were able to borrow at 20 to 25 per cent interest per annum, they would have gained by Rs. 26.20 to Rs. 26.98 per quintal over the village sales. However, in the case of the marketing of cauliflower(seed) both the small and large farmers were equally beneficiaries due to direct sales to the National Seeds Corporation, at the village level. This leads to our belief that if adequate facilities are equally provided to the small and large, the small farmers would not lag behind in realising better returns. Presently there is no processing industry that can absorb the supluses and culled tomatoes in the valley. The culled tomatoes estimated to be aroud 15 to 20 per cent of the total production, earn no revenue and are thrown away. In this context, there is an imperative need to set up processing unit/units in the valley, which could provide gainful employment to some unemployed and also absorb the surpluses/culled tomatoes. For processing of cauliflower (seed) it is done only by human labour, which the small and large farmers supply from their own family and the imputed cost of which came to Rs. 40 to 50 per farmer.

A STUDY OF THE COST OF PRODUCTION OF PADDY OF SMALL FARMERS IN A TRIBAL ECONOMY

Prakash Bakshi and C. S. Mishra*

SUMMARY

The paper makes an attempt to study the cost of production of local and high-yielding varieties (HYVs) of paddy of the small farmers in Bastar district of Madhya Pradesh. The district of Bastar is a tribal district inhabited by tribal population (68.2 per cent). Paddy is the main crop grown in the district (60 per cent) with a primitive tradition. The facilities of irrigation, roads and extension services are all poor in the district. The data for the study are collected from a sample of 192 households of the district selected from two-stage stratified sampling design. It is observed that non-purchased inputs occupy over-riding importance in the cost structure of the small and large farmers. Paid and non-paid out costs of the small farmers for the production of local varieties accounted for Rs. 84.69 and Rs. 234.81 respectively, as against Rs. 119.17 and Rs. 201.35 respectively for the large farmers. Though the paid out costs were higher for the cultivation of high-yielding varieties compared to the local ones, the gap between the two costs of production was considerably reduced particularly for the large farmers. The small farmers expended Rs. 106.44 and Rs. 212.02 on paid out and non-paid out cost items respectively, and the larger ones spent Rs. 185.93 and Rs. 195.93 on them respectively. Human labour was the most important component of the total costs in both the size-groups. The imputed value of family labour on the small farms was Rs. 127.88 per hectare (54.64 per cent of the the non-paid out costs) and on the large farms it was Rs. 98.41 per hectare (48.88 per cent of the non-paid out costs) for the cultivation of local varieties of paddy. On the other hand, the small farmers expended Rs. 17.66 per hectare (21 per cent of the paid out costs) on hired labour, compared to Rs. 49.96 per hectare (42 per cent of the paid out costs) expended by the large farmers. This established that the small farmer is heavily dependent on family labour and is also deficient of capital. Similar trend was also revealed in the cultivation of HYVs. The per hectare human labour accounted for 40 per cent of the total cost in the case of the small farmers, and for the larger ones it was 50 per cent. Family labour again constituted the most important item of cost and was roughly 55 per cent (Rs. 127.88 per hectare) and 49 per cent (Rs. 98.41 per hectare) of the non-paid out costs for the large and small farms respectively. Bullock labour was the second most important item of expenditure. Other expenses occupied different importance for the small and large farmers.

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SOCIO-ECONOMIC CHARACTERISTICS OF SMALL FARMERS IN AN AGRICULTURALLY PROGRESSIVE AREA

A. G. Prasad*

SUMMARY

This paper attempts to study the socio-economic characteristics of the different categories of small farmers, namely, the pure tenants, pure owners and part owners, in an agriculturally progressive area. The area selected is Kapileswarapuram and Rayavaram blocks in the East Godavari district of Andhra Pradesh. The data relate to 59 households collected in 1971-72. The following are the main conclusions. In an agriculturally progressive area, the small farmers have a more diversified economic activity. Those who have more labour power, limited occupational diversification but have little or no land, take up cultivation on leased-in lands since agriculture in a progressive area is a profitable occupation. The small farmers have more intensity of cropping. They also depend on activities allied to agriculture like dairying, poultry, etc. This is more the case with pure tenants and part owners. They raise commercial crops to the extent possible. Livestock, more particularly milch cattle, occupies a prominent place in their agricultural assets. In order to better their economic conditions they have willingness to work hard and save more. The only drag that is holding them below the poverty line is the low proportion of workers to non-workers made up of children.

COMMERCIALISATION AND SMALL FARMS

K. Sain and Bhanudeb Bagchi†

SUMMARY

Economic development and commercialisation of farms go hand in hand. The degree of commercialisation varies as between different size-groups of farms. But the majority of the farms investigated have been found to offer more than 40 per cent of their total products for sale in the market. Commercialisation has also a bearing on the per hectare yield of crops, though not very significantly. The area under non-food crops as a percentage of the total cropped area has increased along with commercialisation. The farmers recorded increasing percentage of sale of food crops as a result of an increase in the degree of commercialisation. The sale of crops in the peak of harvest and immediately post-harvest period by the farmers in general appeared to have been somewhat checked, although the bigger farmers were found to have utilized the advantages of commercialisation more and sold the major portion of their marketable surplus over the lean months. The farmers belonging to different size-groups could record better performance with respect to both the spread of their sale and prices received for their products as a result of commercialisation. The findings of the study are corroborated by similar studies done elsewhere.

INCOME AND EXPENDITURE PATTERNS OF SMALL FARMERS IN DISTRICT AMRITSAR (A CASE STUDY)

J. S. Chawla, S. S. Gill and K. S. Sandhu‡

SUMMARY

The principal objectives of this study were to : (*i*) examine the income and expenditure patterns of small farmers and (*ii*) to derive policy implications, if any. It covered 80 small farmers (with holdings below 7.50 acres), composed of 15 marginal (S_1) with holdings below 2.50 acres, 25 lower small (S_2) with land holdings between 2.50 and 5.00 acres and 40 upper small (S_3) with holdings between 5.00 and 7.50 acres, selected randomly from the five randomly selected villages of Jandiala block of district Amritsar (Punjab). The average size of holdings of the marginal, lower small and upper small farmers was 1.85, 3.68 and 6.28 acres respectively. On these farms 27.03, 30.44 and 23.89 per cent of the operational area was leased in. The reference year for the study was 1973-74. The average annual income of small farmers (overall average called S) amounted to Rs. 7,265.35.

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On S_1, S_2 and S_3 farms, it was Rs. 3,763.04, Rs. 6,402.53 and Rs. 11,631.49 respectively. The source-wise break-up of income revealed that farm production contributed 57.91 per cent of the total income, followed by (income from) milch animals (17.25 per cent), livestock (13.75 per cent), off-farm work (5.91 per cent), sale of irrigation water (0.98 per cent), and miscellaneous sources (4.20 per cent). The income from farm production varied positively with the farm size. The income from milch animals varied inversely with the size of the farm. The sale of livestock contributed from 9.46 to 22.02 per cent of the total income on different farms. Off-farm work produced less income as the size of the operational unit increased. The marginal and lower small farmers derived 15.02 and 9.71 per cent of income from this source compared to the upper small farmers (0.98 per cent). The marginal and lower small farmers purchased irrigation water while the upper small farmers sold it. This source contributed 1.85 per cent of the total income. The remaining income originated from miscellaneous sources. The average expenditure on household requirements per family amounted to Rs. 7,337.50 on the small farms. Its break-up showed that food items accounted for maximum expenditure followed by clothing, lighting, housing, miscellaneous items, medicines, social ceremonies, fuel and education. The per family expenditure of the marginal, lower small and upper small farmers stood at Rs. 4,385.22, Rs. 6,813.38 and Rs. 10,812.12 respectively. The expenditure on food items varied inversely with the farm size indicating thereby the prevalence of diversification of food habits. Fuel claimed increasing expenditure with the increase in size (income). The expenses on clothing varied positively with the farm size. The expenses on light, medicine and education were positively related to the farm size. Likewise the expenditure on ceremonies was a small fraction of the total income. No relationship could be found between the miscellaneous items and farm size. The small farmers showed an annual deficit of Rs. 72.15. The marginal and lower farmers reported deficits to the extent of Rs. 622.18 and Rs. 411.15 respectively while the upper small farmers showed a surplus of Rs. 819.37. The marginal and lower small farmers managed to meet the deficits through loans from friends and relatives. The study suggests that the marginal and lower small farmers are trying to diversify their farm activities by including dairy enterprises financed by the Small Farmers' Development Agency. The deficits of these farms can be turned into surpluses if they are provided additional funds for investment in dairy and crop enterprises. Likewise, the upper small farmers by adopting the recommended doses of inputs may increase their production and generate surpluses which may provide potential income to the State (through conceiving and implementing) an incentive-oriented fiscal system consistent with the principles of equity.

SMALL FARMERS AND HIGH-YIELDING VARIETIES—A SIMULATION EXPERIMENT

P. L. N. Prabhu*

SUMMARY

The objective of this paper was to determine on the basis of empirical evidence the actual costs of farmers adopting high-yielding varieties of seeds (HYVs) and the resulting benefits. An attempt has been made in this paper to determine viable and potential viable units and to suggest a strategy for adopting the HYVs through which the farmer while minimizing the increase in costs, gets substantial gains to induce him to continue cultivating the HYVs. A computer model of the village was made and experimented upon to study the consequences in terms of additional costs and returns of the various changes made. The results of the experiment showed conclusively that an immediate complete switch-over to the HYVs will result in huge increase in the small farmer's working capital requirements. Making a trade-off between additional costs and additional benefits, the adoption of HYVs in one of the two seasons would be ideal at the present stage. Co-operative farming will get the small farmer gains not only in terms of revenue but also the badly needed institutional recognition.

SMALL FARMERS' DEVELOPMENT—SOME ISSUES

Raghuvir S. Mehta†

SUMMARY

The strategy of economic development in India rightly demands adequate emphasis on the study of the problems of the disadvantaged sector of the rural economy. For obvious reasons, the small farmers have been by-passed in the translation of plan efforts. The policy instruments have to be so developed that the benefits of such development efforts percolate to such sections of the community. The programme of development of small farmers is designed to enable them to participate in the process

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of development. To enable the State Government to identify the small farmers, broad guidelines and package of programmes are suggested. The task of identification of such types of farmers is really arduous. The methodology for conceptualising the small farmer in a district is examined and applied. It seems that the identification method is broad and based on merely the size of the farm. The productivity of land, types of crops grown and accrual of net income from the farm are not taken into consideration. The district, as the unit of operation, requires to be properly demarcated into more homogeneously laid out sub-zones of a district. The provision of development administration in the programme should not be overlapping with the existing normal developmental administration. Higher weightage to minor irrigation works and augmenting incomes by supplementary activities like dairying and poultry rearing would be more rewarding and acceptable. Even in revitalizing the co-operative credit structure with added supply of credit to such sections, care will have to be exercised in identifying the creditworthy among the small farmers. There are numerus issues involved in attempting to solve the problems of small farmers. Right policy decision and frame viewed in a clear perspective would be strategically and economically useful. This alone will make these farmers economically viable.

RELATIVE ECONOMICS OF DIFFERENT SIZED BULLOCK OPERATED FARMS IN DISTRICT SANGRUR (A CASE STUDY)

J. S. Chawla and R. P. Singh †

SUMMARY

The principal objectives of the present study are to (*i*) analyse the cropping patterns of small, medium and large farmers, (*ii*) work out the relative economics of food and cash crops on small, medium and large farm holdings and (*iii*) to compute the net returns of these farms on the basis of different concepts of costs. This investigation was conducted in 1972-73 in the five randomly selected villages of Barnala block of district Sangrur. It covers 120 farms, 40 small (below 15 acres), 40 medium (10-30 acres) and 40 large (more than 30 acres) bullock operated farms (randomly selected). A two-stage random sampling technique was used for the analysis of this study. The farms were the ultimate units of study. The source of irrigation on these farms was wells/tubewells-cum-canals or canal alone. A pre-tested schedule was administered to each selected farmer to get the required information. Enterprise budgets were prepared for the analysis. The intensity of cropping varied inversely with the farm size, on small farms it was 1.76 as against 1.60 and 1.47 on medium and large farms. Foodgrains, non-foodgrains and fodders claimed 67.73 to 70.38, 12.33 to 16.42 and 15.00 to 15.32 per cent of the sown area on different categories of farms. Among the foodgrains, crops in order of importance were wheat, maize, gram, bajra and barley with sown area ranging from 40.92 to 44.50, 15.35 to 18.28, 4.05 to 8.33, 1.27 to 4.44 and 0.00 to 1.94 per cent on different farm-groups respectively. Among the non-foodgrains, crops important in terms of coverage of sown area were cotton, sarson and sugarcane. On small, medium and large farms, area under cotton, sarson and sugarcane ranged from 8.13 to 12.87, 1.51 to 2.53 and 1.52 to 1.82 per cent respectively. Fodders accounted for 15.00 to 15.32 per cent of the sown area on different farm holdings. In absolute terms, however, the area under these crops varied with the farm size. The comparative economics of food and cash crops revealed that on per acre basis net returns from commercial crops were higher to the extent of 132.91, 79.37 and 36.36 per cent as compared to net returns from food crops on small, medium and large farms respectively. Net returns per rupee invested from commercial crops amounted to Rs. 3.75, Rs. 2.87 and Rs. 2.25 on small, medium and large farms respectively. For the food crops, net returns per rupee invested were Rs. 1.61, Rs. 1.60 and Rs. 1.65 respectively for these categories. The foregoing analysis points to the possibilities of shifting area from food crops to the commercial crops in such a way that marginal returns from each crop enterprise are equalised. This principle of equi-marginal returns will enable the farmers to maximize their returns from fixed resources. The position with respect to various measures of farm profit was as under. Net income, family labour income and farm business income varied positively with the farm size. On small, medium and large farms, net income, family labour income and farm business income ranged from Rs. 323.97 to Rs. 2,901.60, from Rs. 2,925.91 to Rs. 7,346.60 and from Rs. 5,648.18 to Rs. 16,924.66 (based on concept of cost A_2) respectively. Relatively higher efficiency of the medium and large farms over the small farms is brought out by this study because medium and large farmers can make optimal use of fixed and operating capital.

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PROSPECTS AND PROBLEMS OF MARGINAL AND SMALL FARMERS IN HARYANA

R. S. Grewal and Parmatma Singh†

SUMMARY

The specific objectives of this study were (*i*) to study the input-output relationship for different crops on the farms of marginal and small farmers, (*ii*) to examine the extent of adoption of improved inputs by the marginal and small farmers, (*iii*) to assess the employment opportunity in crop production on the above farms and (*iv*) to identify the problems faced by the marginal and small farmers. For this study Gohana tehsil in Rohtak district was selected purposively. From this tehsil three villages were selected. The list of marginal and small farmers of the three villages was prepared and 5 per cent of them were randomly selected for this study. Thus, 19 marginal and 21 small farmers were selected. The study related to the agricultural year 1972-73. The study showed that the cropping pattern of the marginal and small farmers was dominated by cereals. The input, output and net return per acre were the highest for sugarcane crop and lowest for bajra on both the types of holdings. The input-output ratio was highest for jowar and *guara* and was lowest for bajra on the marginal farms. In the case of small farms the ratio was highest for gram and lowest for bajra. The analysis of the employment opportunity revealed that on an average a farm worker got work hardly for 65 days on the marginal farms and 126 days on the small farms in a year. It is observed that the majority of the farmers faced problems of adequate employment, non-availability of better breeds of milch cattle, marketing problems on account of low quantity and shortage of improved seeds and capital. In any programme of development of small-scale farming the above problems should be kept in mind. On the basis of this study it can be inferred that the marginal and small farmers are aware of the new technology of agricultural production but they need adequate, assured and timely supply of crucial inputs to augment their agricultural production.

THE PROBLEMS AND PROSPECTS OF MARGINAL FARMERS AND AGRICULTURAL LABOURERS IN MATHURA (U.P.) — A CASE STUDY

Daulat Singh, M. R. Singh and Ram Iqbal Singh*

SUMMARY

The scheme for marginal farmers and landless labourers is one of those schemes initiated since the Fourth Five-Year Plan for improving the economic condition of this class as well as ensuring social justice to them. A study of the scheme for the marginal farmers and landless labourers was made in 1974-75 in district Mathura (U.P.) with the following specific objectives : (*i*) to evaluate the measures originally proposed and measures actually undertaken by the Agency, (*ii*) to identify the problems and difficulties encountered during the course of programme implementation, and (*iii*) to suggest some measures and future guidelines. The study has highlighted the achievements made in various specific programmes, and failures in others. It is observed that the Agency has identified only 72.6 per cent of the total marginal farmers in the district with a co-operative membership of as much as 50 per cent. Spectacular success was observed in the high-yielding varieties programme and the conduct of demonstrations. Other related components, *e.g.*, vegetable cultivation, fruit plantation, etc., are performed unsatisfactorily. The achievement in the distribution of bullocks, provision of storage bins and custom service was disappointing due to the apathy of the village level workers and the clientele farmers. The scheme could achieve the target of nitrogenous, phosphatic and potassic fertilizer distribution by 32.6 per cent, 25.6 per cent and 36.5 per cent respectively. Due to the high cost and the tendency of leasing out land to the big cultivators by the marginal farmers the uptake of fertilizers was very poor. The *taccavi* on fertilizers was granted for one year and the farmer was expected to generate his farm income for other enterprises in the succeeding years. The sum distributed to a farmer was often insufficient. More credit facilities need to be provided. The distribution of milch cattle was satisfactory while piggery, poultry, sheep breeding, etc., were not popular in the district due to social prejudices, high mortality of animals purchased from Haryana and Punjab,

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lack of technical knowledge and very low margin of profit. The Agency failed to manage the milk supply of the supported marginal farmers.

The marginal farmers were not being sufficiently supported by minor irrigation programme due to the problem of brackish water and negligible financial support by the government for this task. A little success was achieved in the construction of tubewells/pumping sets. The marginal farmers may be helped with credit facilities and *taccavi*. Some small families of farmers having more land were distributing their land to their members for seeking the benefits of services of the marginal farmers' development agency. To check this state of affairs the bifurcation of holdings made for a specific period should be treated as invalid. The village level workers consider this scheme a burden and complain of additional work without additional remuneration. The interest of these village level workers has to be sustained for making this programme a people's programme.

INCOME AND INVESTMENT BEHAVIOUR OF SMALL FARMERS IN SFDA AND NON-SFDA AREAS OF FATEHPUR (U.P.)—A CASE STUDY

V. K. Singh. S. N. Tripathi and R. I. Singh*

SUMMARY

A study was undertaken in Fatehpur district in Uttar Pradesh to quantify the behavioural changes in income and investments in SFDA and non-SFDA areas. The small farmers were classified into two size-groups (1-2 and 2-3 hectares). The respondents comprised two groups of 50 each, selected from Fatehpur tehsil (non-SFDA) and Khaga tehsil (SFDA). The study was completed in 1973-74. It was found that in the SFDA area, family size was small, earning members were more, illiteracy lower and the average cultivated holding was a little higher than that in the non-SFDA area. The bulk of small farmers belonged to the lower size-group. High-yielding varieties are cultivated in both the areas. However the cropping intensity in the SFDA area was about 100 per cent more than that in the non-SFDA area due to dearth of irrigation, lack of input facilities for credit, institutional support and lack of technical knowledge in the latter area. Co-operative membership has risen but the disbursement of loan has not been adequate and timely. Poor draft power is an universal problem. *Usar* has become a grave problem for north part (non-SFDA) of the district. Information cells at market points for technical support and reorienting input supply system has to be strengthened.

The SFDA has made a spectacular impact on production on the small farms, which increased to the extent of 50 per cent over those in the non-SFDA area. However, farm income generated through agriculture is found to be so meagre that it was not sufficient to meet even the household needs of the small farmers. The small farmers, therefore, lease out their land to the big cultivators and get employment in cities to earn more for meeting their family requirements. The scientific knowledge of the SFDA as well as non-SFDA farmers has been found to be unsatisfactory.

AN ENQUIRY INTO THE ECONOMICS OF SMALL FARMERS IN THE CONTEXT OF SFDA PROGRAMME IN DISTRICT FATEHPUR, UTTAR PRADESH

R. K. Singh, R. I. Singh and R. B. Singh†

SUMMARY

An attempt is made in this paper to study the economics of small farmers in the context of SFDA programme in Fatehpur district in Uttar Pradesh. Forty small farmers classified in four size groups varying from 1.0-1.5 to 2.5-3.0 hectares were investigated in Khajuha block of Fatehpur district. The average size of holding came to 1.99 hectares which varied from 1.26 hectares in the smallest to 2.70 hectares in the largest size-group. The cropping intensity, on an average, worked out to 161.42 per cent. It was highest to the extent of 169.84 per cent on 1.0 - 1.5 hectare size-group and lowest being 158.88 per cent on the largest size-group of 2.5 - 3.0 hectares. The main crops grown by the farmers were jowar + *arhar*, paddy, wheat, barley and gram. On an average, wheat occupied the highest area of 31.23 per cent followed by jowar + *arhar* (21.15 per cent), paddy

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(18.53 per cent) and barley (11.03 per cent). Jowar + *arhar*, paddy and gram were largely grown by the small farmers in the size-group between 1 - 2 hectares while wheat and barley were largely grown by the cultivators having large holdings. On an average, the input cost per hectare came to Rs. 722.10. It was higher being Rs. 796.32 on the small size-group of holdings (1.0 - 1.5 hectares) and lowest on 2.0 - 2.50 hectare size-group. Among the input factors, bullock labour accounted for the highest cost of 39.55 per cent followed by human labour (39.50 per cent) and seed (11.16 per cent). The input and net income per hectare worked out to Rs. 722.10 and Rs. 699.98 per hectare respectively. These values seem to be low because of poor investment of capital resources. The per hectare investment on manures and fertilizers and irrigation was only Rs. 39.14 and Rs. 32.10 respectively, constituting 5.42 and 4.44 per cent only of the total cost of cultivation per hectare. The average input-output ratio was 1 : 1.91. The employment of labour, on an average, came to 1003.25 hour unit per hectare of which family labour accounted for 57.33 per cent and hired labour 42.67 per cent. It is noted that family labour showed decreasing trend with an increase in the size of holding while hired labour showed a reverse trend.

A STUDY OF THE PROBLEMS OF VIABILITY OF SMALL FARMERS IN THE SFDA DISTRICT OF PURNEA. BIHAR

G. Ojha*

SUMMARY

The programme of the SFDA/MFAL has been started with the twin objectives of (*i*) extending to the small farmers, marginal farmers and other weaker section of the rural community benefits of the new technology in agriculture between the rich and poor, and (*ii*) ascertaining the impediments and constraints inhibiting the aforesaid categories from availing of the new technology and devising ways and means of removing them. The available statistics relating to SFDAs emphasize the first objective and hence the study has attempted to make available information relating to the second objective. A total perspective of development of the district and the possible role of small farmers have to be visualised. The present case study is based on field data collected by the Vaikunth Mehta National Institute of Co-operative Management during 1971-72 in the two selected SFDA blocks, namely, Krityanandnagar in Purnea Sadar and Forbesganj in Araria sub-division of Purnea district. The first and the second blocks were served by 39 and 43 primary agricultural credit societies respectively. From each of the two blocks four societies were selected on random basis. In the next stage, from each of the selected societies in the two blocks a sample of ten small farmers identified and included under the programme of SFDA was drawn again on the basis of random sampling method. Thus, in all, 8 primary societies and 80 small farmers were selected for the purpose of intensive study. The SFDA had defined a small farmer as one who owned and operated land between 2.5 acres to 5 acres. For the purpose of analysis the selected small farmers were further classified into sub-operational groups and also into various types of cropping pattern groups. (*a*) The study has revealed that a large number of small farmers has adopted the new technology as a result of which many small farm households have achieved the level of viability although there is still wide scope for the expansion of technology. (*b*) A high percentage of irrigated area does not necessarily lead to higher degree of technological adoption. As against the gross irrigated area of 58.76 per cent, the percentage of HYV area to cropped area was only 26.51 for the size group 2.50 - 3.75 acres. Similarly, for the group 3.76 - 5.00 acres and 5.01 acres and above, against the gross irrigated area of 57.25 per cent and 35.17 per cent, the percentage of HYV area to cropped area was only 23.73 and 16.34 respectively. Such a situation calls for a policy of consolidation of efforts in respect of such farms on which infrastructure existed but a technological adoption was not complete. Such a situation was largely due to inadequacy of institutional finance and farmers aversion towards taking risks involved in the adoption of technology. In such cases, the problem should be solved through integrated farm approach. (*c*) The diffusion of HYV area even in a limited scale has revealed a high degree of farm family employment thereby reducing the level of under-employment and idle days on family operated farms. (*d*) Finally, the analysis of net surplus has revealed the fact that except in a few cases of traditional owner and part-owner farms, all the selected farms contained the element of viability. In many cases the farms in the size-group 3.76 to 5.00 acres have recorded a net income above Rs. 3.000 per annum.

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CREDIT-RELATED PROBLEMS OF SMALL FARMERS—A STUDY OF THE SFDA DISTRICT FATEHPUR, UTTAR PRADESH

D. S. Shukla, J. P. Yadava and S. P. Pandey*

SUMMARY

The SFDA scheme was launched in Fatehpur district in Uttar Pradesh in July, 1970 for the identification of the potentially viable small farmers and helping them achieve economic prosperity. The objectives of the present study, completed in January-March, 1973, were (*i*) to work out the credit requirements, its availability and the source along with the estimation gap, (*ii*) to examine the credit utilization pattern and the items of credit preference, and (*iii*) to critically locate the credit beneficiaries of the SFDA scheme. The study was carried out in Malwa and Soraca villages of Malawa block of Fatehpur district. Fifty farmers from each of these 2 villages were chosen randomly. Small farmers, as per definition, were regarded as those having farm size between 2.5 acres and 7.5 acres. The conclusions of this study are as follows : All the selected farmers covered by this study required credit. Fertilizer is the most important purpose for which credit is obtained by as much as 80 per cent of the farmers. But the highest amount of credit advanced was for implements, being a long-term investment. There are a number of agencies operating in the area for advancing loans. Co-operative societies with 49 per cent (highest) of the farmers approaching them were the most popular agency, while the land development bank with 55.9 per cent of the total advancement proved to be a most effective and rich source of credit, though only 12 per cent of the farmers approached it. The credit required was greater than the credit supplied which meant there was a credit gap. Per farmer and per acre credit gap worked out to Rs. 81.94 and Rs. 44.16 respectively. The average credit requirement per farmer and per acre was Rs. 1,115.45 and Rs. 270.74 respectively. As regards the utilization of credit, fertilizer, irrigation and marriage are the important purposes for which loans were obtained. Similarly, fertilizer, irrigation and seed are the most preferred items of credit. Statistical test (rank correlation between items of credit utilization and the items of credit preference ((rho e = 0.93) indicated that a farmer preferred to obtain credit for fertilizer, irrigation and seed but in practice it was found that he used only traditional varieties of seeds and the amount so saved was used for marriage and unproductive purposes.

The last aspect of the study showed that credit is influenced by a variety of factors. Higher caste people constituted 56 per cent of the selected farmers and obtained 61.5 per cent of the total credit while lower caste people accounting for 29 per cent of the farmers obtained only 24.4 per cent of the total credit. Credit availability is further influenced by the socio-economic status of the farmers. Better status is directly related with the total amount and percentage of credit. One interesting point emerging from this study is that 61 per cent of the farmers with farming as the main occupation obtained 66.2 per cent of the total credit received. Illiterate farmers accounted for 70 per cent and obtained 51.5 per cent of the total credit. Farmers with highest education standard (above primary school) comprised of 7 per cent and obtained 13.3 per cent of the credit.

Those having membership of one organization constituted 89 per cent of the total number of farmers and obtained 66.9 per cent of the total credit and the remaining 11 per cent with multiple membership obtained 33 per cent credit. Eighty per cent of the farmers kept one to two bullocks and obtained 74.9 per cent of the total credit. The remaining 20 per cent of the farmers with 3-4 bullocks obtained the rest of the credit. Eleven per cent (lowest percentage) of *pucca* house owners obtained 41·1 per cent (highest) of credit.

Finally, 43 per cent of the farmers had farm size between 2.5 and 4.00 acres, 39 per cent between 4 and 6 acres and only 18 per cent of the farmers possessed land holdings between 6 and 7.5 acres. The actual amount of credit received per farmer in these categories was Rs. 496.7, Rs. 1,065.5 and Rs. 2,701.5 respectively, constituting 19.2 per cent, 37.3 per cent and 43.5 per cent of the total credit. It appears that credit received was proportional to the size of holding. But at the same time it cannot be overlooked that the farmers in the last category obtained a major share of the total credit. This is, perhaps, because of the nature of credit required.

The study calls for certain restrictions and policies. They are : (1) Productive purpose credit should not be allowed to be used for unproductive purposes. (2) The influence of caste and higher status, etc., should be avoided in the advancement of credit. (3) Efforts should be made to wipe out the credit gap and the official agencies should become so active and efficient providing a larger amount at a lesser rate of interest that the non-official agencies like the moneylenders, relatives and neighbours are automatically eliminated.

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SMALL FARMERS' DEVELOPMENT AGENCY VIS-A-VIS AGRICULTURAL DEVELOPMENT : A MID-TERM APPRAISAL IN THE PROJECT AREA OF RATLAM, UJJAIN DISTRICT (M.P.)

S. P. Mishra*

SUMMARY

An attempt is made in this paper to evaluate the working of the Small Farmers' Development Agency (SFDA) Ratlam-Ujjain and its impact on agricultural development in the area. Specifically, it attempts to study the SFDA at the aggregate level and the aided farmers at the village level. The data were collected by the survey method from a sample of 120 beneficiary farmers with the help of suitable schedule of enquiry, drawn on the basis of stratified random sampling and related to the agricultural year 1973-74. The SFDA Ratlam-Ujjain was established in June, 1970. The project area covered the district of Ratlam and Ujjain. In the project area 75 per cent of the farming population was composed of small and marginal farmers and landless agricultural labourers. It is envisaged to run the Agency from 1970-71 to 1975-76. The Agency has laid maximum stress on the development of minor irrigation and had planned to finance the small farmers for the construction of dugwell, installation of pumpset, purchase of agricultural input, dairy, poultry and goat development and creating additional marketing and storage facility. The land development bank, co-operative bank and commercial banks in the project area were assigned the responsibility of financing various programmes under the scheme. 50,000 cultivators in the project area are to be identified and the real benefit in the form of development of irrigation facilities, establishment of viable subsidiary occupation units, etc., will be extended to only about 10,000 of these farmers, the rest being provided only with production credit inputs, etc. The Agency has a budget of Rs. 1.60 crores to be spent on subsidy grants and administrative expenses. It is not economics of scale as is often made, but financial economics of scale which is a serious impedement to the development of the small farmers. The small farmers find it difficult to get credit from the banking institutions on account of their non-credit worthiness. Financially weak position of the small farmers deters them from adopting modern and innovative techniques of farming. The SFDA Ratlam-Ujjain played an important role in making available credit of Rs. 6.62 crores as long-term, medium-term and short-term loan through different banking institutions to the small farmers who were denied hitherto. The share of commercial banks in the total agricultural finance made available to the small farmers increased from 5.44 per cent in 1970-71 to 26.80 per cent in 1974-75. Although the Agency have achieved the target of identification of small farmers, it has lagged behind in the construction of dugwell and installation of pump set, the achievement on these items of development was only 68.69 per cent and 44.42 per cent respectively of their targets. As regards the subsidiary programme, particularly dairy and goat development, these have not much headway.

To evaluate the impact of SFDA, a survey of 120 small farmers was conducted in Alot and Badnagar blocks of Ratlam and Ujjain district. The major achievement of the Agency was in the field of minor irrigation. Its impact was evaluated through an examination of cropping pattern, incremental income and the empolyment on the sample farms. After the development of irrigation facility and requisite supply of various inputs the farmers changed their mono-cropping pattern to double cropping. The cultivation of more remunerative crops and high-yielding varieties was introduced. The intensity of cropping on the sample farms was found to be 133 and 160 per cent on well and pumpset irrigated farms respectively. In the post-investment perioo the rise in the level of production of various crops was more vividly marked. The minimum increase was 40 per cent in gram on well irrigated farm and maximum increase was 200 per cent in wheat on pumpset irrigated farm. Adequate incremental income has been generated which was sufficient enough to pay back the loan instalment. The repaying capacity on the sample farms generated was found to be Rs. 922.25 and Rs. 2,194.95 as against the equated loan instalment of Rs. 924.77 and Rs. 1,519.46 respectively for well and well + pumpset borrowers. It indicates that farms with pumpset benefited much more compared to well irrigated farms. This is due to the simple reason that well irrigated borrowers with indigenous water lifting appliance could not exploit the well water fully. It is therefore essential for the SFDA to help the farmers with composite loan (well+pumpset) rather than with single purpose loan for well only. After the development of irrigation facility in the post development period the annual employment of human labour was found to be 405.11 and 600.07 man-days on well and pumpset irrigated farms respectively, *i.e.*, a rise of 262.68 per cent and 292.46 per cent respectively over the pre-investment period. Therefore, the study leads to the logical conclusion that there exists a positive impact of SFDA on agricultural development of small farmers.

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IDENTIFICATION OF SMALL FARMS VIS-A-VIS VIABILITY AND NON-VIABILITY ASPECTS

P. C. SHUKLA†

SUMMARY

The term small farm is a relative term and has dynamic characteristics depending on the social, demographic and technological changes occurring in the society. The smallness of farms is also dependent on factors influencing the productivity of land, value of farm output and farm input and value of consumption goods entering the farmer's budget. The size of small farm has been determined at less than 4.50 acres of operational holdings. The land area is a quotient and does not form part of the determinants itself. Out of the 120 farms selected from 17 villages in Deoria district of eastern Uttar Pradesh in 1969-70, seventy-five per cent of sample farms came under the category of small farms. Further implicit in the study is the fact that size of land holding as such is not the principal determinant of small farms because mere physical acreage without a reference to the size and structure of family has no relavence in identifying the potentiality of small farms. The difference in the productivity of land, according to the type of soil, adoptability of technological changes and resource availability make the scope of small farms dynamic and the term is bound to have temporal and spatial differences in dynamic setting. What is important about the concept of small farms are the generalities regarding operational feasibility of cultivation by the farmer on the one hand and desire to improve himself through permanent interest in land on the other, and not the ownership of size of land or deficit family budget. The decisive factors regarding small farms are, monetization and non-monetization reflected by per acre wage payment to hired human labour, intensity of use of family labour, intensity of accumulation of agricultural implements and consumption orientation of farm produce. Thus the concept of small farms does not mean that the small-scale farms constitute small farmers and also it does not mean that the small farms are always cultivating small holdings.

The viability and non-viability aspect of the small farms shows that out of 90 households coming under the perview of small farms, 53 per cent of them are non-viable, 33 per cent viable and 14 per cent came under the category of exceptional farms. The size of farms under the viable category consisted of 1.81 to 4.50 acres and under non-viable category below 1.80 acres. The size of small farms was not limited by the size-group of holding below 4.50 acres but farms coming under the size of holding 4.50 to 6.30 acres also showed some tendency of small farms of viable category. There were as many as 40 per cent of the farms in the size-group 4.51 to 6.30 acres which qualified themselves as small farms. The reason behind this may be the caste rigidities, size of population or voluntary nature of mismanagement of agriculture. It is quite suggestive in this context that some corrective steps are needed for this group of farms also so that greater productivity on such holdings could compensate the limitations of small farms of non-viable category at an aggregate level. As there is acute pressure of population on the land holdings of small farms, there is greater need to raise the productivity of viable small farms vis-a-vis non-small farms of land holding above 4.50 acres and below 6.30 acres.

VIABILITY PROSPECTS OF THE SMALL FARMER IN GANJAM DISTRICT

Gopinath Patnaik*

SUMMARY

Admittedly, the most crucial limiting factor of the small farmer is the necessary capital for investment in agriculture. The credit worthiness of the small farmer is extermely low and as such prohibits the flow of institutional finance for possible development. The Small Farmer's Development Agencies (SFDAs) were created with the main objective of making available to the small farmers the 'enabling factor' through a credit-oriented package programme to assist the potentially viable small farmers to become viable. Evidently, irrigation projects were given the major emphasis. Viability of a farm can be measured by the following yardsticks: (*i*) its ability to acquire a net income large enough to meet the consumption requirements of the farm family above the subsistence level and generate an investible surplus; (*ii*) actual capital formation manifested in investment of own capital in productive and other assets; (*iii*) net worth of the farm shown by excess of assets over liability; and (*iv*) growth potential which might not have been reflected either in current production in income levels, but arising

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from fuller utilisation of under-utilised physical resources. This paper attempts to examine the prospects of viability of the small farmer in Ganjam district in Orissa in the light kf the facilities provided by the SFDA. Evaluation of the small farmers in this analysis is made on 'per farm' basis on some crucial indicators like, operational area, irrigated area, assets, borrowings, investments, net worth and net income in order to assess the extent of viability.

In 1972-73, additional irrigation was provided to about 55.50 hectares of gross cropped area mainly in the *rabi* and summer seasons. This extension of irrigation accounted for nearly 25 per cent of the gross cropped area. Extension of irrigation per farm worked out to 0.39 hectare which may be considered satisfactory. The intensity of cultivation of crops increased from 1.51 in 1971-72 to 1.63 in 1972-73. The use of chemical fertilisers per farm was also higher in 1972-73. About 80 per cent of the borrowed capital was for productive purposes. Co-operative institutions supplied 58 per cent of credit while village moneylenders accounted for 38 per cent. The role of commercial banks in the field of credit was highly insignificant. Owned capital accounted for 40 per cent of total investments, such investments being very high in dugwells. The net worth per farm is estimated at Rs. 18,677. Net income per farm declined from Rs. 2,400 in 1971-72 to Rs. 1,993 in 1972-73 due to severe drought conditions resulting in large-scale damage of crops. Non-farm income accounted for nearly one-fourth of the total income of the small farmer. The rate of return calculated as the ratio of net income to the value of total assets or alternatively to net worth of the farm varied between 13 and 14 per cent. In conclusion, it may be said that the credible success of the Agency in providing the small farmer with the 'enabling factor' of credit in the development of infrastructure is largely due to the existence of a sound network of co-operative institutions in the district. In the ultimate analysis it will not be wrong to identify the 32 farms below the income level of Rs. 2,000 as below the viability point and subsistence farms as such, while 17 farms with incomes from Rs. 2,000 to Rs. 2,500 as having reached marginal viability and as many as 47 (49 per cent) small farms with incomes more than Rs. 2,500 as having attained economic viability in varying degrees.

IMPACT OF NEW TECHNOLOGY ON THE EFFICIENCY OF RESOURCE USE ON SMALL FARMERS (A CASE STUDY OF AZAMGARH DISTRICT, EAST UTTAR PRADESH)

R. P. Singh†

SUMMARY

The present paper highlights the economic efficiency of two categories of small farmers—20 progressive and 20 less progressive—in a selected village of Azamgarh district of Eastern Uttar Pradesh. It was found that the cropping intensity and inputs used per acre were considerably higher on the progressive farms than on the less progressive farms. The income estimated according to various cots concepts and returns to different important factors of production were also higher on the progressive farms than on the less progressive farms. The productivity of resource use has been calculated by using the Cobb-Douglass function which showed that there is large scope for increasing the different inputs for improving the economic position of the farmers. The productivity of each input has been compared with their acquisition cost and it was found that the productivity of area, seed and fertiliser and manure on the progressive farms was significantly higher than its acquisition cost while on the less progressive farms only the productivity of bullock labour was significantly higher than its acquisition cost, reflecting thereby the scope for increasing these resources to realise greater returns from crop production. If adequate resources are provided on time to the small farmers along with proper technical guidance there is much scope for making even the small farmers economically viable

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PROBLEMS OF SMALL-SCALE FARMING IN KARNATAKA

R. Ramanna and N. S. P. Rebello*

SUMMARY

Small farms constitute about 68 per cent of the total number of farms in Karnataka. Capital is one of the main problems on these farms. A study conducted in Bangalore indicates that it is possible to increase incomes from two to six times the current incomes by providing working capital, even without making any structural changes in these farms. Hence provision of credit is an essential aspect of pro-

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grammes for the small farms. A problem in formulating such programmes is to estimate credit requirements. A representative farm and aggregation approach is suggested for this purpose and illustrated in this paper. A necessary condition for the success of this approach is homogeneity among the farms. Where homogeneity with respect to resource patterns does not exist more than one representative farm may have to be set up. Optimum farm plans are then to be prepared for these representative farms by using either the budgeting or linear programming procedures. If structural changes are also to be made this should be kept in mind in preparing the plans. Next, estimates of the possibilities for bringing the farms in the area into the programme within th given time span have to be made. On the basis of these, the total annual and plan requirements, of different term-credit can be estimated.

AN ENQUIRY INTO THE CROPPING, EMPLOYMENT AND INCOME PATTERNS OF SMALL FARMERS IN DISTRICT MEERUT, UTTAR PRADESH (A CASE STUDY)

G. N. Singh, T. R. Singh, R. I. Singh and D. S. Singh*

SUMMARY

The main objective of this paper was to examine the cropping pattern, employment and income patterns of the small farmers in Meerut district of Uttar Pradesh. The study was conducted during the year 1973-74. The findings are based on an intensive enquiry of 72 small farmers having a cultivated area below 3 hectares each, selected randomly from five villages of Mawana block in Meerut district. The average size of sample holdings was found to be 1.52 hectares. Fifty-eight per cent of the two smallest size groups of farms (0-1 and 1-2 hectares) occupied 51 per cent of the total cultivated area under study. As against this, 32 per cent of farmers in the size-group 2-3 hectares occupied as much as 48.9 per cent of the area. This clearly shows the uneven distribution of cultivated area in the locality. The tenurewise distribution of sample holdings revealed that only two types of land tenure, *i.e.*, *bhumidhari* and *seerdhari* existed in the study area. On an average, 22.25 per cent of the area was under *bhumidhari* and the remaining 77.75 per cent under *seerdhari* rights. On an average, 81.3 per cent area was under irrigation on the sample holdings. The area under irrigation showed an increasing trend with an increase in the size of holding because the large sized farmers had relatively more pumping sets on their farms. The analysis of cropping pattern indicated that on an average, food crops occupied the largest area, accounting for 85.4 per cent of the total cultivated area followed by cash crop (9.36 per cent). The percentage area under food crops decreased as the farm size increased while that of cash crops increased as the size of holding increased. The average cropping intensity of the sample holdings came to 187.37 per cent. It showed an increasing trend with an increase in the size of holdings.

The average investment in fixed capital including land came to Rs. 14,553.59 of which land alone accounted for 81.5 per cent followed by livestock 10.2 per cent, farm machineries 47 per cent and farm buildings 4.8 per cent. The investment in fixed capital excluding land, on an average came to Rs. 2,874.79 respectively. An analysis of employment of human labour showed that, on an average, the employment of human labour per hectare in crop production and livestock maintenance, came to 1062.63 hours and 199.11 hours respectively. Family and hired labour employment, on an average, accounted for 77.75 per cent and 22.25 per cent respectively of the total labour employment. The farm business analysis as a whole revealed that, on an average, the net income per hectare on the small farms came to Rs. 3,064.52, with an average output of Rs. 6,352.06, and an average input of Rs. 3,288.54. Input, output and net income per farm showed an increasing trend with an increase the size of holdings, mainly because of higher cropping intensity and higher expenditure on cash inputs. Thus, to raise the level of income and productivity of the small farmers in the study area, it is essential that adequate and timely supply of modern inputs like high-yielding seeds, fertilizers, pesticides, assured irrigation water and credit should be made available to them on the principle of collective management.

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A COMPARATIVE STUDY OF THE PRODUCTION PERFORMANCE AND PROBLEMS ON SMALL FARMS AS ADOPTER AND NON-ADOPTER OF NEW AGRICULTURAL TECHNOLOGY IN FARRUKHABAD DISTRICT, UTTAR PRADESH

Y. S. Chauhan, R. I. Singh, R. Kunwar and D. Singh†

SUMMARY

A comparative study of the production performance and problems on small farms as adopter and non-adopter of new agricultural technology in Farrukhabad district in Uttar Pradesh was undertaken during the year 1974-75 mainly with a view to examine the production performance of major crops, labour time disposition and utilization of family labour input on modern and traditional technology farms. The problems of small farms under traditional technology were also studied so as to enable them to taste the fruit of new technology which is believed to be neutral to size. It was observed that the production performance of small farms under modern technology for each crop per hectare was higher than that of the non-adopter small farms because of assured irrigation, use of quality seeds, fertilizers, insecticides-pesticides and improved farm implements. The yield per hectare within each group in both the categories of farms in general showed an increase with an increase in the size of holding. It was due to the availability of resources in a more sound manner on the large farms in comparison to the small ones. The utilization of family labour input per worker was higher on new technology farms in comparison to its counterparts, because of intensive use of resources and higher cropping intensity. On the other hand, the labour time disposition was more on the traditional farms because of work shortage. The problem in respect of irrigation excluding running cost was reported by 97.81 per cent of the small farmers while the problem in respect of other inputs excluding sufficient quantity was reported by 98.36 per cent. The problem in regard to credit and marketing was reported by 98.36 per cent of the selected farmers in each case. The problems of technical know-how and investment capacity were reported by 98.90 and 100 per cent of the small farms respectively. The percentage of respondents reporting all these problems showed an inverse relationship with the size of holding.

A STUDY OF THE INCOME, INVESTMENT AND CROPPING PATTERN OF SMALL FARMERS IN KALYANPUR BLOCK, KANPUR DISTRICT, UTTAR PRADESH (A CASE STUDY)

D. S. Singh, S. R. Yadav, R. I. Singh and R. S. Asthana*

SUMMARY

This paper is based on an enquiry of 80 small land holders randomly selected from five villages in Kalyanpur block in Kanpur district, Uttar Pradesh. The study examined the pattern of income, investment and the cropping pattern among the small farmers in relation to modern technology. A farmer having more than 30 per cent of the area of his holding under the high-yielding varieties was considered as having adopted modern technology. For purposes of analysis the holdings were stratified into three categories, namely, 0-1, 1-2 and 2-3 hectares. The field work was done during 1973-74. It was observed that 32.5 per cent of the holdings were one hectare or less, 46.2 per cent between 1 and 2 hectares and 21.3 per cent between 2 and 3 hectares. The percentage of irrigated area in the three categories of holdings was 65, 76 and 89 per cent respectively and the cropping intensity was found to be 145, 170 and 180 per cent in the corresponding size-groups of holdings. The value capital investment on livestock was highest in the case of holdings in the size-group one hectare and less. Larger holdings invested more on irrigation. The net income from high-yielding varieties of paddy and wheat was Rs. 850 and Rs. 1,706 respectively. Holdings of one hectare and less subsidised their family income from other sources like business, milk, services, etc., to the extent of 34 per cent of their total income. The contribution to the total income by these sources was about 16 per cent and 12 per cent in the holdings of 1 to 2 and 2 to 3 hectares, respectively. About 80 per cent of the total in-input was accounted for by three factors, namely, human labour (20 per cent), bullock labour (21 per cent) and rented value of land 38 per cent and manures, fertilizers accounted for 7 per cent, 8 per cent and 9 per cent of the total cost in the three categories of holdings respectively.

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The pattern of investment on land improvement, irrigation, farm building, implement, and livestock was found to be slightly different in the three categories of holdings. As the size of holdings increased the investment on land improvement decreased. The farmers in the size-group 2-3 hectares invested about 45 per cent of the total investment on irrigation while those in the size-group 2 hectares and less invested almost half of the former category.

SCOPE OF COMMERCIALISATION ON SMALL FARMS ADOPTING MODERN TECHNOLOGY IN CENTRAL UTTAR PRADESH (A CASE STUDY)

R. K. Singh, R. I. Singh, Janardan Singh and Om Prakash†

SUMMARY

The present paper examines the scope of commercialisation on the small farms adopting modern technology in central Uttar Pradesh, during 1973-74 and analyses the farm structure, cropping pattern, level of production and extent of marketed surplus generated on the small farms in the study area. The study is based on 40 small farmers having their holdings between 0-3 hectares and adopting high-yielding variety on more than 30 per cent of the total cropped area. The average size of holding of the sample farms was 1.57 hectares while the cropping intensity, on an average, came to 153.98 per cent. The main crops grown by the small farmers were wheat, paddy, maize and jowar + *arhar* amongst which wheat occupied the largest area of 43.45 per cent (HYV 39.12 per cent and local 4.33 per cent) followed by paddy 23.20 per cent (HYV 9.13 per cent and local 14.07 per cent), maize 11.88 per cent and jowar + *arhar* 10.31 per cent. So far as the level of production is concerned, the average yield of local and HYV wheat on per farm basis came to 1.71 quintals and 32.38 quintals respectively, whereas the value of produce worked out to Rs. 294.87 and Rs. 5,585.55 per farm respectively. The average yield of local and high-yielding varieties of paddy was 11.12 quintals and 12.28 quintals per farm respectively and their respective values were Rs. 889.62 and Rs. 982.44 per farm. In the case of maize and jowar + *arhar* the value of produce was Rs. 699.72 and Rs. 712.16 per farm, respectively. There was a very little marketed surplus on the farms in the size-group 0-2 hectares because a major part of the production was used for family consumption and whatever quantity of the produce was marketed it was for meeting the cash needs of the farmers. The degree of commercialisation varied from 8.36 per cent for maize to 13.77 per cent for *arhar* crops; it was 12.14 per cent for paddy, 11.05 per cent for wheat. The rate of commercialisation increased with an increase in the size of holdings. It was 6.66 per cent for paddy on 0-1 hectare size-group while it increased to 12.44 per cent on 2-3 hectare size-group. Similarly for *arhar* it increased from 10.64 to 14.86 per cent in the respective size-groups. In the case of wheat, the rate of commercialisation was 4.95 per cent on 0-1 hectare size-group and 12.36 per cent on 2-3 hectare size-group. The disposal of produce was highest (50.38 per cent) during the months of May and June followed by November and December (14.14 per cent and 8.87 per cent respectively).

IRRIGATION PROBLEMS IN WAY OF TRANSFER TECHNOLOGY ON SMALL FARMS IN MORADABAD DISTRICT, UTTAR PRADESH

R. Kunwar, T. R. Singh and D. S. Singh*

SUMMARY

This study undertaken during the year 1974-75 makes an attempt to examine the level of adoption of new agricultural technology by the small farmers with and without the irrigation facilities and to discuss the irrigation problems faced by the small farmers in Moradabad district, Uttar Pradesh. For the purpose of study, a sample 50 small farmers in the size-group 1.5 to 2 hectares comprising 18 having their own or assured irrigation facilities and 32 having neither their own nor assured irrigation facilities, was randomly selected from six villages falling under two village level worker's circles in Amroha development block in Moradabad district. The study revealed that the cropping intensity on farms with assured irrigation facilities was 224 while on farms having uncertain irrigation facility it was

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187. The investment per hectare on fixed as well as working capital was higher on the first category of farms compared to the second category farms mainly because of the level of adoption of new agricultural technology and heavy investment on irrigation structures. In both the categories of farms the investment per hectare on fixed capital was Rs. 3,400 and Rs. 750 respectively while on working capital it was Rs. 2,550 and Rs. 2,000 respectively. Among the problems of irrigation, high water charges and non-availability of timely irrigation were reported by all the selected farmers with assured irrigation facility. The number of small farmers without assured irrigation facility who reported irregular electric supply and heavy running cost was 100 per cent, while those who reported boring failures, heavy initial cost, fuel costly and not in sufficient quantity, theft and difficulty in watering distant fields was 18.7 per cent, 78.1 per cent, 62.5 per cent, 37.5 per cent, and 50 per cent respectively. This study leads to the conclusion that small farmers should be initiated to install their own irrigation sources on co-operative basis. A minimum distance between borings should be fixed prior to their sanctioning. Concrete efforts should be made to remove difficulties in respect of loaning and supply of electricity and fuel, etc. Lastly, the persons responsible for social harassment of these farmers should be penalised.

ECONOMIC ASPECTS OF SMALL-SCALE FARMING (A CASE STUDY)

Gurudev Singh and Ishwar T. Patel†

SUMMARY

The objective of the present attempt was to examine the economic aspects of small-scale farming in Anand taluka of Kaira district in Gujarat. Five villages were purposely selected to represent various agro-economic characteristics of the taluka. Separately from a list of small farms (operational holding between 0.50 to 2.00 hectares) for each village, eight farms were randomly selected. The data on various aspects of farm and farming were collected through survey method by canvassing a specially designed schedule among the selected farms. The analysis of the pooled data pointed out that the small farms of the area had inadequate resource base. About 70 per cent of the farms did not have draft power. Respectively 90 per cent and 40 per cent of the farms did not own any irrigation source and machinery. Contrary to the general relief, thus, the small farms had very little investment in indivisible assets. Even the family labour, two or more man units per farm, was not adequate on the majority of the farms and they had to hire the labour in peak labour need periods. Though the above-mentioned resources were available on hire basis, the uncertainty in the timely availability of such services might have adversely affected their production patterns. Hence there is a need for proper arrangements of these facilities to the farms to make them more viable.

Though the intensity of cropping was not very high (140 per cent), the use of land in the three seasons was quite adequate, *i.e.*, 98, 72 and 92 per cent in *kharif*, *rabi* and summer respectively. This was because of the inclusion of long duration crops of cotton and tobacco which remained in the field for more than two seasons. Though foodgrains occupied most of the cropped area (more than 60 per cent), tobacco was the most important single crop grown on 25 per cent of the gross cropped area on 75 per cent of the sample farms. Bajra summer and *kharif* were other important crops each grown in more than 15 per cent of the gross cropped area. Paddy, cotton and wheat followed in order of importance. All the farms had grown at least one commercial crop (except one) along with two or more of food crops.

The commercial crops of cotton and tobacco with farm business income of Rs. 2,547 and Rs. 1,979 per hectare respectively were the superior most crops. However, when the farm business income (FBI) was inflated on the basis of land use—the most scarce input—tobacco did not prove as promising. The FBI was inflated by adjustment factor (AF) given to each crop on the basis of their growth period. AF one, two and three were allotted to crops remaining in the field for three, two and one season so that, respectively, none, only one and two more seasonal crops are possible. On the other hand, paddy became most superior followed by cotton, bajra *kharif*, *kodra*, tobacco, wheat, etc. Most of the farms (55 per cent) on the basis of FBI (more than Rs. 2,000) were rated as viable or marginally viable. Only 30 per cent of the sample farms with FBI less than Rs. 1,001 were treated as non-viable. It is argued that if the cropping patterns were devised on the basis of adjusted income from different crops, the non-viable farms would become viable even under the existing production technology.

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ECONOMICS OF SMALL-SCALE FARMING (A CASE STUDY)

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SUMMARY

Though many programmes have been introduced to improve the economic conditions of small and medium farmers it appears that their position has not changed much. Therefore, an attempt has been made to study the economics of small-scale farming. An attempt has also been made to examine the credit and marketing aspects of the small farmers. For this study 40 small cultivators (*i.e.*, cultivators owning from 0.01 acres to 5.00 acres) were interviewed from four villages in Patan taluk of Mehsana district, Gujarat. These small farmers were further stratified into three classes, *viz.*, farmers owning 0.01 to 2.00 acres, 2.01 to 4.00 acres and 4.01 to 5.00 acres respectively. The data relates to the agricultural year 1973-74. The overall cropping intensity worked out to 157 per cent and it decreased with an increase in the area operated. This clearly shows the nature of intensive cultivation, adopted by these farmers. Because of lack of irrigation and financial facilities these farmers may not be cultivating their land fully in both the seasons. The assets of the small farmers largely consisted of the minimum required to carry on their daily agricultural operations. It is interesting to note that though all the farmers did not have a pair of bullocks even, the livestock formed a major proportion of the assets. Twenty-five per cent of the farmers possessed milk cattle, such as cows, buffaloes, etc., which added to their income. Lift irrigation devices were found with only 15 per cent of the farmers. In the *kharif* season much importance was given to the food crops. Fodder crop also was given some importance. In the *rabi* season both cash and food crops were given equal importance. The small farmers in the size-group 0.01 to 2.00 acres devoted much of their land to the growing of food crops rather than the commercial crops Canal is the main source of irrigation for the majority of the farmers since all of them are not financially sound. The gross area irrigated to gross cropped area formed only 47 per cent.

The majority of the farmers' income was derived from different sources, *viz.*, agriculture, dairy and other sources. The income from agriculture was highly significant and it increased as the area increased. It is quite interesting to note that the income from dairy decreased as the size of operational holding increased. This indicates clearly that the farmers with less land (0.01 to 2 hectares) preferred to go in for milch cattle to obtain subsidiary income though they did not keep work cattle of their own. The income from other sources was less in the second group (2.01 to 4 hectares) as they were not working as labourers. Though the overall net profit from farming appeared to be good, but if we deduct family expenses we may not find it so encouraging.

Only 15 per cent of the farmers borrowed credit for agricultural purposes. The majority of these farmers borrowed from co-operative societies and only a few from moneylenders and friends and relatives. It is thought that the institutions are not providing loans for these types of farmers as they are not creditworthy.

We cannot expect much marketable surplus with these farms as they are subsistence farms. This is particularly true of the food crops. Thirteen per cent of the farmers only sold their wheat crop, and they marketed 40 per cent of the quantity produced. The marketing of wheat was maximum with the farmers in the size-group 0.01 to 2.00 acres. These farmers may be replacing wheat by jowar and maize. Forty-six per cent of the farmers who raised the mustard crop sold all their produce. Wheat and mustard crops were sold by the majority of the farmers in the regulated market situated in Patan whereas only a few sold their produce in the village. Simple regression analysis has clearly indicated the significance of irrigation and fertilizers on output. Given the irrigation and input supply facilities there is every likelihood of increasing the income of the small farmers, The credit and marketing facilities have to be strengthened.

SCOPE FOR THE DIFFUSION OF NEW TECHNOLOGY ON THE SMALL FARMS IN RAJASTHAN : SOME OBSERVATIONS (A CASE STUDY)

L. N. Gupta*

SUMMARY

'Small' is an arbitrary and a flexible term. In the present context, farms yielding an income upto Rs. 3,000 per annum have been designated as 'small farms'. The purpose of this paper is to highlight the scope and popularity of the new agricultural technology in Bharatpur district of Rajasthan during the year 1970-72. About the diffusion of new technology it was noticed that there were 21.32 per cent of

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the cases who were ignorant or indifferent. However, it is a good sign to note that 63.99 per cent of the respondents had adopted improved agricultural practices (limited mostly to the use of improved seeds and fertilizers). The study revealed that middle aged farmers are inclined more to the use of new technology as against the younger group of farmers. In this regard, three major problems relating to agricultural holding, income and input supply system (main obstacles in the way of new technology) have been examined. During the course of the survey it was found that nearly three-forths of the total respondents had an income upto Rs. 3,000 each per annum. In most of the cases the amount of loan taken by the small farmers was not much. A large portion of the loan was used for consumption purposes. In general, the farmers own small agricultural holdings. In fact, the problem is aggravated further as even these are sub-divided and fragmented. The holdings having over seven fragments were reported in the case of 20.6 per cent of the farmers. These problems block the scope of development of new technology in the district. The prospects of new technology will be greater if subsidised inputs are made available to the small-farmers by spreading the network of institutionalised arrangements. Subsidy/loan should be given to the farmers in kind. Consolidation of holding programme must be implemented widely. Ultimately, it would enhance farm productivity and secure more pecuniary gains to the farmers of the area. The recent 'New Economic policy' of the Government would also help in this direction.

FAMILY LABOUR EMPLOYMENT AND ADOPTION OF MODERN FARM TECHNOLOGY BY SMALL FARMERS IN 'SOUNGHAT' BLOCK BASTI DISTRICT (UTTAR PRADESH)

J. P. Misra, Vipin Behari and Ram Iqbal Singh†

SUMMARY

The study is based on an intensive enquiry of 60 farmers (30 participants and 30 non-participants of new technology) randomly selected from three villages of 'Sounghat' block, in Basti district (Uttar Pradesh) in the year 1973-74. The main objectives of the paper were (*i*) to study the employment pattern of family labour on the participant and non-participant farms and (*ii*) to examine the extent of adoption of modern farm technology and family labour employment. All the selected farmers were having less than 3 hectares of land holdings. They were grouped into three size-groups, *i.e.*, 0-1 hectare, 1-2 hectares and 2-3 hectares for the study. The following were the main findings of the study. The cropping intensity and size of holding was found higher on the participant farms compared to the non-participant farms. On an average, the cropping intensity was 178.79 per cent and 168.48 per cent on the participant and non-participant farms respectively. The number of family workers on the participant and non-participant farms worked out to 4.70 and 5.03 respectively. The study revealed that human labour was employed for 335 days in the production of main crops on the participant farms compared to only 275 days on the non-participant farms. The employment of human labour was highest in paddy production (66 days) in the participant farms followed by wheat (58 days) and sugarcane (48 days). On the non-participant farms it was maximum in the production of wheat (being 47 days) followed by paddy (45 days) and potato (40 days). It was observed that, on an average, family labour was available for work for 415 days on the participant farms and for 460 days on the non-participant farms but they were employed only for 363 days and 288 days in the two categories of farms respectively. The employment of family labour was higher on the participant farms by 26.04 per cent compared to the non-participant farms. On an average, family labour was unemployed for 52 days on the participant farms and for 172 days on the non-participant farms. The unemployment of family labour showed decreasing trend with an increase in the size of holdings in the first category of farms due to higher degree of adoption of modern farms technology. On the other hand a reverse trend was noticed in the second category of farms. The increase in the percentage area under the high-yielding crops varieties indicated that the small farmers were adopting new technology sharply to maximize their farm profits. The employment of a family labour in the production of Mexican wheat and high-yielding crop varieties of paddy was found to be higher compared to their local varieties. It was, on an average, 79.56 days in Mexican wheat as against 51.36 days in local wheat and 80.05 days in HYV paddy as against 54.03 days in local paddy. It is concluded that modern farm technology offered scope for better employment of family labour on the small farms. For strengthening the economic position of such groups of farms in the district some specific project should be launched by he Government.

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AN INVESTIGATION INTO INCOME, EMPLOYMENT AND EXPENDITURE PATTERN OF SMALL FARMERS IN PARBHANI DISTRICT

R. K. Pathak, C. D. Deole, L. V. Ambegaonkar and B. S. Mahajian*

SUMMARY

With a view to studying the income and employment pattern of the small farmers the present investigation was undertaken with the following specific objectives: (*i*) To study the land utilisation and cropping pattern, (*ii*) To examine the assets and liabilities position and (*iii*) the employment, income and expenditure pattern. A sample of 40 small farmers selected randomly from four villages from Jintoor taluka of Parbhani district in Maharashtra was selected. The data were collected by survey method and pertain to the year 1973-74. It is revealed that the average intensity of cropping of the selected sample was 126.71. Cotton occupied a prominent position in the cropping pattern of the small farmers accounting for about 34 per cent of the total cropped area. Hybrid jowar and *rabi* jowar accounted for 16.8 and 16.4 per cent of the total cropped area respectively. A probe into the assets and liabilities position of the sample showed that buildings occupied the foremost position in the assets accounting for 46.40 per cent of the total value of assets, closely followed by land. The debt per indebted family amounted to Rs. 533.26 while the debt per family was observed to be Rs. 346.62. An analysis of employment pattern revealed that the the per unit labour employment was 194.62 days, giving a degree of visible employment of 0.53. Farm was the main source of income to the small farmers and accounted for 46 per cent of the total income. Income from agricultural wages was observed to be 40 per cent. A study of the family expenditure pattern revealed that the per capita per annum expenditure amounted to Rs. 588. The highest percentage of expenditure was incurred on foodgrains.

EXTENT OF UTILIZATION AND PRODUCTIVITY OF LABOUR IN SMALL-SCALE FARMING IN RATNAGIRI DISTRICT OF MAHARASHTRA

S. G. Borude and G. G. Thakare

SUMMARY

An attempt is made in this paper to estimate the extent of utilisation of farm labour and its productivity in small-scale farming in Ratnagiri district of Maharashtra State. The study is confined to 96 farmers from eight villages both selected randomly from Ratnagiri district. 93.3 per cent of the farmers in the sample were either very small or small farmers, the average size of holding being 2.35 acres. This indicated the small-scale nature of farming in general, in this district. On account of hilly and uneven topography, the proportion of current and other fallows was as high as 45.6 per cent, leaving an average net area sown to 1.28 acres. Similarly, for want of adequate irrigation facilities and soils being less retentive of moisture, double cropping on extensive scale has not been possible. The percentage of area irrigated to the gross cropped area was 5.7. Therefore, the cropping intensity was found to be low (110.15 per cent). Eighty-eight per cent of the gross cropped area was under *kharif* crops which signified that the crop production was extremely seasonal in nature. This consequently resulted in concentration of employment mainly in the *kharif* season and 46.76 per cent of the total labour was used in this season. In this small-scale farming, family labour was the most important source of labour, 80.17 per cent labour being supplied by the families and only 19.83 per cent was hired. The extent of per head employment to the family members was 89.0 days for males and 99.7 days for females, the average employment during the year being 94.5 days.

From the foregoing it is to presume that although the extent of employment during the year is low there is excessive use of labour on these small farms on account of the fact that the crop production is extremely seasonal, farming is still of subsistence nature and there is lack of alternative employment opportunities off the farm, and therefore, the productivity also is low. It is also presumed that the family labour was the main element causing excessive use of labour. Therefore, the sample farms were classified into six groups on the basis of the number of family members working on the farms

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(from no family labour to 5 family members) so as to estimate the extent of total employment and the productivity of labour on different groups of farms as well as for all the groups together. It is observed that the per member gross cropped area declined with the increasing number of family members working on the farm showing negative relationship (r= (—) 0.8449). The total employment per farm and per acre increased with the number of working family members showing very strong positive relationship. The total labour per farm increased from 114.0 man-days to 387.1 man-days (r=0.9823) and per acre labour increased from 76.4 man-days to 205.1 man-days (r=0.838). However, the per acre gross value did not increase in the same proportion with an increase in the per acre labour. This ultimately resulted in a decline of gross returns labour the gross value of output per unit of labour being reduced from Rs. 9.41 to Rs. 3.98. This showed a very strong negative relationship of returns to per unit of labour with the number of family members working on the farm (r=0.9055). The marginal analysis indicated that both the average and marginal value products of labour declined with an increase in the number of working family members. The average and marginal values were highest in group I where 100 per cent labour was hired. The average and marginal value products for this group were Rs. 9.42 and Rs. 10.66 respectively. The average and marginal value products for all groups together were Rs. 4.59 and Rs. 1.68 respectively (elasticity was 0.3657). This clearly indicated that the productivity of labour very much declined with the increasing number of working family members.

The study of capital position, which is a complementary factor contributing towards the productivity of labour revealed that the per acre total captial (fixed and working) decreased from Rs. 3,371.62 (group I) to Rs. 1,635.15 (group VI) showing a negative relationship with the number of working family members (r=(—) 0.6986). The proportion of working capital in general was very low and it declined from 19.92 per cent (group I) to 4.16 per cent in (group VI). A similar trend was observed with regard to per member capital position, the per member capital declined from Rs. 1,394.27 (group II) to Rs. 956.97 (group VI), showing again negative relationship (r=(—) 0.8758). The returns to capital were found to increase with an increase in the working members as the levels of capital input increased, the returns to working capital were particularly very high. The returns to fixed working and total capital were 0.73 per cent, 234.39 per cent and 1.49 per cent respectively. This indicated that a large scope existed for increasing the present levels of capital, particularly working capital which will increase the productivity of both land and labour. And whatever excess labour is seen at the present levels of capital input and the technology adopted by the farmers can be reduced to a great extent.

CAUSES OF FAILURE OF LARGE-SCALE SPREAD OF HIGH-YIELDING VARIETIES OF JOWAR, COTTON, WHEAT AND PADDY AMONG SMALL FARMERS

S. V. Supe and V. D. Galgalikar*

SUMMARY

The paper presents the results of a study which examined the causes of failure of large-scale adoption of high-yielding varieties (HYVs) of jower, cotton, wheat and paddy by the small farmers. It is based on a random sample of 237 farmers having land holding of 5 acres and below, drawn from the Agricultural College Extension Block, Nagpur. The sample is divided into adopters and non-adopters. The data revealed that the availability of inputs is one of the greatest hindrance to the adoption of HYVs. Both the adopters and non-adopters faced the problem of non-availability of seeds. Since the hybrid seed needs to be renewed every year this is a serious problem. The cultivators felt that the doses of fertilizers recommended for application were high particularly when their cost was considered and hence a large number of farmers did not use the recommended dose. The non-availability of fertilizers in time was also an important factor. The availability of insecticides and pesticides and dusters and sprayers poised another problem in the adoption of HYVs. Lack of proper technical guidance also came in the way of adoption of these varieties. The quality of seeds supplied, availability of timely credit and irrigation facilities also affected the spread of these varieties. In order that even the small farmers reap the advantage of the high potential of production of the HYVs it is necessary that all the inputs inclusive of quality seeds are supplied to them in time, along with the provision of credit facilities and proper technical guidance.

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THE SMALL FARMER AND THE ASSET STRUCTURE (A CASE STUDY OF THREE VILLAGES IN VISAKHAPATNAM DISTRICT)

T. Hanumantha Rao†

SUMMARY

An attempt is made in this paper to examine the handicaps of the small farmer in building up a sound asset structure. Due to many reasons like lack of finance, the small farmer is unable to use the improved seeds and manures or to introduce new techniques. It is now realised that the small farmer is lagging behind the medium and large farmer in adopting modern innovations in his farming. In spite of the fashionable talk of 'size neutrality' in agricultural technology, the small farmer is unable to muster enough resources for heavy investments in terms of fertilizers, insecticides, tubewells, pumping sets, etc. Only the innovative and progressive farmers have adopted the new technology. The fact of the matter is that the wealthy farmers have become richer investing their savings in profitable ventures. The data presented in this paper were collected from three villages in the Narasipatnam Taluk in Visakhapatnam District (Andhra Pradesh). Three farming regions, *i.e.*, irrigated dry with commercial farming (dry I) and dry with subsistence farming (dry II) are distinguished for analysis. One village from each region was selected on a random basis. From each village three farmers were selected and they were stratified into three categories, *viz.*, small (upto 5 acres), medium (5 to 10 acres) and big (above 10 acres). From each stratum ten farmers were selected at random. Thus 90 farmers were selected from the three regions.

The villages are located at a distance of 3 to 4 miles from the taluk headquarters of Narasipatnam and they are agriculturally quite prosperous. These villages appeared to be inactive till recently and they have changed considerably today with the advent of the 'Green Revolution.' But the new prosperity is limited to certain strata of farmers. Evidently the small farmers in all the above stratified regions are lagging behind the big farmers in the matter of building up the asset structure, etc. The analysis of literacy regionwise and categorywise of children showed a gradual increase in literacy from the small to the big category, and from II to irrigated region. the sample farmers in the dry II region were habituated to borrow and the borrowing was high in the case of the big farmers as they had the higher capacity to borrow. The analysis of borrowings categorywise showed that the number of farmers who borrowed from moneylenders was high in the category of small farmers while the number borrowing from the co-operatives was high in the category of big farmers. Thus, the above findings support the view that the co-operative finance is more accessible to the big farmers and the small farmer is under perpetual obligation to the moneylender and is not able to get out of the rut The data further showed that the small farmers are not in a position to invest more on land to produce any surplus with the result that they are handicapped in the building up the asset structure. With regard to capital investments the small farmer is again at a disadvantage and is not in a position to invest more for land improvement purposes.

THE ROLE OF LAND DEVELOPMENT BANKS IN FINANCING SMALL FARMERS

P. Jagannadha Acharlu*

SUMMARY

Prior to the recommendations of the All India Rural Credit Review Committee the question of providing long-term finance to the small farmers was not taken note of. This, Committee suggested specific and useful schemes suitable to the small farmers, *viz.*, long periods of repayment, joint loans, etc. The studies conducted by many institutions and individual researchers show that small farmers have been facing many constraints in obtaining the long-term finance from the land development banks. In this context, the data furnished by the Andhra Pradesh Co-operative Central Land Mortgage Bank in its Annual Administration Report for the years 1970-71 to 1972-73 have been examined. It is found that the observation of the APCLMB that the small farmers have availed the long-term finance on a larger scale is not correct. The Bank's conclusion is based on major share of loans advanced to the farmers in the loan brackets upto Rs. 5,000. But the finding of the APCLMB is not true for the following reasons. (1) The quantum of loans depend on the requirements of a farmer but not on the size of the farmer. For example, a big farmer with irrigation facilities may require a pumpset which costs less than Rs. 5,000 only. (2) Even the big farmers who apply for a loan of Rs. 4,000 in one year for a well, in another year Rs. 5,000 for pumpset and in another year Rs. 3,000 for reclamation,

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are counted as coming under the loan bracket of Rs. 5,000 and below. (3) The particulars of farmers under certain loan brackets are furnished by primary land mortgage banks only on the basis of quantum of loans but not on the basis of the size of farmers. The data relatiing to loans issued to the small farmers during the year 1973-74 by the APCLMB under the SFDA and MFALs schemes show an encourgaing picture. But the impact of the relaxed conditions in favour of small farmers in other areas could not be assessed for want of data. It is therefore, suggested that the APCLMB should publish reliable data in the case of small farmers for the purpose of analysis. The small farmers can be identified on the basis of land owned by them (in standard acres) or on the basis of gross earnings or some other rational criteria.

ROLE OF INSTITUTIONAL CREDIT IN GENERATING FARM INCOME (A CASE STUDY IN KALYANPUR BLOCK, KANPUR DISTRICT, UTTAR PRADESH)

S. N. Rai, Sri Ram, Vipin Behari and R. I. Singh*

SUMMARY

An attempt is made in this paper to examine the role of institutional credit in generating farm income on the basis of a case study of a sample of 100 farmers selected from Kalyanpur block in Kanpur district undertaken during the year 1973-74. For the study 50 borrower-farmers from institutional credit agencies and 50 non-borrower-farmers classified into three size-groups, *viz.*, 0-2.5, 2.5-5-0 and 5 hectares and above were randomly selected. The cost and returns and the level of institutional credit and the income generated in the selected farms were analysed. It was observed that average size of holding in the size-group 0-2.5, 2.5-5.0 and 5 hectares and above was 1.37, 3.66 and 8.21 hectares respectively on the borrower farms. The corresponding figures for the non-borrower farms were 1.40, 3.70 and 8.10 hectare. The percentage of irrigated area on the borrower farms was 85.62 and it was 70.10 on the non-borrower farms. The cropping intensity on both the categories of farms was 170.4 and 145.43 respectively. The area under the high-yielding varieties was about 68.91 and 20.93 per cent on the borrower and non-borrower farms respectively. The value of capital investment per hectare including land value was Rs. 14,229.33, and Rs. 13,864.04 on the borrower and non-borrower farms respectively. The per hectare overall input-output, net income, family labour income, farm business income for the borrower farms worked out to Rs. 2,636.21, 4.467.06, 1,830.87 2,157.47 and 2,166.47 respectively while the corresponding figures for the non-borrowers were Rs. 2,223.44, 3,314.59, 1,091.51, 1,365.89 and Rs. 1,960.24. The input-output ratio was 1:1.69 for the borrower farms and 1:1.49 for the non-borrowers. It is clear that the larger farms in general and the borrowers in particular invested larger amount of capital on inputs compared to the smaller farmers and non-borrower counterparts. The higher investment in general is associated with higher per hectare expenditure on modern inputs like fertilizer, seeds, pesticides, irrigation and mechanization and other farm machineries. The ratio of additional cost on account of institutional credit and income generated indicates that one rupee of credit would generate an overall income of Rs. 2.72. The highest ratio of 1:3.02 between institutional credit cost and income is seen on the larger size farm followed by the medium farms (1:2.67). The lowest ratio of 1:2.5 of institutional credit cost to income is seen in holdings in the size-group 0-2.5 hectares, due to the fact that these farms did not devote all their available credit to production expenses. It is observed that institutional credit exerts a greater influence on the level of farm income.

SMALL-SCALE FARMING : TECHNOLOGIES AND PRODUCTION IMPLICATIONS

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SUMMARY

The types of problems faced by the small farmers in different socio-economic, geophysical and agro-climatic situations are discussed in this paper. Regarding the unit area of the small farmer, it is suggested that in irrigated condition the unit may be as lower as 0.8 hectare whereas in unirrigated

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areas the unit may be 2.0 hectares. Other measures of categorisation are in forms of producer-sellers and producer consumers. The study concludes that new technology is not neutral to scale as it was considered previously. The weaker sections of the society are at a disadvantage in the management of water, seeds, fertilizers, pesticides and implements. They are unable to drain off excess water from their fields and to get supplemental water for their crops at the right time. Despite the consolidation, the size of holding is uneconomic for a small farmer's family. it still continues to be sub-divided into fragments. The small farmers are forced to sell their tiny holdings to the moneylenders for repayment of old debts. The poor economic base of the small farmers is a great obstacle in the adoption of new agricultural technology. 'Reverse tenancy' has been observed where the financial condition of the small farmer is very poor.

The characteristics of technology influence its adoption by the farmers. The characteristics of 'cost of innovation,' 'simplicity-complexity,' 'profitability,' 'communicability' and 'durability' were found significantly and positively correlated with the adoption of new seeds of dwarf wheat, potato cultivation, nitrogenous fertilizers, phosphatic fertilizers, compost and threshers. The physical and cultural compatibility was not found significantly correlated in the adoption of these practices. Examining the adoption pattern of wheat and paddy techoologies, it was found that fertilizer use and irrigation increased by 26 per cent since the introduction of the high-yielding varieties. Seed treatment and plant protection are becoming popular among 30 per cent of the farmers. To solve the problems of small farmers, two types of action programmes on the production and communication front have been suggested. (*i*) The production problems of small farmers cannot be solved in isolation, therefore, a group action for the whole village on an area and watershed basis for giving desired benefits to them in the problem prone areas of rice production, bad drainage and pest and disease endemic areas, is highly essential. To guard the small farmers against adverse nature, interrupted supply of inputs and other resources it is essential that crop insurance, input guarantee and collective management for minimizing mistakes in decision-making are envisaged in the plans and policies of the government. (2) In the view of poor resource complex, illiteracy and indebtedenss of the small farmers a three-pronged strategy is required. Potential village leaders/progressive farmers may be utilized in decision making. Demonstrations should be laid on the farmers' fields with technical supervision of the agricultural scientists/subject matter specialists. Farmers' training centres may be opened or farmers' clubs organized in the small farmers' areas with the help of the Directorate of Extension, Government of India. The clubs may be technically advised and supported by literature and radio sets. Another measure may be establishing *Krishi Vigyan Kendra* in these districts with the help of the Indian Council of Agricultural Research. The *kendra* may impart technical literacy and devise means for economic growth of the small farmers with new scientific techniques.

ECONOMICS OF HIGH-YIELDING VARIETIES OF PADDY —A CASE STUDY

G. C. Kar*

SUMMARY

There has been widespread belief that due to favourable distribution of the proportion of irrigated land per operational farm in the case of small farm operators, it is likely that the adoption of HYV seed cultivation would be undertaken on a larger scale by them. Through this yield (and hence income)-increasing venture the small farm operators would gain and the relative disparities in income distribution would diminish in the country-side. In an irrigated region (Mahanadi delta) of Cuttack district, two villages were selected at random where 100 per cent cultivable land are under assured irrigation and where the adoption of HYV paddy is nearly cent per cent. The reference period of the study is 1974-75. It is observed in the study area that statistically no significant inverse relationship exists between the size of operational holding and the proportion of land put to high-yielding varieties cultivation. The hypothesis does not hold true in the study area. An attempt has been made to calculate the average cost, output, and net profit per acre of land in different size classes of cultivators in order to find out the probable impact of HYV paddy cultivation on distribution of income and wealth. It is revealed in the study region that the extent of use of plant nutrients and plant protection materials is much lower in the case of relatively small farm operators than the relatively better-off farm operators. Further, there is no evidence of increased human labour use in the case of small farm operators. Rather, the use of human-labour is inversely related to the size of holding. After taking into account the average total cost (under liberal as-

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sumptions) per acre of HYV paddy for different classes of farm operators and the gross revenue, it is found that the net profit from an acre of HYV paddy cultivation increased with an increase in the size of operational holding. Even under such liberal cost calculation it is observed that the extent of net profit accruing to the richest of farm operators was about 62 per cent higher than that of the weakest of farm operators. The differences in the rate of profit would be much higher if the liberal assumptions made in the study are not taken into account and such other items like the actual rate of interest paid by the weakest sections of farmers (which varied between 10 per cent and 120 per cent per annum), rent paid to the owners for lease-in land, distress sale, etc., are taken into consideration. If this is the story of HYV paddy cultivation (the only HYV crop cultivated) in the study region, the income disparities must have grown over time and the impact of HYV cultivation on income and wealth distribution must have been far from the ideal.

OVERALL CRITICAL PROBLEMS AND PROSPECTS OF SMALL-SCALE FARMING IN INDIA

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SUMMARY

The basis for the definition of small-scale farming in India should be the (1) annual income, (2) land holding, (3) land revenue and (4) size of family dependents. The land owned by the small farmer should not exceed 5 acres as dry land revenue paid by the small farmer should not exceed Rs. 10 while annual income from agriculture and allied sources should not be less than Rs. 1,200 per year. But this concept of small farmer will be more meaningful if it is based on the general needs and wants which will enable the small farmer to attain a reasonable standard of living. Hence land holding as a viable unit should not be below the economic size of holding which may vary from village to village, taluka to taluka, district to district, state to state and region to region but the average holding can be worked out at all levels. One of the major objectives of policy in all developing countries of the world is to increase the standard of living of the rural people who constitute the small farmers, marginal farmers, landless labour, wage earners, the unemployed and their families. In India this group is approximately 50 to 60 per cent which represents the poorest or weakest section of the Indian society. During the last Four Five-Year Plans in our country, this section is not given proper attention and consideration for its progress. The magnitude of the problem especially in the backward regions of India and India as a whole is immense. It is estimated that 40 to 50 per cent of India's total population is economically deprived of the normal standard of living. It is also an established fact that the benefits of the new technology in agriculture are confined to only the rich and large holders and the affluent sections of the rural community. As a result, there remained a gap between the big and small farmers and this gap will continue to grow wider and wider unless some serious and urgent measures are adopted for helping this weaker section.

The programmes of SFDA/MFAL have been started and extended to the small farmers, marginal farmers and other weaker sections of the rural community for enabling them to derive the benefit of the new technology in agriculture and for removing the disabilites associated with the small farms. The results of the working of the SFDA and MFAL projects in Bihar and Maharashtra State during 1971-72 are presented below. (1) The SFDA was not able to identity all the small farmers in the project area. (2) A high percentage of irrigated area does not necessarily lead to higher degree of technological adoption. (3) The diffusion of HYV leads to a high degree of farm family employment and hence all efforts should be made to spread it. Crop guarantee scheme should be liberalised to attract more small farmers so as to enable them to adopt the technology. (4) All the selected farmers have the element of viability and the existence of 50 per cent crop sharing with the certainty of tenure, will remove the drawback of viability. (5) The SFDA in its primary objectives could not arrange and co-ordinate the final aspect of the programme due to the weak financial structure of co-operatives and due to the reluctance of commercial banks to share the burdens of co-operatives and hence instead of security oriented policy, the financial institutions should adopt production oriented approach towards the supply of credit. Besides, if individual farm problems are identified and help given they would be in a position to fulfil the objectives of SFDA scheme. Thus integrated small holders' development takes place within the projects for regional development, irrigation, etc. This should be of an integrated nature and it has to be provided with technical advice, marketing facilities, credit for on farm development and input purchase. Integrated small holders' development is relatively recent and the pattern of organization and management are not well established as yet. Two principal strategies of this development can be evolved, the first one being to concentrate on a specific cash crop of high potential as a focal point for development. But for many crops the application

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of this strategy is limited by market prospects while the second strategy is to concentrate on the overall development of a specific geographical area which has a high potential and is of manageable size. The activities include production both for subsistence and for sale in the market and such other aspects as soil conservation, local marketing facilities for food surpluses, input supplies, roads-communication and other social services. The main danger in this strategy is that too many scarce resources particularly trained manpower is concentrated on small area and hence it may be difficult to apply the strategy on large-scale for want of budgetary and manpower constraints. Thus there should be continuing attempt to determine the minimum package of inputs and services which can make a substantial impact on a large number of widely distributed small holders' farms under varying conditions. Within both the strategies, it is advantageous for the small farmers to group together in some way to obtain economics of scale in procuring inputs and marketing their produce. Some of the reasons for the slow 'progress in SFDA/MFAL projects of Maharashtra (1) non-availability of surface irrigation or groundwater potential, (2) lack of creditworthiness of the farmers and weak co-operative sector, (3) lack of co-ordination and (4) inadequate marketing facility.

FINANCING OF SMALL FARMERS—A CASE STUDY OF A FEW SMALL FARMERS IN COIMBATORE DISTRICT, TAMIL NADU

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SUMMARY

The aim of the study is an enquiry into how small farmers finance their agricultural activities and what are their difficulties if any in doing so. The results of a study of 18 farmers in Coimbatore district of Tamil Nadu is given here. A small farmer is defined as one who possesses 10 acres and less in the dry areas and less than 5 acres in the irrigated areas. The village selected was Chinnatadakam which lies 8 miles off Coimbatore city. The average size of these 18 familiesis 5.8. The heads of households are mostly illiterate. The average value of their assets which consist of land owned, agricultural implements, livestock and farm buildings is Rs. 28,543. The average financial assets is Rs. 1,527.5 per holding and Rs. 351 per acre. Indebtedness is Rs. 4,372.0 per holding and half of it was borrowed from the Land Mortgage Bank near Coimbatore city. Some of them are reluctant to go in for loan because of the infertility of the soil and rocky nature of their lands. The rigid nature of the rules regarding repayment are deterrent to many of the farmers going in for loans from the Land Mortgage Bank and State Bank of India. Those who have borrowed from these institutions have asked for time to repay their loans. But computing the net income of these farmers it is found that even after paying for agricultural operations, land taxes and interest on loans they still have a surplus income. Under normal circumstances these farmers ought to be able to repay their loans.

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