CHARACTERISTICS OF SMALL FARMERS AND ADOPTION OF MODERN FARM TECHNOLOGY

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Development of small farmers to their fullest potential has become a serious subject of the present Indian agriculture. Various development measures are in operation to scoop out the multidimensional problems of these teeming millions in order to bring about socio-economic transformation among them. Although, the achievements of these measures seem to be insignificant, it is, however, always desired that the programmes are accepted by all the small farmers and the package of practices recommended for cultivation of various high yielding varieties are adopted by them in full.

Among all the development programmes, the high yielding varieties programme, that too only of wheat, has made a revolutionary change in the farming pattern of the farmers. Available researches, however, pointed out that most of the adopters of these varieties diluted the recommended practices and, in general the extent of adoption of recommended practices differed from farmers to farmers. *Roy (1966)* reported that profitability was the most important attribute for an innovation to be adopted. Several other studies highlighted that one of the main reasons for adoption of high yielding varieties was the higher margin of profit accruing from growing such varieties. It was also observed that use of the high yielding varieties was mainly confined to upper socio-economic strata of the society. Majority of farmers did not adopt them only because they considered these beyond their reach meant for well-to-do farmers with adequate resources.

Now, that emphasis from all corners is laid on the economic augmentation of the small farmers, it is perhaps the high time to investigate into the nature of adoption with the associated socio-economic characteristics of small farmers to bring into light the true state of affairs for future project of programme. Therefore, this study was designed with the following objectives taking into consideration two most important practices of wheat, namely, use of dwarf varieties and application of chemical fertilisers.

1. To study the socio-economic characteristics of small farmers.
2. To study the extent of adoption of the two selected practices of wheat among the small farmers.
3. To find out the relationship between socio-economic characteristics of small farmers and their adoption behaviour.

Theoretical Orientation : The adoption behaviour of farmer is an expression of his transactional action and is the function of the situation in which he lives, his socio-psychological syndrome and his cosmopolitan degree. His behaviour may appear extravagant to a stranger, still his behaviour never abstains from projecting his own perception of the world view. Hence, before adopting an innovation, he always tries to look its realities and relevancy to his situation, and if finds rewarding, he decides upon the course of action, in terms of future and finally acts upon.

METHODOLOGY :

The study was conducted in four purposively selected villages of Shivrajpur, Develop-

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ment block of Kanpur District. For selection of respondents, first a list of farmers having 1 to 3 hectares of holdings was prepared for each village and then from each list, twenty farmers were picked up randomly. Thus, the total number of respondents came to 80 who were intensively interviewed personally. The socio-economic status of the respondents was measured with the help of Socio-Economic Status Scale (rural) developed by *Trivedi and Pareek (1963)*, but with slight modification.

Adoption Quotient Scale : The adoption of selected practices e.g. recommended dwarf varieties of wheat and use of chemical fertilisers was measured by adoption quotient scale of Chattopadhyaya and Pareek (1963). Three variables were considered for working out the adoption quotient namely, extent of adoption in hectare, potentiality in hectare and time (number of years). The under-mentioned formula was used :

$$A.Q. = \frac{E/P \times 100}{\text{Number of years}}$$

Where, A.Q. = Adoption Quotient, E = Extent of Adoption in hectare
P = Potentiality in Hectare

RESULTS AND DISCUSSION :

Enumerative researches have been done in the past to show the socio-economic characteristics of farmers as the governing factors of the adoption of improved farm practices, but the dynamic psychology of the farmers always tells us to verify the set facts, for which an observation of some of these characteristics of our sample farmers has been made. The frequency distribution of farmers falling under different characteristics is presented in Table 1.

It appears from table 1 that the maximum number of respondents (33.75%) were in primary level of education, followed by 20.00, 16.25 and 6.25% of them in 'above high school', 'up to middle' and 'up to high school' levels respectively. The illiteracy was observed among 23.75% of the respondents. The mean educational level was primary.

As regards size of land holding, the majority of the respondents (53.75%) were in holding group of '1.0 to 1.5 ha.', whereas only 25.0, 13.75 and 7.50% of them were in holding groups of '1.5 to 2.0 ha.', '2.0 to 2.5 ha.' and '2.5 to 3.0 ha.' respectively (Table 1).

In case of annual farm income, the table 1 indicates that only 8.75% of the farmers were those whose annual income was more than Rs. 1500/-, while majority i.e. 51.25 and 40.00% of them were in income ranges of upto Rs. 500/- and Rs. 500/- to Rs. 1500/-respectively.

Table 1. Categorization of farmers according to their characteristics.

Farmers' Characteristics	Frequency N = 80	Frequency Percentages
A. Education		
(i) Illiterate	19	23.75
(ii) Upto Primary	27	33.75
(iii) Upto Middle	13	16.25
(iv) Upto High school	5	6.25
(v) Above High School	16	20.00
B. Size of Land Holding		
(i) 1.0 to 1.5 hectares	43	53.75
(ii) 1.5 to 2.0 Hectares	20	25.00
(iii) 2.0 to 2.5 Hectares	11	13.75
(iv) 2.5 to 3.0 Hectares	6	7.50
C. Annual Farm Income		
(i) Upto Rs. 500/-	41	51.25
(ii) Rs. 500/- to Rs. 1500/-	32	40.00
(iii) Above Rs. 1500/-	7	8.75
D. Socio-Economic Status		
(i) Lower Class (0-13 scores)	—	—
(ii) Lower Middle Class (13-23 scores)	43	53.75
(iii) Middle Class (23-33 scores)	28	35.00
(iv) Upper Middle class (33-43 scores)	9	11.25
(v) Upper Class (Above 43 scores)	—	—

The results of socio-economic status reveal that the major bulk of sample farmers (53.75%) were of lower middle class, the rest were rated to middle class (35.00%) and upper middle class (11.25%) respectively. No respondent was found either in the lower class or in the upper class. Thus, it can be inferred that the small farmers are neither totally "Haves" nor totally "Have nots" and their socio-economic condition has remained categorically unchanged due to their poor resource complex.

According to Chattopadhyay and Pareek (1963), the extent of adoption is the degree to which the cultivator has actually adopted a practice. *"When extent of adoption is equal to potentiality of use, the adoption is recognised as full at that time, and when the extent is nil, it is considered as non-adoption"*. The analysis of adoption scores of respondents under the selected practices is recorded in table 2.

Table 2. Categories of Adopters based on observed distribution of scores

S.No.	Practices	Adopter categories	Classification of score	Raw Frequency	Raw Frequency in percent
1.	Use of recommended dwarf varieties of wheat	Non-adopter	0.00	—	—
		Low adopter	0.1–30.00	1	1.25
		Medium adopter	30.1–60.00	20	25.00
		High adopter	Above 60.00	59	73.75
2.	Use of chemical fertilisers	Non-adopter	0.00	—	—
		Low adopter	0.1–30.00	5	6.25
		Medium Adopter	30.1–60.00	43	53.75
		High adopter	Above 60.00	32	40.00

On perusal of table 2, it is revealing to note that 25.00% of the small farmers fell in the category of medium adopter and 73.75% in high adopter, whereas only 1.25% fell in low adopter of dwarf varieties of wheat.

The table also reads that all the small farmers had adopted chemical fertilisers. However, it was interesting to observe that all the farmers who adopted chemical fertilisers did not rate themselves as high adopters (40.00%), rather maximum farmers (53.75%) came under medium adopters with few as low adopters. (6.25%).

Although the adoption result brings into light the popular notion that high yielding varieties have been taken up by all classes of farmers, the chemical fertiliser programme as the concept of package of practices has been partially distorted chiefly because of its sophistication and soaring prices.

Table 3. Correlation Coefficient between socio-economic status and adoption Behaviour of the small farmers

S.No.	Practices	Combination	Value
1.	Dwarf Wheat varieties	XY1	0.922*
2.	Chemical Fertilisers	XY2	0.957*

* Significant at 0.5% level, Y1 = Adoption score for recommended dwarf wheat varieties, Y2 = Adoption score for chemical fertilisers, X = Socio-economic status score.

A cursory perusal of table 3 reveals that there was significant and positive relationship between the socio-economic status of the small farmers with their adoption of recommended dwarf wheat varieties and chemical fertilisers. In other words, higher the socio-economic status greater would be the adoption of these two practices.

CONLUSION :

The findings of this study has highlighted that our small farmers are capable of absorbing productive technology if given the unique opportunity to do so. Consideration of taste, risk and ease in operation are no more the constraints of adoption but their practical adoption can be attributed to their low purchasing power of inputs and unhealthy approach by the change agents.

Not with-standing the results of this study, we rather take the privilege to forward a few suggestions on the basis of the area and farmers surveyed :

1. Soil-injury due to calamity and alkalinity is very much common in Northern India. Farmers with small holdings, that too affected by salinity, can never expect better yield. Reclamation of such soil needs special attention. The group approach for soil management as well as crop management will be most effective.

2. The small farmers still have poor information inputs chiefly because of their lower socio-economic status. Reorientation of the entire communication systems is essential so as to stop the biases in disseminating farm information. Let not the socio-economic status may act as a barrier in maximising production.

3. The story of green revolution seems to continue with the affluent farmers who can afford the high cost involved in the cultivation of high yielding varieties. Simple provision of seeds and fertilisers to the handicapped is certainly not the be all and end all of agriculture. If at all we want to restore equitable distribution of income in the rural community two kinds of inputs are utmost necessary. These are, namely timely and adequate distribution of credit input by correcting the institutional bottlenecks and secondly, the management input, specifically systematic arrangement for marketing of the produce.

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