Impact of Institutional Credit on Cropping Pattern and Farm Structure in Fakharpur Block of Bahraich District of Uttar Pradesh

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Authors’ contributions

This work was carried out in collaboration among all authors. Author HPSC designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors GPS, Supriya, AK and PM managed the analyses of the study. Author PM managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Finance in agriculture is as important as development of technology because new technology of farming cannot be adopted at field level by resource poor farmers. This view is also supported by Banerjee [1], Jugale [2] and Kalhon & Karam [3]. But the real picture of Bahraich district of Uttar Pradesh was unavailable in this regard. Having the importance of financial support in agriculture in view a sample study was conducted in Fakharpur block of Bahraich district of U.P. Purposive cum proportionate random sampling technique was applied to select the sample respondents. Personal interview technique was used to collect the primary data. Simple tabular analysis (percentages and averages) were done to present the result. The study was conducted during 2017-19 and the final result obtained from this study in dictate that financial support from institutional credit agencies are quite helpful in the study area to improve the position of crop production and financial upliftment of rural poors through additional generation of finance and employment in agriculture.

Keywords: Institutional credit, cropping pattern, farm structure, agricultural finance.

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1. INTRODUCTION

Finance in agriculture is as important as the development of technologies. Technical inputs can be purchased and used by farmers only if sufficient money (funds) is available. Most of the times farmers suffer from the problem of inadequate financial state. This situation leads to borrowing from an easy and comfortable source [1].

The importance of Agricultural finance for agricultural production in this country depends upon millions of small farmers. Their intensity, effort and efficiency have helped in raising yields per acre. Finance in agriculture act as a key to farmers. But farmer’s money is always inadequate and he needs outside finance or credit. Because of inadequate financial resources and absence of timely credit facilities at reasonable rates, many of the farmers, are unable to adopt inputs and better methods or techniques. The farming community must be kept informed about the various sources of agriculture finance. Agricultural finance possesses its usefulness to the farmers, lenders and extension workers. The knowledge of lending institutions, their legal and regulatory environment helps in selecting the appropriate lender who can adequately provide the credit with terms and related services needed to finance the farm business [2,4]. Finance helps to increase the agricultural production and productivity as well as income and employment of the farmers.

The procedures and amount of loans for various purposes have been standardized. Among the various purposes “Crop loan” (Short-term loan) has the major share. In addition, farmers get loans for the purchase of electric motor with pump, tractor and other machinery, digging wells or boring wells, installation of pipelines, drip irrigation, planting fruit orchards, purchase of dairy animals and feeds/fodder for them, poultry, sheep/goat keeping and for many other allied [3].

Seeing the importance of finance in agriculture development, for the purpose impact of institutional credit on cropping pattern, cropping intensity and farm structure in Fakharpur block of Bahraich district was conducted.

2. MATERIALS AND METHODS

2.1 Sampling Technique

Purposive cum stratified proportionate random sampling technique was applied to select the block, villages and respondents. Block Fakharpur was selected purposively then from 5 villages of this block fifty borrower and fifty non-borrower farms were selected randomly. For the further study all selected sample farms were grouped in three categories of marginal (below-1 ha), small (1-2 ha) and medium (2-4 ha and above). To justify the representation of all category of farms proportionate random sampling technique was applied. A sum of 17 marginal, 18 small and 15 medium of borrower and 30 marginal, 13 small and 7 medium sizes of non-borrower sizes of sample farms were selected.

2.2 Collection of Data

The primary data were collected on well prepared pre structured schedule by survey method. Frequent visits were done by the investigator to selected respondents and required data were recorded by personal interview. Accuracy of the data was assumed through cross-checking. And the secondary information was compiled from the published report at Block, Tehsil and District level offices.

2.3 Analytical Tools

The collected data were analyzed and estimated with certain statistical techniques:

2.3.1 Per cent

The total sum of all frequencies of particular variable was divided by the total number of respondents and multiplied by 100 to calculate the percentage.

2.3.2 Average

The simplest and important measure of average which has been used into statistical analysis was the average and weighted average. The formula used to estimate the average is:

\[ \bar{X} = \frac{\sum x}{N} \]

Where,

- \( \bar{X} = \text{Mean} \)
- \( \sum x = \text{sum of all observations} \)
- \( N = \text{Total number of observation} \)
2.3.4 Weighted average

The weighted average of values is the sum of weights times values divided by the sum of the weights. The formula used to estimate the weighted average is:

\[ W.A. = \frac{\sum w_i x_i}{\sum w_i} \]

Where,

- \( W.A. \) = Weighted average
- \( X_i \) = Variable
- \( W_i \) = Weights of \( X_i \)

2.3.5 Cropping intensity

It refers to the number of crops raised on the same field within a year; it can be expressed through a formula:

\[ CI = \frac{\text{Gross cropped area}}{\text{Net sown area}} \times 100 \]

3. RESULTS AND DISCUSSION

3.1 Average Holding Size on Sample Farms

The average land holdings size on various group of sample farms are presented in Table 1. It is evident from the table that the average sizes of holding on overall farms were 1.65 and 1.24 ha in borrower and non-borrower categories of farms. The average size of holding in case of borrower sample farms were found to be 0.66, 1.59 and 2.83 hectare in case of marginal, small and medium size group of farms respectively. The same was found to be 0.69, 1.49 and 3.14 hectare corresponding to marginal, small and medium size group of farms in case of non-borrower sample farms. It is depicted from the table that the overall average holding size of borrower sample farms were higher than the non-borrower. It may be concluded that holding size had the direct effect on borrowing nature of the farmers.

3.2 Cropping Pattern on Sample Farms

Cropping pattern shows the area devoted to the various crops during the given period conventionally in a single year. It indicates the yearly sequence and spatial arrangement of crops followed in a particular area. The cropping pattern followed by the sample farms are presented in Table 2a and 2b, for borrower and non-borrower categories.

3.2.1 Cropping pattern on borrowers sample farms

The cropping pattern followed by borrower sample farms is presented in Table 2a. It is depicted from the table that on overall farm the per cent areas covered under different crops during kharif season were 49.50 per cent which was 40.92 per cent in rabi and 9.90 per cent in zaid season. The major crops of the study area during kharif, rabi and zaid seasons which covered maximum share of gross cropped area were paddy, wheat and mentha. Which accounted 18.81, 21.78 and 5.61 per cent respectively of the total cropped area. Banana, mustard and urd+moong stood on second by covering 11.22, 7.26, and 7.92 (kharif & zaid) per cent of gross cropped area respectively. On an overall average total sown area was found to be 3.03 ha on the sample farms which varied as 1.24, 2.93 and 5.20 ha in marginal, small and medium size group of borrower farms respectively.

3.2.2 Cropping pattern on non-borrower's sample farms

Cropping pattern followed by sample farms of non-borrower category is presented in Table 2b. It is depicted from the table that, on overall farm the per cent areas covered under different crops during kharif, rabi and zaid season were 48.47, 39.73 and 11.79 per cent of total cropped area. Paddy in kharif, wheat in rabi and urd+moong in zaid season were found as major crops which covered 17.47, 20.52 and 5.68 per cent of the total cropped area. Maize in kharif, mustard and sugarcane in rabi season and mentha in zaid season were found as the crops of second importance which covered 10.48, 5.68 and 5.24 per cent of gross cropped area.

Average gross cropped area on overall farm in case of non-borrower category was found to be overall average 2.29 ha, which was minimum 1.28 ha on marginal farms and maximum 5.77 ha on medium farm. Whereas, it was 2.77 ha on small farm respectively. It is concluded from the data presented in Table 2a and 2b, that financial assistance provided to the borrower sample farmers enable them to cultivate the 0.74 times higher area as compared to the non-borrower farms.
**Table 1. Average size of holding on sample farms under different size groups of farms (ha)**

| Size group of farms | Borrower | | | Non-Borrower | | |
|---------------------|----------|---|---|-------------|---|---|
| | No. of respondents | Total area | Average size | No. of respondents | Total area | Average size |
| Marginal | 17 | 11.35 (13.77) | 0.66 | 30 | 20.78 (33.39) | 0.69 |
| Small | 18 | 28.59 (34.69) | 1.59 | 13 | 19.46 (31.27) | 1.49 |
| Medium | 15 | 42.48 (51.54) | 2.83 | 07 | 21.99 (35.34) | 3.14 |
| Total | 50 | 82.42 (100.00) | 1.65 | 50 | 62.23 (100.00) | 1.24 |

**Table 2a. Cropping pattern on different size group of sample farms (ha): Borrower**

| Sl. No. | Crop | Average size of sample farms | | | Overall average |
|--------|------|-------------------------------|---|---|---|
| | Marginal | % | Small | % | Medium | % |
| A. Kharif | 0.59 | 47.50 | 1.44 | 49.15 | 2.62 | 50.38 | 1.50 | 49.50 |
| 1. Paddy | 0.21 | 16.94 | 0.56 | 19.11 | 1.00 | 19.23 | 0.57 | 18.81 |
| 2. Maize | 0.13 | 10.48 | 0.29 | 9.90 | 0.58 | 11.15 | 0.32 | 10.56 |
| 3. P. Pea | 0.02 | 1.61 | 0.07 | 2.39 | 0.10 | 1.92 | 0.06 | 1.98 |
| 4. Banana | 0.16 | 12.90 | 0.30 | 10.24 | 0.61 | 11.73 | 0.34 | 11.22 |
| 5. Moong+Urd | 0.04 | 3.22 | 0.15 | 5.12 | 0.21 | 4.04 | 0.13 | 4.29 |
| 6. Chari | 0.01 | 0.80 | 0.02 | 0.68 | 0.05 | 0.96 | 0.03 | 0.99 |
| 7. Vegetable | 0.02 | 1.16 | 0.05 | 1.71 | 0.07 | 1.35 | 0.05 | 1.65 |
| B. Rabi | 0.48 | 38.71 | 1.22 | 41.64 | 2.12 | 40.77 | 1.24 | 40.92 |
| 1. Wheat | 0.21 | 16.93 | 0.65 | 22.18 | 1.17 | 22.50 | 0.66 | 21.78 |
| 2. Mustard | 0.12 | 9.68 | 0.21 | 7.17 | 0.36 | 6.92 | 0.22 | 7.26 |
| 3. Lentil | 0.02 | 1.61 | 0.07 | 2.34 | 0.15 | 2.88 | 0.08 | 2.60 |
| 4. Pea | 0.04 | 3.22 | 0.08 | 2.73 | 0.14 | 2.69 | 0.09 | 2.97 |
| 5. Sugarcane | 0.07 | 5.64 | 0.15 | 5.12 | 0.21 | 4.03 | 0.14 | 4.62 |
| 6. Berseem | 0.01 | 0.81 | 0.02 | 0.68 | 0.04 | 0.77 | 0.02 | 0.67 |
| 7. Vegetable | 0.01 | 0.81 | 0.03 | 1.02 | 0.05 | 0.96 | 0.03 | 0.99 |
| C. Zaid | 0.17 | 13.71 | 0.27 | 9.21 | 0.46 | 8.85 | 0.30 | 9.90 |
| 1. Urd+Moong | 0.04 | 3.23 | 0.10 | 3.41 | 0.20 | 3.85 | 0.11 | 3.63 |
| 2. Chari | 0.01 | 0.081 | 0.02 | 0.68 | 0.02 | 0.38 | 0.02 | 0.66 |
| 3. Mentha | 0.12 | 9.68 | 0.15 | 5.12 | 0.24 | 4.61 | 0.17 | 5.61 |
| Grand total | 1.24 | 100 | 2.93 | 100 | 5.20 | 100 | 3.03 | 100 |

**3.3 Cropping Intensity on Sample Farms**

Cropping intensity for borrower and non-borrower sample farms of all three categories were calculated and presented in Table 3a and 3b. It is depicted from Table 3a that the overall farm cropping intensity of borrower farms was 183.64 per cent which was highest 187.88 per cent on marginal farm followed by small and medium farms which accounted for 184.28 and 183.74 per cent respectively. Similarly the cropping intensity for non-borrower sample farms were also calculated and presented in Table-3b. The table shows that the cropping intensity on overall farm came to 184.68 per cent. Which was highest on marginal farms i.e. 188.23 per cent, followed by small and medium size of farms respectively which corresponded to the 185.91 and 183.75 per cent respectively.

**3.3.1 Comparative cropping intensity on borrower and non-borrower sample farms**

The cropping intensity of both the sample farm i.e. borrower and non-borrower i.e. 183.64 per cent and 184.68 per cent were higher than the cropping intensity of district i.e. 172.41 per cent. It is concluded from the data presented in the Table-3.c that the marginal group of farms was more conscious about best utilization of their tiny holding with the help of better employment of family labour.
Table 2b. Cropping pattern on different size group of sample farms (ha): Non-borrower

| Sl. No. | Crop | Average size of sample farms | Overall average |
|---------|------|------------------------------|-----------------|
|         |      | Marginal % | Small % | Medium % | %          |
| A.      | Kharif | 0.61 | 47.66 | 1.34 | 48.37 | 2.83 | 49.05 | 1.11 | 48.47 |
| 1.      | Paddy | 0.21 | 16.40 | 0.49 | 17.69 | 1.05 | 18.19 | 0.40 | 17.47 |
| 2.      | Maize | 0.12 | 9.37  | 0.27 | 9.75  | 0.71 | 12.30 | 0.24 | 10.48 |
| 3.      | P. Pea | 0.03 | 2.34  | 0.13 | 4.69  | 0.27 | 4.68  | 0.09 | 3.93  |
| 4.      | Banana | 0.15 | 11.72 | 0.27 | 9.75  | 0.53 | 9.18  | 0.23 | 10.04 |
| 5.      | Moong+Urd | 0.06 | 4.69  | 0.10 | 3.61  | 0.16 | 2.77  | 0.08 | 3.49  |
| 6.      | Chari | 0.03 | 2.34  | 0.05 | 1.81  | 0.06 | 1.04  | 0.04 | 1.74  |
| 7.      | Vegetable | 0.01 | 0.78  | 0.03 | 1.08  | 0.05 | 0.87  | 0.03 | 1.31  |
| B.      | Rabi | 0.51 | 39.84 | 1.09 | 39.35 | 2.30 | 39.86 | 0.91 | 39.73 |
| 1.      | Wheat | 0.26 | 20.13 | 0.56 | 20.22 | 1.17 | 20.28 | 0.47 | 20.52 |
| 2.      | Mustard | 0.06 | 4.69  | 0.17 | 6.14  | 0.39 | 6.76  | 0.13 | 5.68  |
| 3.      | Lentil | 0.05 | 3.91  | 0.08 | 2.89  | 0.13 | 2.25  | 0.07 | 3.06  |
| 4.      | Pea | 0.03 | 2.34  | 0.06 | 2.17  | 0.19 | 3.29  | 0.06 | 2.62  |
| 5.      | Sugarcane | 0.08 | 6.25  | 0.15 | 5.42  | 0.31 | 5.37  | 0.13 | 5.68  |
| 6.      | Berseem | 0.02 | 1.56  | 0.03 | 1.08  | 0.07 | 1.21  | 0.03 | 1.31  |
| 7.      | Vegetable | 0.01 | 0.78  | 0.04 | 1.44  | 0.04 | 0.69  | 0.02 | 0.87  |
| C.      | Zaid | 0.16 | 12.50 | 0.34 | 12.27 | 0.64 | 11.09 | 0.27 | 11.79 |
| 1.      | Urd+Moong | 0.09 | 7.03  | 0.15 | 5.42  | 0.29 | 5.03  | 0.13 | 5.68  |
| 2.      | Chari | 0.01 | 0.78  | 0.01 | 0.36  | 0.05 | 0.87  | 0.02 | 0.87  |
| 3.      | Mentha | 0.06 | 4.69  | 0.18 | 6.50  | 0.30 | 5.20  | 0.12 | 5.24  |

| Grand Total (A+B+C) | 1.28 | 100.00 | 2.77 | 100.00 | 5.77 | 100.00 | 2.29 | 100.00 |

Table 3a. Cropping intensity of different size group of sample farms (%): Borrower

| Sl. No. | Size group of farms | No. of farms | Net cultivated area (ha) | Gross cropped area (ha) | Cropping intensity |
|---------|---------------------|--------------|--------------------------|------------------------|-------------------|
| 1.      | Marginal            | 17           | 0.66                     | 1.24                   | 187.88            |
| 2.      | Small               | 18           | 1.59                     | 2.93                   | 184.28            |
| 3.      | Medium              | 15           | 2.83                     | 5.20                   | 183.74            |
| Average |                     | 50           | 1.65                     | 3.03                   | 183.64            |

Table 3b. Cropping intensity of different size group of sample farms (%): non-borrower

| Sl. No. | Size group of farms | No. of farms | Net cultivated area (ha) | Gross cropped area (ha) | Cropping intensity |
|---------|---------------------|--------------|--------------------------|------------------------|-------------------|
| 1.      | Marginal            | 30           | 0.69                     | 1.28                   | 188.23            |
| 2.      | Small               | 13           | 1.49                     | 2.77                   | 185.91            |
| 3.      | Medium              | 07           | 3.14                     | 5.77                   | 183.75            |
| Average |                     | 50           | 1.24                     | 2.29                   | 184.68            |

Overall cropping intensity of borrower and non-borrower sample farms shows that, sample farms of borrower category were much aware about better utilization of farm resources managed through financial assistance received from agricultural credit and they had the less cropping intensity of 183.64 per cent as compared to 184.68 per cent of non-borrower sample farms. The 99.44 per cent different was observed in cropping intensity between borrower and non borrower sample farms.

Cropping intensity of non-borrower farms were high because they were growing more numbers of crops in all three season whereas borrower farmers mainly grow the annual cash crops like Banana and Sugarcane which offers the higher income to the borrower farms but their cropping intensity was less as compared to non borrower because less numbers of crop grown.

Same result about cropping intensity was also reported by Singh et al. [5] and Deorukhakar et
3.4 Farm Structure on Sample Farms

Farm structure mainly includes the investment done by the sample farmers on their farms for creating the resource like building, livestock and irrigation structure. Per farm and per hectare investment on farm structure at borrower and non-borrower sample farms were studied and presented in Table 4a and 4b.

3.4.1 Per farm investment on sample borrower farms

Per farm investment on borrower sample farms is presented in Table 4a. It is depicted from the table that total investment on overall all borrower sample farms was Rs. 537905.10, which was constituted by 66.22 per cent at investment on building, 19.54 per cent on implements & machinery and 14.24 per cent on livestock. Category wise per farm investment were found to Rs. 342957.93, Rs. 579917.44 and Rs. 708430.42 on marginal, small and medium size group of farms respectively.

It is also revealed from the table that the investment on buildings was maximum followed by machinery & implements and livestock, whereas investment on livestock was given as third priority by the borrower sample farms. It shows the importance of finance in crop production for income and employment generation in farming community.

3.4.2 Per farm investment on sample non-borrower farms

The per farm investment on sample non-borrower farm is presented in Table 4b. It is revealed from the table that total investment on overall non-borrower farms was Rs. 484147.20. The maximum share of the investment was done on the buildings followed by the expenditure on implements and machinery and livestock which accounted for 66.08, 20.62 and 13.30 per cent respectively. As far as the per farm investment on different categories of non-borrower sample farms is concerned it was a maximum of Rs. 695733.39 on medium size group of farms followed by small and marginal size group of farms, which accounted for Rs. 575534.06 and Rs. 395176.12 respectively. The per cent share of total investment on building, implements & machinery and livestock on all size groups of farms were found of same trend. Where maximum amount was spent on building followed by implements & machinery and lastly on livestock.

3.4.3 Comparative per farm investment on borrower and non-borrower sample farms

The comparison of per farm investment on borrower and non-borrower farms is also presented in Table 4c to see the impact of credit on farm structure.

The farm investment on borrower sample farms was found to be higher than the non-borrower sample farm. It shows the impact of financial assistance through agricultural credit. The similar impact of credit on farm investment was also reported by Balishter et al. (1990). It is concluded that agricultural credit supported the borrowers to develop their farm structure.

3.5 Per Hectare Investment on Borrowers Sample Farm

Per hectare investment on borrower sample farms was also analysed and is presented in Table 5a. It is revealed from the table that the overall total per hectare investment on borrower sample farms was Rs. 326003.10 which included the 66.22 per cent of expenditure on building 19.54 per cent on farm machinery and 14.24 per cent on livestock, which corresponding the amount of Rs. 215876.50, Rs. 63711.52 and Rs. 46415.16 respectively.
### Table 4a. Per farm investment on different size group of sample farms: Borrower

| Sl. no. | Particulars               | Small % | Medium % | Overall average % |
|--------|---------------------------|---------|----------|-------------------|
| 1.     | Buildings                 | 397194.97 | 502068.92 | 356196.20 |
| 1I.    | Residential               | 373164.24 | 475185.94 | 332240.90 |
| 1II.   | Cattle shed               | 24030.73  | 26882.98  | 23955.37  |
| 2.     | Live stock (milch animals & others) | 78799.35 | 83154.64 | 76585.01 |
| 3.     | Machinery and implements  | 103753.31 | 123207.16 | 105124.00 |
|        | **Grand Total**           | 579917.44 | 708430.42 | 537905.21 |

### Table 4b. Per farm investment on different size group of sample farms: Non-borrower

| Sl. no. | Particulars               | Small % | Medium % | Overall average % |
|--------|---------------------------|---------|----------|-------------------|
| 1.     | Buildings                 | 406411.70 | 442051.05 | 319941.40 |
| 1I.    | Residential               | 387405.04 | 422082.70 | 301636.60 |
| 1II.   | Cattle shed               | 19006.66  | 19968.35  | 18304.77  |
| 2.     | Live stock (milch animals & others) | 68023.18 | 71743.82 | 64345.98 |
| 3.     | Machinery and implements  | 100989.54 | 181938.52 | 99859.82  |
|        | **Grand Total**           | 575534.06 | 695733.39 | 484147.20 |

### Table 4c. Comparative per farm investment on borrower and non-borrower sample farms

| Sl. no. | Particulars               | Borrowers | Non-borrowers | Per cent increase |
|--------|---------------------------|-----------|---------------|-------------------|
| 1.     | Building                  | 356196.20 | 319941.40    | 89.82            |
| 2.     | Livestock                 | 76585.01  | 64345.98     | 84.01            |
| 3.     | Machinery and implements  | 105124.00 | 99859.82     | 94.99            |
| 4.     | Grand Total               | 537905.10 | 484147.20    | 90.00            |
Table 5a. Per hectare investment on different size group of sample farms: Borrower

| Sl. no. | Particulars                     | Size of Farms | Overall average | %  |
|---------|---------------------------------|---------------|-----------------|----|
| 1.      | Buildings                        | Marginal      | Small           | Medium |   |
|         |                                  | 278900.91     | 249808.16       | 177409.51 | 215876.50 | 66.22 |
| I.      | Residential                      |               |                 |         |               |       |
|         |                                  | 246639.71     | 234694.49       | 167910.23 | 201358.10 | 61.77 |
| II.     | Cattle shed                      |               |                 |         |               |       |
|         |                                  | 322161.19     | 15113.67        | 9499.29  | 14518.41   | 4.45  |
| 2.      | Live stock (milch animals & others) | 102980.80   | 49559.34        | 29383.26 | 46415.16  | 14.24 |
| I.      | Milch Animals                    |               |                 |         |               |       |
|         |                                  | 102980.80     | 49559.34        | 29383.26 | 46415.16  | 14.24 |
| 3.      | Machinery implements             |               |                 |         |               |       |
|         |                                  | 137302.19     | 65253.64        | 43536.09 | 63711.52  | 19.54 |
| Grand Total |                               | 519633.23     | 364727.95       | 250328.77 | 326003.10 | 100.00 |

Table 5b. Per hectare investment on different size group of sample farms: Non-borrower

| Sl. no. | Particulars                     | Size of Farms | Overall average | %  |
|---------|---------------------------------|---------------|-----------------|----|
| 1.      | Buildings                        | Marginal      | Small           | Medium |   |
|         |                                  | 36805.06      | 272759.53       | 140780.59 | 311477.80 | 66.08 |
| I.      | Residential                      |               |                 |         |               |       |
|         |                                  | 342559.77     | 260003.38       | 134421.24 | 291955.70 | 62.30 |
| II.     | Cattle shed                      |               |                 |         |               |       |
|         |                                  | 25525.29      | 12756.15        | 6359.35  | 19522.08  | 3.78  |
| 2.      | Live stock                       |               |                 |         |               |       |
|         |                                  | 88085.77      | 4563.10         | 2848.35  | 65292.80  | 13.30 |
| 3.      | Machinery implements             |               |                 |         |               |       |
|         |                                  | 116258.80     | 67778.21        | 57942.20 | 94489.52  | 20.62 |
| Grand Total |                               | 572719.01     | 386264.47       | 221571.14 | 475080.10 | 100.00 |

Table 5c. Comparative statement of per hectare investment on borrower and non borrower sample farms (Rs.)

| Sl. no. | Size group of farms | Borrower | Non-borrower | Per cent difference | Remark |
|---------|---------------------|----------|--------------|---------------------|--------|
| 1.      | Marginal            | 519633.22| 3627.31      | +69.81              | i)Per hectare= \( \frac{X_f - X_c}{X_c} \) \times 100 |
| 2.      | Small               | 364727.94| 386264.46    | -105.90             |        |
| 3.      | Medium              | 250328.77| 221571.14    | +88.51              | ii) \( N - \mu \) \times 100 |
It is also revealed from the data that per hectare investment on different categories of sample farmers had the indirect relation with size of holding. As holding size increases the investment on per hectare of area decreases.

### 3.5.1 Per hectare investment on non-borrowers sample farms

Per hectare investment on farm structure by non-borrower sample farms presents the real picture of the resource combination on a farm which helps to receive the optimum production.

Per hectare investment on non-borrower sample farms is presented in Table 5b. It is depicted from the table that the per hectare investment on overall non-borrower sample farm came to Rs. 475080.10. Which was constituted with 66.08 per cent on buildings, 20.62 per cent on farm machinery and 13.30 per cent on livestock. Farm size group wise distribution of per hectare investment shows the indirect relationship with the size of farm. As the holding size increases per hectare investment showed the decreasing trend.

It is also observed from the table that pattern of expenditure on various constituents of farm assets were similar in all categories of the borrower sample farms.

### 3.5.2 Comparative statement of per hectare investment on borrower and non-borrower sample farms (Rs.):

Comparison of per hectare investment on borrower and non-borrower farms are presented in Table 5c. It is depicted from the table that marginal and medium borrower farmers invested 69.81 and 88.51 per cent higher than non-borrower. But unlike these the small farmers of non-borrower category invested 105.90 per cent higher than borrower that may be because of family income received from the source other than agriculture.

From the above discussion it may be concluded that majority of the farming society are certainly in need of credit for better farming [7-11]. Similar result about per hectare investment were also reported by Balishter et al. (1990) on farms supported with credit.

### 4. CONCLUSION

Size of holding was directly associated with borrowing nature of the farmers. Cropping pattern shows that borrower farms cultivate more area as compared to non-borrowers. But the cropping intensity was higher on marginal farms as compared to small and medium size of farms in both borrower and non-borrower farms categories overall cropping intensity of borrower farmers were 99.44 per cent less than the non-borrower farms. It is because borrower farms gave priority to the annual cash crops like banana and sugarcane in their crop plan. Per farm investment was 90.00 per cent higher on borrower farms than the non-borrowers which shows the positive impact of credit on farm business.

Per hectare investment on sample farms was indirectly related with size of holding. Similar trend of per hectare investment was also found in case of non-borrower sample farms.

Finally it is concluded that in case of marginal and medium farm size of groups per hectare investment was 69.81 per cent and 88.51 per cent higher on borrower sample farms than non-borrower farms. In case of small size of sample farms, non-borrower had spent more than borrower which is an exceptional example.

It was because of spending more on farm structure from their earning other than agriculture. Finally it is concluded that financial support to the farmers are always essential for conducting the farm enterprises profitability.

### CONSENT

As per international standard or university standard, respondents’ written consent has been collected and preserved by the author(s).

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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