CHAPTER – 6

FINDINGS AND DISCUSSION
Findings from Secondary Sources:

1. Trend of Area under different varieties of rice:
The trend values for area under rice increases by 173 hectare per unit of time indicating the increasing trend in the area under rice in Hailakandi district.

2. Trend of Production of different varieties of rice:
The trends of rice production have been found to be increasing. Rice production in Hailakandi district increases by 2533 tons per unit of time.

3. Trend of Productivity of rice:
Trends in productivity of rice have been found to be decreasing. Productivity of rice in Hailakandi decreases by 10.4 kg/hectare per unit of time. The decrease in productivity of rice in Hailakandi district may be due to the decreases in the areas under HYV, fertilizers and irrigation facilities.

4. Comparative Analysis of the Trend of Productivity of Hailakandi district and other leading districts of Assam:
   By comparing the trend of productivity of Hailakandi district with the trend of average productivity of leading districts of Assam, it is found that the rate of decrease in average productivity of the leading districts is more than Hailakandi district.
   So from the above finding it is clear that the trend of agricultural productivity in Hailakandi district is not equal to the other leading districts of Assam. So our Hypothesis-1 is rejected.

5. Trend of Area under HYV of Rice:
The trend in area under HYV of rice production is decreasing in Hailakandi district. It decreases by 344.9 hectare per unit of time.
6. Trend of Fertilizer Consumption:
The trend in fertilizer consumption per hectare in Hailakandi district is showing downward sloping. Fertilizer consumption in Hailakandi district decreases by 1.96 kg/hectare per unit of time.

7. Trend of Irrigation:
The trend line of Gross Irrigation potential Created is showing downward sloping. The trend value for Gross Irrigation Potential Created in Hailakandi decreases by 38.04 hectare per unit of time. The trend line of Gross Irrigation potential utilized is showing downward sloping. The trend value for Gross Irrigation potential utilized decreases by 32.39 hectare per unit of time.

Findings from Primary Sources:

1) **Land Holding Patterns of Sample Farmers:**
   
   52.26% of investigated households is found as marginal farmers.
   
   31.83% is found as small farmers.
   
   Medium farmers account for 12.18%.
   
   The large farmers constitute 2.89%.
   
   Very large farmers accounted 0.85%.
   
   The average size of operational holding in Hailakandi is only 1.37 hectares.

2) **Area under Different Variety of Rice of Sample Villages:**
   
   The total area under three varieties of rice (ahu, Sali, and boro) is 471.12 hectares.
   
   The percentage of area under ahu rice to the total variety of rice is 24.43 %.
   
   The percentage of area under sali rice to the total variety of rice is 73.76 %.
   
   The percentage of area under boro rice to the total variety of rice is 1.8 %.

3) **Production of Different Varieties of Rice of Sample Villages:**
   
   The total amount of three varieties of rice production of Sample Villages is 9685.425 quintal.
The percentage of production of Ahu rice to the total variety of rice is 25.84%.
The percentage of production of Sali rice to the total variety of rice is 71.92%.
The percentage of production of Boro rice to the total variety of rice is 2.24%.

4) Productivity (Yield Rate) of Rice of Sample Villages in Hailakandi District:
The average yield rate of total rice is 1921.21 kg/hectare.
Among the investigated villages the highest productivity 2276.21 kg/hectare is in the village Umednagor.
The lowest yield rate 1530.79 kg/hectare is in the village Killerbak.
The productivity of autumn paddy is 1974.62 kg/hectare.
The productivity of winter paddy is 1870 kg/hectare.

5) Percentage of Area under HYV of rice to the Total Cultivated Land:
From the analysis it is seen that out of the total area of 21 villages of simple farmers, still 34.42 percent is cultivated under the traditional variety of seeds and 66.58 percent is cultivated under HYV seeds.

6) Irrigation Facility:
From the analysis it is evident that only 6.96 percent lands are covered by irrigation facilities. The cropped area is not irrigated at all. The cultivation is mostly dependent on rain water.

7) Fertilizer Consumption:
The consumption per hectare of N + P + K has been recorded with a variation from 0 to 150 kgs. There is a great variation in the dose of fertilizer application. It is found that chemical fertilizer has been used by a few percentages of the total farmers in the district.
In some cases, it is seen that farmers don’t fertilize the land and consequently productivity becomes lower.

8) Technology (mode of ploughing):
From the above table it is evident that mechanized farmers in the district are only 6.47 percent.
The partially mechanized farmers are high in the district i.e. 72.06 percent.
Fully manual is only 21.47 percent.

9) Credit Facility in sample villages
In the investigated families only 10.36 percent of the total obtained credit from institutional sources.
15.89 percent of the total households obtained credit facilities from non-institutional finance.

10) Cropping Intensity of Sample Villages:
The average cropping intensity of the district is 119.90%.
The cropping intensity is highest with 127.95% in Rajyeswarpur village.
Killerbak village has the lowest cropping intensity with 100%

11) Agricultural Marketing:
There are 27 primary markets in Hailakandi District. There is only one regulated market in Hailakandi District. Near absence of regulated markets for agricultural product is a major factor of agricultural backwardness of Hailakandi District.

12) Percentage of Marketable Surplus producer farmers:
The percentage of households producing marketable surplus is 34.73 percent.
Only 40.50 percent of the households produced sufficient food grains to meet their annual requirement.
53.25 percent of the farmers in Rajyeswarpur produced marketable surplus, which is highest.
The lowest percentage is 18 percent which is found in the village Nishkar.
13) **Agricultural Landless farmers:**
Among the investigated households 7.43 percent is found to be landless.
The percentage of landless farmers is highest in Bakrihawar (16%).
The percentage of landless farmers is lowest in Seralipur (3.04%).

14) **Education and Training:**
In sample villages about 35% farmers are illiterate.
30% farmers studied in between class V and VII.
15% farmers studied above class VIII but below the H.S.L.C. level and the remaining 20% studied above the H.S.L.C. level.

15. **Findings of Regression of Productivity on Farm Size:**
Productivity has been found to be negatively associated with the farm size. In our estimated regression the Beta coefficient on farm size is negative (-36.81). This implies that for one unit increase in farm size the productivity decreases by 36.81%. The P value has been found to be 0.046 which is less than 0.05 indicating that the farm size has a significant impact on productivity. The R-square value is 0.34 implying that 34% variation in productivity is explained by the variation in farm size.

16. **Findings of Regression between Productivity and HYV:**
\( \beta \) coefficient on HYV has been found to be positive (2.31). The positive coefficient on HYV has an economic implication that productivity increases with the increase in the use of HYV. It has been further found that the p-value corresponding to HYV is 0.06 which is significant at 10% level of significance. It indicates that the variable HYV has a significant impact on the productivity of a farm.

17. **Findings of Regression between Productivity and Irrigation:**
The \( \beta \) coefficient on irrigation is positive (230.79). This implies that for one unit increase in irrigation, productivity increases by 230.786 kg/hectare. The p-value
corresponding to irrigation has been found to be 0.02 which is less than 0.05. It indicates that the variable irrigation has a significant impact on the productivity of farm.

18. Findings of Regression between Productivity and Fertilizer:
There exists a positive correlation between productivity and fertilizer, which means that if fertilizer increases then productivity also increases. The independent variable fertilizer is responsible to determine the productivity. The P-value corresponding to fertilizer is 0.000 which is less than 0.05. So the relation between productivity and fertilizer is significant.

19. Findings of Regression of Productivity on Technology:
The Beta value on technology is positive (32.10). This has an implication that more the use of modern technology, the more is the farm productivity. The p-value corresponding to technology used is 0.25 which is greater than 0.05 indicating that technology has an insignificant impact on productivity. This may be due to poor infrastructural facilities in Hailakandi district.

20. Findings of Multiple Regression of Productivity:
The coefficient on farm size has been found to be inversely related with productivity whereas technology, HYV, irrigation and fertilizer are positively related with productivity implying positive impact of these variables on productivity.

The β coefficient on farm size is -50.166. This implies that for one unit increase in the farm size, productivity decreases by 50.17%.

The significant value of corresponding to F value (i.e.70.227) is 0.000 which is less than 0.05. Therefore, we can say that the predictors considered for the study are explaining the dependent variable nicely. Thus, the regression model is appropriate and fits good. It has been found that the p-value corresponding to the predictor’s farm size (X1) irrigation (X4) and fertilizer (X5) are less than 0.05. It indicates that the variables farm size, irrigation and fertilizer
have significant impact on the productivity of a farm. It is also found that the (X3) HYV is significant at 10%.

Thus we can say that the size of the holdings has impact on productivity. Thus our Hypothesis-2 is rejected, because the farm size has been found to be negatively associated with productivity.

21. Findings of Regression of Farm Size on Technology:

The coefficient on farm size is positive (0.554). This has an implication that larger is the farm size, the more is the use of technology.

The p-value corresponding to farm size is 0.000 which is less than 0.01. Thus the above findings have an economic implication that larger the farm size, the more is the use of technology. So, in our study area we observed that adoption of new agricultural technology is not scale neutral. Thus our null hypothesis that “adoption of new agricultural technology is scale neutral” is rejected.

22. Findings of Multiple Regression of Diversification:

The coefficient on technology (0.45), irrigation (0.82), fertilizer (0.4) and credit (0.45) are positive and significant at 1% indicating that technology, irrigation, fertilizer and credit are directly associated with the crops diversification. This implies that the crops diversification increases with a unit increase in each of the variables.

The value of $R^2$ is 0.39. This implies that 39% variation in the dependent variable is explained by the variables technology, irrigation, fertilizer and credit. Further, the F value is 55.85 being significant at 1%. This means that the model fits good.

There is a positive relationship between infrastructure and crop diversification. When infrastructure increases crop diversification also increases. When crop diversification increases income of the farmers is likely to increases.