CHAPTER VIII

CONCLUSIONS AND POLICY IMPLICATIONS
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The development of modern technology in agriculture has always been followed by expectations and the need to measure its impact at the grass root level by researchers and planners. The examination of the individual farm level serves as indication or otherwise of the efforts of the government, scientists, extension agents and the input agencies involved in the development and promotion of the modern technology.

The green revolution is one of the major events in the Indian agricultural history that not only resulted in the development of new crop varieties but also contributed research in the field of agriculture.

The present study revealed the yield obtained in major agricultural crops in the southern part of the state, the technology adopted in production, the factors contributing to the output growth and the role played by the factors of production that have contributed to the yield performances in a given technology. More specifically modern and traditional technology performances under similar set of production conditions have been assessed. In supplementation to this factor the employment generation factor of each technology has also been assessed.

The study focuses on the jurisdiction of the Karnataka University Dharwad. The agricultural crops selected for the study include the prominent
food crops in the area. The study was based on both primary and secondary data. Secondary data was extensively made use of from various sources like the Directorate of economics and statistics, Bangalore. District and taluk level agriculture and statistical office in Davangere district.

The farm being the basic unit of study, a multi stage random sampling was employed for their selection. Davangere district is purposively selected, which is producing both Jowar and Ragi. Thus there were two taluks selected which had the highest area under Jowar and Ragi, and four villages in each selected taluk were identified for an in-depth analysis. Further, fifteen farmers who had adopted traditional technology and fifteen farmers who had adopted modern technology were selected for each crop. Care was exercised to see that the farmers were selected from the small land holding (less than 5 acres) and the medium (5 to 10 Acres) and remaining from the large (> 10 Acres) categories. The total sample size for each crop was 120 farmers. In all the total sample size was 240 farmers.

The study employed tabular analysis. Decomposition analysis, factor shares analysis and ANOVA techniques in pursuance of its objectives.
8.1: Main Findings.

1) The compound growth rates in area, production and productivity of crops for the state as a whole and on well as the districts showed both positive and negative varieties. In most of the crops the production variations was observed to be area led rather than productivity. The growth rates were found to vary from crop to crop and among the there parameters. In the case of Jowar crop in Karnataka, the area, was found to be declining but not significant. On the contrary, both production and productivity were found to be in increasing trend, but not significant. In the case of Chitradurga district, Jowar area, production and productivity were found to be declining. But, the farmer two components were found to be significant. This indicates the replacement of the crop by some other crop in view of declining productivity or on some other considerations.

2) Ragi crop in Karnataka showed a declining non-significant trend. But, the production and productivity were found to be increasing and the growth rates were found to be significant. The decline in area has been compensated by increase in productivity to mention the tempo of production. In the case of Chitradurga district, the area under Ragi crop showed a declining trend, but was not significant. However, the growth in production and productivity were found to be in increasing trend, but statistically not significant.
3) The results on the Socio-economic characteristics of the sample farmer indicated that the farm family size for the study as a whole averaged to around five members. Adult male and adult females were in almost equal proportion of each in the total family size. Literacy of the entire farm family was higher in the case of large farmers compared to small and medium farmers.

4) Agriculture was stated as the main occupation by almost all the selected farmers of the study area. The proportion of such farmers was ranging between 75-90 percent for the Jowar crop in the case of traditional technology. In the case modern technology it ranged between 55-90 percent. In the case of Ragi crop, the proportion ranged from 90-100 percent for traditional technology and 90-95 percent for modern technology farmers.

5) There was growth in output of the crops under study with the introduction of modern technology in their production. This growth was decomposed into its constituent sources. The results on decomposition analysis in Jowar production showed that the production was 46.53 percent higher under modern technology farms compared to traditional technology farms. To this increased Jowar output, technology contributed 34.06 percent while the increased levels of inputs contributed 12.48 percent. Among the different inputs contributing to this increased Jowar output, concentrates bullock pair and human labour (9.95%), seeds (8.95%) and manures and fertilizers (4.87%) were the important contributors. In the case of Ragi, the adoption of
modern technology resulted in 15.81 percent higher Ragi production, per acre. To this increased output the technology component contributed 2.06 percent and increased use of inputs contributed remaining 13.74 percent.

6) The actual factor shares, under both modern and traditional technology farms cultivating Jowar were significantly different from their respective estimated factor shares in the case of modern technology farmers. This implied that they did not have their due share, whereas only bullock labour had its due share on Jowar producing farmers using modern technology. On the other hand, on traditional technology farms, the actual factor shares accrued to be significantly different from their respective estimated factor share. Thus the share accrued to these inputs found to the Jowar production in traditional technology. Generally, the results on the change in actual factor shares per se do not reveal the real picture, hence the Actual Absolute Factor Shares (ABFSs) of the different factors were found to loose their shares in absolute terms with the introduction of modern technology and other inputs found to gain.

7) The actual factor share of all the inputs under both (modern and traditional) technologies of Ragi production farmers were significantly different from this respective estimated factor shares. Thus the share accrued to these inputs found to approximated their contribution to the total Ragi production. Among the various inputs included in the production function model, land input stood to gain with the introduction of modern technology in Ragi production were observed to be greater than zero. Hence these
inputs were found to gain their shares as results of introduction of high 
yielding verities of Ragi. The actual absolute factor shares all the inputs 
stood to gain as a result of introduction of modern technology and the 
percentage gain varied across the inputs.

8) The per farm production function estimates in Jowar production showed 
that total area, bullock pair and human labour and manures and fertilizers 
were found to be the most important variables under modern technology 
influencing the output. Selected variables put together were other the 
explain 85 percent of variation in output. On the contrary in traditional 
technology total area and bullock pair and human labour were the only two 
variables found to be important. The selected variables were able to 
influence the output to the extent of 65 percent. In the case of Ragi total area 
and manures and fertilizers were found to be input and the selected 
variables were able to explain about 75 percent variations in output under 
modern technology. On the other land in the case of traditional technology, 
total area and bullock pair and human labour were the significant variables. 
The selected variables put together were able to influence out put to the 
extent of 52 percent.

9) The technology wise and category wise employment in Jowar crop 
production reveled that per acre employment generation of modern 
technology was higher compared to traditional technology across all the 
categories of farmers. The employment generation in terms of man days as 
well as monetary income of the labourers indicated an increasing trend with
the increase in the size of holdings in both the technologies. Since the calculated F were found to be lower than the table values at five percent, which was indicated acceptance of null hypothesis of equality of mean employment generation in between the two technologies.

10) The technology wise and category wise employment in Ragi crop production revealed that per acre employment generation of modern technology was higher compared to traditional technology across all the categories of farmers. The employment generation in terms of man days as well as monetary income of the labourers indicated an increasing trend with the increase in the size of holdings in both the technologies. Since the calculated F value were found to be higher than the table values at five percent, which was indicated rejection of null hypothesis of equality of mean employment generation in between the two technologies.

11) The problems found by Jowar farmers were mainly lower prices, instability in prices, susceptibility to pests and diseases and net aware of improved technology under both traditional technology farms. In the case of Ragi crop, the farmers main problems were lack of credit, instability in prices and yields under both the traditional and modern technology farms. The main reason for adoption HYV technology by farms were the quality of grains, fodder and profitability opined by sample farmers.
8.2: Policy Implications.

Based on the findings of the study the following policy implications have been suggested.

1. Socio-economic characteristics: The general characteristics of the farm family indicated that policy measures should by and large, aim at improving the income from agriculture, which is the main occupation of the farmers of the designed to accommodate the livestock, which form a vital link in maintaining the fertility status of the farm and family structure of the farmers. Since the family composition is almost equally balanced with regard to gender, creation of employment opportunities should give equal scope for both the male and female member.

2. Technical innovations should be conveyed to the farm families in an easily understandable manner with the help of different communication media. This is because approximately one-third of the family members in case of farms were found to be illiterate and a major proportion had reasonable level of education. Hence, selective approach with media intervention to send to the needs of the farms may be planned.

3. Adoption of modern technology resulted in output growth ranging of 2.06 percent in the case of Ragi, and 34.06 percent in the case of Jowar. To this increased output, technological component was the major source. Thus farmers can obtain considerable amounts of additional grain output just by
replacing their traditional cereals with varieties classified under modern technology. As regards the contribution of the different inputs to the total output growth, the HYV seeds turned out to be the crucial contribution. Production and supply of quality seeds to the farmer is therefore essential to facilitate timely sowing and to raise their cropping potential.

4. Generally the use of inputs other than seeds was observed to be for below the optimum levels. Appropriate extension and financial services should be provided to promote the input use to the recommended level.

5. The employment generation by modern technology was found to be non-significant in the case of Jowar and significant in the case of Ragi. But the extent of increase in additional employment was of lower order. Hence, efforts may be made to increase the level of employment through replacement of traditional varieties.

6. The problems faced by the farmers of irrespective technology adoption have been the lack of credit, lower and unstable prices, sustainability the pests and disease. Hence, some policy changes have to be made at the government level to over come there problems besides strengthening the extension support.