

CHAPTER VI

SUMMARY AND CONCLUSIONS

Technological change and prices are the important instruments for accelerating growth in the agricultural sector. Once, proper technology is available, then prices in their extremities do affect production, consumption, factors demand, industrial growth, employment tempo, etc. It has a definite bearing on the economic stability and political security of a country. The persistent rise in prices of inputs has been affecting the planned targets for development. At this stage, therefore, it becomes necessary to adopt a price policy which can match the demand for foodgrains and other agricultural commodities with the supply thereof. This study is an attempt to develop the system of output supply and factors demand for major crops of Punjab state. Beside this, the marketed surplus responses to factor and product prices were estimated and used to work out the policies for factor product prices and productivity growth to attain the specific goals of production, marketed surplus and income.

The specific objectives of the present investigation were 1) to derive the system of output supply and factor

demand equations (ii) to estimate the marketed surplus of major crops and to analyze the impact of factor and product prices on marketed surplus response, and (iii) to suggest the price structure and productivity changes to attain the specific goals of production and marketed surplus.

The study utilized the cross section cum time series data collected under the "Comprehensive Scheme for Studying the Cost of Cultivation of Principal Crops" for Punjab state from 1977-78 to 1979-80. The profit function approach was used to derive the factor demand and output supply functions for wheat, paddy, gram and cotton. In this study, the Normalized Quadratic (NQ) profit function and the factor demand equations for human labour, fertilizer and bullock labour were estimated jointly using Zellner's method (1962) with and without restrictions of economic theory, across equations. The output supply equations were estimated residually from the NQ profit and factors demand equations. The marketed surplus and net farm income responses to factor and product price changes were also estimated to analyse the desired price policy for different crops.

Wheat in rabi and paddy in kharif were the most remunerative crops compared with gram and cotton. Capital

and fertilizer inputs constitute the major share in cost of cultivation of wheat and paddy crops.

The restricted estimates of NO profit and factor demand equations were consistent with the theory of production and used for economic analysis in the present investigation. Using the restricted estimates, the elasticities of factor demand and output supply were computed with respect to prices and fixed factors at mean level.

The labour demand elasticity with respect to wage rate was $-.33$ in wheat and $-.38$ in paddy; but it was nearly zero in cotton and gram. Fertilizer appeared to be a substitute for labour. In case of wheat, output price was more powerful than wage rate in generating the employment whereas reverse was true in case of paddy. At existing price structure, the negative effects of factor prices on employment was not compensated by positive effects of product price on employment. Fertilizer appeared to be a good substitute for labour in paddy. The irrigation growth under wheat and paddy had promoted the use of human labour. The growth in capital expenditure like machine etc. was negatively associated with labour employment but the effect was very weak for all crops.

Labour demand is inelastic to wage changes.

A rightward shift in the supply function of labour in the agricultural sector will not be absorbed with only a small decrease in wages. Conversely, a leftward shift would result in significant increases in wage rates. Migration policies, for example, which would be designed to reduce migration out of rural areas are likely to have severe wage effects for those remaining in rural areas. The policies inducing more migration would have reverse effects. Policy makers should not presume that agricultural sector is flexible enough to absorb labour easily. Nor can policy be based on an assumption that output prices matter little for demand for labour. More investment in capital assets like tractors, threshers and other machineries can be safely used to increase crop output without any danger of its large negative effect on labour employment.

The own price elasticity of fertilizer demand was $-.63$ in wheat, $-.65$ in paddy, $-.22$ in cotton and -1.29 in gram. The effect of output price was also quite substantial in effecting the fertilizer use. Irrigation evidenced complementarity with fertilizer. The fertilizer demand was neutral to scale irrespective of farm size. In case of wheat crop output price support seems to be more effective than input subsidy for promoting input use whereas contrary held true in paddy. Human labour was a

good substitute of fertilizer in paddy. The capital expenditure was substitute in some crops and complement in others.

The own price elasticity of bullock labour demand ranged between $-.01$ (gram) to $-.52$ (wheat). Strong complementarity was seen between human labour and bullock labour pair for wheat crop. Capital emerged as a net substitute of bullock labour, the elasticity ranged between $-.41$ (gram) to $-.91$ (wheat). The scale elasticity of bullock labour demand was nearly zero under wheat and paddy. Output price displayed significant influence in bullock demand.

The output supply was inelastic to the output and factor prices for all the crops under study. The highest response was observed in wheat (0.1809) which was closely followed by paddy (0.1326). The response of cotton and gram was nearly zero, in case of gram, it was even perverse. Fertilizer price was most influential among factor prices followed by wage rate. Diminishing returns to scale were observed in wheat and gram, constant return to scale in cotton and increasing return to scale prevailed in paddy. Therefore, on the basis of one crop, one cannot generalise the effect of land ceiling etc. on total crop production. The possibilities of increasing output by investing more

in irrigation and capital are very limited in case of wheat whereas, such investments will result in significant increase in output of paddy and cotton.

The price policy followed by government during the previous decade had increased the output of different crops at a low rate. Due to the phenomena of asset fixity and factor inelasticity, a weak relationship between output and prices hold in Indian agriculture for any given level of technology. Technological improvements are more important than prices in boosting agricultural output and generating employment opportunities in agricultural sector.

The marketed surplus of wheat showed great responsiveness to prices compared to its output supply. For commercial crops, the output supply and marketed surplus did not differ significantly from each other. Notwithstanding the low effect of product and factor prices on output and market supply, their impact on net income of the farmers was amazing. A one per cent increase in output price raises the income from wheat and paddy by 6 per cent and 4 per cent respectively. The price policy has its serious effects on income and its distribution for farmers.

Pure price inflation has a positive effect on the marketed surplus. Marketed surplus of wheat tends to

increase by 10.62 per cent of the rate of inflation and that of paddy by 1 per cent of the rate of inflation. In order to maintain constant level of marketed surplus, wheat prices need to be compensated by 69 per cent of the rate of inflation and paddy price by 99 per cent of the rate of inflation. These adjustments in product prices necessitate the consumer's income to be increased by about 6 per cent per annum to maintain equilibrium of supply and demand. The price policy followed by Government of India for wheat and paddy during the last decade was just sufficient to maintain constant level of marketed surplus.

The response of marketed surplus to changes in the terms of trade for agriculture is highly inelastic. Using the estimated elasticities of output and derived demand responses with respect to different prices, the increase in output price needed to neutralise factor price inflation, without technological change, are socially unbearable for achieving even 2 per cent growth rate in market supply. Parity between factor and product prices and adoption of new high yielding technology are the appropriate policies for maintaining the output supply equal to consumers demand and farmers income at desired level.

Since the most advanced agricultural regions are already close to technological ceilings productivity gains via technological change have to come from other under-developed areas while price adjustments imply that the bulk of supply response is obtained in the already most advanced areas at the neglect of other regions. Hence in agriculture countering the cost inflation or achieving growth in output via product price increase allows defence of the social status quo and deepening of the existing inequalities. By contrast, the spread of new technology to the under-developed regions of the country appear a progressive force towards levelling out economic inequality and achieve higher level of output.