CHAPTER 6

CONCLUSION

The major findings of this study are summarized as follows: The estimates of the frontier production indicate that traditional inputs land and labor are still important to the agricultural production in northern Thailand. However, the importance of labor and tractors is decreasing. In contrast, the coefficients of land and irrigation, were small in 1975 but have since increased, especially the land coefficient increased rapidly.

Efficiency measurements indicate that production efficiency in northern region was in a stagnant situation from 1975 to 1991. The regional average index are 81.7%, 81.4%, and 81.9% during 1975-76, 1977-81, 1982-86 periods, respectively, and a little increase up to 83.0% during the Sixth Plan period 1987-91. However, differences among zones are large.

The accounting for production growth showed that a significant share of total production growth can be attributed to the increases of total inputs. Among all inputs, increased labor was the most important source of production growth with a contribution share 22.6%. Increased tractor input ranked second in importance, just about two percentage points lower than labor. Total input growth explained 54.1% of total production growth. The residual, the proxy for technological change and efficiency improvement, accounted for 45.9% of total production growth. Neutral technological change had greater effects on productivity and production growth than efficiency improvement.

In view of the quantitative results, the author believes the quantitative conclusion that advances in technology played an important role in agricultural sector of northern Thailand during the past two decades cannot be denied. In the production promoting process, government also played an important role. The most obvious fact

is that it allocates public resources for investment in infrastructure such as irrigation, road networks, research and extension, and the provision of credit.

While no significant structural shifts of neutral technological change in northern region was found in the Fifth to Sixth Plan period, on the one hand, it can be explained that these government policies and programs may have contributed to the agricultural productivity gains through impacts on crop diversification and improved cultivation practices as well as through some increased provision of irrigation water-control facilities (Tasanasanta). On the other hand, the government policies on agricultural development need more explicit examination toward the changing situations. In other words, more government policy supports are needed for further agricultural production promotion.

Further agricultural growth in this region can be achieved through

(1) increasing input use: (i) to increase harvested area in the zones C and D; to make use of the idled paddy land while reducing the damage of planted area in the whole region. (ii) to increase labor input in the zones C and D. (iii) to increase tractors in the zones C and D, especially in zone D. (iv) to increase irrigated area in the whole region through government investment on new irrigation projects.

(2) adopting new technology: (i) to transfer new technology, such as new high yielding seeds, anti-pest varieties and new cropping methods, etc., to farmers through research and extension institutions or agencies, particularly in zone A and zone B area. (ii) to use the current input factors efficiently in order to improve the biased technological change, and

(3) improving production efficiency further: to trace and adjust the unfavorable factors which influence the technical efficiency improvement in the zones A, B, and D, especially zone B.

Notwithstanding the possible limitations on the interpretative explanations, the impacts of input use, technological change on agricultural production in the northern

region of Thailand, after a long hiatus has been done, the quantitative results showed a picture of the sources on agricultural production growth and demonstrated the potential for further agricultural production increase. However, this study used the aggregate data, associated with some inevitable statistical problems such as multicollinearity, autocorrelation, etc., the results may liable to error. Therefore, the policy implications drawn from the quantitative result may only be used as a reference.

Further area for Research

This study focuses only on the production process, thus the impact of prices on agricultural production growth has been excluded. To comprehend the full picture of agricultural production and development process, comprehensive information such as marketing, and other social economic factors should be incorporated. Further research can be done focusing on the following areas: (1) to trace the factors which influence the production efficiency in the northern region by cross-sectional survey, (2) to examine the sources of production growth on specific agricultural sectors or crops.