

## Chapter 7

### CONCLUSIONS AND RECOMMENDATIONS

#### 7.1 Conclusions

Demand of animal products in Vietnam has been increasing as the increase of population and improvement of income and living condition. Cattle production in Vietnam is mainly in the smallholder and of local breed which provided low productivity. Even though crossbred cattle have been introduced but its adoption has been slow. This study aims to investigate problems and potential of crossbred cattle production, the production profitability and factors affecting the adoption of local breed and crossbred cattle. This study was conducted in 2006, in Nam Dong district, Thua Thien Hue province of Vietnam where both local breed and crossbred cattle were being raised by smallholder farmers.

Based on the information from the field survey, cattle were mostly kept for cash income but only in the small size, 2 to 3 heads of cattle per household. About 59 per cent of total cattle population in the Nam Dong district was Laisind crossbred cattle (Red Sindhi x local Yellow cattle) whereas local breed cattle, Vietnam Yellow cattle, were about 41 per cent of total cattle population. Cattle were fed by local available feed resources such as natural grasses, rice straw, rice bran, cassava and sweet potato vines. During summer, natural grasses on road sides, along the edge of rice-field, in rubber farms and uncultivated areas were the main feed resources for cattle. During winter, cattle were kept in the cattle-shed and rice straw was the major conserved feed. Only small areas of grass were cultivated for cattle feed. About 44 per cent of cattle raisers did not have area of own grass land. An average of own grass land of non-adopters and adopters were 0.037 and 0.017 hectare, respectively. The average of cassava production area of non-adopters and adopters were 0.13 and 0.31 hectare, respectively.

77.5 per cent and 90.0 per cent of the households had household heads age for non-adopters of crossbred cattle and adopters with age range from 35 years to 50 years old, respectively. Most of non-adopters (72.5%) have the household head with the secondary education level or high level whereas almost a half (47.5%) of adopters has household heads with only primary level education. 65 percent and 80 per cent of non-adopters and adopters had 2-3 laborers available in their households. Regarding land size and land use of cattle raisers, 1.5 ha was the average size of land and there was no significant difference of land size per household between the two groups. Most of land, about 65% in both groups, was used as rubber land where rubber trees were mainly grown for cash income. Very small areas, 0.1-0.3 ha, were used for paddy rice, cassava and fruit trees. With regard to household income, most of the household income was from farm activities. 57.5 per cent of non-adopters and 70.0 per cent of adopters earned income ranging from 15,000,000-30,000,000 VND per year (1 US\$ = 15,500 VND). Regarding institutional development, 75 per cent of non-adopters took the loan for cattle raising from both formal and informal institutions, while only 37.5 per cent of adopters took the loan. All cattle raisers of both groups had access to veterinary services. About 32.5 per cent of non-adopters and 45 per cent of adopters had access to technical training.

Lack of feed processing and veterinary knowledge, short time of loan period and limited amount of credit offered as well as grass shortage during winter and lack of grass planting knowledge were the problems of cattle production systems in this study area. However, it was found that local breed cattle raisers had additionally marketing problem which was not found in crossbred cattle raisers whereas 10 per cent of crossbred cattle raisers lacked suitable breeding time knowledge which was not found in the local breed cattle raisers. Regarding the potential, available of family labor, supporting by non-government organization, veterinary services and marketing opportunity were the potentials of the crossbred cattle production.

The results of enterprise budget analysis show that the revenue of crossbred cattle production, 3,303,791 VND/MSU, was significantly higher with a difference of 60 per cent over local breed cattle, 2,019,448 VND/MSU, before including income

from selling manure. Revenue from local breed cattle production increased up to 2,180,665 VND/MSU after including income from selling manure of cattle, but it was still significantly lower than the revenue of 3,503,598 VND/MSU from the crossbred cattle production after including income from selling manure.

Considering the total production cost, crossbred cattle production had a significantly higher cost, 1,863,828 VND/MSU, when compared to the cost of local breed cattle which was 1,301,450 VND/MSU. The difference of total cost between the two groups came from both differences in operating cost and ownership cost but mainly from the operating cost. The total operating cost of crossbred production was 1,476,923 VND/MSU which was 43 per cent over the local breed cattle production (1,012,727 VND/MSU). For the ownership cost, the crossbred cattle had a higher cost, about 32 per cent over the local breed cattle.

Regarding gross margin, there was a significant difference in the gross margin between the local breed and crossbred cattle production at 1 per cent level. Before including income from selling manure, the higher gross margin was found in crossbred cattle production which was 1,787,415 VND/MSU compared to 977,853 VND/MSU of the local breed cattle production. Gross margin of crossbred cattle was about 70 per cent higher than the gross margin of local breed cattle production after including income from selling manure.

Profit or returns to management and returns to family labor and management were calculated in both groups. The results show that there were significant differences in both profit and return to family labor and management (RFLM) of local breed and crossbred cattle production at 1 per cent level in both before and after selling manure. The average profit of crossbred cattle production were 1,439,963 VND/MSU, 2 times over that of local breed cattle which was 717,998 VND/MSU. The average RFLM of local cattle production was 1,275,390 VND/MSU with a difference of 80 per cent lower than the cost of 2,293,696 VND/MSU of crossbred cattle production. After including the income from selling manure, the average RFLM of local breed cattle increased up to 1,436,607 VND/MSU while the average RFLM of

crossbred cattle increased up to 2,493,503 VND/MSU. The difference of RFLM was slightly reduced to be 70 per cent after including income from selling manure. Returns to family labor and management per day of both groups were also calculated but there was no significant difference between the two groups at 1 per cent level since the family labor used for cattle production of crossbred cattle was about 50 per cent higher than that of local breed cattle.

Cassava production area was added into the list of independent variables for running the binary logistic regression of crossbred cattle adoption. The model results indicated that the overall goodness-of-fit measured by significance of the Chi-square statistic (Omnibus Test of Model Coefficients) was high and the percent of correct prediction was also good at 80.0%. Besides, the Hosmer and Lemeshow's Goodness of Fit test showed that the model's estimated sufficiently fits the data. There were 14 independent variables in the model and four of them significantly influence the adoption of crossbred cattle. There were three significant predictor of the crossbred cattle at 1 per cent level which were the dummy variable of access to technical training and cassava production area which had positive influence as expected and the area of own grass land which had negative influence. Another significant predictor variable at 10 per cent level was the number of cattle kept in the family which had the positive relationship to adoption of crossbred cattle.

## 7.2 Recommendations

Based on the findings of this study, policy implications and future research direction can be derived as follows.

1. Raising of crossbred cattle was more profitable than that of local with or without including income from selling manure. The cost of crossbred cattle production was higher than that of local breed cattle production. However, the revenue of crossbred cattle production was also higher than that of local breed cattle. So, profit or return to management of crossbred cattle production was higher than that

of local cattle. It recommended that the government should have a strategy plan for promoting crossbred cattle to smallholder farmers.

2. The most important factor having maximum influence on adoption of crossbred cattle is to access to technical training. The farmers who attend a technical training was understood and be able to apply technique to raise crossbred cattle well. Also, the feeding problem explained in the Chapter 4, can be reduced by providing the knowledge of concentrated feed processing. So there is an urgent need to develop education and training programs to smallholder farmers raising cattle.

3. During the time of survey, some of the local cattle raisers and crossbred cattle raisers were facing disease problem which the farmers did not cope with. So this may have affected the profitability of cattle raising. It is recommended that in the future there should be studies about prevention and treatment methods to limit the losses caused by disease.

4. From the filed survey, it can be observed that the capital is an important factor for raising crossbred cattle. Most of crossbred cattle raisers seems to wealthy than the local breed cattle. Hence, they did not take loan for cattle raising nut they used their own money. Some of poor farmers mentioned in the group discussion that the credit offered by the agricultural bank was quiet limited and the loan period was too short. The limited amount of 3 million VND offered by the bank for three years was not a good option for farmers who want to invest for raising crossbred cattle. The farmers mention that about 5-6 million VND will be the good option for them. Also, they need time more than three years to be able to pay back all the credit since investment in cattle production is a long term investment. It is recommended that the agricultural bank should be review the credit policy to match with the need of cattle raisers.