

CHAPTER 1

INTRODUCTION

1.1 Background

Vietnam is located along the Southeast margin of Indo-Chinese Peninsula with a total land use area of over 33 mil.ha. Three-quarters of the country consists of mountains and hills. Vietnam is essentially a tropical country with a humid climate. The average annual rainfall is 2,000 mm, which falls in the rainy season (Thanh, 2000). There is a wide range of latitude and a variety of landform – from swampy deltas to limestone karsts and high mountains. Soils in Vietnam have been formed under a tropical climate with adequate precipitation, strong weathering, frequent changes in temperature, and therefore the soils are completely differentiated. Most of the agricultural land is in annual crops, and a small part is in perennial crops. In general, the annual crops are situated in the lowlands, and the perennial crops are situated in upland and hills. Most of the sloping land is used for forestry and is unused land. The main land use systems in the hills are perennial trees, such as fruits and industrial trees. The yields of these long-term crops depend on the soil type, slope, soil depth, and soil fertility. There are some annual crops planted on sloping land but the yields are normally less than on the lowlands (Thanh, 2000).

Covering more than 70% of the national territory and home for at least one-third of the population, the uplands are understandably a major concern of Vietnam's government (Jamieson et al., 1998; Rambo, 1995; Quy, 1995). The Vietnam uplands are home to the poorest communities, whose welfare and livelihoods depend directly on the natural resource base. Sustainable management of lands, forests and other natural resources of the uplands are critical not only to benefit local people but also for the national interest. Therefore, achieving the successful development of these vast areas of mountains is a matter of high priority (Binh, 1998; Rambo, 1995).

Central Vietnam consists of 13 provinces with about 17 mil. people, and it covers on about 97,000 km² (Vietnamese General Statistical Office, 2003). It is a long

and narrow strip bordered by the Truong son mountain range in the West and the coast line in the East. Lands are dominantly upland to hilly with a very limited flood plain along the shore line. Central Vietnam is noted for its very hostile weather and climate: flood, drought, hot winds and prolonged rains are frequent natural events. The natural condition of weather and climate cause problems of soil erosion in raining season, water deficiency in dry season.

Thua Thien Hue is one of the four provinces located in the economic key area of central Vietnam. Administratively Thua Thien Hue is divided into eight districts and its capital Hue city. The province can be divided into three major zones those are the coastal area, the midland area and the mountainous area. It has a total area of 506,000 ha, with an estimated population of 1,091,000 (2002), of which 75% live in the rural areas. Agricultural land accounts for 10% of the land (Thua Thien Hue Statistical Office, 2003). The main source of income is agriculture, followed by trading, employment in the state sector, handicrafts and fishing. Agriculture is concentrated in the coastal areas where rice farming is predominant. In the hilly and mountain areas irrigated farming is limited and crops like maize, cassava, sweet potatoes, sugar cane and perennials become more important. The main farming system is an integrated system centered around irrigated rice production. Minor elements are animal husbandry, home gardens, as well as fish-ponds.

One highland location, Nam Dong district, is located in the Southwest of Thua Thien Hue province. It is mountainous, dissected by many streams, tributaries of Ta Trach River, forming a complex topography with many micro - catchments - areas. The Ta Trach River is one of the main arms of the Perfume River. In the center of Nam Dong, there is a valley, which is enclosed by high mountains such as Truoi, Bach Ma, Mang, etc. There are differences in altitude in the district area. The total natural area is 65,052 ha, in which 64% are covered by forest. A large area of Nam Dong is fallow land (28%) and only around 6% of Nam Dong area is used for agriculture. Nevertheless, some 4,000 households live in the district. The main agricultural systems are based on annual crops (rice, cassava, maize, banana, beans, etc), upland rice and perennial plants (coffee, tea, rubber, areca, etc). Home gardens

and fishponds have small surfaces, which are quite important for household income. In most cases, major constraints are the result of the topography, socio-economic conditions. Steep slopes, lack of arable land, difficulty in transportation, poor infrastructure, and poverty are some of these constraints, etc. In addition, agricultural production is spontaneous and shifting cultivation still exists here. Sustainable development for the district becomes an essential issue. (People Committee of Nam Dong District, 2004)

1.2 Rationale of the study

Nam Dong is one of the two mountainous districts of Thua Thien Hue Province. The inhabitants consist of Cotu ethnic group, an ethnic minority that settled in this district since a long time, and Kinh ethnic group who came from plain area after 1975 following the policy of resettlement of the government. This district has potential in economic development for Thua Thien Hue province. At the same time, it is an important zone in conserving and protecting ecological environment and agricultural production for plain areas. They are diversified in terms of their natural resources and the culture of people, but they also bear their own constraints. Agriculture is still an important factor of livelihood for the residents of this area. In the last decade, its development had been spontaneous. However, the research and assessment for sustainable agricultural production, especially crop production system (CPS) is still not adequately considered. Both positive and negative outcomes of the production patterns and trends were not clearly demonstrated.

Critical issues that people and authorities in Nam Dong have to face and solve are how to improve the socio-economic conditions to reach the tempo of the country's development. However, if the development is spontaneous and lacks scientific bases, then development will not be efficient and thus will take a longer time. Therefore, the agricultural production does not yet take full advantage of the potentials of the region. The farmers at the moment do not well consider the types and composition of their products as well as sustainable environmental management. It leads to low profit, pollution of environment, as well as the destruction of the upstream forest area.

Moreover, research is needed to establish optimal production patterns in order to develop the socio-economic conditions for this district. We have to put them in interaction and specification for each concrete condition. Therefore, research to establish sound bases to promote optimal crop production systems (CPSs) are necessary. At the same time, the exploitation of potentials of the land resources in Nam Dong with trade-offs of productivity and sustainability becomes important for policy makers, researchers and farmers.

1.3 Objectives

This study therefore has as its objectives:

1. To distinguish natural and socio-economic characteristics as well as identifying advantages and disadvantages for each micro-zone related to crop production systems in the study areas.
2. To determine and compare sustainability of crop production systems at the household and commune level in each micro-zone.