

# Sustainable Management of Natural Resources in Central Vietnam



## Summary Report Mushroom Sub-sector in Quang Binh Province

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Dong Hoi

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Mushroom farming is practiced in more than 100 countries and its production is increasing at the rate of 7 per cent per annum. Production of mushroom has already crossed 5 million metric tons annually in the world (FAO - 2006) and is expected to reach around 7 million metric ton in next ten years. The world leading mushroom producers are China, United States, Netherlands, France, Poland, Spain, and Canada. Viet Nam mushroom production has been sharply increasing since 2003 and Viet Nam has become the third leading exporter of straw mushroom in the world.

## I. Overview of mushroom sub-sector in Viet Nam

Mushroom production is considered an economically highly effective sub-sector, involving participation of many farmers in Viet Nam since 1990. Main species of mushrooms produced by mushroom farms in the South are Oyster, Straw while the main species in the North are Agaricus, Cat ear, Reishi mushroom (*Ganoderma lucidum*) - a kind of medicinal mushroom and Shitake mushroom (*Lentinus edodes*). During the past few years, the annual production of mushrooms has reached 150,000 tons of all kinds of fresh mushrooms. The main mushroom producing areas in Viet Nam are Nam Dinh, Ninh Binh, Thai Binh, Hung Yen and Ha Nam (Hong delta region with big amount of Agaricus), Dong Thap, Tay Ninh and Soc Trang with big scale of Straw mushroom. The major cat ear production area is Long Khanh, Dong Nai Province.

About 60 percent of the mushrooms quantity is sold in domestic markets mainly as fresh produce. The remaining 40 percent are exported to overseas markets, at a value of 40 million USD annually. Exported mushroom products are mainly put in cans and shipped to the United States, Japan and Italy markets.

Viet Nam's orientation and strategy for the mushroom sub-sector until 2010 is to make use of 10 percent of straw from paddy production, sawdust from wood processing and sugar cane dregs (about 4 million tons of raw materials) for producing mushroom with targeted indicator of 1 million tons of fresh mushrooms (50% for domestic consumption and 50% for export).

## II. Review of current mushroom production and consumption in Quang Binh

### 1. Species of mushroom produced in Quang Binh

- Out of 10 species currently produced in other provinces nationwide, only 4 species have been widely adopted by mushroom producers in Quang Binh. They are: Straw, Oyster, Cat Ears mushroom, and Reishi mushroom.
- Straw and Oyster mushrooms are mainly used in fresh form by local consumers, while Cat Ears mushroom is consumed in dried form. Reishi - the medical mushroom is also used in conserved form, possibly processed by drying and later grinding into powder.
- Mushroom producers in Quang Binh experienced quite good production of Straw and Oyster mushrooms, which can be attributed to some favorable natural conditions and locally available input materials for production of these 2 species. Reishi mushroom has the highest economic value, with prices up to 600,000VND per dried kg, compared to



40,000VND per fresh kg of straw mushroom and 12,000VND/ kg of oyster mushroom. Still, production of this medicinal mushroom has just been developed at rather modest level in locality due to high risk of production losses and engagement of high production techniques.

- Local consumers are getting familiar with oyster and straw mushrooms. The straw mushroom is perceived by users as nutritious fresh food. While production cost and selling price of this mushroom is a bit high compared to other vegetables, it can be served for above middle class population in the centers of districts and in Dong Hoi City. However, to the extent observed, prices tend to increase for the past few years, illustrating relative increase of demand on this mushroom. The Oyster mushroom needs more raw materials and brings more relatively output in production. Production cost and selling prices of the Oyster are lower than that of the Straw mushroom. Local consumers consider the Oyster mushroom as fresh vegetable. There has been also increasing demand for this mushroom.
- Climate and weather conditions in Quang Binh are a matter of seasonal effects, affecting mushroom production in Quang Binh. The Straw mushroom is cultivated in summer time while the Oyster mushroom is mainly cultivated in August and Winter.

## **2. Preliminary analysis of mushroom Value Chain**

### 2.1 - Mushroom Producers

- There are about 200 - 220 mushroom smallholders all over Quang Binh. Production in Le Thuy is most widespread, making up 50% of total province. The second leading production areas are Bo Trach, Quang Ninh, Quang Trach districts and Dong Hoi City followed by Tuyen Hoa and Minh Hoa with lesser number of mushroom producers. However, mushroom production is bringing high and higher source of income for smallholders, involving more and more people into the sub-sector.
- During the past two years, from 2006 to 2007, an estimated output of about 120 - 140 tons of fresh mushrooms was produced with a high percentage of Oyster mushroom and Straw mushrooms, reaching up to 80% of total quantity produced.
- Only few (10-15 households) do processing of mushroom into conserved forms.

### 2.2 - Spawn and other inputs suppliers

- At present, there are two mushroom spawn suppliers, one is the Employment Promotion Center (EPC) belonging to the Provincial Youth's Union and other is the Centre for Transferring of Advanced Technology and Science (CTATS) belonging to Department of Science and Technology. It is roughly estimated that up to 45% mushroom spawn is served by these actors. Both of EPC and CTATS received spawn multiplication techniques from the Centre for Plant Bio-technology of Institute for Generics in Hanoi. The EPC was sponsored by the GTZ's "Integrated Food Security Program" (IFSP) in 2001 while the CTATS was supported by its Ministry program in 2002.
- Apart from the two local spawn suppliers, local producers import mushroom spawn from Quang Tri, Hue and Thai Binh. The local spawn suppliers have to share the markets with



outside suppliers for certain reasons. First some producers in Le Thuy district find it more convenient in terms of transport from Quang Tri to their place. Secondly, some producers went outside to receive technical training. Then they continue buying spawns from these places. Thirdly, it occurred sometimes that the quality of spawn deliveries from the two local suppliers were not good enough, due to weak coordination and logistics.

- The production of straw mushroom and oyster mushroom needs substantial quantities of straw from paddy fields at rather low cost; yet the availability of straw throughout the year, especially in the rainy season remain one difficulty confronting the straw mushroom producers.
- The production of Reishi and Cat ear mushrooms rely on saw dust from the wood processing industry. Since the government has banned logging from natural forests, it has become more difficult to get enough saw dust for mushroom cultivation and not every household can get access to the source of raw materials. However, people have assumed that there is more advantages in Quang Binh compared to other provinces in terms of raw materials and the medicinal mushroom production.

### 2.3 - Supporting organizations and agencies

So far, there have been many bodies supporting the sub-sector, including the Integrated Food Security Project (IFSP - GTZ), Non-Agriculture Promotion Project (NAPA - SNV), Department of Science and Technology (DST), Provincial Agriculture Forestry Extension Centre (PAFEC), Farmer's Union, Women's Union, Project for Poverty Reduction in Central, Viet Nam (ADB project). Among them, the IFSP was the pioneer in searching and transferring advanced techniques of mushroom cultivation and spawn multiplication in Quang Binh since the year 2000.

A bit later, the DST also facilitated mushroom cultivation by setting up small spawn factory in 2002 which is now still in operation. The NAPA project has been organizing several technical training courses on mushrooms cultivation in collaboration with provincial WU but focusing its activities in the delta areas of Quang Binh (Le Thuy and Quang Ninh Districts). The NAPA also gave other significant inputs for mushroom production, including the medicinal mushroom. Beside the main actors, the FU, PAFEC and EPC have been doing continuous supports for extending mushroom production in Quang Binh province.

### 2.4 - Consumers

- Consumers of fresh straw and oyster mushrooms: mushrooms consumers can be segmented into two groups in accordance with income. The wealthier households have more a preference for straw mushrooms which is considered as a clean, safe and nutritious food while lower income groups buy Oyster mushroom for consumption. Customers often buy larger quantities of mushrooms (10-15 kg) for some family occasions, such as marriage, worshipping.



- Apart from individual households, daily customers of fresh mushroom are hotels and restaurants serving premium specialty food. Mushrooms can be cooked in many delicious dishes and mixed with many other foods, including fish, shrimp, pork and chicken.
- There is also an increasing trend of consumption of Reishin - the medicinal mushroom which is believed to cure many types of disease and which can be grinded into powder, then mixed with honey and or wine to be used as the healthy nutritious food for health recovery and health strengthening.

## 2.5 - Traders and trade channels

- The majority of mushrooms are sold in fresh form at retail channels in which traders play an important role. Traders often have small stands in big open markets, and they do not need to go to mushrooms farms to buy products but instead, different mushroom producers bring mushrooms to the traders in the market places. Traders do bear risk of being unable to sell all mushroom during the day, but does not happen very often. In this case the leftover mushrooms are rotten until the next day. In order to mitigate the risk of unsold fresh mushrooms, big traders rely on some key relationships with hotels, restaurants and event cooks to do their business.
- Another channel is that traders collect mushrooms from producers and bring to restaurants and hotels to sell and normally with late payments.
- In the third channel, there are few traders importing straw mushroom from Hue to resell to retailers in markets in Quang Binh and to sell to demanded restaurants
- The estimated quantity in demand for fresh mushrooms in Quang Binh is about 200 tons per year. It means that demand exceeds current local supply and there are income opportunities for more small producers.
- A small amount of mushrooms is processed into dried form, such as Ears mushroom. Reishi mushroom is preserved by sucking in wine or grinding into powder and sold to Oriental Medicine shops in other provinces.

## III. IFSP support 8 for the mushroom sub-sector (1999 to 2002)

### 1. IFSP support

- In the framework of its income generating component, the IFSP aimed at creating opportunities for additional income for its target groups. The strategy was to diversify income generation activities in the two mountainous districts of Tuyen Hoa and Minh Hoa. After launching need assessments, the IFSP organized 3 training courses on mushroom cultivation and processing for about 60 local people in the two sub-zones of the two districts (Up-land and low-land areas). Purposely, the IFSP support was to train people in the up-land area to produce Cat Ear, Shitake mushrooms with the intension of making use of available timber from their forest. For the people in the low-land area, the IFSP provided technical training courses on cultivation of Oyster and Straw mushrooms to help trainees making use of straw in the field.



- Besides the training, the IFSP also organized technical consulting visits to mushroom demonstrations. However, among many trained persons, there only 7 - 10 farmers continued cultivating mushrooms in the two districts. They produce Oyster mushrooms and a small quantity of Straw and Cat Ear mushrooms. Some of them produce Reishin mushroom. Since then, it seems that very few people are self-motivated to practice mushroom cultivation, and the demonstration plots have not been replicated.
- Being aware of the difficulties of mushroom producers all over Quang Binh to get spawns from other provinces for mushroom cultivation, the IFSP also supported the EPC to conduct a kind of feasibility study on setting up a spawn multiplication factory in Quang Binh. It was decided to support the installation of a small spawn facility: The IFSP provided technical trainings on mushroom spawn multiplication for 3 staff of EPC in collaboration with the Centre for Plant Bio-technology (Institute for Generics in Hanoi). IFSP also provided some essential machinery and equipment to the factory. Since then, 3 staff of EPC have been actively collaborating with the Provincial Youth Union and DOLISA to give several technical trainings on mushroom cultivation for interested farmers.

## **2. Impact Evaluation of IFSP Support**

Besides some achievements of the IFSP support for the EPC, the IFSP failed to truly convince a larger number of farmers in the remote mountainous districts to start or continue mushroom production. Several factors contributed to this failure:

- Unfavorable physical and agro-climatic condition for mushroom growing in the mountainous areas (too cold in winter, too dry in summer)
- Lack or insufficient availability of some raw materials (i.e. rice staw) compared with low land areas
- Difficult and insecure access to markets for products (Shitake and Reishi mushrooms), that were not yet properly introduced or considered a luxury among poorer mountainous people
- lack of a systematic approach in promoting the mushroom sub-sector in the remote project area, lack of a sensitization process, lack of creating a business dialogue environment. Supporting activities from IFSP were scattered with low attention and lack of involvement from local authorities, relevant supporting agencies (Agricultural Extension, mass organizations)
- Mistakes or ignorance for need assessments and trainee selection, especially inadequacy in identifying leading actors for the sub-sector
- Lack of a continuous technical consulting to new practitioners of mushroom production instead of a few days and two or three time consulting visits of mushroom experts



#### IV. Proposal for quick-win Interventions for mushroom VC promotion

The mushroom sub-sector is getting more advanced in Quang Binh Province compared to 8 years ago. There is a quite good opportunity for serving local demand and there are quite many good mushroom cultivation demonstrations at household farms in all districts of Quang Binh. However, the development is still modest compared to its potential and in comparison with other provinces (like TT-Hue).

Some interventions for quick win and visible results are proposed as follows:

- In the workshop context, support mobilization of all relevant actors along different stages of the sub-sector to exchange and discuss about opportunities and constraints of mushroom sub-sector. Apply demand driven approach with respect to utilizing knowledge and experience from relevant actors. Identify gap of key information (if any).
- Identify the need for formation of mushroom association and identify the leading actors (some key mushroom producers or spawn producers). Support "future mushroom association" to formulate a development strategy and an action plan for the mushroom sub-sector in Quang Binh.
- In the framework of VC Promotion Group and together with other supporting agencies and project support for coordination and promotion activities among relevant actors of "future association".
- From the viewpoint of the consultant only, possible activities could be:
  - ✓ Launching a quick market study focusing on qualitative factors of consumption (preferences, consumption patterns), quantification of demand by different segments (private house of upper class, event organizers, catering, Hotels, Restaurants, etc.)
  - ✓ Designing marketing support facility (support for promotion of specific distribution channels to all the above market segments, advertisement of products, links to the growing tourism industry in Quang Binh (Hotels, Restaurants, etc.), initiate supply chain arrangements.
  - ✓ Developing products for quality improvement or application of preservation techniques for improving competitive advantages of local products over products from Hue (a kind of import substitution strategy from the Quang Bing perspective).
  - ✓ Provide technical support and some input materials for replicate Reishi demonstrations (highest economic value mushroom) in those districts of Quang Binh with the highest potential in terms of favorable production conditions and easy market access.

