Spread Prevention & Control of Apple Snail in Rice in the Lao PDR

Mr. Khanxay Somchanda

Plant Protection Center (PPC)
Department of Agriculture (DoA)
Ministry of Agriculture and Forestry (MAF), Lao PDR

and

Mr. Anousone Bandavong

Agriculture Section
Provincial Agriculture and Forestry Office,
Vientiane Capital

I. INTRODUCTION

The Lao PDR or Laos Situated in the center of the South-East Asia peninsula. It shares border with China in the North, with Thailand and Myanmar in the West, Vietnam in the East, and Cambodia in the South. This geographic situation renders Laos as a land-linked, which provides favorable basis for the country becoming the centre of economic, cultural and environmental crossroads, if appropriately managed.

The altitude for two thirds of the country ranges from 200 to 2820 m. It is a country of rolling mountains and plateaus (about 85 percent of its territory), which is a barrier to development of economic infrastructure, transportation, communication and production, but which creates wide variations in climate, soils, and ecological niches leading to locally adapted and diverse biota, which calls for a variety of agricultural practices and lifestyles.

Two seasons predominate, a monsoon season from May to September and a dry season. Annual rainfall varies from 1,300 to 3,000 mm, but often falls short of the level

needed for paddy rice farming. Localized drought and flooding create periodic crop failures, resulting in food a shortage, which hits severely the pockets of heavy poverty.

The Mekong River, originating in the Himalayas, traverses the entire length of the country. It provides fertile floodplains for agriculture and also serves as a main artery of transport and water. Most of the country's rivers flow into it. The tributaries of the Mekong River within the country hold a tremendous potential for national hydropower development.

Economic

The Lao PDR remains predominantly a rural society with only 18 % of the population being classified as urban in 1991, 25 % being expected to be urban by the year 2000. Its population is composed of three main ethnic groups, which assemble 48 ethno-linguistics groups and therefore engenders a cultural and custom diversity.

Although much efforts and energy have been invested since 1975, and particularly since 1986, the adoption of the New Economic Mechanism, to upgrade the education of the population, there are still inadequate education facilities and poorly developed communication and transportation infrastructure, which seriously affect the rural areas of the country. This is the result of many factors, but mostly related to the lack of capital for public spending.

The agriculture and forestry sectors will still remain as the basis of the national socio-economic development. Therefore, the Government strives to protect this resource base from wasteful utilization and degradation.

Rice Production

Table 1. Rice Area under Rice Production.

Year	season	Harvested area (ha)	Damaged area (ha)	% of extent damage by GAS
2011	• Rain-fed • lowland Irrigated rice	705,040 598,358	97,135 96,307	
2008	• Rain-fed • lowland Irrigated rice	731,277 619,635	44,925 41,693	

Note: Damaged area (ha) means Damage from any pests in that season
Source: planning division, Department of Agriculture

II. SITUATION OF GAS IN LAOS

GAS (Pomacea spp. from Thailand) were first introduced at Sikhotabong District of Vientiane Municipality in 1991 and spread out in three villages namely: Viengsavanh, Nahai and Phosi. First damages to lowland rice fields were reported in 1992. Few years later (1994), they were brought from Vietnam to Northern provinces of the country, mainly as a source of food.

Since then, GAS has spread to 10 of 17 provinces of the country mainly by way of connecting waterways such as irrigation canals and rivers as well as by people. GAS does most attack young rice seedlings (seedbed up to 20 days after transplanting), and

consequently fields infested with GAS have to be re-planted several times in order to replace the missing hills.

The shell can cause severe injures to people working in the field. Collecting GAS in the field has become inefficient in severely infested areas, and due to laborconstraints farmers turn to use unspecific chemicals for help (e.g. Niclosamide or Baylucide, and copper sulfate…). But these chemical products pollute water and are serious threat to other aquatic organisms living as well as to the health of people working in the paddy fields.

Meanwhile many different control techniques were developed by the Agricultural Extension Center and have been already transferred to farmers. The core of technologies was focused on integrated apple snail management by a combination of different techniques applied simultaneously such as: protection of entrance of snails to the rice field, hand picking, transplanting with old seedling, reduction of water level in the rice field, using a variety of local experiences, and particularly controlling action should be done seasonally. Many people in the Lao PDR are still unaware of the threat; therefore they are attracted by the snails' colorful egg masses and bring it with them as a delicacy.

III. CONTROL METHODS OF GAS IN LAO PDR

***Handpicking*:** Œ Handpick snails and crush egg masses.
Œ Place bamboo stakes to attract adults for egg laying.
***Use attractants*:** Place leaves of plants that attract snails to make hand picking easier
***Water control*:** Snails are active in standing water and thus, good land leveling and field drainage can help reduce damage.
***Preventing field entry*:** Place a wire or woven bamboo screen on the main irrigation water inlet and outlet to prevent the entry. However benefit from such action is quite limited as most snails bury themselves and "hibernate" in the field as the soil dries.
***Transplanting*:** Plant healthy vigorous seedlings that tiller well.
Chemical use

- Niclosamide 70% WP
- Metaldehyde 5%
- Copper sulphate WP

IV. UTILIZATION OF GAS

Utilization	%
Food	85
Farm animal feed	14
Liquid bio-fertilizer/compost	1
Bio-control of weed in rice fields	-Œ
Any other use	Œ

V. CONCLUSION AND SUGGESTIONS

The prevention and management of GAS in Laos are still at the infancy stage due to the lack of qualified staff, financial constraint, the short of appropriate information, and the lack of legal framework, notably on its implementation, as well as the low level of the Lao society awareness on the negative impacts of alien species to the health of the population, and to the economy as well as the environment of the country.

In recent years, there are claims that apple snail infestation has decreased due to the spread of integrated management approaches which are being promoted through Farmer Field School training design

However, there is a crucial need for the Lao Government to take into seriousconsideration, since the outset, destructive impacts of GAS before this issue to bespread out into the entire country.

Therefore, in order to effectively prevent and manage GAS in the Lao PDR, there is a necessity to consider these suggestions:

1. Promotion and development of the economic incentives on the sustainable use and conservation of national biological resources, specifically on the indigenous species;
2. Promulgation of appropriate legislation, particularly related to the introduction of invasive alien species, emphasizing on the cooperation and support of local communities;
3. Strengthen capacity of local staff, notably on taxonomy, tropical botany and zoology;
4. Establishment of National Network or Working Group related to the prevention and management of GAS;
5. Promotion of researches on the positive and destructive impacts of GAS, notably on the destructive effects of invasive alien species;
6. Promotion of awareness on the destructive impacts of GAS at all level of the Lao society and at school;
7. Creation of the National Biodiversity Conservation Fund in order to effectively address the GAS in a sustainable manner;
8. Cooperation with relevant institutions at the sub-regional, regional and international level related to this issue, such as information sharing, capacity strengthening and collaboration of research.