Production and Processing of Edible Insects for Improved Nutrition

Value Chains of Edible Insect for Food and Nutrition Security in Eastern Shan State, Myanmar

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Background

In rural Myanmar, chronic malnutrition is widespread. Entomophagy is a traditional habit in Eastern Shan State, a former civil war area, where varieties of edible insects such as bamboo worms, silk worms, cicadas, hornets and crickets can be found in the markets. The potential to which insects can contribute to food and nutrition security is not yet well explored in Myanmar, especially in conflict regions.

Objectives

Analyses insect value chains in Eastern Shan State to detect the availability and accessibility of edible insects.

Methods

Quantitative data along the value chain were collected in urban and rural communities and markets. Interviews were conducted with 197 consumers (77 urban and 110 rural), one producer, 21 harvesters, 6 wholesalers, 4 local traders and 6 retailers.

Results

Seasonal Availablility

- Insects are wild harvested and availability is seasonal, but at different times.
- Cicada season starts from January to May but it has a periodical lifecycle which leads to a two to three year interval, when larger amounts are available.
- There are two seasons for giant crickets (May to September and November to January).
- Bamboo worm is available from July to December differing from place to place.
- August to November is hornet and bee season.
- Insect rearing is not yet popular, with only one cricket producer in Eastern Shan State.
- Reared crickets, silkworm, and coconut beetles are imported from Thailand for year around consumption.

Consumption of Edible Insects

- Urban people mainly use insects as snacks, but around one third of consumers interviewed at markets use them also as a complement for dishes.
- Villagers gather insects for own consumption as a main dish.

Types of Value Chain

- Seven different types of value chains for edible insects could be detected as follow:

Harvester → Consumer
Harvester → Retailer → Consumer
Harvester → Wholesaler → Retailer → Consumer
Harvester → Local Trader → Wholesaler → Retailer → Consumer
Harvester → Local Trader → Wholesaler → Restaurant → Consumer
Harvester → Local Trader → Wholesaler → Retailer → Restaurant → Consumer
Harvester → Local Trader → Wholesaler → Trader → Retailer → Consumer

Affordability: Prices and Margins

- Fried bamboo worm is very popular and can be found year round. The most frequent chain for the supply of local bamboo worm market consists of harvester, local trader, wholesaler, retailer. Consumer prices on average reach 26 US$/kg.
- The lion share of total gross marketing margin is appropriated by retailers and harvesters (40.0% and 38.5 %, respectively), whereas margins of local traders and wholesalers are relatively modest (15.4 % and 6.2 %, respectively).

Table 1. Marketing margin along the bamboo worm value chain in Eastern Shan State

Actors	**Cost** ($/kg)
Harvester	
Selling Price	10.00
Costs*	0.01
Harvesters' net profit = (Gross sale - costs)	9.99
Local Trader	
Buying price	10.00
Costs*	0.50
Selling Price	14.00
Local Traders' net profit = (Gross sale - costs)	3.50
Wholesaler	
Buying price	14.00
Costs*	0.05
Selling Price	15.60
Wholesalers' net profit = (Gross sale - costs)	1.55
Retailer	
Buying price	15.60
Costs*	2.00
Selling Price	26.00
Retailers' net profit = (Gross sale - costs)	8.40
Gross Marketing Margin (GMM) = (Selling Price-Buying Price) x 100/Consumer Price	
GMM of local traders = (14.0-10.0) x 100 /26	15.4 %
GMM of wholesalers = (15.6-14.0) x 100 /26	6.2 %
GMM of retailers = (26.0-15.6) x 100 /26	40.0%
Total Gross Marketing Margin	= 15.4% + 6.2% + 40.0% = 61.5 %
Gross Margin of harvesters (= 10 /26)	= 100% - Total GMM = 38.5 %

* Costs include mainly: harvesting devices, transportation, market fees, packaging, handling, ingredients for frying.

Conclusions

- Value chains of edible insects are developing in Eastern Shan State and already contribute to food and nutrition security, yet still at a low level.
- Margins at hunter and retailer level are relatively high making the business profitable for all value chain actors.
- Consumer price is relatively high and more than doubles compared to the hunters' price, restricting affordability.
- Local rearing could improve insect availability and accessibility by lowering prices, and give local consumers a more sustainable and safer supply of this nutrient-rich food.

Global Food Security Conference, Montpellier, 16-18 of June, 2020

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ProciNut is financially supported by the German Federal Ministry of Food and Agriculture (BMEL) based on the decision of the Parliament of the Federal Republic of Germany through the Federal Office for Agriculture and Food (BLE)

With support from Federal Ministry of Food and Agriculture, by decision of the German Bundestag