Analysis of the vegetable value chain and gender roles in vegetable production in northwest Cambodia

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Abstract

Consumer demand for vegetables has been on the rise in the past 10 years due to their reported nutritional and health benefits. In addition, vegetables provide crop diversification for rice-based production systems, being suitable for crop rotation and therefore contributing to minimising the spread of plant disease and improving the quality of soil. Within the Cambodian market there is a strong, local preference for vegetables produced in Cambodia as they are recognised to be of high quality relative to those imported from neighbouring countries. This project aims to analyse the scalability of best practice in vegetable production, by conducting a value chain analysis (VCA) to map and evaluate each actor in the vegetable supply chain within Cambodia, including farmers, collectors and wholesalers. In addition, the degree of gender equality in vegetable production is assessed to determine if there has been progress with women empowerment in the production sector. The VCA was conducted using the mixed method approach, which included interviews with 140 farmers and surveys with 524 household representatives in the Cambodian provinces of Battambang and Banteay Meanchey. Challenges that actors in the VCA face are a lack of resource-base and technical knowledge. Cambodian men do most of the heavy labour activities such as land preparation and the application of both pesticides and herbicides, while women are more predominantly involved in monetary decision making such as managing the household finances and selling the produce. Women play a key role in vegetable production; integrated models that recognise women's potential to capitalise on and value-add to vegetable products will advance the vegetable industry in Cambodia.

Keywords: Gender equality, diversification, sustainable farming, Cambodian agricultural system

Introduction

In developing countries such as Cambodia, smallholder farming has been and continues to be the backbone of the agriculture sector and the main income generator for communities living in poverty within rural areas (Buntong et al., 2013). In Northwest Cambodia, the main commodity produced is rice as its production needs are suited to the local climate and rainfall patterns. Currently more than 70% of Cambodia's arable land is used for rice cultivation. When the price of rice spiked in 2008 many Cambodian farmers were further encouraged to increase rice production due to its high profitability. However, when the price of rice started to stabilise and fall, Cambodia's traditional rice monocropping system was unable to adapt to meet the competition it faced from the global market and, as well, the rice industry failed to adapt to evolving consumer demands. Therefore, households reliant on incomes from rice production became highly vulnerable. Vegetables are a high value commodity in Southeast Asia and can supplement the income of many farming households. Currently, 40-50% of vegetables in Cambodia are imported mainly from neighbouring Vietnam and Thailand and sold at inflated prices as local supply is not enough to meet the demand (Phon and Yamaji, 2016).

In Cambodia the traditional farming norm is based on a patriarchal social structure. While women have dramatically increased their participation in the labour force over the last 20 years, they are still largely responsible for managing the household and its finances and looking after the wellbeing of the children (Bricknell, 2011; Nguyen, 2017). Men are in charge of the commercial crops and undertake physically demanding activities while women manage the home garden crops that are used for household consumption (Nguyen, 2017). Currently in Cambodia approximately 20% of households have women as the head, often accidentally due to the illness of an adult male member or their employment overseas. It is a social goal that women be empowered so that they are not reliant on men for on-farm decisions that negatively affect their position, income and independence. Empowerment in agriculture is defined as the ability for one to make their own decisions in agricultural production and to have access to resources to aid in the decision-making (Alkire et al., 2013).

Several knowledge gaps exist regarding the diversification of rice monocultures into vegetable production in NW Cambodia and in the market value chain associated with vegetable supply. This paper aims to explore those gaps using quantitative and qualitative value chain analysis of the existing vegetable value chain in NW

Cambodia by obtaining first-hand information from actors in this chain. In addition, there is a lack of research regarding gender roles in the vegetable farming industry of NW Cambodia, offering opportunity for this to be explored.

Methods

Qualitative Analysis: Participatory Rural Appraisal (PRA)

The participatory rural appraisal (PRA) consisted of a series of face-to-face interviews with over 140 farmers across the rice and vegetable value chain in North-western Cambodia, in particular the provinces of Battambang and Banteay Meanchey. The PRA was performed by CamSID staff (Sustainable agricultural Intensification and Diversification in NW Cambodia) who are working on an ongoing ACIAR project based in Cambodia (Project number: CSE/2015/044). A broad range of representative villages were targeted; the size and diversity of the locations surveyed were selected to represent different cultural and physical environments such as geological landforms, old alluvial terrace (OAT) locations, active flood plains (AFP) and the level of aid or communication that farmers have with other villagers/farmers or non-government organisation (NGO). Qualitative data from the PRA were analysed using NVivo software to determine themes and trends in specific responses on vegetable production and marketing.

Quantitative Analysis: Baseline Survey

Data from the baseline survey obtained from ACIAR Project number: CSE/2015/044 were used to analyse the current state of the agricultural food systems in NW Cambodia. A total of 524 households surveys were used in this analysis. Using Microsoft Excel, relevant vegetable-related data were extracted and plotted.

Quantitative Analysis: Vegetable Value-Chain Survey

The vegetable value-chain survey was undertaken to provide a more detailed understanding of vegetable production, which was not the focus of the PRA nor the baseline survey. A broad range of villages across Battambang and Banteay Meanchey were targeted based on using knowledge gained from over 70 survey forms collected in the same villages as those for the PRA and baseline surveys; this methodology was an extension of the body of work already conducted. The surveys were conducted face-to-face with farmers, traders and collectors that were specifically involved in the vegetable value chain. The surveys were conducted by students from the Universities of Battambang and Banteay Meanchey, respectively, and supervised by a representative from the CamSID project team. The surveys were semi-structured utilising both open-ended and close-ended questions to generate qualitative and quantitative data. They were structured around themes to gain household information on the contribution of vegetable production to the livelihoods of farmers and to identify prevalent gender roles.

Select data from all three methodologies were used to analyse vegetable production and gender roles.

Results

Qualitative analysis of vegetable production

Below is the typical value chain of vegetables in northwest Cambodia where the collector collects vegetables from individual farmers and re-sells the vegetables to wholesalers (Fig. 1). There were few vegetable farmers who sold directly to the wholesaler. The lack of adequate training available also restricts growth in vegetable production.

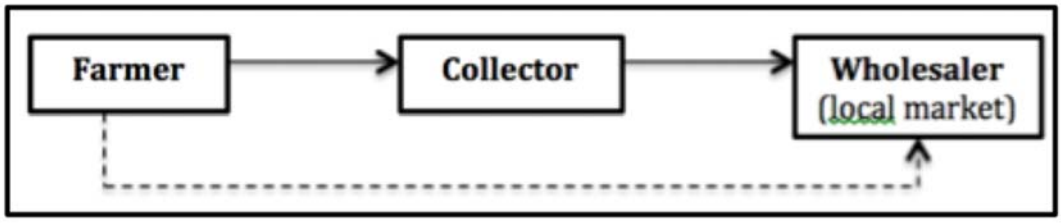

Figure 1: Value chain of vegetables in NW Cambodia.

Quantitative analysis of vegetable production

Fingerroot and lime leaf were the first ($8750) and second ($8265) highest grossing vegetables followed by watermelon ($3142) based on averaged annual values of these crops (Figure 2).

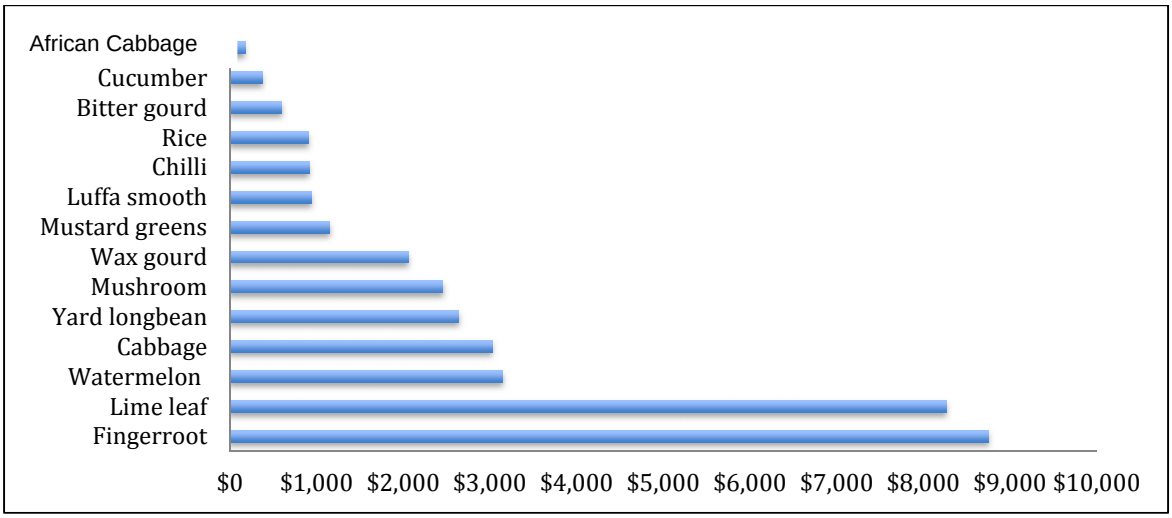

Figure 2: Annual income (USD/ha) earned by farmers of each commodity

With the exception of some vegetables (cucumber and watermelon), the majority of the vegetables grown in Battambang and Banteay Meanchey resulted in positive outcomes, requiring lower quantities of fertilizer (NPK), pesticide and herbicide compared with rice (Figures 3 and 4). Battambang farmers were more likely to grow vegetables than Banteay Meanchey farmers due to better water availability.

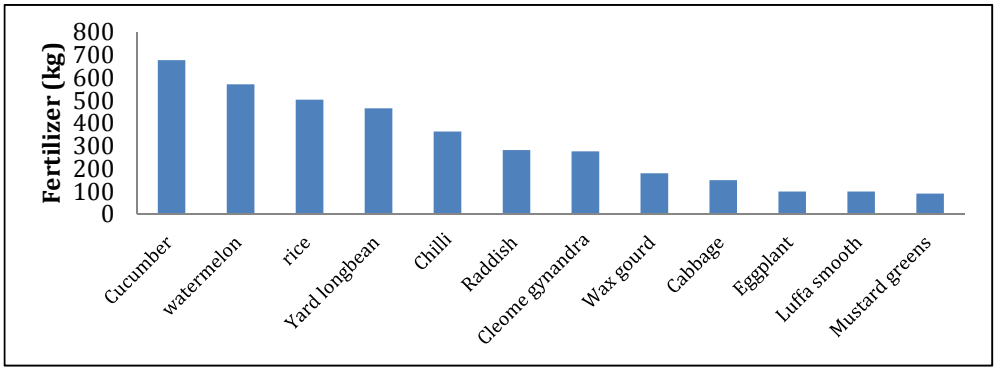

Figure 3: Average total annual fertilizer (NPK) application across the target region

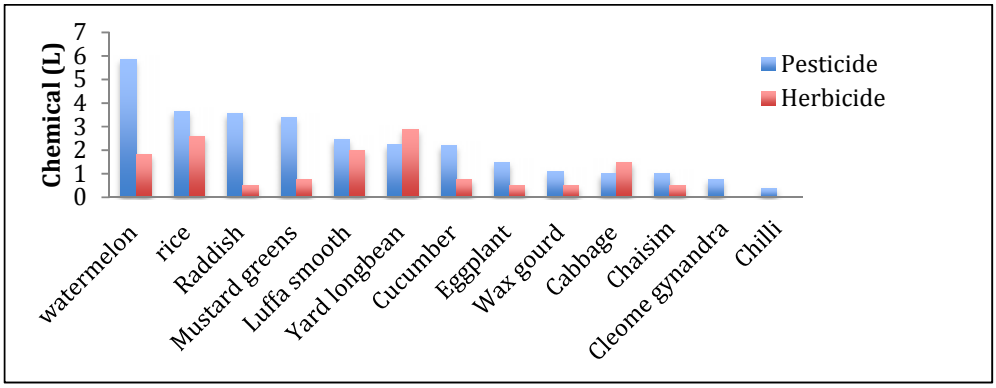

Figure 4: Average total annual pesticide and herbicide application across the target region

Distribution of gender roles

The main difference between the genders is that men did most of the heavy labour activities such as land preparation and application of pesticides and herbicides while women were more predominantly involved in monetary decision-making such as managing the household finances and selling the produce (Figure 5), activities that are consistent with the literature (Nguyen, 2017). However, an equal workload was shared among

males and females in farming roles where hard labour was not required (for example, planting crops). Some women stated that they were out in the field for only a few hours a day while the children were at school. Women participated in crop planting and hand weeding as these were tasks which were not as time sensitive nor perceived to be as 'unsafe' as pesticide and herbicide application. Women without a male-counterpart to do the physical labour were, therefore, at a disadvantage.

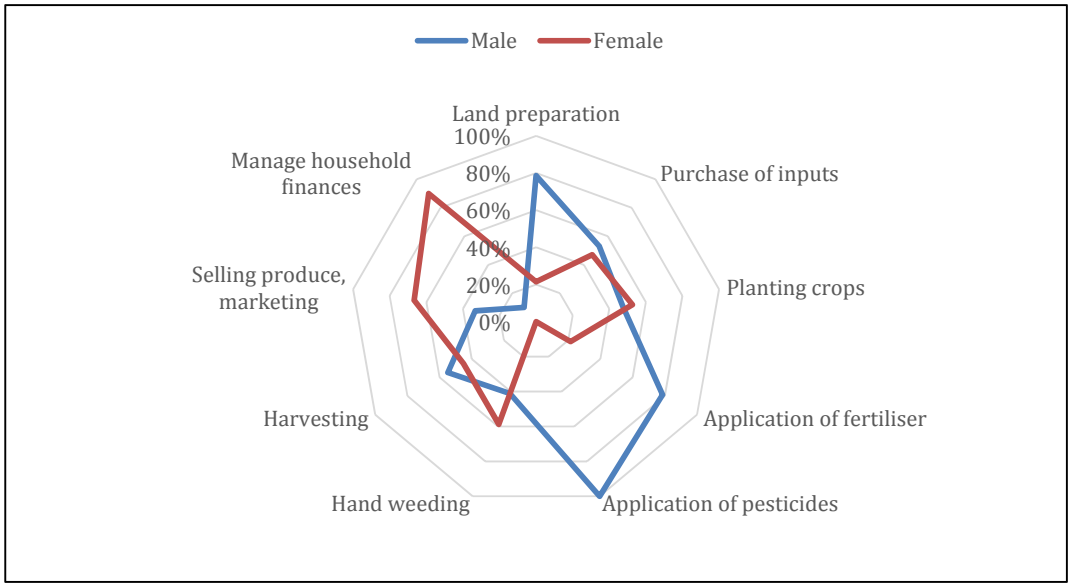

Figure 5: Distribution of gender roles in vegetable production in NW Cambodia.

Conclusions

Vegetable production in Cambodia is not an option for all farmers, but for those who have the resource-base and technical knowledge. It is a positive diversification option for improved livelihoods. The vegetable value-chain is characterised by unrealised potential, with a lack of coordinated supply and demand and specific infrastructure for transport and storage limiting development. Women played a key role in vegetable production and integrated models that recognise women's potential to capitalise on and value-add to vegetable products will advance the vegetable industry in Cambodia.

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