Prospects and Challenges of Mushroom Production in Kuruwita, Sri Lanka: Comparative Report on Two Consecutive Years

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Abstract: Global mushroom production has expanded rapidly in last few decades with the introduction of new mushroom varieties. However, Sri Lanka mainly relies on Oyster (Pleurotus ostreatus) and Abalone (Pleurotus cystidiosus) cultivation. It is believed that many of the mushroom farmers in Sri Lanka already gave up the business due to various issues related to production and marketing. Hence, the current study was executed from 03rd to 10th of April 2017 and 13th to 16th of February 2018 to identify the problems and challenges faced by the mushroom farmers in Kuruwita division of Sri Lanka. Direct interviews using structured questionnaire were used to collect information from 36 farmers in 2017. The sample contained 56% females and 44% males of different age categories, where, 39% and 33% belonged to age groups (31-40) and (41-50), respectively. Twenty five per cent of the farmers showed fulltime involvement, while, rest involved in mushroom cultivation as a part time job. However, only 19 farmers are still involved in the business (during survey in 2018) out of 36 farmers interviewed in 2017. Monthly average income of the farmers of this area was Rs. 16,777 in 2017 and Rs. 14,210 in 2018. Major problems and challenges faced by the farmers were lack of knowledge in mushroom cultivation and disease management, lack of financial assistance, difficulties in finding proper local market and producing value added mushroom products.

Keywords: Kuruwita, Mushroom, Pleurotus cystidiosus, Pleurotus ostreatus, Sri Lanka

Introduction

Mushroom is a fleshy, macroscopic and spore-bearing fruiting structure of a fungus. It can be classified into three categories such as edible, non-edible and poisonous. Edible mushroom is being cultivated since ancient time, however, only 22 out of 2000 species can be consumed (Manzi et al., 2001). Mushroom cultivation requires relatively little space and considered as fast growing organisms to give the yield within short time span, hence, mushroom cultivation is a profitable agribusiness for farmers who are interested in an additional income (Sher,
Global mushroom production has steadily increased from 0.3 million tons to 3.4 million tons from 1965 to 2015 (Singh et al., 2017). Mushroom possesses high nutritional and medicinal properties (Manzi et al., 2001). Many studies have revealed that the amino acid compositions of mushrooms are similar to animal proteins (Barros et al., 2007). Pleurotus sp. is a perfect diet to prevent hypertension and heart diseases (Patil et al., 2010). Bioactive compounds of many mushroom varieties including oyster mushroom have exhibited antibacterial, antifungal, antiviral, and antimicrobial activities (Neelam and Singh, 2013; Ren et al., 2014).

More than 70% of Sri Lankan population lives in the rural areas of the country and their main income source is agriculture and related activities. Agriculture sector alone provides 12% of GDP to the country’s economy (Central Bank of Sri Lanka, 2008). Mushroom is one kind of agricultural products, which became popular among Sri Lankan as an agribusiness at the later part of 1980. Commercial scale mushroom cultivation was first started in Sri Lanka with the aid of United Nations Development Program (UNDP) in 1985 and spawn laboratories for spawn production was established by the Export Development Board of Sri Lanka. The Sri Lankan government and many other government and non-governmental organizations such as Mushroom Development and Training Center in Ratmalana are encouraging mushroom farming as a self-employment.

However, the problems faced by the mushroom farmers were not addressed in deeper context. Therefore, the present study was carried out to assess the current situation and problems faced by the mushroom farmers in Kuruwita division of Ratnapura district of Sri Lanka.

**Materials and Methods**

The Kuruwita village community involved in the mushroom cultivation in the Ratnapura District of Sri Lanka was selected for this...
study. Direct interviews and structured questionnaire were employed to gather data during the period from 03\textsuperscript{rd} to 10\textsuperscript{th} of April 2017 by selecting 36 mushroom farmers. The sample contained 56\% females and 44\% males of different age categories. Where, 39\% belonged to age groups (31-40), 33\% to the age group (41-50), 11\% to the age group (51-60), 11\% to (61-70) and 6\% to (21-30) However, only 19 farmers out of 36 were involved in the business during the data gathered from 13\textsuperscript{th} to 16\textsuperscript{th} of February 2018. The qualitative and quantitative data gathered were then analyzed by using Microsoft excel 2010 to understand the current situation to evaluate the results.

**Results and Discussion**

According to the results obtained in 2017, Oyster mushroom (*Pleurotus ostreatus*) (Figure 3) was cultivated by all the farmers, while 11\% were involved in Abalone (*Pleurotus cystidiosus*) (Figure 4) cultivation as well. Most of the farmers still in the process of getting established where, 69\% was involved in the business for more than one year while 31\% had been involved for less than 1 year. Twenty five per cent of farmers showed fulltime involvement, while rest (75\%) involved in mushroom cultivation as a part time job. About 31\% of farmers bought seeds from sales outlets while 25\%, 22\%, 16\% and 6\% from Government Agriculture Centers in Ratnapura, friends, neighbors and Mushroom Training and Development center in Ratmalana, respectively.

Monthly income of mushroom farmers varied from Rs. 8,000 to 48,000 in which, monthly average income of the farmers of this area was Rs. 16,777. All the farmers carried out this industry as a family business where 100\% of labor was shared within the family. The main sources of capital were gained from family income and loans obtained from the government, private banks or personal loans from friends and money lenders. Seventy five per cent of the farmers received training from

![Figure 2: Sample data sheet](image-url)
government departments, centers or through the projects conducted by non-government organizations such as Ratmalana Mushroom Training and Development Center. All (100%) farmers were used the saw dust (Figures 5 and 6) as mushroom growing substrate. Saw dust was bought from saw mills located in the village.

None of the farmers interviewed were involved in export business due to lack of knowledge in export activities or experience in providing continuous supply of mushroom harvest. Only 3% of the farmers involved in the production of value added products of mushroom such as fried mushroom (Figure 8). The final product was packed in polythene bags as 200g packets (Figure 9) and driven to market through middle persons who were visiting the farmers’ premises by Lorries. Only 19 farmers, out of 36 farmers interviewed in 2017, were involved in the mushroom cultivation according to the data gathered in February 2018. Monthly average income of the farmers of this area was dropped from Rs. 16,777 in 2017 to Rs. 14,210 in 2018.

According to the results obtained in both years, absence of quality spawn was the problem for approximately 29% of farmers due to lack of spawn production centers in the village. Nearly 74% of farmers in
both years mentioned that they do not have proper knowledge about disease control and almost 13% of farmers stated that they do not have proper knowledge on packaging since they have received minimal level of training by working in other farms. Nearly, 55% of farmers in both years mentioned that high initial investment is needed to start up the mushroom cultivation and this could be sorted out by providing relevant loan scheme at lower rates.

The farmers are offered Rs. 40 per packet by the intermediate buyers even though the price of mushroom in the local market is Rs. 80. Therefore the profit obtained from one packet is nearly Rs. 25-30 after considering the expenses of saw dust, spawn, polythene, chemicals and other raw materials. Further, most of the intermediate buyers suddenly stopped the purchasing and returned most of the packs which are not sold out.

![Figure 8: Fried Mushroom available at Kuruwita retailers](image)

![Figure 9: Final Product packed in polythene bag](image)

### Table 1: Constraints faced by mushroom farmers in 2017 and 2018

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Farmer response in % in 2017</th>
<th>Farmer response in % in 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>High initial Investment</td>
<td>58</td>
<td>52</td>
</tr>
<tr>
<td>Low quality and less availability of seeds</td>
<td>31</td>
<td>26</td>
</tr>
<tr>
<td>Low availability of saw dust</td>
<td>50</td>
<td>52</td>
</tr>
<tr>
<td>High cost of fertilizer and other chemicals</td>
<td>19</td>
<td>26</td>
</tr>
<tr>
<td>Labor cost involved</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Allergic to the mushroom spores</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td>Pest and disease problem</td>
<td>81</td>
<td>68</td>
</tr>
<tr>
<td>Lack of proper storing facilities</td>
<td>25</td>
<td>15</td>
</tr>
<tr>
<td>Inadequate knowledge in packaging</td>
<td>17</td>
<td>10</td>
</tr>
<tr>
<td>Lack of buyers</td>
<td>55</td>
<td>84</td>
</tr>
</tbody>
</table>
Conclusion and Recommendation

Problems encountered in marketing were the biggest challenge faced by majority (84%) of farmers in 2018. This problem can be minimized by providing direct transport facilities to the island wide supermarket, local traders, intermediaries, regional wholesalers, local restaurants or becoming organized with farmer cooperatives with the government involvement. Returned packs could be used to make value added products such as dried, pickled or fried mushroom to increase the shelf life of mushroom for domestic and local consumptions. Farmers stated that that they need additional training in disease management, packaging and storing methods and also need a support in terms of finance to expand their business.

This study expressed the significance of empowering the mushroom production in Sri Lanka as small and medium entrepreneur because it aids the rural farmers to improve their livelihood. High quality seeds should be continuously provided to all the farmers to obtain high quality yield at a reasonable price by targeting the foreign market as well. To achieve this target, availability of better and low cost substrates, approaches of maintaining hygienic conditions in the culturing sheds, effective disease controlling techniques, introduction of new varieties of edible mushroom to the farmers are essential. Finally, the research and development aspects relevant to above issues need to be promoted to have a sustainable mushroom cultivation in Sri Lanka.

Acknowledgements

We would like to thank Mrs. Sanjeewa Nandani (Grama sewaka –Lassakanda), Mr. Benett (Grama sewaka – Sudagala) and Mrs. P. Abegunawardena (Divisional secretariat office – Kuruwita) for giving us the opportunity to list out and interview the mushroom farmers in Lassakanda and Sudagala areas in Kuruwita division and all the mushroom farmers in the Erathna, Sudagala and Lassakanda areas for helping us out during their busy schedule.

References


Neelam, S. and Singh, S. 2013. Comparative in vitro studies on phytochemical and antibacterial Properties of ethanolic Extracts of *Pleurotus florida* and *Pleurotus*


http://dx.doi.org/10.1016/j.bcdf.2014.01.003
