



IDENTIFYING SUSTAINABILITY ISSUES USING SWOTANALYSIS: A STUDY OF DUCK FARMING IN KUTTANAD, ALAPPUZHA

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Received : 16.05.2016

Accepted : 18.05.2016

Abstract

The present study was undertaken among a sample duck farmers of Kuttanad region of Alappuzha district. The objective of the study was to identify the strengths, weaknesses, opportunities and threats of the duck farming system of Kuttanad and to identify the sustainability issues. The study revealed that the important strengths perceived were the traditional significance of duck farming in the region, efficiency of duck production systems in providing nutritional security to the farm families, its contribution to women empowerment, the low cost/ no cost production of ducks and its contribution to organic farming. The labour intensive nature of duck farming, risk of diseases to ducks, lack of effectiveness of farmers' unions, lack of knowledge of scientific duck farming and lack of faith in scientific management practices were the important weaknesses. The delicacy status enjoyed by duck products in the region, opportunities for self-employment and value addition and the demand for native organic products were the important opportunities. Threats perceived included poor social status accorded to duck farming, difficulties in feed procurement, unavailability of labour and credit

and the unorganized nature of market.

Key words: Duck farming, SWOT analysis, Kuttanad

Duck farming is a traditional farming vocation of Kuttanad region, an important wetland ecosystem of Kerala rich in biodiversity. The Kuttanad area is inhabited mainly by agrarian community engaged in the "below sea level farming system" one among a few of its kind in the world. Apart from being an important livelihood option, duck farming has other functions that are of socio-cultural significance in Kuttanad. However, as in the case of many other farming systems, duck farming in Kuttanad too is facing several serious challenges impacting its sustainability. Dearth of relevant empirical studies on the duck farming system of Kuttanad till date impedes the planning and implementation of appropriate development programmes. The decision making tool, SWOT analysis i.e., analysis of strengths, weaknesses, opportunities and threats was used to ascertain the present status of duck farming system in Kuttanad region by exploring various external and internal factors of the system. The interplay of the internal and external

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factors is instrumental in shaping the outcome of this production system. By manipulating the performance of internal factors, the farmers or stakeholders can accentuate the benefits from external factors besides minimizing their hazardous effects. Therefore, analyzing the internal and external factors and understanding their interactions are crucial in formulating appropriate strategies.

Materials and Methods

The panchayaths of both Upper and Lower Kuttanad regions in Alappuzha district, where duck rearing was predominant were listed and sixth panchayaths were randomly selected. Sixtyduck farmers were selected purposively from these six panchayaths. SWOT analysis of duck farming system in Kuttanad involved the steps, defining the duck farming system of Kuttanad followed byan identifying of its internal and external driving forces. Duck farming system of the Kuttanad region, its operational components and driving factors were identified and defined through the process of discussions with the farmers of the region and scientists of Kerala Veterinary and Animal Sciences University. A review of available studies both area specific as well as species specific and the pertinent agricultural calendar of operations were also carried out. The farming system thus defined was then simplified in order to capture the important components of the system as well as their interactions. This was achieved by adopting the broad framework suggested by Hiemstra *et al.* (2010) with suitable modifications. The driving factors of the system, viz. strengths, weaknesses, opportunities and threats were identified and were then presented as item statements. The statements were pre-tested by conducting a pilot study in a non-sample area. Suitable modification of the statements in the light of pilot study was made and they were included in the final interview schedule. There were a total of 17 strengths, 12 weaknesses, 8 opportunities and 23 threats identified and separately listed. Responses to each statement were scored on a three point continuum namely agree, disagree and undecided. The strengths, weaknesses, opportunities and threats were then ranked separately based on the mean

score of each item statement such that the statement with highest mean score was ranked first. The frequencies of various responses to each item on the three point continuum were multiplied with their respective weights. These values were then added up to get a cumulative value which was divided by the number of respondents under each category to obtain the mean score for a statement.

Result and Discussion

The results of SWOT analysis is given in Table 1. The traditional significance of duck farming in the region was perceived to be the most important strength of the system. The system's efficiency in providing nutritional security to the farm families, its contribution to women empowerment through income and employment generation and effective utilization of family labour were also reported to be the strengths of significant social implication. Costa and Costa (2011) reported similar findings in the case of Braviagoat rearing, a traditional livelihood option of Portugal, where this vocation was a source of nutritional security and employment to farm families. In Kuttanad, the topographical peculiarities of the area made it suitable for duck foraging. This coupled with their innate foraging nature made them less dependent on materials for housing and equipments leading to their repeated utilization. This was important in lowering the cost of housing and equipments. The prevalent practice of integrating ducks with rice and fish cultivation, utilizing by-products as feed i.e., by-product recycling and using locally available feed resources were found to be the important strengths. The above factors might have been critical in reducing the cost of feeding besides providing year round income to the farm families. Other strengths of importance were that the foraging ducks can be a source of organic manure and an agent of biological pest control.

High susceptibility of ducks to diseases while foraging and the chances of high mortality during the early stages of growth were identified as the important weaknesses of duck farming system. These weaknesses can be overcome by adopting proper and timely disease prevention measures and by adopting

better management practices from the early stages of growth itself. The labour intensive nature of duck farming was indirectly preventing duck farmers from accessing information sources. The inability of duck farmers to access to information sources will have far reaching consequences. Hence efficient extension education programmes for timely information sharing need to be designed and implemented. Reluctance of descendant younger generation to take up this vocation, general inefficiency of farmers' unions in marketing, lack of knowledge on value added products and lack of trust in scientific management practices were other important weaknesses of duck farming system. The above issues have to be addressed with appropriate policy interventions.

A noteworthy opportunity perceived by the farmers was the high demand for duck products in the existing market. This was because of the traditional delicacy status enjoyed by duck products in the area. The self-employment opportunities of duck farming and additional employment and income generation from associated activities of duck farming were also perceived to be important. Therefore duck farming could be recommended as an entrepreneurial activity which will be very much rewarding to the new entrants thereby solving the unemployment of the youth in the region. Utilizing the hatchery and duck farm waste as a source of organic manure either by processing it or as raw was perceived to be another important opportunity to be exploited for economic and environmental benefits. Marketing of value added products, branding of Kuttanad products and the high demand for native and organic products were the important future market prospects of duck farming. Burkurt *et al.* (2011) also reported that the demand of native products was an important opportunity for the meat industry of Cambodia. All the above opportunities ought to be capitalized for economic benefit of the farm communities and those concerned with tourism.

The poor social status of duck farmers that tend to keep away young generation from duck farming was the most important threat perceived by the farmers. It is worth mentioning here that FAO (2010) reported

that the socio-economic change in China had adversely affected the involvement of younger generation in traditional farming practices like duck farming. Shortage of feed during lean season and difficulty in transporting feed due to water logged terrain unique to the area were perceived as the next important threats. Absence of organised supply-chain for inputs resulting in exploitation by middlemen was also found to be important. Yet another threat associated was high labour cost. A possible solution to this could be co-operative farming, involvement of Kudumbasree members and including duck farming in MNREGA etc. The credit related threats perceived were farmers' inability to provide collateral security for availing loans and the high interest rates charged by the money lenders. Appropriate interventions in this regard to assure credit availability either through agricultural banks or through co-operatives is needed. Absence of insurance schemes for the ducks kept for shorter periods that is less than one year was an important threat. MSSRF (2007) has also reported the inadequacy of insurance schemes for duck farming in Kuttanad. The important threats associated with flock health management were the high cost of medicine, the high cost of hiring vaccinators and the untrained vaccinators operating in the area. The absence of organized market was perceived to be important in affecting the profitability of duck farming and this in turn might have acted as the precursor of other market threats viz. the seasonal fluctuations in demand and supply and fluctuations in market price. APCOS model co-operative can be a better solution to tackle the above situation. Threat from predators and from seasonally migrating birds which can be a source of disease to the duck flocks were also reported which requires appropriate management strategies to be implemented in the area.

In the light of above findings, appropriate strategies focusing on maximizing the strengths vis-a-vis exploiting the opportunities needs to be formulated to ensure the sustainability of duck farming system in Kuttanad. So also taking maximum advantage of the opportunities to overcome the weaknesses and threats will also be useful.

Table 1. Perceived strengths, weaknesses, opportunities and threats of duck farming system in Kuttanad with mean scores and item rankings

| No. | Item | Mean score | Rank |
|-------------------|--|------------|------|
| Strengths | | | |
| 1. | Duck rearing is a traditional vocation in Kuttanad | 3.00 | I |
| 2. | By-products of rice and fish farming can be utilized in duck rearing | 2.95 | II |
| 3. | Duck rearing contributes to nutritional security of the family | 2.88 | III |
| 4. | Family labour can be effectively utilized | 2.78 | IV |
| 5. | Duck rearing in Kuttanad can be integrated with other species and crops into units that can ensure income throughout the year | 2.78 | IV |
| 6. | Duck products are utilized as indigenous medicinal remedies | 2.78 | IV |
| 7. | Duck rearing is a venture that provides gainful employment for farm women on their homestead | 2.77 | V |
| 8. | Foraging ducks in post harvested fields can be a source of organic manure | 2.75 | VI |
| 9. | Landscape of Kuttanad with wet and dry lands provides a natural habitat for ducks | 2.73 | VII |
| 10. | Foraging behaviour of ducks makes them less dependent on equipment and shelters that can be repeatedly used reducing investment per batch of birds. | 2.70 | VIII |
| 11. | High returns from duck products when compared to other poultry products | 2.63 | IX |
| 12. | Duck farming in Kuttanad is an biological pest control method | 2.62 | X |
| 13. | The duck farms can be operated profitably in different scales of production starting from the low cost backyard farming to large scale commercial farms | 2.57 | X |
| 14. | The high demand for duck products in the tourism industry of Kuttanad | 2.57 | XI |
| 15. | Foraging behaviour of ducks makes duck farming suitable for landless farmers | 2.50 | XII |
| 16. | Feed cost can be reduced using locally available materials | 2.38 | XIII |
| 17. | Duck farming in Kuttanad does not require a lot of initial investment | 2.00 | XIV |
| Weaknesses | | | |
| 18. | Lack of man power in traditional nomadic duck farming system has led to adoption of more expensive intensive system | 2.88 | I |
| 19. | Transportation of flocks to distant fields is difficult | 2.73 | II |
| 20. | A lot of labour is involved in duck rearing | 2.65 | III |
| 21. | Inefficient farmers unions | 2.43 | IV |
| 22. | Farmers lack knowledge and skill for making value added products | 2.38 | V |
| 23. | Labour intensive nature of duck farming limits farmer's access to information media | 2.33 | VI |
| 24. | Kuttanad duck farmers believe that the recommended scientific practices are less reliable than traditional ones | 2.18 | VII |
| 25. | High mortality of ducklings during the first few days of hatching leads to economic loss | 2.13 | VIII |
| 26. | Low level of knowledge of farmers on scientific duck rearing causes improper disposal of dead birds and other farm wastes resulting in spread of diseases | 2.02 | IX |
| 27. | Foraging ducks are highly prone to diseases | 1.93 | X |
| 28. | Environmental and health issues due to pollution of water bodies by the foraging duck flocks | 1.83 | XI |
| 29. | Since duck farming demands continuous management throughout the day, in farm holds utilizing family labour, it has impacted the formal education opportunities of family members | 1.80 | XII |

| | Opportunities | | |
|-----|--|------|-------|
| 30. | Kuttanad duck products being delicacy items , the assured market that they offer is a potential opportunity to be further exploited | 3.00 | I |
| 31. | Duck rearing in Kuttanad region provides gainful self-employment opportunities | 3.00 | I |
| 32. | The associated processing and marketing activities of duck products offer additional employment vis-à-vis income. | 2.90 | II |
| 33. | Branding of Kuttanad duck products will help to overcome the competition from imported non-native products | 2.88 | III |
| 34. | Since organic farming is gaining importance the waste generated from duck farms and hatcheries can be a good source of organic manure | 2.85 | IV |
| 35. | Demand for the native breeds and organic products can be better exploited | 2.82 | V |
| 36. | Value added products like pickles, frozen meat, ready to cook products etc. can increase the income from duck farming. | 2.75 | VI |
| 37. | Duck rearing and duck integrated systems open up avenues for farm tourism | 2.67 | VII |
| | Threats | | |
| 38. | Poor social status of duck farmers that tends to keep away the younger generation from duck farming occupation | 2.93 | I |
| 39. | Shortage of feed during lean season is a challenge to duck farming | 2.90 | II |
| 40. | Farmers inability to provide collateral security to avail loans | 2.85 | III |
| 41. | The high labour cost is a serious problem | 2.85 | III |
| 42. | Difficulty in transporting feed due to the water logged terrains of the region | 2.80 | IV |
| 43. | High interest rates charged by money lenders is a challenge | 2.77 | V |
| 44. | Absence of farmer unions and co-operatives in most of the areas | 2.75 | VI |
| 45. | Absence of organized market for duck products | 2.70 | VII |
| 46. | Absence of schemes to insure birds kept for shorter periods | 2.65 | VIII |
| 47. | Inadequate supply of quality chicks since there are only a few certified nurseries | 2.63 | IX |
| 48. | Fluctuation in the market price | 2.48 | X |
| 49. | Absence of organized supply chain of inputs resulting in exploitation by middlemen | 2.45 | XI |
| 50. | The problem of disposing off duck farm and hatchery waste during a disease outbreak | 2.35 | XII |
| 51. | The hesitance of hatchery managers to repay the advance money remitted by farmers as and when there is a disease outbreak | 2.27 | XIII |
| 52. | High cost of veterinary medicines | 2.25 | XIV |
| 53. | Low demand of duck products during lent season (when the religious groups the Hindus, Muslims and Christians abhor non-vegetarian food items) | 2.17 | XV |
| 54. | Threat from predators | 2.0 | XVI |
| 55. | Unavailability of vaccines in time vis-a-vis failure to vaccinate birds results in heavy economic lose due to morbidity and mortality | 1.78 | XVII |
| 56. | Un trained farmer turned vaccinators who often vaccinates own and others' birds | 1.78 | XVII |
| 57. | The high cost of in hiring vaccinators | 1.78 | XVII |
| 58. | Seasonally migrating birds could be a source of disease to local duck flocks | 1.77 | XVIII |
| 59. | Absence of official records regarding backyard duck rearing units and migratory flocks is a hindrance to disease prevention measures | 1.70 | XIX |
| 60. | The seasonal water scarcity as well as pollution of water bodies | 1.48 | XX |

References

- Burkart, S., Holmann, F., Peter, M. and Hoffman, V. 2011. SWOT analysis of small holder livestock production in Columbia & Nicaragua from a meat consumer perspective. In. *Conference on international research on food security, natural resource management and rural development*. University of Bonn. Tropentag.
- Costa, H. and Costa, A.M. 2011. SWOT analysis of goat rearing towards its sustainability: Case study with Bravia goat breed. *Options Méditerranéennes*. **100**: 179-184. Available at: <http://om.cih eam.org/article.php/pdf>.
- FAO (Food and Agricultural Organization) 2010. Distribution and characteristics of duck-fish farming systems in Eastern China, by Miao Weimin. FAO Smallholder Poultry Production Paper No. 2. Rome. 28p.
- Hiemstra, S.J., de Haas, Y., Mäki-Tanila, A. and Gemini, G. 2010. Local cattle breeds in Europe- Development of policies and strategies for self-sustaining breeds. Wageningen Academic Publishers.
- MSSRF (M. S. Swami Nathan Research Foundation). 2007. Measures to mitigate agrarian distress in Alappuzha and Kuttanad Wetland Ecosystem- A study report. 227p. ■