CHAPTER-V
FINDINGS, SUMMARY AND CONCLUSION

Findings

The present study on “An Economic Evaluation on Environmental and Socio Economic Impacts of Sago Industries in Salem District of Tamil Nadu” had covered the sago industry impacts on human’s economic activities, environmental, nature of water resource and availability, willingness to pay for quality water on drinking purpose, health status of the respondent and treatment taken details included medical expenses with mode of transport and so on.

The present chapter had been framed to indicate the major findings of the analysis relevant the study and try to suggest and how to reduced pollution impact of the sago industries.

1. The majority of the respondents were below 3 acres type of wetland.
2. The association was found between the respondents and land holding, type of the land, sources of irrigation, irrigation affected by sago industries pollution, suitability for cultivation type of cropping pattern and change the cropping pattern.
3. The majority of the respondent’s source of the irrigation was well and a significant association was found between sources of irrigation of the respondents.
4. The majority of the respondents opined “Yes” regarding irrigation affected by sago industries pollution with a significant association was found.
5. The majority of the respondent stated as “No” regarding suitability for cultivation and significant association was found.
6. The majority of the respondents stated as ‘sugarcanes’ cultivated and a significant association was found with type of cropping pattern of the respondents.

7. The majority of the respondent stated as ‘No’ regarding changing the cropping pattern of respondent and a significant association was found.

8. The majority of the respondents stated as a medium depressing from both Taluks regarding the level of depressing impact on land and the high a significant association was found between respondent level of depressing impact or land.

9. The majority of the respondents are 1 to 2 acre affected by sago pollution and the land was faced salinity problem regarding the type of problem with highly a significant association was found.

10. The majority of the respondents opined as ‘Fully’ cultivation regarding the type of cultivation and the highly a significant association was found.

11. The majority of the respondents stated as ‘Yes’ and regarding of soil condition changed due to sago industrial pollution.

12. The majority of the farmers optioned as ‘Yes’ and a significant association was found regarding the sago industry effluent, the quality and supply of irrigation.

13. The majority of the respondents land converted as a ‘Salt’ by sago effluent from both Taluks.
14. The majority of the respondents stated as before yield means score was found highly from both Taluks pollution. It was inferred from the analysis that the yield was found maximum ‘before pollution’ and ‘after the pollution’. The yield was decreased very much and significant difference in the mean score was found with respect to yield regarding these factors.

15. Nature of livestock from the respondents stated is ‘No’ and a significant association was found with age, educational qualification and family income between livestock and demographic variable of the respondents.

16. The majority of the respondent stated as ‘Yes’ regarding that livestock suffered and a significant association was found between land holders and illness suffered by livestock due to pollution.

17. The majority of the respondents stated as ‘No’ regarding grazing land defined and reason of grazing land because the dump yard of industrial waste both of form among educational qualification and family income influenced and a significant association was found between the opinion about the reason for declining of crossing land and the demographic variable of the respondents.

**Water damage**

18. Overall of the respondent’s opinion about reasons for the difference in odour, color and taste had been analyzed regarding the factors ‘industrial pollution, over usage of chemical, climatic conduction and others’ and the majority agreed.
Health

19. Taluk wise opinion was covered regarding family members who were affected by industrial pollution. The majority of mean score difference was found high in Gangavalli Taluk regarding medical expense, a number of loss of working days and remaining one of the average wage in Attur Taluk a signification association was found.

20. The effect of village distribution regarding the medical expenses, a high means score were found in following the Villages of Thulukkanur and Ulipuram in Attur and Gangavalli Talkus. The overall a significant association was found between village wise opinion regarding medical expenses.

21. The effect of Village maximum means scores difference were found in the Village of Thalaivasal and Jangamasamudram in Attur and Gangavalli Taluks with the overall highly significant difference in the means scores werefound.

22. The effect of Taluks villages, inferred from the analysis means score differences maximum were found Thalaivasal Village and Ulipuram of Attur and Gangavalli Taluks. Hence there was a significant difference in mean score was found in relation to the villages’ wise regarding average wage.

23. Evidence of the analysis majority of respondents family impact by industrial pollution and there was a significant association was found between the opinion an impact of industrial pollution in the family and demographic variable of the respondents.

24. Gender wise based on male affected by industrial pollution, and the age group of above 40 diseases of a headache, medical expenses between Rs.501- 1000 and number of working days of between 3-4 days from both Taluks.
25. Factor wise evidence majority follows male, the age of above 40 and skin disease with highly significant association was found between the opinion about diseases are due to the sago industrial pollution and these demographic variables of the respondents.

26. The majority of the respondents accepted ‘Yes’ regard in going to the hospital and a signification association was found between the opinion about going to the hospital for illness by pollution and disease code.

27. The majority of respondents approached the Governmental hospital, majority English medicine taken and hospital distance 5 km from both Taluks with a signification association was found the type of hospital, type of medicine, a distance of the hospital and demographic variable.

28. The majority of respondents stated as ‘2 days’ were treatment taken in the hospital with highly a significant association are found.

Awareness

29. The majority of the respondents stated as ‘Yes’ regard that ‘inform to authority’ regarding interested and action was taken protecting the environment from sago industrial pollution and signification association was found between both factors.

30. The majority of the respondent’s opinion ‘Government takes action’. It was highly a signification association was found between the opinion about willing to organizes or join any maze movement from sago industry pollution and the demographic variable of the respondents.

31. Analysis of regarding willingness to pay the majority of respondents stated as ‘Not WTP’ in order to find there was a significant association was found between the opinion about willing to pay for the better management of sago industry pollution and family income of the respondents.
**Factor wise**

32. An attempt had been made to study the factor wise opinion an economic and environmental damages noted that agricultural damage means score difference were maximum respect water damage, health damage and livestock mean score found.

33. An incidental from the analysis opinion about the economic and environmental damage from this majority of the means score difference was found in Attur Taluk factor of water and health damages remain two of agricultural and livestock damages maximum mean score difference was found in Gangavalli Taluk.

34. Gender wise opinion regarding economic and environmental damage and the factor wise respectively agricultural, livestock, water and health damages with majority female respondents means score differences was found and male respondents mean score differences is found in the factor of health damages only. Further, a significant association was found.

35. The majority of the respondents opinion stated as ‘above 60’ most mean score differences was found the factor of agricultural and livestock damage. Similarly, up to 20 and 21-40 age groups maximum means score is found in the remaining factor of water and health damages. It is from this health damage that was highly significant.

36. Effect of education influenced by the respondent’s opinion regarding economic and environmental damages indicated majority factor of agricultural and health damages maximum means score difference was found up school level. Similarly, livestock and water damage maximum mean
score differences were found respect graduate and postgraduate. Hence, highly significant association was found in the factor of livestock and health damage.

37. The majority of the means score difference was found in ‘above 15 years’ with regarding years residing wise opinion about the economic and environmental damages. The especially factor of agricultural, livestock and health damages reaming one of the factors of water damage covered up to 10 years with significance.

38. The majority of the means score difference covered ‘above 30000’ in the factor of water damage respectively health, agricultural and livestock damages contributed with a significant association was found.

Attur Taluk

39. Study find out the Taluks and factor wise opinion regarding the economic and environmental damages most mean score difference was found for orderly water, health, agricultural and livestock damages from experimental the villages was found with significance.

Taluks wise

40. Taluks wise and level of economic and environmental damages covered maximum mean score differences and high damage was found in Attur Taluk. Similarly, medium and low damage covered in Gangavalli Taluk. Further, there was no significant association was found between the taluks wise respondents economic and environmental damages.
41. Gender wise comparative study of the economic and environmental damage seen maximum which was found among female respondents all though when level wise was considered ‘high’ among male respondents.

42. Age wise opinion regarding overall economic and environmental damage indicated ‘21-40 age group’ maximum mean score was found with the highly significant association. Further, age wise opinion regarding ‘above 60’ age group was maximum covered in ‘medium’.

43. Evidence for the analysis faced by the education states indicted maximum mean score was found in graduate with a significant association was found between the educational qualification wise opinion on overall economic and environmental damage. Father level wise compared for low, medium and high. It was from the school level respondents who contributed high level with a significant association between education and level of economic and environmental damage.

44. Years of residing and level wise compared ‘Above 15 years’ were mean score difference of maximum was found. Hence, there is highly significant association was found between the year of residing, level and economic and environmental damages.

45. The effect of the family income maximum means score difference was found in ‘above Rs.30000’. Further level wise ‘high’ was found up to Rs.10000 with high significant was found between the income and the level economic and environmental damages.
Suggestions

- People to arise from unhealthy agricultural practices have been required, involved in agriculture and allied activities in neighbour of sago industries.
- To involve a higher priority agricultural decision making considering human health and so on.
- The major sago industries around between Vasista and Swetha Nadhi were generating effluent directly into the nearby drains which ultimately reach the river or supply channels. There is no treatment plant for sago industries in the sub basin. So special attention is necessary.
- The industry pollution with stipulations of effluent waste resources, energy waste minimize and resource recovery beginning sago industry.
- It had become essential for sago units to treat the effluent water for safe discharge. Hence, there is abundant scope for an efficient and complete treatment system that will ensure a safe effluent standard limit with potential energy recovery the form of biogas and recycling of effluent water for sustainable water resource management.
- A large quantity of sago hazardous waste has been serious environmental health implications. So need specific knowledge on human health effects of specific agriculture activities and growing interactive and impact of multiple environmental changes.
- Always Interventions are required usually from the government.
- Technical support should be extended to the industries with subsidy by government.
Pollution control board should be monitored when sustain growth of specific session because it should be avoid seasonal migration, reduction of livestock, poor drinking water supply, and poor sanitation.

Basic knowledge on environmental impact has needed. It should be developed in accountancy with that appropriate technologies.

Awareness programme are essential to create awareness among the public on environmental aspects and the action has to be taken by them to remove or reduce the impacts due to the environmental problems.

Conclusion

The study reveals that irrespective of nature, the sago industrial effluents could be well utilized for agricultural crops on proper dilution, so as reduce the lethality of the pollutants. Undiluted sago industrial wastewaters create serious hazards to plants and eventually to human health. In water scarce areas, reuse of wastewaters for irrigation of various crops was very effective method to meet the demand of proper water and food supply. It may be further conclude that the higher concentration of released industrial effluent causes many types of inhibitory effects on the germination speed, peak value, germination value, plant growth, crop yield accumulation of heavy metals plants and poor human health. The proper treatment and dilution of the effluent were therefore needed before the disposal and usage of wastewater for irrigation purposes.

Agricultural activity most essential for human survival and also provides gainful employment for the majority. Although the practice of agriculture have been an essential for human health, careless and inappropriate agriculture practice can
degrade and contaminate natural resources, all of which had implications for human health. Sago industry of agro based industry now become the backbone of region’s rural economy. The rapid rate of unplanned sago industries generated huge quantities of wastewater released into environmental without proper treatment most of the rural areas. It’s contained very high concentration of dissolved and suspended solids, which has affects the health of soil, human beings, animal and pose serious threat to environment.

The present study on the evaluation of sample respondents from the study area had been noted who were directly affected by untreated sago industrial pollution. The attempt had also been made to assess the pollution potential of sago industry as well as the possible effects on the environment. Further, to need for cooperation among the sago industries should be shared experience in treatment method and sustainable development of human health and environment.

The major problem of the sago industry that requires immediate attention is to avoid industrial pollution mainly due to the cluster of sago industries and around the study area. Based on the results of the research conclude that an almost perfect wastewater treatment system of the sago industry in the selected study area. It combines pollution prevention with energy recovery and resource protection. With the proposed integrated treatment system, which incorporates waste minimization and reuse of valuable compounds from the ‘waste’ a sustainable development of the sago industry can be achieved. Waste and wastewater really comprise a resource instead of a headache. The treated wastewater can be reused in aquaculture or for irrigation in the study area. Peel waste can be used for composting, and the compost
produced can be applied for the cassava cultivation or other industrial crops. Fibrous residues can be used for animal feed production. In this way, a zero waste industrial ecosystem can be created.

Scope for Further Research

1. A study can be conducted specifically the sago industrial workers in the study area for analysing the effects of pollution impacts on their life.

2. A comparative study can be evaluated on small scale and large scale of sago industries