CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

The chapter covers the concluding remarks of whole thesis. The chapter is divided into three major sections: Summary of the study, Conclusion of the study, and Recommendation from the study.

5.1 Summary of the study

The study is entitled "A Study of the Effect of Organic Farming on the Livelihood of Small Holder in Nepal" with an overall objective to explore the contribution of organic agriculture in the livelihood of smallholders (farmers) of selected districts (Kathmandu, Lalipur, Bhaktpur & Dhading) of Nepal. In Nepal, agriculture is still the main source of income for the households of ordinary populations as well as National growth domestic product (GDP). Organic agriculture is scientifically modified techniques of conventional agriculture that has potentials to contribute to human health, social capital and climatically adaptive eco-systems.

The organic farming system is guided by some specific principles: i) principles of Health, ii) principles of ecology, iii) principle of care, and iv) principles of fairness. Besides that it has certain rules and regulation to certify the quality of organic agriculture which made scientifically different from the conventional farming. Specifically, the study was focused to know the effect of organic agriculture in socio-economic status of farmers, challenges and opportunities of organic agriculture from the perspective of concerned stakeholders and sustainable modality of organic agriculture.

Methodologically, this study was guided by the pragmatic philosophy considering the importance of mixing the qualitative and quantitative data. The study
was problem centered and accepted the multiple realities on the ground of different socio-cultural perspective. The study was based on the 'Diffusion of Innovation Theory' which talks about the process of diffusion of new innovation, process of decision of adopters and the cumulative numbers of adopters in the phase of adoption process through the S-curve in 'Diffusion Model'. Specifically, the idea of study was linked with the process of decision of adopters. The study unit of the study was the organic farmer who already decided to accept the new innovation of organic farming. Thus, study had evaluated the socio-economic changes of farmers after adopting the new innovation of organic agriculture. The study had developed the broader conceptual framework to explain the inter-relationship between the independent and dependent variables. The study had gone through more than five hundred research articles, books, reports and government policies to collect the information of organic agriculture, its origin, its theoretical background, contribution, challenges, opportunity, sustainable model and study gap. The study found that there was need of research to know the socio-economic contribution of organic agriculture in the grass-root level where farmers were doing the organic agriculture with hope that they could earn good amount from it. The objective of this study was set to meet that gap.

The study was based on the deductive approach because it had set the research hypothesis and deducted the idea of existing theory. The study had applied the descriptive as well as exploratory research design. The study had described the status of organic agriculture and also explored the contribution in socio-economic change of farmers after involved in the organic agriculture. The study had selected 586 farmers covering the four districts (Kathmandu, Lalitpur, Bhaktpur and Dhading) of Nepal. The study had considered the equal participation of male and
female and also considered the participation of caste and ethnicity. The study had applied the structured questionnaires survey, semi-structured interview checklist and observation checklist to collect the primary data. The data were presented in frequency table, mean value, Chi-square test, ANOVA, multiple comparison and Regression analysis. The analysis tested the research hypothesis.

The study has summarized the major findings on the basis of specific objectives. The key findings of the study are presented as below:

5.1.1 Key findings of the study

Demographic findings

1. There was 66.9% male followed by 33.1% female participated in the study.

2. The district wise data showed that in total 8.5% organic farmers from Kathmandu, 28.3% from Lalitpur, 19.1% from Bhaktpur and 44% from the Dhading district participate in the study.

3. Minimum 15 to maximum 85 years old people were involved in the organic agriculture.

4. There was 25.9% farmers were illiterate followed by 30.5% had primary level education, 9.7% had lower secondary level, 14.5% had secondary level, 10.9% had intermediate level, 6.3% had Bachelor level and 2% had master and above level education.

5. In total, 27.3% respondents said that they were doing the Coffee, 1% was doing Tea, 80.3% was doing Vegetable, 17.1% was doing Fruits, 18.2% was doing Spices, 2.6% was doing meat items (meat/fish/poultry), 28.7% were doing the livestock, 16.1% were doing milk and dairy products and 7.1% were doing others.
Findings related to Socio-economic changes of farmers

6. Minimum 1 ropani to maximum 55 ropani land was owned by the farmers. In average, 1 household = 6.2656 ropani land was cultivated for the organic agriculture.

7. In total 78% farmers said that they were using own land for organic agriculture followed by 14.3% had taken land in rent, 6.8% said that they used own land and some land was taken in rent also and 5% had used others' land.

8. The range of annual income was NPR 2000/- to 30,00,000/- from the organic agriculture. The mean annual income was NPR 1,27,813.11.

9. The findings of ANOVA had rejected the null hypothesis no. 1 of this study that there is no significant difference between the farmers of four districts regarding their income of organic farming because the P value was less than .05.

10. There was no significant difference between Lalitpur and Dhading as well as Bhaktpur and Kathmandu. But rest district had significant difference in relation to their annual income of organic agriculture.

11. From the analysis of linear regression, it is found that the R² value is .161 which means that demographic variables (address, age, sex, education, year of experience, total organic land of individual farmer) only explain 16.10% of the variation in the Annual income of organic farming (dependent variable). The adjusted R² value is .150 which means that the different demographic variables contributed only 15% in annual income of organic farming.
remaining 85% were contributed by other factors which are not included in this study.

12. High income was the main motivational factor for the farmers because 56% said that they involved in organic agriculture because income could be high from organic agriculture.

13. In total 8.9% had said that they had very good knowledge followed by 30.7% had said that they had well and majority (60.4%) said that they had normal or basic level knowledge of organic agriculture.

14. In total 85% reported that they had started the organic agriculture with their own investment whereas 3.8% had started with the support of Nepal Government, 6% had started with the support of Non-governmental organization and 5.3% had started with the support of others (loan taken from the neighbors or bank or cooperatives).

15. In total 25.8% reported that they were highly satisfied followed by 71% farmers were satisfied whereas 3.2% farmers reported they were dissatisfied from income of organic farming.

16. Majority (74%) of farmers had used income of organic agriculture for the education of their children,

17. In total 78.6% said that vegetable farming was the more profitable organic agriculture than the other,

18. In total, more than 90% farmers believed in contribution of organic farming in changes of economic status.

19. In total 33.2% farmers strongly agreed followed by 52.9% that organic agriculture had created the employment opportunity for the community people.
20. In total 75.9% farmers strongly agreed that organic agriculture had supported to make the surrounding environment clean followed by 20% farmers agreed the same.

21. In total 42% farmers strongly agreed followed by 41.1% agreed that organic agriculture can support to reduce the size of abroad migration.

22. In total, 97% farmers had experienced of improving the quality of soil after doing the organic agriculture.

23. In total 52.1% strongly agreed followed 40.2% agreed that there is more benefit in organic agriculture than the traditional agriculture.

24. In total 54.9% farmers strongly agreed followed by 36.3% agreed that exhibition of organic agriculture could support in dissemination of organic products.

Findings related to challenges and opportunities of organic farming

25. In total 42.7% had said that the 'high cost of production', 40.1% farmers said that 'lack of market', 46.9% said the 'low production', 11.2% said the 'less selling', 23.2% said the 'lack of labour for farming', 47.9% said the 'transportation and storage problem' and 10% said that organic certification and networking with international market were the major problem of organic agriculture.

26. Only 4.9% said that it was easy to get certification whereas 44.5% said that it was difficult followed by 50.5% farmers had no knowledge of process of certification.
27. In total 86.5% said that they used the house made medicine whereas 28.6%
said that they used the medicine purchased from market also and 4% said that
the used the other like spray the cow-dough and 'water mixed with ashes'

28. In total 11.6% farmers said that there was very easy to access the international
market of organic products followed by 49.2% said that it was easy whereas
39.1% said that there was no easy access on international market.

29. In total 8.4% reported that many time they had faced the loss from the
organic products whereas 62.8% said they lost sometimes and 28.8% said that
they never faced any loss from the organic agriculture.

30. In total only 3.9% said that they had got the compensation of destruction or
loss of organic products whereas 96.1% said that they never received such
compensation.

31. In total 58.2% farmers said that there was a very high possibility to extend the
organic agriculture whereas 38.4% said that there was normal chances to
extend organic agriculture. Very few (only 3.4%) farmers said that there was
very low possibilities to extend the organic agriculture in Nepal.

32. In total 49.9% had received the training of organic agriculture.

33. In total only 10.1% had got chance of exposure visit. Rest around 90% had no
opportunity of exposure visit.

34. In total 96.6% said that they had suggested to new interested people to
involve in organic agriculture whereas very few (2.7%) suggested not
involving in organic agriculture.

Findings related to sustainable model of organic agriculture
35. In total only 17.9% of farmers said that they had received support from the Nepal Government to manage the organic agriculture.

36. In total 85.8% said that there was most necessary to continue the organic agriculture followed by 13.7% said that there was normal need of necessity whereas 0.5% said that there was no need of continuation of organic agriculture.

37. There was 78.8% farmers said that trained human resources who can have deep knowledge of organic agriculture is one prime requirement, whereas 71.8% said that involvement of youth by discouraging of going abroad for job, 71% said that improvement of market to sell the organic products, 72% said that Government should manage the easy loan for farmers, 77.2% said that awareness of organic agriculture was required for all, 56.3% said that easiness of certification process, 46.8% said that easy information of organic agriculture, 73.6% said that irrigation and seed facilities, 26.6% said that making involvement of commercial business person can jointly contribute in sustainability of organic agriculture.

38. In total 85.8% said that there was need of one agriculture cooperative in each VDC, 70.7% farmers said that there was need to promote the local market considering its infrastructure, utilities, transportation and other facilities, 70.3% said that transportation facilities for organic products was must, 58.1% said the need of auction market, 55.7% farmers said about the fix rate of goods, availability of fresh goods so that community people could be encouraged to do the organic agriculture.

39. In total 80.2% strongly agreed followed by 14% agreed that there was need of organic agriculture board.
40. In total 72.4% strongly agreed followed by 24.7% agreed that easy loan facilities can support to sustain the organic agriculture in long run.

41. In total 75.4% farmers strongly agreed followed by 19.8% agreed that there was need of cold store for organic product.

42. In total 72.3% farmers strongly agreed followed by 20.4% agreed that auction market can support to sustain the organic agriculture.

43. The data showed that more than 50% farmers were doing the organic farming without any formal training of organic agriculture.

44. In total 77.1% farmers strongly agreed followed by 18.8% agreed that there was need of such technology which could give the information of daily price rate of organic goods.

45. In total, more than 90% farmers were asking to provide the trademark for organic products so that they can convince their consumers.

46. In total 81.2% farmers strongly agreed followed by 14.7% agreed that there was need of processing and packing machines. In total, more than 95% farmers felt the need of machine for of organic goods.

47. The study had developed the ‘Sustainable model of Organic Agriculture’ in Nepalese context and tested its reliability through the ‘Validity Seminar’.

5.2 Conclusion of the study

This study examined the contribution of organic agriculture to the livelihood of smallholders (farmers) in Nepal. It identified challenges facing organic agriculture in Nepal, and proposed future opportunities for its development in the form of a sustainable model
The study had proved that there was positive contribution of organic agriculture to uplift the socio-economic status of organic farmers because the data showed that around 97% farmers reported that they were satisfied from the organic agriculture. Organic agriculture could protect the human life from the negative impact of climate change and disease prevalence. It could transfer the knowledge to next generation also regarding the importance of clean environment in human life. Organic production could be more profitable so that economic status could be increased and social relation could be improved. It has also observed that healthy diet could develop the sound mind of people which could contribute in peace building also. Regarding the opinion of farmers in relation to the contribution of organic farming to reduce the size of abroad migration, the finding showed that in total 42% farmers strongly agreed followed by 41.1% agreed that organic agriculture can support to reduce the size of abroad migration. It was strongly indicated the sociological contribution of organic agriculture in promotion of local resources to generate the local employment opportunity. If youth generation would be in society then there was high chances to promote the development activities even in hard to reach rural societies also.

With the connection of positive contribution of organic agriculture, farmers had reported some problem of organic agriculture. Farmers reported the problem of certification, use of pesticide, access on international market, loss from the organic product because of delay on selling or lack of transportation facilities and sometimes due to political strike. Majority of farmers highlighted the certification problem as the major which had affected to convince the consumers in the quality of organic products. Farmers and experts had suggested establishing the 'Participatory Guarantee System (PGS)' instead of third party certification. The study found that 'Participatory Guarantee Systems (PGS)' may be the one appropriate alternative way for third-party
certification of organic farming in Nepal. As the process of PGS, Nepal Government can formulate PGS council under ministry of Agriculture or as a separate entity as the formal authority in central, regional and district level. The council can be responsible to formulate and implement the standards norms, principles and values of organic farming in a local level. The council can develop the collective PGS trademark for Nepali organic products so that consumers clearly understand where and how their food has been grown. It is observed that Nepal government has some plans and programs to promote OA and the certification system but this information is virtually unknown to the smallholders' farmers. The third party organic certification system (ICS) seems better for export oriented high value crops and especially for big farmlands but the complex paper works, being accountable to the distant certifying body, non-understandable terminologies and a different approach of farming makes smallholders go away from the process. In this context the PGS system may be the best alternative at the present situation of Nepal for the smallholders. Direct participation of all the stakeholders and based on the ground reality adopting the core values and principles of organic cultivation and the most economic certification system makes PGS the most suitable way of certifying produce as organic.

In the Nepalese context, PGS is good for organic farmers in the following reasons:

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<th>PGS (Participatory Guarantee System)</th>
<th>ICS (3rd Party Certification System)</th>
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<td>1. Low certification cost, locally based system, small farmers and local market focused.</td>
<td>1. High certification cost, international agency based system, big investors and high value cash crops focused.</td>
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<tr>
<td>2. Basic paper works</td>
<td>2. Complex paper works</td>
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<tr>
<td>3. New concept, started in 2004</td>
<td>3. Old system, almost 50 years</td>
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Particularly appropriate for small-scale farming, PGS has proven to be a practical alternative to third-party certification for smallholders and an effective way to develop local markets for organically produced goods.

The study had also identified some challenges of organic agriculture, like problem of certification, networking with international market, competition with the non-organic product, price management, auction market, transportation and storing …etc. It had created the opportunity to get the training, exposure visit, social networking, social leadership, positive changes in socio-economic status of farmers. Considering the challenges and opportunity of organic agriculture, the farmers had given some suggestion also. There was need of 'Organic Agriculture Board' who could monitor the activities of organic agriculture and could deal with Government for the betterment of organic agriculture. Farmers had also suggested establishing the 'Training and Research Centre' and 'Auction Market'. It could be observed that organic products are only available in niche market, but it should be reached in the general market also so that general people can purchase it. The price of organic cost should be reasonable in comparison to the non-organic product then it can be available in general market.

There was need to expand the areas and quality of organic agriculture so smallholder (farmers) and experts suggested that there was need to encourage the high commercial/business persons to participate in the field of organic agriculture to promote it within and out of Nation.
The farmers were asked about the possibility of extension of organic agriculture when more than 96% replied that there was a good possibility to extend the organic agriculture in Nepal. The response of majority of farmers clearly suggested the need of continuation of organic agriculture in future also. There was need to transfer the knowledge of organic agriculture to the next generation because Nepal is known as the agriculture oriented country. Organic agriculture was found important from the perspective of health and environment. From the study, it was found that more than 90% respondents were satisfied from the income of organic products and they were using its income for the promotion of child education, using the health facilities, developing the infrastructure facilities in house. People perceived the need of sustainability of organic agriculture in Nepal because it discourages the modern agriculture having the high use of pesticides and chemical fertilizer. Considering the importance of organic agriculture, the study also promoted the ‘sustainable model of organic agriculture’ in Nepalese context. The reliability of this model was tested and approved from the ‘Validity Seminar’. There was high chance to sustain the organic agriculture in Nepal because the conventional farming practices were more similar to the organic agriculture as well as there is family and small-scale farming practices in Nepal. Family decides the needs and promotion of agriculture on the basis of their cultural values, social norms and practices. Family and small-scale farming are inextricably linked to world food security. Family farming preserves traditional food products, while contributing to a balanced diet and safeguarding the world’s agro-biodiversity and the sustainable use of natural resources. But there were some difficulties of family farming so this study recommended developing the Farmers’ Cooperative which can contribute to address the various issues raised among the ‘family farming’ because ‘family farming is the basic building blocks of sustainable
organic agriculture’. The sustainable model also promoted to manage the integrated livestock practices and farmers should be encouraged by providing the motivational incentives by Government and non-governmental organization. The model clearly explained the roles and responsibilities of different actors to sustain the organic agriculture. Among them, government should take the serious leading role to promote and mobilize the resources for the sustainability of organic agriculture. If organic agriculture can be sustained then finally it will increase the Ecological value, Economic value and Social values. As the limitation of this study, the study has developed the sustainable model on the basis of primary and secondary data so the future research can test the model to measure its effectiveness.

5.2.1 Hypothesis testing

The study had developed major four research hypotheses which were tested from the statistical analysis of data. The result showed that the study had rejected the hypothesis no. 1, 'There is no significant difference between the farmers of four district regarding their income of organic farming,' from the P value of analysis of variance (ANOVA). The Result of power test of hypothesis testing found that there is a 100% chance of correctly rejecting the H0 with 511 respondents of study. The power of test was calculated by using the formula of 1-ß. Analysis was calculated by using the statistical software (SPSS).

Similarly, the study accepted the hypothesis no. 2 that 'Certification of organic farming is the main challenges of farmers'. It was accepted that there was third party certification system in Nepal. More than 50% farmers were found unknown about the process and requirement of organic certification. The study had also accepted the hypothesis no. 3 that 'increasing demand of organic production is
the opportunity of organic farming which motivates the farmers to involve in organic farming'. The data showed that around 96% farmers said that there was a high possibility to extend the organic agriculture and around 99% farmers said that there was necessity of continuation of organic agriculture. Finally, the study had developed the sustainable model of organic agriculture on the basis of primary data. The study had accepted the hypothesis no. 4 which had assumed some variables as an effective indicator of sustainable model of organic agriculture. The hypothesis no. 4 was 'Easy certification, loan facility, improvement of market, trained human resources may be the main indicators to sustain the organic farming for long run'. The proposed model was finally accepted from the ‘Validity Seminar’ conducted to ensure the reliability of this model. All the participants of seminar accepted the model and recommended for further implementation to concerned stakeholders.

5.2.2 Theory testing

The study had linked with the limited variables of ‘diffusion of innovation theory’. The theory talks about the process of diffusion of innovation and also discuss about the cumulative numbers of adopters in the phase of adoption process through the S-curve in 'Diffusion Model'. But the study had not linked with the process of diffusion of innovation and types and numbers of adopters of new innovation of organic agriculture. It was only linked with the process of decision and status of farmers after decision to accept the new innovation. It was good to know that in total around 45% farmers shared that there was difficult to get certification of organic agriculture and around 50% farmers were still unknown about the process and requirement of certification, besides that they shared their problem of transportation and storing, dissemination of benefit of organic
agriculture even though more than 95% farmers wanted to continue their organic business because they understood the socio-economic benefit, health benefit and environment benefit. As the ideas of theory, they were also found influenced by the social variables, personal characteristics and perceived characteristics of innovation of organic agriculture. They were influenced by the relative benefit of organic agriculture so the organic farmers would be in continue adoption phase in future also. From the analysis of quantitative and qualitative data, the process of decision of accepting and rejecting the new innovation was found in similar in characteristics of organic farmers of study areas of Nepal also.

5.3 Recommendation from the study

1  The study had developed the sustainable model of organic agriculture so it is strongly recommend to concerned organization to implement this model,

2  The future researchers are recommended to do the comparative study of organic and non-organic products to identify the effect in health of persons,

3  Future researchers are also recommended to conduct the study on 'process of diffusion of new innovation' and 'process of cumulative numbers of adopters of organic agriculture' in Nepal by adopting the concept of 'Diffusion of Innovation Theory' of Everett M. Rogers

4  It is also recommended for establishing 'Organic Agriculture Board' to government of Nepal

5  Nepal Government is recommended to establish the 'Training and Research Centre' of organic agriculture because the study found that more than 50% farmers were doing the organic agriculture without any formal training which could create the problem to ensure the quality of organic products.
There was need to establish the auction market of organic products also in Nepal so further research can study on the potentiality of auction market and its limitation,

Nepal Government should revise the policy of organic agriculture by addressing the above given recommendation.

High commercial non-organic agriculture farmers are requested to apply the 'Integrated pest Management' (IPM) system to protect the health and environment.

Nepal government should care to enhance the capacity of 'Participatory Guarantee System (PGS) to make the east process of certification of organic agriculture within the Nepal.

Variables like organic farm land, organic farmers etc. are still to cover in national census and national agriculture census