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Highland Vegetable Production and Marketing Systems

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Preface

The present study was undertaken by us on the request of ACDI with a view to filling some of the gaps hitherto existed in our understanding of the process of production and marketing of highland vegetables. Fieldwork relating to the study was conducted during November-December, 1991. The researchers were assisted by Mr. M.D.A.L. Ranasinghe of the Department of Economics, University of Colombo, Mr. Saman Kumara, Ms. Chrishanthi Fernando and Ms. Lasanthie Wewala. Household interviews were conducted by a team of eight recently passed out social science graduates.

It would not have been possible to complete this study if not the collective effort of the members of the research team mentioned above. We also to note with gratitude the support and cooperation which the staff of the ACDI extended to us throughout the present study, in particular Mr. S.A.C.M. Zuhyle and Mr. Robert Flick. Last but not least, we also wish to express our sincere thanks to the numerous respondents, both in the field areas as well as in Colombo, without whose cooperation the researchers could not have gathered the data upon which the analysis embodied in the present report is based.

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April 15, 1992

Colombo.

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Executive Summary

1. The socio- economic characteristics of the farm families engaged in the vegetable production in the four survey areas such as sex, age, educational level, activity status and main occupation etc. display a uniform pattern. The labour force is highly literate but un and underemplyment rates are quite high. Also, some of the vegetable cultivators are part-time farmers. Given the smallness of their farm plots, many of them cannot subsist entirely on farm incomes.

2. Production of vegetables in the upcountry areas is a highly commercialized economic activity, and has long been linked to external market such as Colombo, Galle, Matara etc.

3. The four survey areas selected for this study fall within two administrative districts, namely Nuwara Eliya and Badulla. The areas which fall within the Badulla district, namely Welimada, Bandarawela and Haputale have two prominent cultivation seasons; Yala and Maha. In these areas during the Maha season vegetables are cultivated only in highland plots because lowlands are devoted to rice cultivation. However, during the Yala season both highlands as well as lowlands are used for vegetable cultivation. In Nuwara Eliya the cultivation of vegetables takes place throughout the year.

4. Another important difference between Nuwara Eliya and the other three areas is that the size of operational landholdings in the former is much smaller. The villagers in the other areas in general have access to larger plots.

5. 13% of the farmers in the four survey areas cultivate either rented in or leased in land. The incidence in tenancy and leases is higher in the Bandarawela and Haputale areas. Joint ownership is another category of land tenure which affects production. The incidence of

joint ownership is highest in Bandarawela, followed by Welimada and Haputale. Provision of the inputs for vegetable cultivation by the landlord is a rare occurence in the tenancy system prevailed in survey areas.

6. The main source of water in the Nuwara Eliya area is waterpumps. In Welimada and Haputale most farmers cultivate vegetables under rainfed conditions, whereas in Bandarawela the majority cultivate under irrigation facilities.

7 The major crops grown in the Nuwara Eliya area include potatoes, arrots, beetroots, leeks and cabbages. the main vegetable crops grown in Welimada are potatoes, beans, tomatoes and cabbages. The most popular vegetables in Bandarawela are beans, tomatoes, brinjals and capsicums. In the Haputale area both upcountry and other types of vegetables are grown.

8. Resistance to the particular climate, cultivation is easy and costs less, and the conditions in the market are the three main reasons given by the farmers for the choice of their crops.

9. Joint ownership, landlessness and high land rents are the major problems experienced by the farmers with respect to land.

10. Since most farmers own small plots of land, they strive to achieve maximum productivity of land. Cultivation of high value crops, optional use of fertilizer, extensive application of agro-chemicals and use of imported seed etc. are all aimed at the maximizationof yields per unit of land.

11. Many farmers in the four survey areas use their own seeds and planting materials. When these are purchased the main source of supply is the private trader. The share of state sector and co-operatives in the supply of seeds and planting materials is negligible.

12. Farmers have to incurr heavy costs in purchasing seeds and planting materials. The cost of seed is heaviest for cultivation of potatoes. Seeds are mostly purchased with spot cash, and the majority of farmers manage to purchase seeds in time. But they experience problems such as high prices,low quality, poor germinating and /or sprouting quality, and immitation varieties in the market.

13. In highland vegetable cultivation some type of fertilizer is used by each and every farmer interviewed. Fertilizer is applied also to each and every crop. However, due to the high cost of chemical fertilizers, various kinds of substitutes are used such as chicken manure and leaves of some trees. Among the chemical fertilizers the most popular brand names are the Fertilizer Corporation (CFC), "Jana pohora" and Baurs.

14. Both natural and chemical fertilizers are purchased by the growers. Private sector sources dominate in supplying both these types of fertilizers, because the farmers trust the dealers and the short distances involved

15. Although fertilizer use is widespread among the farmers, quantities used are very low. Less than 40 kgs. per block of land of about 40 perches in extent appears to be the norm. But more commercialized and large scale farmers use heavy doses of fertilizer costing Rs. 3,000/= or more.

16. The most important problems faced by the sample farmers in relation to the application of fertilizer are high prices, immitation types and low quality.

17. The sample farmers do not use weedicides. But they use heavy doses of fungicides, insecticides and vitamins.

18. Among the fungicides the popular brands are Antracol, Poliram and Wandersop. Tamaron, Losband and Hercross are the most popular insecticides. Plantput and Maxicrop are the popular brands of vitamins.

19. The private sector sources dominate the supply of agro-chemicals. And most of the prchases are on ready cash. The major problems faced by th farmers in respect of agro-chemicals are high prices, low quality and non-availability when needed.

20. Most farmers in all survey areas rely heavily on family labour. Hired labour is mostly used for certain tasks such as land preparation and planting. Only a small percentage depend almost exclusively on hired labour.

21. There are regional differences in wage rates which is indicative of imperfections in the local labour markets. The two very important

problems in hiring in labour are the difficulty in finding labourers when needed and high wages.

22. Most farmers are of the view that they are well experienced in the crops they grow and hence they do not need agricultural extension advice from outside. However, those farmers who need such advice face numerous difficulties due to a lack of field extension workers.

23. Most farmers do not borrow either from institutional or non-institutional sources. However, among those who borrowed money for cultivation purposes, majority have borrowed from commercial banks. Thus, the majority of vegetable cultivators in the sample did not have other obligations like surrendering their produce to the lender.

24. The absolute size of the loans transacted for vegetable cultivation appears to be high at times exceeding Rs. 10,000. However, farmers in the sample do not seem to pay exhorbitant rates of interest. This is because majority of the borrowers obtain loans from commercial banks. Those who borrow money from dealers in Colombo do not pay interest in cash as loans are debited to their accounts.

25. The problems faced in obtaining credit includes difficulty in finding guarantors, insufficiency of the loan to meet cultivation expenses and being compelled to sell their produce to the lender. However, the percentage of farmers who have reported the last problem is negligible.

26. The highly commercialised nature of the production of vegetables has persuaded the producer to optimise production and this has resulted in the widespread utilisation of modern agricultural inputs such as imported seeds, chemical fertilizers and agro chemicals. Though wage labour is also utilised in many areas, particularly in the Nuwara-Eliya area, owners of small parcels of agricultural land tend to rely mostly on family labour. This is particularly so in the Bandarawela, Welimada and Haputale areas.

27. Upcountry vegetble production, due to its largely specialized nature, has long been linked to external markets, notably Colombo. These trends have been reinforced in the recent past by the growing demand for upcountry vegetables, particularly in the urban areas.

28. The collection, tranportation and wholesale and retail sale of vegetables have become activities which involve a large mass of people ranging from village-level brokers through transport agents to wholesale merchants in Colombo and other regional centres.

29. Colombo, being the main clearing house for highland vegetables requires a constant and uninterrupted supply of vegetables and this has facilitated the establishment of direct contractual links between Colombo dealers and rural vegetable producers. While such links constitute an important marketing channel, there are also several other channels which are equaly , or in some areas, even more significant.

30. Farmers who send their produce to Colombo appreciate the benefits they derive from the patron-client relationship they have with the Colombo traders, but, they are also mindful of the fact that they are being constantly exploited by the patrons. They complain that this is done in many different ways.

31. Since vegetables are a perishable commodity and cannot be kept in the ground for long periods, producers can do little to regulate the supply in the short run. What they often attempt to do is to choose between different marketing channels available to them with a view to minimizing their losses.

32. In spite of the lower prices the vegetable producers often secure from the local collectors, there are also obvious advantages of selling vegetables to the latter.

33. The fact that there are several marketing channels in operation in the vegetable producing areas is significant in several respects. Firstly, it means that there is a considerable degree of competetion among vegetable dealers. Though there is little evidence of price wars, the fact that all of them have to secure a portion of the vegetables available in the market no doubt gives the farmers some flexibility. Apart from those who are indebted to dealers in Colombo or elsewhere, others can choose between Colombo and local dealers. Even the former do not have to sell all their produce to those from whom they have obtained credit if the market conditions do not persuade them to do so.

34. As is evident, except in Haputale, in other areas around one third of the farmers mention the Colombo Wholesale Market (CWM) as their

mostly used marketing channel. In Haputale, the corresponding figure is about 15%. Here most farmers sell their produce to middlemen and local commission agents.

35. What is clear from the farmers responses is that they are not heavily dependent on a single channel and that they are quite dispersed across different marketing channels. At Bandarawela and Welimada, many farmers also use the urban fair as a channel of vegetable marketing.

36. What is clear is that the vast majority of the farmers (75.8%) sell their produce to more than one dealer (Table 3.16). This state of affairs is further confirmed by the responses given to the question as to whether the farmers could change the present dealer. About 93% of the respondents answer this question in the affirmative.

37. Transportation is an integral aspect of highland vegetable marketing. Vegetables being a perishable commodity, the producers as well as the dealers have a common interest in moving them fast from the farm gate to the consumers.

38. Producers who depend on transport agents to send their vegetables to market report several problems associated with transport. They are a) delays involved, b) high transportation costs and c) damages caused to vegetables in transit. As mentioned earlier, the produce reaching Colombo later in the day fetch lower prices. So transportation delays usually result in losses to the farmers.

39. There is a constant flow of price information between the Colombo wholesale market and the producer areas. While many dealers use telephones to check on prices obtained in Colombo, the traders and transport agents who constantly travel between Colombo and the producer areas carry price information. The result is there is a correspondence between prices obtained in different markets

40. Inadequate attention paid to proper post-harvest handling is due to several reasons. Firstly, farmers as well as dealers wish to avoid unnecessary costs during transit. They continue to use conventional packaging methods in spite of the fact that they contribute to the wastage of vegetables. Most vegetables are packed in gunny bags, both thick and net type, which are stacked on top of each other exerting considerable pressure on the vegetables. Hundreds of such packages are tightly packed into a lorry for transportation from the vegetable producing areas to far away destinations. This practice

generates considerable heat inside the lorry contributing to the process of decay.

41 Frequent loading and unloading of vegetables involved in long distance transportation account for a major part of the damages caused to vegetables. The manual labourers who load and unload vegetables at various points take little care in handling packages of vegetables. They often throw them into the lorry and drop them on the ground in the process of unloading.

42. The present marketing system of vegetables takes the perishability of vegetables for granted. It does very little to deal with it.

Chapter 1

INTRODUCTION

1.1. Previous Studies:

There are not many studies available in published form on vegetable marketing in the highlands of Sri Lanka. The two notable exceptions are Abeysekera and Senanayake (1974), and Gunawardena and Chandrasiri (1979). These two studies differ from the present one in various respects including the Context, Scope and Coverage.

The study by Abeysekera and Senanayake was undertaken in 1974, and was restricted to four villages in Welimada which is one of the four areas covered in the present study. At the time when Abeysekera and Senanayake undertook their study, the Udapalatha Multi purpose Co-operative Society in Palugama , Welimada was very active in the collection, transportation and wholesale trading in vegetables. This co-operative even had a wholesale stall in the Colombo Vegetable Wholesale Market operating side by side with the private wholesalers of vegetables. However, the main disposing outlet for vegetables collected those days was the Department of Developement of Marketing. Thus, the study by Abesekera and Senanayake has devoted much attention to compare benefits and costs involved in dealing with the two competing marketing outlets namely, government/co-operative and the private sector. This particular study concentrated their attention on both production and marketing aspects. However, at the time of the study most of the inputs for vegetable cultivation were also supplied mainly by the state sector organisations and co-operatives. Their main conclusions included among other things that the private sector was paying higher prices to the producers when compared with the state sector and co-operative marketing channels.

The study by Gunawardena and Chandrasiri was undertaken in 1979. Their main objective was to explain the factors influencing the vegetable prices in Sri Lanka, and have therefore devoted much of their focus on price analysis. Furthermore, the coverage of their study extended beyond the highland areas and included areas like Jaffna, Kandy and Anuradhapura. The main conclusions of their study are that farm incomes are low due to heavy

production expenses, and middlemen reap undue benefits due to the imperfections in the market.

1.2. Objectives of the Study:

The main purpose of the present study has been to examine the existing marketing systems and arrangements resorted to by vegetable farmers in Nuwara Eliya, Welimada, Bandarawela and Haputale areas. In doing so, the study also focuses attention on the issues involved in the process of production, in particular those relating to land tenure, credit, inputs and extension.

As regards the marketing of vegetables, the present study deals not only with the different marketing channels available and resorted to by producers but also with related aspects such as preparation, packaging, handling and transportation of vegetables from the farm plot to Colombo and other provincial markets.

The study seeks to understand the processes of production and marketing more closely with a view to shedding some light on the major problems involved. It is hoped that the major findings of the study will provide a basis for an intervention programme aimed at improving the marketing systems relating to highland vegetables.

1.3. Methodology:

The discussion that follows is based on the analysis of data derived from a number of sources during the fieldwork which was conducted between November 1991 and January 1992 by the researchers, assisted by a team of research assistants and field investigators recruited from among recently passed out Social Science graduates from the University of Colombo.

A major tool of data collection has been a household survey based on a purposive sample of 240 farm families drawn from a 6 villages in each of the four areas covered by the study. (See Appendix 1) A structured composite interview schedule has been used for the purpose of collecting data from the households. The key respondent in these interviews has been the farmer himself. The other members of the family including his spouse were also interviewed to gather specific data.

A cross section of other sectors were also contacted and interviewed to get at the diversity of views, experiences and responses that different parties involved are bound to have. In the context of the field areas, they included brokers, bulk buyers, collection centre owners, visiting outside traders, transport agents, labourers input suppliers and lorry drivers. Apart from interviewing diverse individuals, considerable field observations were also conducted during fieldwork with a view to gathering detailed qualitative data.

Interviews and observations were also carried out at the Colombo wholesale market which attracts a considerable part of the vegetables produced in the areas concerned. Repeated visits to the market by the researchers helped gather valuable information not only on the working of the market itself but also the wider network of market and exchange relations that revolve around it.

1.4. Organisation of the Report:

The main body of the present report is divided into three chapters including the presint introduction. Chapter two deals with aspects of highland vegetable production. This chapter also gives a brief description of the socio-economic characteristics of the farmer population surveyed. Chapter three examines the marketing systems associated with highland vegetables, and also looks at post harvest handling of vegetables.

1.5. Limitations of the Study:

Rationalization of the processes of production and sale of vegetables concerns much more than the network of marketing. It no doubt relates to a whole host of other aspects of the vegetable economy such as land use, land quality, land tenure, suitability of crops cultivated and seeds used, desirability and appropriateness of fertilizers and agro-chemicals used, desirability of crop mix and the timing of cultivation, mode of harvesting preparation, packaging and disposal of produce.

A detailed analysis of all the above issues based on empirical evidence has not been attempted in the context of the present study. Nevertheless it should be noted that no analysis of the vegetable marketing systems can be complete without an examination of such issues. The analysis attempted in

the present study therefore is only a limited one; it deals with the processes of production and marketing but does not examine the possibility for rationalization in the areas of land use, crop mix, input use etc.. Given the fact that most farmers have no access to agricultural extension services and are therefore guided more by "trial and error" and crude market forces, it is reasonable to assume that there is considerable room for improvement in these areas.

Chapter 2

PRODUCTION OF HIGHLAND VEGETABLES

2.1. Socio-Economic Conditions of Farmers and Members of Their Families:

As mentioned earlier, this survey covered 4 areas in the Nuwara Eliya and Badulla districts, and 240 farm families in those 4 areas were interviewed. Out of this number, 238 interview schedules were used in the analysis.

Table 2.1.1 provides information on selected socio-economic characteristics of the farm families covered in the survey. A notable feature in this table is that there are no marked variations among the four areas as far as these characteristics are concerned., i.e. they display a uniform pattern. Since the table is self-explanatory only a few remarks will be made here. If we define the labour force as those who are above 15 years of age and below 60 years, it is seen that 72% of the sample population belongs to the labour force. 33% of the sample population is highly literate having qualifications equal to or above the G.C.E. Ordinary Level. The overall literacy rate is over 90%. The unemployment rate reported appears to be too high when compared with the national average. It is possible that this category includes both unemployed and underemployed. Many of the latter are engaged in Agriculture and other occupations as revealed in section (f) of Table 2.1.1 According to the data given in this section 46.3% is reported to be without a main job. Out of this percentage about 33% belongs to categories like students, disabled and too young or too old to work. Hence the openly unemployed represents only 13.3% of the sample population which is somewhat below the national estimate of open unemployment.

Another feature revealed in this table which needs mention is the extent of part-time farming reported. It is seen that only 66% of the respondents are engaged in full-time farming. About 28% of the respondents are part-time farmers. The balance 6% consists of farmers who engage in farming occasonally (like pensioners) and as farm helpers. Part-time farming has become more prominent in the Haputale and Bandarawela areas, whereas in the Nuwara Eliya area the incidence is less (19%).

2.2. Production of Vegetables:

The four areas selected for the present study namely, Nuwara Eliya, Welimada, Bandarawela and Haputale fall within two administrative districts. While Nuwara Eliya belongs to the district of Nuwara Eliya, the rest of the areas fall within the Badulla district. There are considerable differences between the areas surveyed in several respects. Seasonal variations are quite significant in the areas that fall within the Badulla district. They have two cultivation seasons namely, Yala and Maha. In Nuwara Eliya, such a clear division is not noticiable and the cultivation of crops takes place throughout the year. A significant feature of the study areas in the Badulla district is the importance of the Maha rice cultivation on low land. In other words, only highlands are used for vegetable cultivation during Maha. On the other hand, during Yala , both highland as well as lowlands are used for vegetable cultivation. In the district of Nuwara Eliya, none of the farmers in the sample has cultivated rice.

The significance of rice cultivation during Maha in the Badulla district is that the farmers there in general produce their own staple food and vegetables are cultivated as a cash crop. On the other hand, in Nuwara Eliya farmers have to purchase their rice from the market. This makes the Nuwara Eliya farmers more dependent on the market than those in the Badulla district.

Another important difference between Nuwara Eliya and the other areas is that the size of the parcels of land in the former is much smaller. The villagers in the other areas in general have access to larger plots. In some cases they have encroached onto adjacent forest land. In others, they have larger plots of ancestral land. This does not, however mean that they do not experience problems of land scarcity. The point is that the problem is more acute in Nuwaraeliya where the demand for land is greater due to severe competetion for laand involving external bidders as well.

Locational variations are also evident in the types of crops raised. While Nuwara Eliya farmers are exclusively vegetable and potatoe cultivators, the other three areas have a more diversified crop mix as they also grow rice during Maha. The general cropping pattern is given in Appendix 3.

Most farmers in all farm areas rely heavily on family labour. Hired labour is used by many of them for certain tasks such as land preparation and harvesting. Only a small percentage of vegetable producers depend almost exclusively on hired labour. They are largely concentrated in Nuwara Eliya.

They are often relatively large scale producers cultivating crops on several acres. They are mostly found in Nuwara Eliya*

Since most farmers own small plots of land, they strive to achieve maximum productivity of land. Cultivation of high value crops, optimal use of fertilizer, extensive application of agro chemicals etc. are all aimed at the maximization of yields per unit of land.

2.2.1 Land Ownership and Tenure:

Production of vegetables in the upcountry areas such as Nuwaraeliya, Bandarawela, Haputale and welimada is a highly commerlized economic activity in which a large number of farmers are engaged. Since the bulk of the land area in this part of the country is devoted to plantation crops like tea, whatever fertile land, that is found in between large tracks of plantations is utilized for vegetable cultivation.

Increasing - Population pressure on land in a situation where the cultivated land area cannot be expanded due to scarcity of land has resulted in the fragmentation of existing land holdings. The result is that many vegetable growers have only very small parcels of land. Some family plots are as small as 10 perches in extent.

As far as the land ownership pattern in the survey areas is concerned, 69% of the families interviewed have single ownership to land,and about 12% have joint owne. ship. Also, another 6% cultivate lands distributed under the Land Development Ordinance (a 99 year lease from the government). The percentage of farmers who cultivate rented in and leased in land amounted to 13%. Only about 1% cultivate on encroached crown land (Vide Table 2.2.1). The incidence of tenancy and leases taken together account for 22% of the farm families in Bandarawela, 15% in Haputale and 10% in Nuwara Eliya. However, in Welimada only about 3.5% operate rented in or leased in lands. Next to these two categories of tenure, joint ownership of land is another category which affects the production. The incidence of joint ownership is highest in Bandarawela (16.7%), followed by Welimada (13.3%) and Haputale (11.7). However, in Nuwara Eliya only 5.2% is reported to have operating lands under joint ownership. Provision of the inputs for cultivation by the landlord is a rare occurance in the tenancy system prevalent in survey areas. Only 3 farmers in the sample in Welimada and 8 farmers in the Haputale survey areas are receiving inputs or advice from the landlords or joint owners.

2.2.2. Size of Operational Holding:

The vegetable cultivation in the survey areas is undertaken primarily in small holdings below 100 perches in extent. About 73% of the farmers in the total sample cultivate lands in this size group. The incidence of tiny holdings (below 50 perches) is much more prominent in Nuwara Eliya (48%) followed by Haputale (42%) and Bandarawela (38%). The percentage of farmers cultivating lands more than 100 perches in extent in the total sample amounted to about 28% (Vide Table 2.2.2)

2.2.3. Types of Land Operated:

In the survey areas vegetables are cultivated both in paddy fields and highland plots. 67% of the farmers cultivate vegetables in highland plots and 32% cultivate in the paddy fields. Cultivation of vegetables in the paddy fields is more prevalent in Bandarawela (57%), followed by Haputale (38%) and Welimada (32%). Only one farmer in the Nuwara Eliya sample has reported that he cultivates vegetables in the paddy fields. Thus, in Nuwara Eliya about 95% of the farmers cultivate vegetables in highland plots (Vide Table 2.2.3).

2.2.4. Sources of Water Supply:

The main sources of water supply to the vegetable plots in the four survey areas differ from one another. In the Nuwara Eliya area 62% of the farmers in the sample use water pumps to irrigate their crops. In Welimada and Haputale, most farmers cultivate vegetables under rainfed conditions. (62% in Welimada and 45% in Haputale). In Bandarawela 53% of the farmers in the sample cultivate with irrigation facilities (Vide Table 2.2.4). When the whole sample is taken into consideration 39% cultivate under rainfed conditions and 35% under irrigated conditions. From the balance 26 per cent, 20% use water pumps and 6% use manual methods to irrigate the crops.

2.2.5. Number of Seasons Cultivated per Year:

In the total sample 53% cultivate their lands twice a year while 25% cultivate thrice a year. The balance 22% cultivate only once. However, there are notable differences in this respect among the four areas surveyed. For example, in Nuwara Eliya 55% of the farmers cultivate their plots three times a year. In contrast, in Welimada 53% of the farmers cultivate their

plots of vegetables only once a year. A large percentage of farmers in Haputale (65%) and Bandarawela (57%) cultivate vegetables twice a year (Vide Table 2.2.5).

The cropping pattern in the four survey areas is influenced by the type of land and the sources of water supply. In the Nuwara Eliya area most farmers cultivate their lands throughout the year with upcountry vegetables. Paddy farming is almost non-existent among the sample farmers. The major crops in this area include potatoes, carrots, raddish, beetroot, leeks and cabbages. They do not grow crops like tomatoes, brinjals and capsicums. In Welimada, farmers very rarely cultivate a third season. 32% of the farmers there grow paddy during the Maha season. The percentage of farmers cultivating vegetables during this season amounts to about 52%. The main vegetable crops grown in this area include potatoes, beans, tomatoes and cabbage. In Bandarawela, 60% of the farmers in the sample grow paddy during the Maha season. Vegetables are cultivated only by about 32% of the farmers during this season. However, this percentage increases to 83% during the Yala season. The most popular vegetables are beans, tomatoes and other vegetables like brinjals and capsicum. About 17% of the farmers in this area cultivate during all three seasons. In the Haputale area 40% of the farmers cultivate paddy during the Maha season, and therefore only about 58% cultivate vegetables during that season. In contrast, in the Yala season there is no paddy cultivation and therefore about 92% cultivate vegetables. Also, about 32% of the farmers in this area grow vegetables in the middle season as well. In this area both upcountry and other types of vegetables (tomatoes, capsicums etc.) are grown. Tables 2.2.6, 2.2.7 and 2.2.8 provide information on the types of vegetables grown and the number of farmers cultivating each type of vegetable during the three seasons namely, Maha, Middle, and Yala.

2.2.6. Reasons for Growing Particular Crops:

The farmers in the sample were asked to give reasons for the choice of crops they have been cultivating. Three main reasons have been provided by farmers in all the survey areas. They include, resistance to the particular climate (63%), cultivation is easy and also costs less (21%), and conditions in the market (9%) . (Vide Table 2.2.10). There are no marked variations among the survey areas in this respect.

2.2.7. Problems Relating to Land:

The farmers have reported a number of problems in relation to land ownership and tenure. One of the common problems cited is the question of joint ownership. This leads to disputes among owners and affects the level of investment in land. Landlessness is another major problem which is growing with the increasing population. Some farmers do not have deeds and licences for the lands they cultivate. Since land is scarce, land rents are high and rising over time.

2.3. Supply of Seeds and Planting Materials:

In the field survey information was collected in respect of the supply position of inputs such as seeds and planting materials, fertilizer and agro-chemicals, with a view to identifying problems faced by the farmers in relation to these inputs. The information gathered were limited to vegetable cultivation . No attempt was made to collect information on paddy production inputs.

Although the total sample consisted of 238 farmers, they have operated 404 blocks of land for growing various types of vegetables. The vegetables grown in these 404 blocks are shown in table 2.2.9 Out of 97 land blocks in the Nuwara Eliya area 31% has been devoted to potato cultivation, 26% for cultivation of carrot and 16% for cabbages. In Welimada out of 107 land blocks, 30%, 31% and 16% have been respectively devoted for cultivation of potatoes, beans and tomatoes. In Bandarawela most important crops were beans (36% of 101 land blocks) and tomatoes (36%). In Haputale out of 99 land blocks, 28% for potatoes and 15% for leaks. In addition to the cultivation of different vegetables in the four survey areas, the varieties of each vegetable grown in these areas differ significantly from one anther. The differnt varieties.grown in the four survey locations are given in Appendix 1.

As far as the sources of supply of seeds and planting materials are concerned, about 43% of the land blocks cultivated in the four areas depend upon farmers own seeds. Private traders supply seeds to another 50% of the land blocks. The share of cooperatives and state sector in the supply of seeds/planting materials is only about 6%. (Vide Table 2.3.1) In Bandarawela 65% of the land blocks are cultivated with own seeds which in Welimada this percentage was 50%. About 40% of the land blocks in

Haputale depends on own seeds. In contrast in Nuwara Eliya the dependence on own seeds in only about 16%.

Another aspect of seeds/planting material supply is the level of costs incurred by the farmers on this input. Table 2.3.2 gives a summary of the financial costs incurred. It is seen that about 19% of the blocks cultivated in the survey area had required seeds/planting materials costing over Rs. 4,000/=, and another 7% between Rs. 2,000/= and Rs. 4,000/=. These high cost are incurred in mainly respect of potato cultivation.

As mentioned earlier out of the 403 blocks cultivated with vegetables, 154 or 38% have been cultivated with own seeds. The balance 62% depends on purchased seeds. As seen from table 2.3.3 most of the seeds have been purchased by paying spot cash. Only 42 blocks (10%) in the total sample have purchased seeds on credit terms. While 25% and Nuwara Eliya depend on seeds purchased on credit terms only about 2% in the Welimada and Bandarawela areas depend on credit to purchase seeds.

About 63% of the 404 blocks in the four survey areas are cultivated with seeds/planting materials purchased or obtained from the village itself. For the balance 37% of the blocks seeds/planting materials have been obtained from other places such as the principal towns in the respective survey areas. In Bandarawela 77% of the cultivated blokcs have used seeds obtained from village, in Haputale this percentage was 72%, and in Welimada 63%. In contrast in Nuwara Eliya only 39% of the blocks are cultivated with seeds/planting materials obtained from the same village (Vide Table 2.3.4).

A question was asked from the farmers as to whether the seeds/planting materials were available in time for the cultivation. About 96% replied that they got these inputs in time. Only about 4% did not recieve seeds/planting materials in time (Vide Table 2.3.5).

About 27% of the farmers in the total sample have reported that they do not experience any problems relating to seeds/planting materials supply, but the balance 73% have experienced various difficulties. These are summarised in table 2.3.6. About 25% of the farmers in the sample have replied that they experienced a bundle of problems including high prices low quality, sprouting and germinating problems and immitation varieties. Another 38% have identified these same problems individualy. Other problems of minor significance are long distances involved in purchasing seeds, and non-availability of seeds in time.

2.4. Fertilizer Use:

Fertilizer is one of the most important inputs in intensive vegetable cultivation as practised in the highlands of Sri Lanka. Thus, in this survey information was collected on the types, brands, sources of supply, quantities used, and costs incurred in respect of fertilizer. In this section an attempt is made to present the findings on these issues.

2.4.1. Types of Fertilizers Used:

In the highland vegetable cultivation some type of fertilizer is used by each and every farmer interviewed. Fertilizer is also applied to each and every crop. However, due to the high costs of chemical fertilizers various kinds of substitutes are used such as leaves and chicken manure. Table 2.4.1 provides information regarding the types of fertilizers used by the 240 farmers included in the sample to grow various kinds of vegetables in 482 small blocks of land. According to this table in all the four survey areas chemical fertilizer (vegetable and potatoe fertilizer) use is about 57%. Cow dung is used by another 15%, but compost is used by only by 1%. It is instructive to note that about 20% use chicken manure and another 8% use leaves of various types. When the four different survey areas are considered, in Nuwara Eliya the most omportant types of fertilizer are potatoe fertilizer (40%) and cowdung (31%). In Welimada chemical fertilizers such as potatoe (27%) and vegetable fertilizers (43%) are more prominent. In Bandarawela vegetable fertilizers are used in 49% of the blocks and chicken manure in 39% of the blocks. In Haputale the most prominent fertilizer type is chemical fertilizer including both potatoe (25%) and vegetable fertilizer (37%).

Farmers were asked as to why they use the type of fertilizer they said they were using. The responses are summerized in table 2.4.2. It appears that farmers are more concerned about the quality of fertilizer they use. 74% of the farmers in the total sample have said that they use that particular type fertilizer for its high quality. Another 9% think that that type of fertilizer is specially suited for the particular crop. Only 2 farmers in the total sample used a particular type of fertilizer because of the low price. Other reasons include popular brand names and because fertilizers are essential for vegetable cultivation. There are no marked variations in the responses area wise.

2.4.2. Brands of Fertilizers Used:

Some of the vegetable cultivators in the four survey areas use natural fertilizers and therefore cannot give a brand name for such fertilizer. About 37% of the 483 land blocks cultivated are treated with this type of fertilizer. The other 63% of the land blocks are treated with chemical fertilizers of various brand names. Amongst these the most important brand names are Fertilizer Corporation (CFC-27%), "Janapohora" (21%) and Baurs(12%). Other brand names are C.T.C. (3%) and C.C.C. (1%). The four survey areas do not exhibit marked differences in the brands of chemical fertilizers used. In all the areas the most popular brands are C.F.C. , "Janapohora" and Baurs (Vide Table 2.4.3).

2.4.3. Sources of Fertilizer Supply:

Out of the 483 land blocks in the four survey areas only 4% are treated with fertilizers produced /collected by the owner himself. Hence, both organic and chemical fertilizers are purchased off the farm. 83% of the land blocks are applied with fertilizer supplied by private sector sources. The share of government and co-operative sector taken togher is only 12%. The involvement of the government and co-operative sectors in supplying fertilizers is relatively greater in Welimada and Bandarawela compared to the other two areas (Vide Table 2.4.4).

The reasons for purchasing from these sources were also gathered during the field survey and this information is summerized in table 2.4.5. Accordingly, 38% of the farmers purchase fertilizer from the dealers trusted by the farmers, while 26% prefer to buy from a particular source due to short distances involved. Provision of transport facilities by the dealers is the reason given by 7% of the farmers. Other reasons include lower price, convenience, supplied by the trader who purchases his vegetables and the only available outlet for fertilizer. All these other reasons are given by 24% of the farmers. There is no marked variation among the four survey areas in respect of the reasons provided.

2.4.4. Levels of Fertilizer Use:

Although fertilizer use is widespread among the farmers, quantities used are very low. About 68% of a total of 483 land blocks are applied with less than 10kgs of fertilizer. Another 23% of the land blocks are treated with less than 50kgs of fertilizer. The number of blocks applied with less than

10kgs of fertilizer is greater in the Welimada (81%) and Haputale (83%) areas (Vide Table 2.4.6).

2.4.5. Costs Incurred In Applying Fertilizer:

Although farmers use less quantities of fertilizer, the costs incurred in fertilizing one block of land is high because of the high fertilizer prices. Table 2.4.7 provides the costs incurred in applying fertilizer to the 483 blocks in the four survey areas. Only the owners of 28 (6%) land blocks incur a cost of Rs. 100 or less on fertilizer. Owners of 25% of blocks incur more than Rs. 3,000/= as fertilizer costs, while another 11% of the blocks use fertilizers costing between Rs. 2,000/= and 3,000. Apparently, these higher costs are associated with potatoe cultivation. Nuwara Eliya and Welimada farmers incur relatively higher costs on fertilizer compared with the farmers in the other two areas.

Most of the fertilizers are bought with ready cash. In the total sample, owners of 82% of the blocks purchase fertilizers with ready cash. Owners of only 13% of the blocks purchase fertilizers on credit (Vide Table 2.4.8). The credit purchases assume relatively greater importance in Nuwara Eliya (owners of 20% of the blocks) and in Haputale (owners of 20% of the blocks).

2.4.6. Problems Relating to Fertilizer Use:

The most important problems faced by the sample farmers in the four survey areas in relation to application of fertilizer are high prices (45%), immitation types (10%), low quality (7%) and lack of transport (1%). Other reasons include non-availability of fertilizer when needed, lack of funds to buy fertilizer and ineffectiveness of fertilizers. There is no marked differences among the four survey areas (Vide Table 2.4.9).

2.5. Use of Agro-Chemicals:

Use of agro-chemicals for vegetable cultivation is widespread in the four survey areas. Table 2.5.1. provides information on the types of agro-chemicals used. It is noteworthy that these farmers in the sample have not used weedicides. Out of the 453 purchases of agro-chemicals, 58% were purchases of fungicides, 30% of the purchases are insecticides and the

balance 13% vitamins (Vide Table 2.5.1). Use of fungicides is equally popular in the four survey areas. However, the use of insecticides is far greater in the Haputale (38%) and Welimada (34%) areas. Use of vitamins is much more prevalent in Nuwara Eliya (19%) compared with the other three areas.

2.5.1. Brand Names of Agro-Chemicals Used:

Tamaron, Losband and Harcross are the most popular insecticides used in the survey areas. Among the fungicides the popular brands are Antracol, Poliram and Wandersop. Plantput and Maxicrop are the popular brands of vitamins (Vide Table2.5.2).

When farmers were asked as to why the particular brand was purchased, 52% failed to give a special reason. However, 46% of the farmers said that they purchased the particular brand due to its popularity among farmers and high quality (Table 2.5.3).

Only 3 farmers in Haputale have purchased because of the low price of agro chemicals.

2.5.2. Sources of Supply of Agro-Chemicals:

Table 2.5.4 provides information on sources of agro chemicals supply. 92% of the 453 purchases made by the sample farmers were from private sources. Only 8% of all the purchases were made from government or co-operative sources. The government and co-operative sources assume relatively greater_importance in the Welimada area (12% of the purchases were made from this source) compared to the other three areas.

The purchase of agro chemicals too is mainly with ready cash. 83% of the purchases reported have been with ready cash. The percentage of credit purchases amounted to 16% only. (Vide Table 2.5.5). Credit purchases are a little higher in Nuwara Eliya (21%) and Haputale (24%) compared to the other two areas.

2.5.3. Problems Relating to the Use of Agro-Chemicals:

When asked whether the agro chemicals they used in vegetable cultivation were effective the majority (89% of the purchases) answered in the

affirmative. Others (11%) replied that the chemicals were ineffective (Vide Table 2.5.6). The major problems faced by the farmers in respect of agro-chemicals are high prices (39%), low quality (19%) and non availability when needed (6%). Other problems of lesser importance are having to travel long distances to buy agro-chemicals and the need to apply a larger quantity during the rainy season (Vide Table 2.5.7). An important problem assosiated with the use of agro-chemicals is the absence of reliable and independent sources of information. The result is that the farmers are dependent heavily on the dealers themselves as well as mass media. Farmers often seek information from agro-chemicals outlets in the area. Some farmers expressed the view that agro-chemical traders are likely to be biased as they have a vested interest.

2.6. Use of Hired Labour:

Use of hired labour for vegetable cultivation is widely prevalent in the survey areas although the vegetables are cultivated in small blocks of lands. In the field survey information was collected on various aspects of hired labour use in vegetable cultivation. These included for cultivation of which crops labour was hired, number of working days labour was hired, activity for which labour was hired, daily wage rates and problems encountered in hiring in labour. In the following sections these issues will be discussed.

2.6.1. Crops for Cultivation for Which Labour was Hired:

Out of a total of 482 land blocks devoted to the cultivation of vegetables in the four survey areas, 275 (57%) are cultivated with the use of hired labour. Thus, the use of hired labour is common to all vegetable crops cultivated in these areas. However, the use of hired labour is more prominent among the growers of potatoes, beans and tomatoes, compared with growers of other crops such as raddish, knol khol and beetroot (Vide Table 2.6.1).

The activities for which labour is hired are shown in table 2.6.2. The most common activity for which labour is hired according to this table is for land preparation. This is true for all the four survey areas, and owners of 56% of the total number of 342 land blocks cultivated with the use of hired labour have hired labour for this purpose. Planting seeds (6% of the land blocks) and applying fertilizer (3%), harvesting (1%), watering (0.6%) and spraying insecticides (0.3%) are the activities of lesser importance for which labour

is hired. Other activities for which labour is hired are guarding/watching the crops and transporting seed/produce to/from the farm.

2.6.2. Number of Man/Woman Days Hired:

From the owners of 342 land blocks who have hired labour 216 (63%) have hired less than 10 man days, while another 18% have hired 11-20 man days. However, about 8% have hired more than 40 man days per land block (Vide Table 2.6.3). In addition to the hiring of male workers they also hire female workers. Here again, owners of 88% of the land blocks hire less than 10 female working days per block to cultivate vegetables. Only 1.5% use more than 40 working days of female labour (Vide Table 2.6.4).

2.6.3. Daily Wage Rates:

Daily wages paid to hired male labourers ranged from less than Rs.50 to over Rs.100. The most common wage rate in the four survey areas is Rs.71 - Rs.80 (23%). The highest wage rates are reported from Nuwara Eliya (Rs. 125/=). But the highest wage rate in Haputale is Rs. 80. Thus, there are regional differences in wages paid probably resulting from local labour market conditions. The daily wages paid to hired male labour are reported in Table 2.6.5.

The daily wage rates paid to female workers ranged between Rs.25 - Rs.75. The most common wage rate prevailing in the four survey areas for female workers ranges between Rs.41 - Rs.50 (Vide Table 2.6.6). Here again the highest wage rate is reported from Nuwara Eliya (Rs. 75/=) and the maximum wage rate reported from Bandarawela is Rs. 50/=. Both in Welimada and Haputale the highest wage rate paid did not exceed Rs. 60/=. These are indicative of imperfections in the local labour markets.

2.6.4. Problems Encountered in Hiring Labour:

Table 2.6.7 shows the various problems encountered by the farmers in the sample in hiring in labour for vegetable cultivation. More than half (52%) have not responded to this question implying that they do not encounter any problem in this respect. Others have identified two very important problems in hiring in labour. They are difficulty in finding labourers when needed (short supply) and high wages. Other problems of lesser importance include the need to supply meals in addition to the wages, labourers not

doing the full amount of work for which they are being paid and lack of funds to pay the labourers.

2.7. Agricultural Extension Services:

Farmers in the sample were asked whether there is an agricultural extension service available in their respective areas from which they could receive advice and technical guidance on various aspects of vegetable culvation. 71% of the 240 farmers in the sample have said that there is no agricultural extension service available. However, 40% of the farmers in Welimada and 35% in Bandarawela have reported the existence of an agricultural extension service (Table 2.7.1).

2.7.1. From Whom Advice Was Sought:

Then they were asked from whom they (the farmers) sought advice when the necessity arises. Again, about 72% have replied that they do not need extension advice as they themselves are well experienced in various aspects of vegetable cultivaton. The percentage of farmers who do not need advice is highest in Haputale (82%) and lowest in Welimada (60%). (Vide Table 2.7.2). From the rest of the farmers who sought extension advice 57% said they contacted the Agricultural Instructor in the area when advice was needed. 29% depended on neighbours for extension advice while the balance 14% sought advice from others including Grama-Seva Niladhari, traders in the agro-chemical shops and the Farmer Service Centres.

2.7.2. For What Purposes Advice Was Required:

Here again only 66 farmers (26%) required extension advice. From this number 37% sought advice for cultivation purposes such as the management practices and 46% sought advice regarding the diseases to crops. The balance 17% sought advice on other matters as to which agro-chemicals should be used and to find out about the Purchasing Centres (Vide Table 2.7.3).

Out of the 66 farmers who sought extension advice from the sources mentioned above, 82% in fact received advice, whereas the balance 18% failed to receive advice. The percentage of farmers who failed to get advice

is relatively larger in Welimada (20%) and in Haputale (36%) (Vide Table 2.7.4).

2.7.3. Where Advice Was Recieved:

A total of 196 farmers (82%) did not respond to the question on the place where advice was received. From the balance, 39% received advice at the respective offices of the extension agents whilst 48% received advice in the field. The rest (18%) received advice at other places like gatherings of farmers held at village schools, temples etc (Vide Table 2.7.5).

2.7.4. Distances Travelled to Get Advice:

Since some of the farmers who sought extension advice received them at the field itself and since some of the farmers did not require extension advice at all, only 32 farmers (13%) of the total sample had to travel to other places to receive extension advice. From these 32 farmers too, 47% had to travel less than 1km. to obtain extension advice. About 31% of these 32 farmers had to travel distances ranging from 4km. to 20km (Vide Table 2.7.6).

2.7.5. Usefulness of the Advice:

Out of 67 farmers who sought extension advice 47 (70%) found the advice to be useful whereas the balance 20 (30%) found it not useful. 34% of the farmers who sought extension advice in Welimada have found that the extension advice they received was not useful, whilst the percentage of farmers in the same category was 30% in Bandarawela (Vide Table 2.7.7).

2.7.6. Problems Relating to Agricultural Extension Services:

Table 2.7.8 summarises the problems faced by the farmers in relation to the agricultural extension services. Whereas 51% of the farmers in the sample said that there is no advisory service available, another 25% have stated that they did not encounter any problem with regard to extension services. 10% of the farmers had been unable to meet the agricultural instructors when needed , and 9% found the advice received was not useful. Other problems include the Agricultural Services Centre being situated too far away, the agricultural extension service being ineffective and not

functioning, and agricultural instructors giving advice only to a selected few.

2.8. Credit Facilities for Vegitable Cultivation:

Vegetable cultivation in highland areas of Sri Lanka is a very costly affair. The need for cash to pay for purchased inputs such as seeds, fertilizers and agro-chemicals as well as to pay wages to hired labourers is therefore very significant. Therefore in this study an attempt was made to find out how the vegetable cultivation is financed in the four survey areas. The information sought included the sources of borrowing, relationship to the lender, obligations of the borrowers, amounts borrowed, interest rates paid, reasons for borrowing from the particular sources and the problems relating to credit. In the following paragraphs these issues will be taken up for discussion.

2.8.1 Sources of Borrowing:

A total of 235 farmers have responded to these questions on credit facilities for vegetable cultivation. Out of this number 161 farmers (69%) did not borrow for cultivation purposes. Out of the 74 farmers who borrowed money for cultivation of vegetables 52 farmers (70%) have borrowed from commercial banks. Also 21 farmers (28%) have borrowed from private sources. Only one farmer (in Bandarawela) has reported that he borrowed from a Non - Governmental Organization (NGO). Table 2.8.1 summarises this information. In Bandarawela borrowing from private sources is zero. But in Haputale, out of the 17 farmers who borrowed money 10 farmers (59%) have borrowed from private sources.

2.8.2 . Relationship to the Lender:

Since the majority of the borrowers have obtained credit from the banking sector, the relationship of borrower to the lender in most cases is impersonal and contractual. Out of the 74 farmers who borrowed in the four survey areas 56 farmers (76%) have said their relationship to the lender is organisational. In 22% of the cases, money has been borrowed from friends whereas in 3% of the cases borrowing was from relations. This information is presented in Table 2.8.2. Borrowing from relations is absent in the Nuwara Eliya, Welimada and Bandarawela areas.

2.8.3. Other Obligations of the Borrower:

To this question 177 farmers (75%) have not responded. This implies that 16 farmers (22% of borrowers) who borrowed money did not have any other obligation to the lender other than repaying the loan. The balance 58 borrowers or about 25% of the total number of farmers in the sample had various other obligations of some sort to their lenders. Out of these obligations also two things are really part and parcel of repaying/obtaining loans. These are that the the loan must be repaid before the grace period is over and that guarantors are needed for obtaining loans. Thus, actually only 15 farmers in the total sample have had other obligations to be fulfilled. Out of this number 10 farmers were required to repay the loans in terms of produce. 7 out of these 10 farmers were found in Haputale (Vide Table 2.8.3).

2.8.4. Amounts Borrowed:

Table 2.8.4. summerizes the data on amounts borrowed by the farmers. Out of the 74 farmers who borrowed money 31 farmers or 42% have borrowed less than Rs. 5,000. Another 24 farmers (32%) have borrowed amounts ranging from Rs. 5000 to Rs. 10,000/=, while the rest (19 farmers) have borrowed above Rs. 10,000/=. Hence the absolute size of the loan transacted for vegetable cultivation is high. The number of farmers who transacted larger loans are higher in the Nuwara Eliya area compared with the other three areas.

2.8.5. Rates of Interests Paid:

Since 178 farmers have not responded to this question, 17 farmers who have borrowed money are also included in the no response category. This implies that these 17 farmers have borrowed money free of interest. Only 2 farmers in Nuwara Eliya have borowed money at an interest rate over 25%. The majority have borrowed at interest rates ranging from 6% to 25%.

2.8.6. Reasons for Borrowing From the Particular Source:

Table 2.8.6 presents information relating to the reasons as to why these 74 farmers borrowed from the particular sources they have mentioned. 45 Farmers (61% of those who borrowed money) have borrowed from banks because they had relations who are employed with the banks. Similarly 8

farmers (11%) have borrowed from private traders because the borrowers are relatives of the traders. 11 Farmers (15%) gave covenience as the reasons for borrowing from the private sources. 10 Farmers have given other reasons. These includes borrowed from bank on the advice of the Departnent of Agriculture and inability to borrow from institutional sources.

2.8.7. Problems Relating to Credit:

When asked to explain the problems farmers may be having regarding the credit facilities available to them, 182 farmers (77% of the total sample) said that they did not have any problems. This implies that out of the 74 farmers who obtained credit 21 farmers (28%) did not have problems in obtaining credit. Out of the 74 farmers who borrowed money 30 farmers (41%) have had difficulties in finding guarantors. Another 9 farmers (12%) explained that the loan they got was insufficient to meet the cultivation expenses. Also, 6 farmers from Haputale (8%) were compelled to sell their vegetables to the lender. Only one farmer has complained that the rate of interest was high.

2.9. Costs Of Production of Vegetables:

During the field survey data on costs of production of vegetables were collected from the farmers. Since this was a one shot survey the information collected is subject to memory lapses, because the data gathered were in respect of cultivation activities of the previous seoson. Further, it is also possible that farmers have generally overestimated their costs and underestimated the yeilds and incomes. However, this is a common problem encountered by many researches in conducting farm management surveys, perticularly in developing countries. Thus the accuracy obtained by farm record keeping exercises can not be expected from a survey of this nature. An aatempt was made however to overcome this problem to a certain extent at the tabulation stage by excluding the responses considered to be unreliable in computing the costs of production data. This resulted in the reduction of the number of responses used in computing the costs of production of certain types of vegetables such as beetroot, carrot and cabbages.

The costs reported in the folowing subsections are mainly cash production expenses, though in certain instances an imputed cost of family labour is

used. However opportunity cost of the land was not imputed in these calculations. Thus, the net cash income of the family for each crop reported in the ensuing tables includes returns to land and family labour both. The total farm family income from growing a number of crops can not be obtainable from the data gathered in the survey.

2.9.1. Costs of Production of Potatoes:

Altogether responses of 41 farmers were used to calculate the costs of production of potatoes, and the results are summerised in table 2.9.1. One important feature relevent in this table is that on average about 55% of the total cost of production is spent on purchasing seed potatoes. The percentage of costs incurred on seed potatoes is highest in Bandarawela (71.2%) and lowest in Nuwara Eliya (45%). The other most important cost items are fertilizers (16.4%) and agro-chemicals (8%). These three most important material inputs account for about 80% of the total cost of production. In Nuwara Eliya land rent is also an important component of the cost of production (10%). In other areas it is of lesser significance. In all the survey areas hired labour accounts for about 7% of total costs.

Nuwara Eliya records both the highest yield per perch (18 kg). In contrast Haputale records both the lowest yield per perch (9 kg) and lowest net income per perch can be used as an indicator of profitability in making comparisons among the four survey areas.

2.9.2. Costs of Production of Beans

In calculating the average costs of production of beans responses recorded from 35 farmers were used. The data are presented in table 2.9.2. In the case of beans, the three material inputs namely seeds, fertilizer and agro-chemichals account for about 46% of the total cost of production. Thus when compared with the cultivation of potatoes, these three inputs assume lesser importance in the cost structure of beans. No farmers in the Nuwara Eliya sample provided data on cost of production of beans. But in other three areas the labour inputs accounts for about 20% of the total cost of production. The importance of the labour input as a cost item is highest in Welimada (40%) and lowest in Bandarawela (15%). Land rent does not appear as a cost item in Welimada, presumably because the majority of Welimada farmers used their own land for cultivation. But in the Bandarawela and Haputale areas land rent accounted for 13% and 20% respectively of the total cost of production of beans.

On average yield per perch was 13 kgs. The reported yields are highest in Bandarawela, about 16 kgs. In other two areas the average yield is about 10 kgs. per perch. The average net income per perch in the four survey areas was Rs. 45/=. This income was highest in Bandarawela (Rs. 59/=) and was lowest in Haputale (Rs. 26/=).

2.9.3. Costs of Production of Carrot:

In computation the costs of production of carrot, data provided by 10 farmers was used. No data was available from Welimada and Bandarawela areas. Even in Haputale the number of farmers who provided reliable information was only 2. In Nuwara Eliya the plots of land is somewhat larger (108 perches on average) than those found in Haputale (35 perches). To cultivate this average sized plot with carrots the Nuwara Eliya farmers have spent about Rs. 25,000/=. Avergae value of their production is about Rs. 34,000/=, thus giving them an average netincome of around Rs. 9,000/=.

The highest cost items found in the carrot cultivation in Nuwara Eliya are fertilizer cost (33%) and land rent (28%). This implies that many of the carrot farmers in Nuwara eliya cultivate rented in lands. The three material inputs namely seeds, fertilizers and agro-chemicals accounted for about 45% of the total costs. The use of hired labour (13%) and machine hire (7%) were the other large cost items Nuwara Eliya.

In contrast Haputale farmers incur only 33% of their costs on the three material inputs. They have incurred higher costs in connection with capital services (24%) and hired labour (19%). The capital services includes cost items such as fuel used for machinery and repairs to the same.

To cultivate an average plot of 35 perches Haputale farmers have spent about Rs. 4,000/=, whereas the value of the production obtained from it was Rs. 5,775/=. The yield per perch as well as the net income per perch was much higher in Nuwara Eliya, compared with Haputale. Nuwara Eliya farmers have got a yield of 26 kg per perch and earned a net income of Rs. 80 per perch from carrot cultivation. In Haputale the average yield per perch was 15 kg and net income per perch Rs. 43/= (vide table 2.9.3).

2.9.4. Costs of Production of Leeks:

In the case of this crop the responses from 14 farmers were used in computing costs of production. Again, there were no responses from Welimada and Bandarawela farmers. In this case too the average size of land devoted to cultivation in Haputale was smaller (46 perches) than in Nuwara Eliya (82 percheses). Also the cultivation of leeks in Nuwara Eliya involves intensive use of material inputs and hired labour when compared with the cultivation of leeks in Haputale. Out of a total cost of about Rs. 21,000/= spent for cultivting an average sized plot of about 82 perches in Nuwara Eliya, 71% is spent on seeds, fertilizer and agro-chemicals. To cultivate exactly half of this area Haputale farmers spent only about Rs. 6,000/=. Out of this amount they spent 51% on the three material inputs. As a result the yield per perch as well as net income per perch was much higher in Nuwara Eliya compared with those obtained in Haputale. In Nuwara Eliya yield per perch average 59 kgs, while in Haputale this was 25 kgs. Nuwara Eliya farmers have earned an average net income of Rs. 169/= per perch, when Haputale farmers recieved Rs. 54/= only (vide table 2.9.4).

2.9.5. Costs of Production of Beeetroot:

In the case of beetroots, responses of only 6 farmers were available. They were found in Welimada and Haputale. The cost structure given in the table 2.9.5 is in respect of beetroots intercropped with one or two other crops, such as leeks and carrots. No data was available for beetroots as a pure stand. Since it is cultivated as an intercrop the level of total costs incurred in cultivating is relatively much lower than for other crops covered in this study.

In the cultivation of beetroot too the largest cost items are seeds, fertilizer and agro-chemicals. In Welimada 71% of the total cost of cultivating this crop are spent on these three items. In Haputale this percntage was 67%.

The next important cost item is labour. 18% of the total cost in Welimada is incurred on hired labour. Although total labour cost accounted for 23% of the total costs in Haputale, much of it (14%) is accounted for by family labour.

Although average extents cultivated in Welimada is much smaller in size (20 perches) when compared with Haputale (85 perches) the average yield

per perch as well as average net income per perch is higher in Welimada than those obtained in Haputale (vide table 2.9.5).

2.9.6. Costs of Production of Cabbages:

Altogether 10 farmers have provided information relating to the costs of production of cabbages from three survey areas, namely Nuwara Eliya, Welimada and Bandarawela. These are summerised in table 2.9.6. The average size of land devoted to cabbage cultivation is more or less similar both in Nuwara Eliya (85 perches) and Welimada (80 perches). The average size of land is somewhat larger in the Bandarawela area. However, Nuwara Eliya farmers appear to have spent a relatively larger sum of money to cultivate their lands. They have spent on average about Rs. 12,000/= to cultivate this extent. From this about 57% was in respect of the three material inputs namely seeds, fertilizer and chemicals. Their next largest cost item is hired labour (27%). In contrast in Bandarawela, the two farmers on average have spent Rs. 6,275/= to cultivate an average sized plot of about 120 perches. Out of this amount almost 95% is spent on the three material inputs. The total cost of cultivating an average sized plot of 80 perches, Welimada farmers have spent Rs. 4,371/=. This is about one third of the total costs incurred by the Nuwara Eliya farmers. In Welimada the share of cost of the three material inputs does not exceed 50%. However, they incur relatively higher costs for packaging (14%) and capital services (15%). Both hired and family labour account for about 18% in this area from the total costs incurred.

However, the average yield per perch (38 kgs) as well as the average net income per perch (Rs. 140/=) obtained by the Nuwara Eliya farmers are considerably higher than those obtained in both Welimada and Bandarawela. In Welimada the average yield per perch was 21 kgs and the average net income per perch was Rs. 71/=. But in Bandarawela whereas the average yield per perch (17 kgs) was lower the average net income per perch (Rs. 81/=) ws higher than in Welimada.

2.9.7. Costs of Production of Tomatoes:

25 farmers from Welimada, Bandarawela and Haputale have provided data on the costs of production of tomatoes. the largest average land extent devoted to the cultivation of this crop was reported from Welimada (180 perches), whereas the smallest extent was reported from Haputale (40 perches). In Bandarawela average land size devoted to tomatoe cultivation

was 80 perches. However, the highest average costs of production was reported from Bandarawela (Rs. 9,470/=). The total costs in Welimada (Rs. 6,429/=) and in Haputale (Rs. 3,878 for 40 perches) are roughly comparable.

Although Haputale farmers cultivated the smallest extent of land they have spent a relatively higher percentage of their total costs on seeds, fertilizer and agro-chemicals (63%). In contrast Welimada farmers have spent about 47% of their costs on these inputs while Bandarawela farmers have spent 45%. The next important input is labour. Farmers in all the three areas have spent about 16% of their total costs on the hired labour input. Transoort (9%) and capital services (11%) have contributed significantly to the higher total cost found in Bandarawela.

The highest average yield per perch (19 kgs) and the highest average net income per perch (Rs. 60/=) have been reported from Bandarawela. This is followed by Haputale (average yield 16 kgs and average income Rs. 57/= per prch) and Welimada (average yield 14 kgs. and average income Rs. 53/= per perch).

2.9.8. Costs of Production of Brinjals:

In the case of this crop costs of production data have been provided by 7 farmers from two survey namely Welimada and Bandarawela. The average extents devoted to the cultivaton of brinjals are roughly equal in these two areas; 120 perches in Welimada and 128 perches in Bandarawela.

However, Bandarawela farmers have spent more than the Welimada farmers to cultivate this extent of land. One reason for the differences in costs is that Welimada farmers have not used hired labour but Ba`ndarawela farmers have done so. They have spent about 11% of their total costs on hired labour. Other contributory factors for this difference are relatively higher costs incurred in respect of machine hire (5%) and capital services (3%) in Bandarawela. Welimada farmers have spent less on these items.

Another important feature in table 2.9.8 is that while the average yields per perch in the two areas more or less similar (13 kgs. in Welimada and 11kgs. in Bandarawela) the average net income per perch is relatively higher in Welimada (Rs. 59/= as compared to Rs. 34/= in Bandarawela).

Chapter 3

MARKETING OF HIGHLAND VEGETABLES

Upcountry vegetable production, due to its largely specialized nature, has long been linked to external markets, notably Colombo. These trends have been reinforced in the recent past by the growing demand for upcountry vegetables, particularly in the urban areas where middle and upper income groups are concentrated.

While a major part of upcountry vegetables reaches Colombo through a network of owners of trucks, middlemen and wholesale dealers in the capital city, the rest finds its way into the other towns in other parts of the country. The Colombo Wholesale Market also known as the Manning Market is the largest single clearing house for upcountry vegetables. The latter also changes hands at many small markets scattered throughout the country including the producer areas themselves.

The demand for upcountry vegetables has no doubt been growing due to such factors as population growth, the highly concentrated nature of the cultivation of such crops in the hill country region, expansion of the hotel industry due to tourism etc.. On the other hand, there appears to be a considerable degree of price elasticity which operates as a check on the demand for such vegetables. As for the supply, it is evident that the production appears to have kept pace with the growing demand as the land area under cultivation has expanded wherever feasible as evident from the encroachments that have taken place, at least in certain areas. As mentioned earlier, the greatest demand for upcountry vegetables is found outside the areas of production, in particular in the towns and cities in other parts of the country. This has led to the development of a complex network in the marketing of upcountry vegetables,linking the areas of production with Colombo and other commercial centres. The collection, transportation and wholesale and retail sale of vegetables thus became activities which involve a large mass of people ranging from village - level brokers through transport agents to wholesale merchants in Colombo and other regional centres.

Given the fact that the vast majority of upcountry vegetable producers are owners of small parcels of land, according to many our respondents the market forces often operated against their interests. Lack of access to institutional credit, indebtedness, high cost of production due to increasing input prices, percieved exploitation by middlemen etc. reinforced the view that the vegetable producers in general are an exploited lot. On the other hand, it is argued in the same breath that the consumers of vegetables have to pay highly inflated prices due to two reasons. Firstly there are the large profit margins that whole range of people along the line keep when vegetables change hands between the producer and the retailer at the two ends. Secindly, costs of marketing are heavy due to the inefficient methods of handling vegetables.

Vegetable cultivation in the survey areas is a highly commercialised economic activity. The growing demand in the country for the vegetables produced in these areas has resulted in the growth of marketing systems linking the areas of production with the urban centres throughout the country, in particular Colombo. Colombo being the main clearing house for highland vegetables, requires a constant and uninterrupted supply and this has facilitated the establishment of direct contractual links between the wholesale dealers in Colombo and some of the vegetable producers in the study areas. While these direct trade links constitute an important marketing channel for highland vegetables, there are also several other channels that are equally, or in some areas, even more significant.

There are several important marketing channels in operation in the vegetable producing areas.

For example, farmers could send their produce direct to Colombo through transport agents. Here, they deal directly with the wholesale merchants at Manning Market. There are wholesale merchants based in local towns who collect vegetables from the producers either directly or through local brokers. The merchants who come from other parts of the country collect vegetables from farmers through local agents. Farmers in Bandarawela, Welimada and Haputale areas also take their produce to Producer Fairs (Polas) where merchants comming from different parts of the country make their purchases either directly from the farmers or through brokers. The recently established Purchasing Centres sponsored by the Ministry of Policy Planning also play a role in marketing in certain areas such as Welimada and Bandarawela. However, many farmers do not rely entirely on one channel. They often combine more than one channel depending on their circumstances.

The diverse marketing channels available to the farmer can be presented in the form of tree diagrams as given below. As is evident, in each case, vegetables change hands a number of times from their origin to their ultimate destination, namely the consumer. The length of the marketing channel has implications not only for the prices but also for the extent of wastage of vegetables. (See Diagrams 1-5)

3.1. Traders at the Colombo Wholesale Market:

The Colombo wholesale market has a three tier structure comprising of wholesale dealers, retailers and small vendors. There are over 1800 wholesale and retail stalls. Of this number, about 500 are wholesale stalls. As many traders recall, there had been about 30 stalls there about 30 years ago. In other words, the market has expanded enormously over the last few decades. Less than one third of the stalls are occupied by wholesale dealers who receive vegetables from both producers and vegetables collectors in the producer areas. Their role is to dispose of the vegetables they receive to visiting traders as well as retailers based at the wholesale market. Most of these traders deal with large stocks of vegetables and have large incomes on a daily basis. As mentioned earlier, though they are supposed to keep a 10% commission on the sales they make, they in fact, earn much more by understating both the selling price and the actual weight, according to the investigations carried out in the Manning Market. This is also the view of about 25% of the farmers (Vide Table 3.18).

Apart from the occasional cash advances they make to the producers, there is virtually no reinvestment of their profits in the sphere of vegetable marketing. Many traders invest their earnings in finance companies based in Colombo. Some have invested in goods and passenger transport businesses.

A few traders also set aside a small part of their earnings for advertising. They print calenders to be distributed among their clients, mainly in the producer areas. In many producer households, such calenders can be seen prominantly displayed.

Some of the wealthy wholesale dealers run their businesses by employing a small staff. The latters work is closely and regularly supervised by the employers.

Figure I : Marketing Channel One

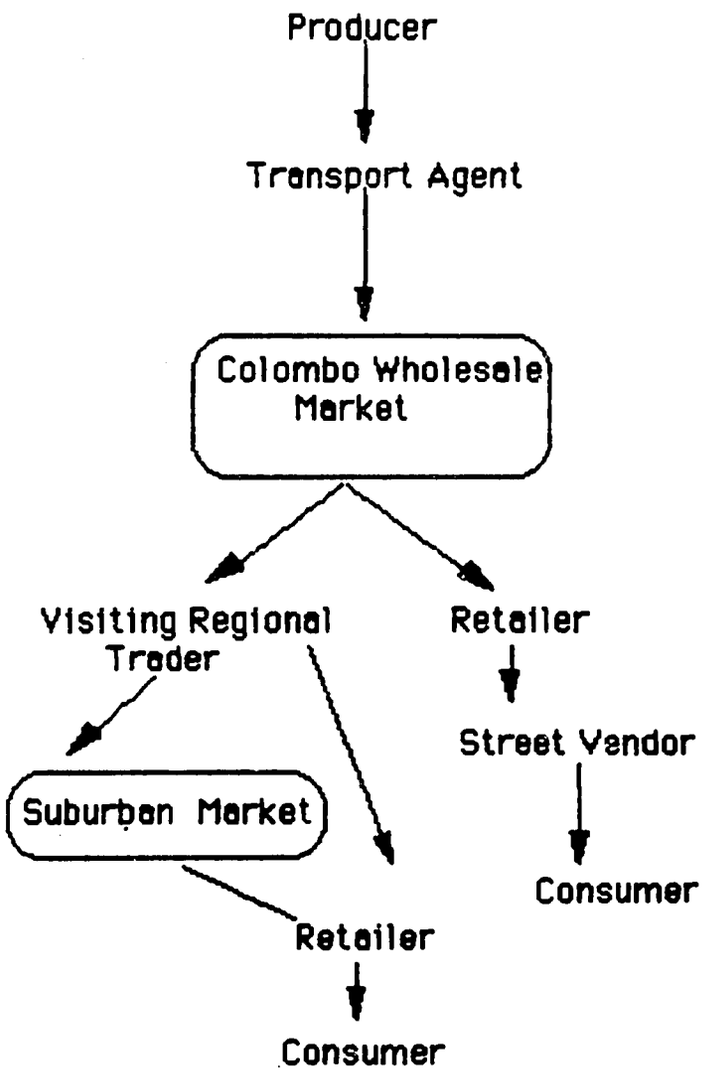


Figure 2 : Marketing Channel Two

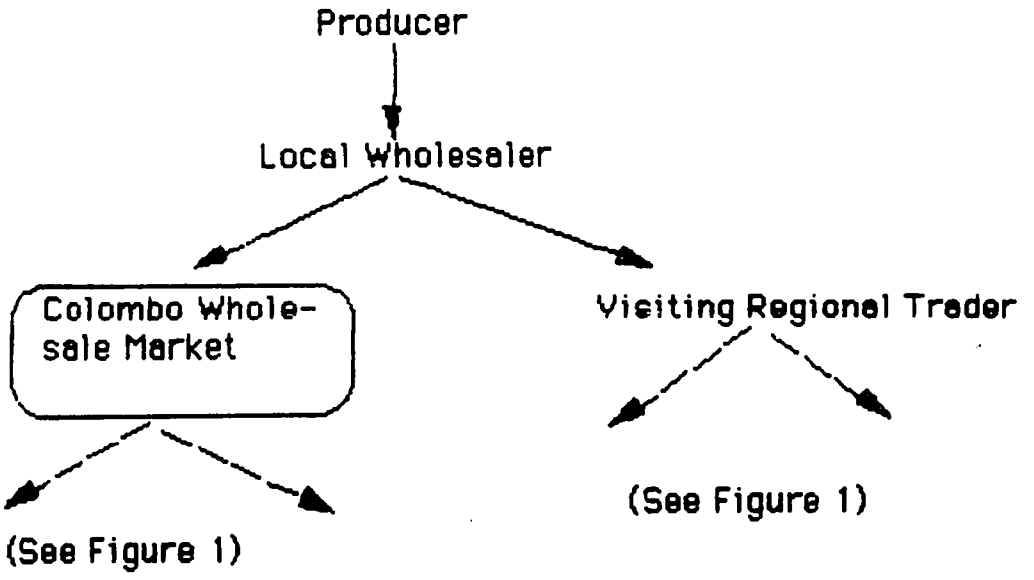


Figure 3: Marketing Channel Three

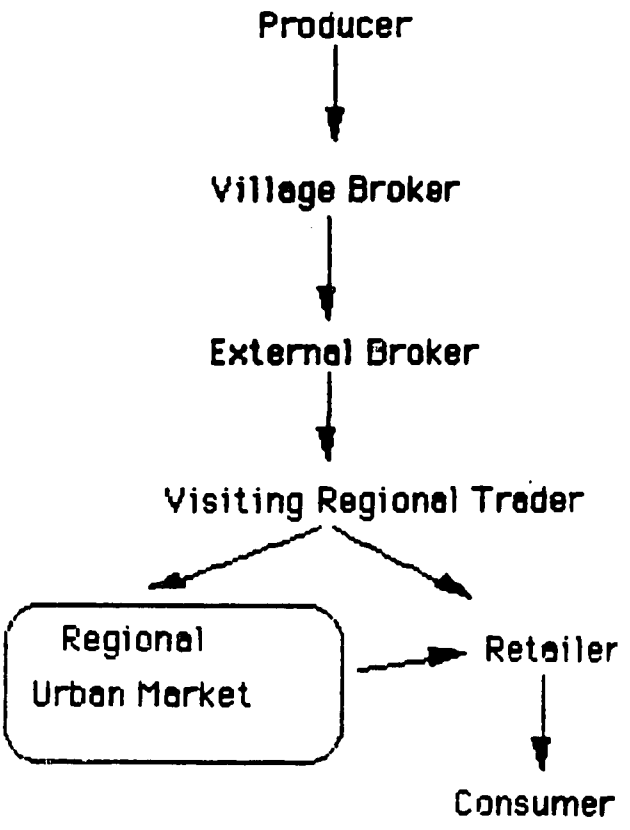


Figure 4: Marketing Channel Four

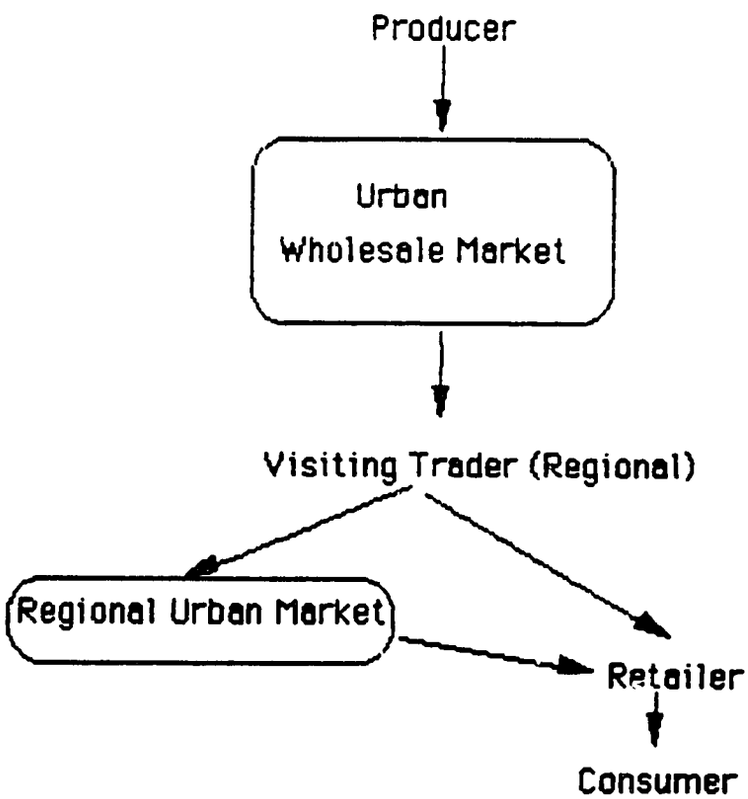
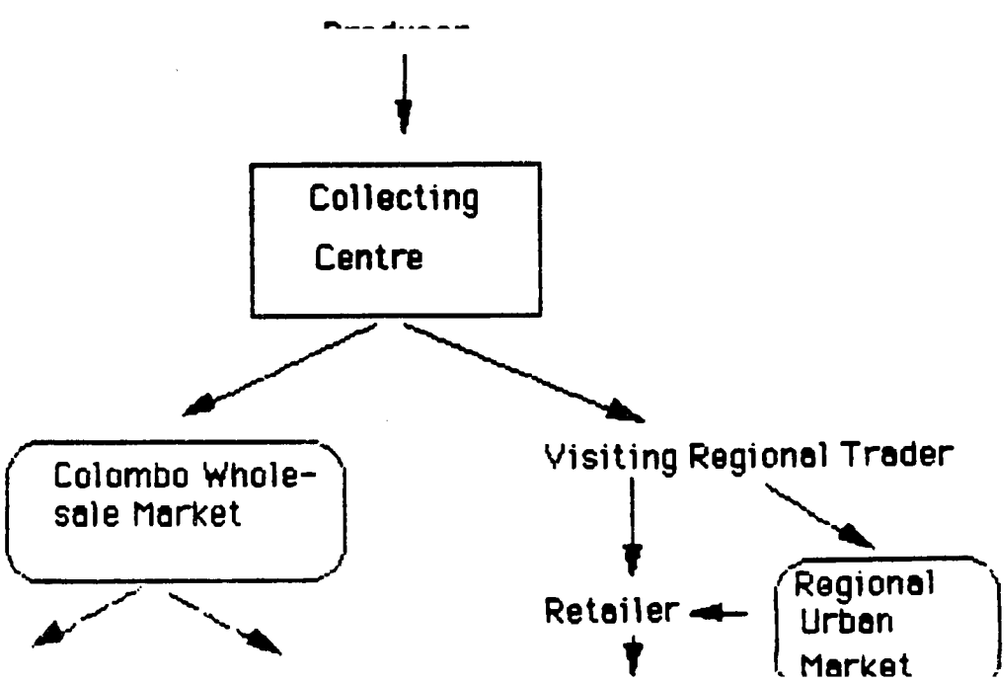


Figure 5: Marketing Channel Five



The influential and wealthy traders also control the Association of Traders at the wholesale market. This association which is known as the "Manning Market United Traders Union" is the central authority directing and controlling the system at the Manning Market. the Traders Union has a committee elected by the general membership. It employs a small support staff and a crew of labourers who handle the loading and unloading of vegetables. Union levies a fee of 10% of the transport charges paid to the transport agents. These proceeds are used to pay the salaries of its small office staff. They also charge Rs. 3/= per package of vegetables as handling charges and this fee is paid to the labourers employed by the union.

All the above charges, including transportation charges paid to the transpot agents are debited to the account of the wholesale dealer who in turn deducts them along with his own commission from the amount payable to his suppliers (both producers and others who send vegetables to Colombo). The latter is often done on paper as payments to the suppliers are not made frequently. The value of the stocks received by the dealer along with the transport and other charges deducted are recorded and , when the latter makes a payment, it is set against the final balance which appears in the records.

Since wholesale dealers do not have to make daily payments to their suppliers, they invest their earnings in different ways. The **Seettu System**[1] is one such mode of investment. This system allows people to save money or raise investment capital outside the banking system without revealing their income to the tax authorities. Investment in finance companies which pay higher interest rates and provide investment capital when needed is also popular among the traders at the Colombo wholesale market. The bigger vegetable dealers who have businesses like passenger and goods transport no doubt rely on capital raised through such channels for importation or purchase of vehicles.

The traders association which performs a facilitating function relating bulk vegetable trade at the wholesale market is also highly politicized. Its key office bearers have close links to the centres of municipal and state power. Such political links may help secure favours from the authorities. In this respect, it is noteworthy that the wholesale market premises belongs to the

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[1] A number of people who often know and trust each other get together and agree to contribute an agreed sum of money on a periodic basis, either daily, weekly or monthly into a common fund. Then the group draws lots in order to prepare the order of priority. The person who comes first gets the first collection, and so on. But, if a person who has a later date wants money urgently, he can offer to accept an amount lower than the actual collection. The amount thus saved is added to the common fund.

Colombo Municipal Council which levies a monthly rent from each of the stalls used by the traders. While most traders have one stall each, a few have access to over 10 stalls each. The bigger dealers have also entered into agreements with public and private sector institutions to supply large stocks of vegetables on a regular basis.

Many wholesale dealers at the Manning Market in Colombo have long established contacts with the farmers in the vegetable producing areas. These traders have operating rights or have access to 'spaces' at the market known as 'bakki' which are numbered. Once they establish contact with the producers, the latter can hand over 'packages' of vegetables to transporters to be delivered to the addresses written on the packages. These links between the Colombo wholesale dealers and some of the vegetable producers in the hill country in some cases have developed over time into patron-client relationships.

Some vegetable producers being small scale farmers have had limited access to institutional credit due to various reasons discussed in chapter two. Yet, they being intensive agriculturalists dependent on expensive agricultural inputs such as chemical fertilizer, seeds and other agro chemicals needed credit most. It was this gap that the Colombo wholesale dealer came forward to fill. They were willing to extend credit to vegetable producers not only to meet cultivation expenses but also other needs such as weddings, new year celebrations, housing construction and healthcare. The traders' only consideration was an assured and uninterrupted supply of vegetables.

The credit extended to vegetable producers by the Colombo wholesale traders is seemingly interest free as borrowers do not pay an interest on the loans obtained. Once a patron-client relationship is established, loans are relatively easily obtained by sending a note through the transport agent. Or, if it is a relatively large sum, the farmer himself travels to Colombo to meet the trader. Unless otherwise requested, the amount obtained is deducted in installments when goods are sent to Colombo.

When farmers come to Colombo for various purposes, they are often accomadated and entertained by their respective patrons in Colombo. This is considered by many farmers as a privilege which many other villagers do not enjoy. Vegetable producers who sell their produce to Colombo traders also receive calenders and presents from the latter at the beginning of the calender year.

Farmers who send their produce to Colombo appreciate the benefits they derive from the patron-client relationship they have with the Colombo traders, but, they are also mindful of the fact that they are being constantly exploited by the patrons. They complain that this is done in many different ways. About 25% of the farmers complain of incorret weights and another 22.5% complain of lower prices (Vide Table 3.18).

Those who send their produce to Colombo do so either because they have to send at least part of their produce there due to contractual obligations or because they expect a higher price. When adequate supplies do not reach Colombo, prices naturally go up so that those who send vegetables get a good price. When higher prices are recorded in Colombo, many people tend to send goods there leading to a glut which in turn results in lower prices. This situation speaks of a high degree of regional integration of markets. In otherwords when the vegetable producers send their produce to Colombo through transport agents, the prices they get are determined at the Colombo wholesale market. The Colombo wholesale traders who receive vegetables from producers are supposed to sell vegetables at the highest price possible on behalf of their suppliers. They can keep a commission of 10% on vegetables and 5% on potatoes sold. Vegetable producers however complain that they do not often get the highest price or the exact value for the quantity of vetgetables they dispatch due to a number of reasons.

At the Colombo Wholesale Market, vegetable prices vary during the day,the highest prices usually recorded in the early morning. Prices can also vary depending on the quality of produce, i.e. freshness, cleanliness, size etc.. Since the owners of the stocks of vegetables reaching Colombo are not around when the transactions take place, wholesale dealers might be able to underestimate the prices obtained. Although we have no hard evidence to prove this , about 25% of the sample farmers are of the view that these wholesale traders usually do so. If cabbages are sold at Rs.8/= a kilo they record the price as Rs. 7/=. Then the farmer is paid at the rate of Rs. 6/=. In other words, the profit that the wholesale trader makes on a kilo of cabbage is Rs. 1.60/=, more than twice as much the "stated" commission. of 10%.

According to farmers there are at least two other ways in which the Colombo wholesale dealers are known to take undue advantage of the situation. Firstly, it is by under-weighing. They almost always reduce one or two kilos from each package containing about 50 kilos of vegetables. This is attributed to weight loss due to supposed dehydration. Secondly, several kilos each are reduced from some of the packages saying that vegetables were damaged or spoiled due to bad handling, delays in

transportation etc.. Even though the farmers know that such weight reductions are often done to optimize profit rather than to compensate for actual losses, they are not present when the transactions take place in Colombo. Many farmers visiting Colombo have observed how the Manning Market operates and they complain that the above malpractices take place. But, they are usually not there when it happens to them.

The prices prevailing in the Colombo market are highly correlated with prices prevailing in the producing areas. This should encourage them to sell the available quantity at the highest possible price. But, on the otherhand they have no facilities to preserve vegetables, and therefore they have to get rid of the vegetables on the same day. Usually within few hours. Under the circumstances, wholesale dealers do not necessarily attempt to set higher prices for the vegetables they handle. Prices are usually determined by the supply of, and demand for vegetables that prevail at the time of the transaction.

3.2. Visiting Traders or Trucker Buyers:

Traders who visit the producer areas by trukes or lorries to purchase vegetables wish to purchase vegetables at lower prices so that they could make a reasonable profit by selling vegetables in their own areas. Since they usually purchase by making spot payments, they tend to quote lower prices than those obtained in Colombo. However, when there is a short supply of vegetables in the local market either due to a fall in production or higher prices obtained in Colombo, these traders are compelled to offer higher prices in order to secure adequate supplies. Such purchases reduce supplies to Colombo leading to higher prices there.

What is evident from the above description is that Colombo and local vegetable markets are interdependent in that the changes in one affects the conditions in the other. While the distribution of vegetables between Colombo and other regional markets is guided by the pricing mechanism, the overall supply of vegetables is guided by factors such as weather conditions and farmers decisions on the cropping mix. Since vegetables are a perishable commodity and cannot be kept in the ground for long periods, producers can do little to regulate the supply in the short run. What they often attempt to do is to choose between different marketing channels available to them with a view to minimizing their losses.

3.3. Local Collectors:

Traders who purchase vegetables from the producers either at the farm gate or at the collection centres usually offer lower prices relative to those obtained in Colombo. But at times, prices paid to farmers in Colombo fall even below those paid by local collectors. It is when this happens that the producers sell their vegetables to local collectors instead of sending them to Colombo.

In spite of the lower prices some of the vegetable producers often secure from the local collectors, there are also obvious advantages of selling vegetables to the latter. Firstly, they often get spot cash for their produce at a price which they negotiate with the buyer. Secondly, they do not have to bear the cost and burden of transport, particularly when the buyers visit the farm to make the purchases. Thirdly, once vegetables are removed from the cultivation plot , the producer runs no risk of incurring losses due to delays, bad handling and loss of weight due to dehydration.

3.4. Brokers:

As mentioned before, there are several ways in which produce can be disposed of in the local context. An important feature of almost all these marketing channels is the involvement of brokers or middlemen. It is the latter who mediate between the producers and the buyers. The brokers help the bulk buyers to locate sources of supply. They also bring buyers to the doorstep of the producers. In the process, they often secure commissions from both the bulk buyers as well as the producers. Hence the widespread contention among vegetable producers that it is the middlemen who thrive, not the producers.

3.5. Purchasing Centres:

It is perhaps due to the above situation that the Ministry of Policy and Planning has helped establish purchasing centres with a view to offering a reasonable price to both the producer and consumer by strenghning the conpitition. This scheme also hopes to replace the services of redundant intermediaries such as brokers. The Ministry has allowed carefully selected individiuals obtain bank loans up to a million rupees as investment capital to start purchasing centres. However some of the owners of currently

operating purchasing centres has obtained a loan amounting to 1 million. They are supposed to purchase directly from the producers by paying highest possible prices. Most purchasing centres in the survey areas have been in operation for only several months and it is too early to evaluate their performance. The fact that they have encountered opposition from the middlemen in the area indicates that in the areas where they operate successfully they are eating into the profits made by the latter (see Appendix 5).

3.6. Producer Fairs (Polas):

In the survey areas there are three larger producer fairs (Polas) located in Welimada, Bandarawela and Haputale. These fairs constitute a significant marketing outlet for vegetable grown in these areas. The buyers of vegetables at these fairs are merchants comming from far away places like Galle, Matara, Kurunegala etc. They make their purchases either directly from the farmers or through brokers. At these fairs prices are determined through bargaining. Farmers are awere of the prices they can obtain from marketing outlets, other than Pola, particularly prices prevailing in Colombo. It is when the Colombo wholesale prices are low majority of the farmers divert their produce to these Polas. On the otherhand buyers also are aware of the prices in Colombo and other producing areas. Thus there appear to be a fair degree of correlation prevailing between the prices in the Colombo market and in the producer fairs. (Vide Table 2.34 and 2.35)

3.7. Competition Among Marketing Channels:

The fact that there are several marketing channels in operation in the vegetable producing areas is significant in several respects. Firstly, it means that there is a considerable degree of competetion among vegetable dealers. Though there is little evidence of price wars, the fact that all of them have to secure a portion of the vegetables available in the market no doubt gives the farmers some flexibility. Apart from those who are indebted to dealers in Colombo or elsewhere, others can choose between Colombo and local dealers. Even the former do not have to sell all their produce to those from whom they have obtained credit if the market conditions do not persuade them to do so.

On the other hand, all bulk buyers have a shared interest to keep the buying prices as low as practicable. This is the only way to secure a bigger profit margin. This is particualrly so for those who make their purchases in the producer areas. Those who come from far away locations such as Matara, Anuradhapura and Kurunagala particularly belong to this category. They cannot, however offer prices which are much lower than those obtained in Colombo because then the producers can send their produce to Colombo. They are however in a stronger position as the producers find it more convenient to sell vegetables to those who purchase at the farm gate.

Tables 3.1 - 3.4 give survey data on the mostly used marketing channels in the four areas by the type of vegetable. As is evident, except in Haputale, in other areas around one third of the farmers mention the Colombo Wholesale Market (CWM) as their mostly used marketing channel. In Haputale, the corresponding figure is about 15%. Here most farmers sell their produce to middlemen and local commission agents.

What is clear from the farmers responses is that they are not heavily dependent on a single channel and that they are quite dispersed across different marketing channels. At Bandarawela and Welimada, many farmers also use the urban fair as a channel of vegetable marketing.

Tables 3.5 - 3.8 give the breakdown of farmers by the occasionally used marketing channel. Data in Tables 3.9 - 3.12 indicates the marketing channels available but not made use of by the farmers. If we first look at CWM ,in all four areas a sizeable number of farmers seem to avoid it. The relevant figures are 30%, 37.8%, 33.3% and 46.1% for Nuwara Eliya, Welimada, Bandarawela and Haputale respectively. The other marketing channels available in the area avoided by a sizeable number of farmers are local commission agents, middlemen, the weekly fair and purchasing centres.

It is significant that less than 25% of the farmers interviewed report that they sell their vegetables to a single dealer. While the majority of them mention trust and friendship as th e reasons for their being tied to a single dealer, a handful of farmers mention the fact that they have obtained credit from them. What is clear is that the vast majority of the farmers (75.8%) sell their produce to more than one dealer (Table 3.16). This state of affairs is further confirmed by the responses given to the question as to whether the farmers could change the present dealer. About 93% of the respondents answer this question in the affirmative (Table 3.17). The relative ease with which most farmers could change their dealers seems to be due to the fact that most producers do not have an enduring relationship

with their dealers. As Table 3.14 shows, less than 20% of the farmers report friendship or kinship ties with their dealers. Others no doubt have contractual relationships which are superficial and transitory.

The fact that the vast majority of the farmers have impersonal contacts with the dealers has no doubt contributed to the formation of their attitudes towards the latter. These respondents perceive their dealers as untrustworthy. As Table 3.18 shows, nearly two thirds of the respondents report unfair practices adopted by their dealers such as underweighing, lower prices and higher commissions. For instance, about 25% of the respondents complain of incorrect weights. Some of the data given in Table 3.19 also attests to these facts.

Table 3.19 points to the major marketing problems identified by the producers. They are incorrect weights, exploitation by traders and transport difficulties. What do the farmers perceive to be the solutions to these problems. It is interesting to note that the vast majority of them (77.1%), irrespective of the area mention the establishment of purchasing centres.as a solution. Some of the solutions proposed by a small number of farmers are given in Table 3.22. They are provision of better transport and organize farmers. One farmer mentioned the provision of cold storage facilities as a solution.

Vegetable producers who were interviewed were questioned as to the nature of their experience with state sponsored marketing channels such as Marketing Department and Markfed which existed in the past. Only a minority of farmers interviewed in all areas had any experience with them (less than 10%). The respondents had mixed reactions when they were asked to point out advantages and disadvantages associated with these marketing channels. The main disadvantages identified were corruption, low prices and stringent quality control. The advantages identified by the respondents were the use of correct weighing scales, direct purchase and provision of transport. (Vide Tables 3.20 and 3.21)

3.8. Transportation:

Transportation is an integral aspect of highland vegetable marketing. Vegetables being a perishable commodity, the producers as well as the dealers have a common interest in moving them fast from the farm gate to the consumers. Many vegetable plots are located away from the major transport routes. The owners of such plots have to rely on non-mechanical

forms of transport such as wage labourers. The latter carry vegetables on their backs to the nearest dispatch point from where vans and lorries collect packages of vegetables to be transported to selling points. Many farmers have to incur additional costs to move produce from the farm plot to the dispatch point. (Vide Table 3.23) As Table 3.24 shows a large proportion of the farmers report difficulties in transporting from to the dispatch point.

Most of the lorries transporting vegetables are privately owned by a large number of individuals. Only a small percentage of them are organized into unions. (Vide Table 2.37) The union based in Nuwara Eliya is the largest and the oldest, established in the 1940's. Few smaller groups have emerged elsewhere but, they are not formally organised as the Nuwara Eliya one.

Producers who depend on transport agents to send their vegetables to market report several problems associated with transport. They are a) delays involved, b) high transportation costs and c) damages caused to vegetables in transit. As mentioned earlier, the produce reaching Colombo later in the day fetch lower prices. So transportation delays usually result in losses to the farmers. (Vide Table 2.35)

3.9. Pricing Mechanism:

And finally to make a few comments on the pricing méchanism and the flow of price information. It became clear to us during our fieldwork that there is a constant flow of price information between the Colombo wholesale market and the producer areas. While many dealers use telephones to check on prices obtained in Colombo, the traders and transport agents who constantly travel between Colombo and the producer areas carry price information. The result is there is a correspondence between prices obtained in different markets. As Table 3.30 indicates, the farmers receive such information from traders, brokers and neighbouring farmers. As Table 3.31 shows, the producers receive price information throughout the harvesting season.

The prices obtained by the producers from local dealers during the fieldwork period indicate considerable price variations. Such changes take place almost daily. For instance, two farmers sending the same vegetable on the same day to Colombo may receive different prices depending on the time of arrival of produce in Colombo, condition of produce at the the arrival in

Colombo, etc. Moreover, different dealers at different local markets may offer slightly different prices depending on the circumstances.

The producers in general find the price information they recieve useful. Most farmers rely on such information to select the marketing channel. For instance, if the farmers come to know that the prices obtained in Colombo are relatively low, they may sell their produce to a local dealer who offers a reasonable price. On the other hand, if the prices in the markets continue to be low for days, at least in the case of certain vegetables, the farmers can delay harvesting.

3.10. Some Comments on the Post-Harvest Handling of Vegetables:

Post-harvest handling of vegetables involves many activities such as grading, packaging, weighing, carrying to the dispatch point, loading, transportation, unloading,storage and so on. All these activities depending on how carefully or carelessly they are carried out can have a significant impact on the quality and the durability of the vegetables. What was observed during fieldwork was that not much attention is paid to careful post-harvest handling by any of the parties involved. In other words, there is considerable room for improvement which can prevent post-harvest losses all the way from the farm gate to the ultimate consumer.

Inadequate attention paid to proper post-harvest handling is due to several reasons. Firstly, farmers as well as dealers wish to avoid unnecessary costs during transit. They continue to use conventional packaging methods in spite of the fact that they contribute to the wastage of vegetables. (Vide Table 3.29) Most vegetables are packed in gunny bags, both thick and net type[2], which are stacked on top of each other exerting considerable pressure on the vegetables. Hundreds of such packages are tightly packed into a lorry for transportation from the vegetable producing areas to far away destinations. This practice generates considerable heat inside the lorry contributing to the process of decay.

Wooden boxes are used only for packing tomatoes which cannot be transported in gunny bags. The result is that the unit cost of transportation for tomatoes is much higher. Wooden boxes do not eliminate losses as some

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2 The choice of the type of bag depends on the type of vegetable. For instance , for potatoes, they use the thick type but for carrots, the net type is used. The net type is used to allow more ventilation.

riped tomatoes get damaged during transportation. Even though the unit cost of transportation for other vegetables is lower as more can be packed into gunny bags, losses involved in this mode of packing is considerable. Leafy vegetables such as raddish, beetroot and leeks are packed into bundles wrapped in an open net type gunny bag. This mode of packing is resorted to prevent damage to leaves. However, since bundles of such vegetables are not often kept separate from bags of other vegetables, considerable losses occur during transportation. Transport agents tend to load as many packages as possible into their lorries in order to optimize lorry hire with the result that there is often overloading.

Frequent loading and unloading of vegetables involved in long distance transportation account for a major part of the damages caused to vegetables. The manual labourers who load and unload vegetables at various points take little care in handling packages of vegetables. They often throw them into the lorry and drop them on the ground in the process of unloading.

Given the above background, it is not surprising that many producers complain that they have to incur considerable losses due to damages caused during transportation. Dealers in Colombo often deduct a certain percentage from the weight of a package saying that vegetables are spoiled. Since the owners of such packages are not present at the Colombo wholesale market, they are not in a position to verify whether such claims are true or not. On the other hand, such damages often take place with the result that the farmers have no option but to believe what their dealers say about such losses.

It is also common knowledge that, when the vegetables after a long journey from the producer areas, finally appear in retail stalls in Colombo and elsewhere, they are often badly bruised and crushed and cannot be preserved for long. Since no cold storage facilities are usually used to store vegetables , traders are compelled to dispose of their stocks quickly. Thus the whole process does not last for more than a few days. Considerable price fluctuations that are observable in the vegetable market can be partly attributed to the rapid nature of the process of transfer and disposal of vegetables. The present marketing system of vegetables takes the perishability of vegetables for granted. It does very little to deal with it.

Since Preservation and Storage of vegetables are not built into the marketing system that we have described above, wholesale dealers have to dispose of their stocks on a daily basis. Given the fact that most consumers of vegetables are low income households, it is not easy to maintain very high price levels when the supply increases. The general tendency on the

part of the dealers at various levels, therefore is to pass on the burden of declining prices to the producers who have limited control over supply in the short run. For the former, the actual price level that prevails at a given point in time is of no great significance as they could maintain their profit margins irrespective of the prices fetched for vegetables in the market. There is therefore, no incentive for the wholesale vegetable dealers to reinvest at least part of their profits for the improvement of the processes of packaging, transfer, storage and handling of vegetables. This is also evident from the way the Colombo wholesale market is organized.

3.11. Problems of Exporting Highland Vegetables:

One of the main problems faced by the vegetable exporters in Sri Lnka is that producers are not aware of the quality requirements of the exporters and thus most of their produce lack uniformity in size, shape and colour. Normaly, foreign buyers maintain strict specifications with regard to the length, shape, appearence of the vegetables and colour etc.

Another problem is that the supply of highland vegetables is limited on the one hand and the range and variety of vegetables available are also limited on the other hand. It is understood that the Export Development Board is currently working on this in collaboration with the Department of Agriculture.

There is also no proper coordination between production and marketing of vegetables. Most farmers are unaware of the specifications and requirements of the export market. This leads to poor quality consciousness on the part of the producers. The non-availability of correct post-harvest technology is also a problem confronted by the exporters. Incorrect handling of vegetables during harvesting, inadequate storage facilities, incorrect packaging and incorrect transportation leads to damage to the vegetables.

LIST OF TABLES

Table 2.1.1. Average Family Size

	N'Eliya	W'mada	B'wela	H'tale	All
Size	5.7	5.0	4.8	4.9	5.1

Table 2.1.2. Sex Distribution (%)

Male	50.2	50.5	54.8	56.8	53.0
Female	49.8	49.5	45.2	43.2	47.0
Total	100.0	100.0	100.0	100.0	100.0

Table 2.1.3. Age Distribution - Years (%)

15 or less	22.2	26.9	25.5	23.1	24.4
16-30	42.2	36.2	36.6	39.1	38.1
31-45	17.9	20.9	17.9	16.3	18.3
46-60	14.0	12.3	15.5	16.6	14.6
Above 60	3.6	3.7	4.5	4.8	4.1
Total	100.0	100.0	100.0	100.0	100.0

Table 2.1.4. Education (%)

No schooling	5.8	9.0	5.5	6.1	6.6
Primary	27.3	24.6	27.9	25.9	26.4
Post primary	28.0	31.5	26.6	29.9	29.0
GCE OL/AL	33.1	25.6	33.4	29.3	30.4
Higher	4.3	4.7	1.0	-	2.6
Below school going age	1.5	4.7	5.5	8.8	5.0
Total	100.0	100.0	100.0	100.0	100.0

Table 2.1.5. Activity Status (%)

Employed	14.3	11.0	18.3	25.9	17.2
Unemployed	49.5	51.5	47.2	39.1	47.0
Student	24.0	23.9	23.8	20.4	23.1
Disabled	0.9	1.3	-	0.3	0.7
Too young or too old	5.2	9.6	10.7	14.3	9.8
Data Missing	6.1	2.7	-	-	2.3
Total	100.0	100.0	100.0	100.0	100.0

Table 2.1.6. Main Occupation - Family (%)

Farmer	35.2	40.2	31.0	25.2	33.0
Artison	1.8	2.0	4.5	3.4	2.7
House wife	7.0	7.3	11.0	10.9	9.0
Labourer	2.1	0.7	1.0	8.2	3.0
Blue collar worker	3.3	0.3	4.8	5.4	3.5
White collar worker	3.0	2.0	2.4	2.7	2.6
Without a main job	47.4	47.5	45.2	44.9	46.3
Total	100.0	100.0	100.0	100.0	100.0

Table 2.1.7. Main Occupation - Respondent (%)

Farmer	82.8	91.7	75.0	55.0	76.1
Artison	1.7	-	1.7	1.7	1.3
House wife	-	-	6.7	-	1.7
Labourer	3.4	1.7	-	18.3	5.9
Blue collar worker	8.6	1.7	6.7	10.0	6.7
White collar worker	3.4	1.7	8.3	3.3	4.2
Other	-	3.3	1.7	11.7	4.2
Total	100.0	100.0	100.0	100.0	100.0

Table 2.1.8. Status of Farming - Respondent (%)

Full Time	81.0	73.3	65.0	45.0	66.0
Part Time	19.0	23.3	30.0	38.3	27.7
Occasional (Farm - helpers)	-	3.4	5.0	16.7	6.3
Total	100.0	100.0	100.0	100.0	100.0

Table 2.2.1. Land Ownership and Tenure - No of Farmers (%)

Single owner	81.0	76.7	61.7	56.7	68.9
Joint ownership	5.2	13.3	16.7	11.7	11.8
Tenant Farmer	-	1.7	15.0	6.6	5.9
Leased	10.3	1.7	6.6	8.3	6.7
LDO Lands	5.3	5.0	-	15.0	5.9
Crown	-	1.6	-	1.7	0.8
All Types	100.0	100.0	100.0	100.0	100.0

Table 2.2.2. Size of Operational Land Holdings - Perch (%)

Less or eq 25	10.3	3.3	3.3	28.3	11.3
26-50	37.9	23.3	35.0	13.3	27.3
51-100	25.9	40.0	33.3	26.7	34.7
101-200	19.0	23.3	18.3	18.3	19.7
201-300	-	5.0	6.6	3.3	3.8
Above 300	-	5.0	6.6	3.3	3.8
Total	100.0	100.0	100.0	100.0	100.0

Table 2.2.3. Types of Land Operated - No. Of Farmers (%)

Paddy Field	1.7	31.7	56.7	38.3	32.4
High land	94.8	68.3	43.3	61.7	66.8
Home Garden	3.4	-	-	-	0.8
Total	100.0	100.0	100.0	100.0	100.0

Table 2.2.4. Sources of Supply of Water - No. of Farmers (%)

Irrigation	17.2	31.7	53.3	38.3	35.3
Water pump	62.1	1.7	8.3	8.3	19.7
Manual	10.3	5.0	-	8.3	5.9
Rainfed	10.3	61.7	38.3	45.0	39.1
Total	100.0	100.0	100.0	100.0	100.0

Table 2.2.5. Number of Seasons Cultivated Per Year - No. of Farmers (%)

1 season	1.7	53.3	26.7	6.7	22.3
2 seasons	43.1	45.0	56.7	65.0	52.5
3 seasons	55.2	1.7	16.7	28.3	25.2
Total	100.0	100.0	100.0	100.0	100.0

Table 2.2.6. Crops Grown During the Maha Season - No. of FArmers (%)

No Cultivation	1.7	16.7	8.3	1.7	7.1
Paddy	-	31.7	60.0	40.0	33.2
Potatoes	37.9	23.3	3.3	11.7	18.9
Beans	-	10.01	16.7	6.6	8.4
Carrot	15.5	-	1.7	10.0	6.7
Beetroot	12.1	-	-	8.3	5.0
Cabbage	6.9	3.3	-	3.3	3.4
Leeks	8.6	-	1.7	10.0	5.0
Knol Khol	3.4	-	-	-	0.8
Raddish	13.8	-	-	-	3.4
Tomatoes	-	5.0	3.3	6.6	3.8
Other	-	3.3	3.3	1.7	2.1
Combination	-	6.6	1.7	-	2.1
Total	100.0	100.0	100.0	100.0	100.0

Table 2.2.7. Crops Grown During the Miidle Season - NO. of Farmers (%)

No cultivation	41.4	96.7	83.3	68.3	72.7
Potatoes	10.3	-	-	3.3	3.4
Beans	-	3.3	5.0	3.3	2.9
Carrot	6.7	-	--	6.7	3.4
Beatroot	3.4	-	1.7	1.7	1.7
Cabbage	1.7	-	1.7	-	0.8
Leeks	-	-	-	10.0	2.5
Raddish	5.2	-	-	1.7	1.7
Tomatoes	-	-	5.0	-	1.3
Other	-	-	-	1.7	0.4
Combinations	31.0	-	6.6	6.6	10.9
Total	100.0	100.0	100.0	100.0	100.0

Table 2.2.8. Crops Grown During the Yala Season - No. of Farmers (%)

No cultivation	16.4	3.4	38.3	15.0	8.3
Paddy	-	-	1.7	-	0.4
Potatoes	32.8	20.0	5.0	18.3	18.9
Beans	1.7	6.7	25.0	28.3	15.5
Carrot	20.7	1.7	-	10.0	8.0
Beetroot	3.4	-	-	6.7	3.8
Cabbage	12.1	-	1.7	1.7	3.8
Leeks	5.2	-	-	6.7	2.9
Tomatoes	-	10.0	21.7	3.3	8.8
Other	-	3.3	13.3	1.7	4.6
Combinations	20.7	20.0	16.7	1 5.0	18.1
Total	100.0	100.0	100.0	100.0	100.0

Table 2.2.9. Crops Grown During the Last Season - No. of Farmers (%)

POtatoes	30.9	29.9	5.9	21.2	22.0
Beans	-	30.8	35.5	28.3	24.0
Carrot	25.8	-	-	9.1	8.4
Beetroot	10.3	0.9	5.9	6.1	9.2
Cabbage	25.8	9.3	5.9	6.1	9.2
Leeks	9.3	-	-	15.2	5.9
Kno Kohl	1.0	1.9	-	1.0	1.0
Raddish	7.2	-	-	1.0	2.0
Tomatoes	-	15.9	35.6	7.1	14.9
Other Vegetables	-	11.2	16.8	5.1	8.4
Total	100.0	100.0	100.0	100.0	100.0

Table 2.2.10. Reasons for Crop Choice - No. of Farmers (%)

No special Rea	-	-	1.7	1.7	0.9
Resistant to climate	69.0	62.0	55.9	63.3	62.6
Market condition	5.2	12.0	10.2	8.3	8.9
LOw cost & easy	13.8	19.0	25.4	25.0	20.9
Seeds canbe obtained	-	1.7	1.7	-	0.9
2,3,4,5	12.0	5.2	5.1	1.7	6.0
Total	100.0	100.0	100.0	100.0	100.0

Table 2.3.1. Sources of Seed/Planting Materials Supply - No. Of Land Blocks Cultivated (%)

Private	68.0	41.1	33.7	58.6	50.0
State & Cooperatives	13.4	9.3	1.0	2.0	6.4
Own Supply	15.5	49.5	65.3	39.4	42.8
State & Private	3.1	-	-	-	0.7
Total	100.0	100.0	100.0	100.0	100.0

Table 2.3.2. Costs of Seeds and Planting Materials Used - No. of Land Blocks Cultivated (%)

Lees than Rs. 100	9.3	14.0	15.0	8.1	11.7
Rs. 100 - Rs. 500	26.8	33.6	52.0	42.4	38.7
Rs. 501 - Rs. 1000	13.4	14.0	19.0	22.2	17.1
Rs. 1001 - Rs. 2000	15.5	4.7	5.0	3.0	6.9
Rs. 2001 - Rs. 4000	10.3	4.7	4.0	8.1	6.7
Over Rs. 4000	24.7	29.0	5.0	16.2	18.9
Total	100.0	100.0	100.0	100.0	100.0

Table 2.3.3. Terms of Purchase of Seeds / Planting Materials - No. of Land Blocks Cultivated (%)

Own Seeds	15.6	46.7	56.4	32.3	38.2
Cash	70.8	51.4	41.6	42.4	51.4
Credit	13.5	1.9	2.0	25.3	[illegible]
Total	100.0	100.0	100.0	100.0	100.0

Table 2.3.4. Place of Supply of Seeds / Planting Materials - No. of Land Blocks Cultivated (%)

No response	2.1	-	-	-	0.5
Village	39.2	62.6	77.2	71.7	62.9
Other Places	58.8	37.4	22.8	28.3	36.6
Total	100.0	100.0	100.0	100.0	100.0

Table 2.3.5. Seeds and Planting Materials were Available in Time - No. of Land Blocks Cultivated (%)

No response	1.0	1.9	-	-	0.7
Yes	95.8	94.4	96.0	97.0	95.8
No	3.1	3.7	4.0	3.0	3.5
Total	100.0	100.0	100.0	100.0	100.0

Table 2.3.6. Problems Relating to Seed / Planting Materials - No. of Land Blocks Cultivated (%)

No Problems	13.8	20.7	37.3	35.0	26.8
Low Quality	13.8	10.3	8.5	13.3	11.5
High Prices	31.0	10.3	11.9	13.3	16.6
Do not Sprout/Germinate	10.3	8.6	8.5	3.3	7.7
Imitation Varieties	-	-	8.5	-	2.1
Unavailability	1.7	5.2	-	1.7	2.1
Long Distance	-	8.6	3.4	6.7	4.7
2,3,4,5	29.3	29.3	18.6	23.3	25.1
Other Reasons	-	6.9	3.4	3.3	3.4
Total	100.0	100.0	100.0	100.0	100.0

Table 2.4.1. Types of Fertilizer used in Vegetable Cultivation - No. of Farmers (%)

Cow dung	30.9	8.9	3.0	16.5	14.7
Chicken Fertilizer	8.1	15.2	38.6	13.9	19.5
Leaves	17.1	5.4	0.8	7.0	7.5
Compost	3.3	0.9	-	-	1.0
Vegetable Fertilizer	0.6	42.9	49.2	37.4	32.6
Potatoe Fertilizer	39.8	26.8	8.3	25.2	24.7
All Types	100.0	100.0	100.0	100.0	100.0

Table 2.4.2. Reasons for Using This Type of Fertilzer - No. of Farmers (%)

High Quality	67.2	81.0	76.3	70.0	73.6
Low Price	1.7	1.7	-	-	0.9
Specially Suited for the Crop	19.0	6.9	3.4	8.3	9.4
Other	12.0	10.3	20.3	21.7	16.2
All	100.0	100.0	100.0	100.0	100.0

Table 2.4.3. Brand Names of Fertilizer Used - No. of Land Blocks Cultivated (%)

No Name	42.3	23.2	44.4	34.8	36.6
Jana Pohora	17.1	25.0	14.3	28.7	20.9
Corporation Fertilizer	16.3	44.6	31.6	16.5	27.1
C.T.C.	7.3	-	2.3	-	2.5
Baurs	13.8	7.1	7.5	10.0	12.0
C.C.C.	3.3	-	-	-	0.8
All Type	100.0	100.0	100.0	100.0	100.0

Table 2.4.4. Sources of Fertilizer Supply - No. of Lnad Blocks Cultivated (%)

Own Supply	3.3	6.3	3.0	5.2	4.3
Gvt. and Coopertion	7.3	20.5	13.5	7.8	12.2
Private Sector	89.4	73.2	83.5	87.0	83.4
All Sources	100.0	100.0	100.0	100.0	100.0

Table 2.4.5. Reasons for Purchasing From the Above Sources - No. of Famers (%)

No Response	15.5	3.4	-	-	4.7
Trust Dealer	43.1	24.1	42.4	43.3	38.3
Short Distance	15.5	39.7	27.1	21.7	26.0
Transport Facilities	10.3	5.2	6.7	6.7	7.2
Others	15.5	27.6	23.7	28.3	23.8
Total	100.0	100.0	100.0	100.0	100.0

Table 2.4.6. Levels of Fertilizer used Per Land Block (%)

Less than 10kg.	42.3	81.3	66.2	82.6	67.5
11 - 50kg.	32.5	14.3	30.1	14.8	23.4
51 - 100kg.	8.1	3.6	3.0	0.9	3.9
101 - 200kg.	6.5	0.9	0.8	0.9	2.3
201 - 300kg.	6.5	-	-	0.9	1.9
301 - 400kg.	1.6	-	-	-	0.4
Ovre 400kg.	2.4	-	-	-	0.6
All	100.0	100.0	100.0	100.0	100.0

Table 2.4.7. Costs Incurred on Fertilizer - No. of Farmers (%)

Less than Rs.100	4.1	7.1	3.0	9.6	5.8
Rs.100 - 500	8.1	18.8	21.1	27.0	18.6
Rs. 501 - 1000	13.0	18.8	22.6	22.6	19.3
Rs. 1001 - 2000	16.3	19.6	24.8	18.3	19.9
Rs. 2001 - 3000	13.8	9.8	12.0	9.6	11.4
Above Rs.3000	44.7	25.9	16.5	13.0	25.1
All	100.0	100.0	100.0	100.0	100.0

Table 2.4.8. Terms of Purchasing of Fertilizer - No. of Farmers (%)

No Response	-	1.8	-	-	0.4
At No Cost	3.3	4.5	3.0	6.1	4.1
Cash	76.4	87.5	91.0	72.2	82.0
Credit	19.5	6.3	6.0	20.0	12.8
Cash & Credit	0.8	-	-	1.7	0.6
All	100.0	100.0	100.0	100.0	100.0

Table 2.4.9. Problems Relating to Fertilizer Use - No. of Farmers (%)

No Problem	34.5	17.2	13.6	10.0	18.7
High Prices	41.4	41.4	47.5	48.3	44.7
Low Quality	3.4	10.3	6.8	6.7	6.8
Imitation Types	3.4	15.5	15.3	6.7	10.2
Lack of Transport	1.7	1.7	-	-	0.9
2,3,4,5	12.1	12.1	11.9	17.3	14.9
Other	3.4	1.7	5.1	5.0	3.8
All Types	100.0	100.0	100.0	100.0	100.0

Table 2.5.1. Types of Agro-Chemicals Used - No. of Purchases (%)

Insecticides	20.0	32.4	28.4	37.8	29.6
Fungicides	60.8	61.0	59.6	48.5	57.6
Vitamins	19.2	6.7	11.9	12.6	12.8
All Types	100.0	100.0	100.0	100.0	100.0

Table 2.5.2. Brand Names of Agro-Chemicals Used - No. of Purchases (%)

Tamaron	6.7	21.9	13.3	23.7	16.3
Losband	5.8	1.9	4.8	6.8	4.9
Aloran	0.8	1.0	-	0.8	0.7
Harcross	2.5	1.0	4.8	1.7	2.5
Other Insecticides	4.2	6.7	5.7	5.1	5.4
Antracol	21.7	25.7	41.9	33.1	30.4
Wandersop	5.0	11.4	8.6	11.0	8.9
Poliran	27.5	19.0	-	1.7	12.3
Deconil	-	-	-	0.8	0.2
Redonil	2.5	-	1.0	-	0.9
Other Fungicides	4.2	4.8	10.5	2.5	5.4
Plantput	5.0	2.9	7.6	4.2	4.9
Maxicrop	12.5	-	1.0	4.2	4.7
Lipster	0.8	-	-	-	0.2
Other Vitamins	0.8	3.8	1.0	4.2	2.5
All brands	100.0	100.0	100.0	100.0	100.0

Table 2.5.3. Why the Particular Brand is Used - No. of Farmers (%)

Popular brand & High quality	51.7	53.4	47.5	31.7	45.9
Low Price	-	-	-	5.0	1.3
No Special Reason	48.3	46.6	52.5	60.0	51.9
No Response	-	-	-	3.3	0.9
All	100.0	100.0	100.0	100.0	100.0

Table 2.5.4. Sources of Supply of Agro-Chemicals - No.of Purchases (%)

Private Traders	96.7	87.6	90.8	91.6	91.8
Gvt. & Coopertives	3.3	12.4	9.2	7.6	7.9
No Response	-	-	-	0.8	0.2
All Sources	100.0	100.0	100.0	100.0	100.0

Table 2.5.5. Terms of Purchase of Agro-Chemicals - No.of Purchases (%)

Cash	77.5	87.6	93.5	75.6	83.2
Credit	20.8	11.4	6.5	23.5	15.9
Cash & Credit	1.7	1.0	-	-	0.7
No Response	-	-	-	0.8	0.2
All	100.0	100.0	100.0	100.0	100.0

Table 2.5.6. Were Agro-Chemicals Effective - No. of Purchases (%)

Yes	90.0	86.7	92.7	85.7	88.7
No	10.0	13.3	7.3	13.4	11.0
No Response	-	-	-	0.8	0.2
All	100.0	100.0	100.0	100.0	100.0

Table 2.5.7. Problems Relating to the Use of Agro-Chemicals - No.of Farmers (%)

No Problem	29.3	20.7	23.7	18.3	23.0
High Prices	36.2	20.7	44.1	53.3	38.7
Low Quality	12.1	31.0	16.9	15.0	18.7
Non-Availability	6.9	6.9	1.7	8.3	6.0
High pric. & Low qual.	8.6	10.3	-	-	4.7
Other	6.9	10.3	13.6	5.0	8.9
All	100.0	100.0	100.0	100.0	100.0

Table 2.6.1. For Which Crops Labour Was Hired - No. of Land Blokcs Cultivated (%)

No Response	9.4	14.3	25.6	32.9	19.6
Paddy	-	5.5	-	-	1.5
Potatoes	27.1	31.9	3.7	17.8	20.8
Beans	-	20.9	30.5	19.2	17.0
Carrot	26.0	-	-	4.1	8.2
Beet Root	5.2	-	-	4.1	8.2
Cabbage	14.6	4.4	2.4	-	5.8
Leeks	14.6	4.4	2.4	-	5.8
Knol Khol	-	1.1	-	-	0.3
Raddish	4.2	-	-	-	1.2
Tomatoes	-	15.4	29.3	4.1	12.0
Other	-	6.6	8.5	6.8	5.3
All Types	100.0	100.0	100.0	100.0	100.0

Table 2.6.2. Activities For Which Labour Was Hired - No. of Land Blocks Cultivated (%)

No Response	9.4	14.3	25.6	32.9	19.6
Preparing Land	66.7	59.3	48.8	45.2	55.8
Spraying Insecticides	-	-	-	1.4	0.3
Watering	1.0	-	1.2	-	0.6
Adding Fertilizer	9.4	2.2	-	-	3.2
Planting Seeds	11.5	8.8	-	-	5.6
Harvesting	1.0	2.2	1.2	-	1.2
Other	1.0	13.2	23.2	20.5	13.7
All Activities	100.0	100.0	100.0	100.0	100.0

Table 2.6.3. Number Of Mandays Hired (Male Workers) - No. of Farmers (%)

Less than 10 days	59.4	54.9	63.4	78.1	63.2
11 - 20 days	16.7	20.9	18.3	13.7	17.5
21 - 30 daus	6.3	12.1	8.5	2.7	7.6
31 - 40 days	6.3	4.4	2.4	2.7	4.1
Over 40 days	11.5	7.7	7.3	2.7	7.6
Total	100.0	100.0	100.0	100.0	100.0

Table 2.6.4. Number of Mandays Hired (Female Workers) - No. of Farmers(%)

Less than 10 days	76.0	91.2	92.7	95.9	88.3
11 - 20 days	13.5	5.5	6.1	1.4	7.0
21 - 30 days	-	-	-	-	-
31 - 40 days	7.3	3.3	-	1.4	3.2
Over 40 days	3.1	-	1.2	1.4	1.5
Total	100.0	100.0	100.0	100.0	100.0

Table 2.6.5. Daily Wages Paid to Male Workers - No. of Male Workers Hired (%)

Less than Rs.50	-	5.5	19.5	20.6	10.5
Rs.51 - 60	7.3	6.6	34.1	23.3	17.0
Rs.61 - 70	9.4	27.5	-	8.2	11.6
Rs.71 - 80	25.0	36.3	15.9	13.7	23.04
Rs.81 - 90	10.4	-	-	-	3.0
Rs.91 - 100	26.0	7.7	1.2	-	9.6
Over Rs. 100	2.0	-	-	-	0.6
No Response	19.8	16.5	29.3	34.2	24.3
All Levels	100.0	100.0	100.0	100.0	100.0

Table 2.6.6. Daily Wage Rates Paid to Female Workers - No. of Female Workers Hired (%)

Less than Rs.40	5.2	15.4	6.1	1.4	7.3
Rs.41 - 50	30.2	19.8	6.1	8.2	16.9
Rs.51 - 60	11.4	3.3	-	1.4	4.4
Over Rs.60	5.2	-	-	-	1.5
No Response	47.9	61.5	87.8	89.0	69.9
All	100.0	100.0	100.0	100.0	100.0

Table 2.6.7. Porblems Encountered in Hiring Labour - No. of Farmers (%)

No Response	32.8	42.9	61.0	70.0	51.9
High Wages	15.5	1.8	5.1	1.7	6.0
Difficulty in finding lab.	34.5	44.6	33.9	25.0	
34.3					
Both	8.6	3.6	-	-	3.0
Other	8.6	7.1	-	3.3	4.7
All	100.0	100.0	100.0	100.0	100.0

Table 2.7.1. Availability of Extension Services - No. of Farmers (%)

Yes	23.3	40.0	35.0	16.7	28.8
No	76.7	60.0	65.0	83.3	71.3
Total	100.0	100.0	100.0	100.0	100.0

Table 2.7.2. From Whom Extension Advice was Sought - No. of Farmers (%)

No need to seek advice	78.3	60.0	66.1	82.0	71.7
Agricultural Instructor	10.0	23.3	22.0	9.8	16.3
Neighbours	11.7	10.0	5.1	6.6	
Others	-	6.7	6.8	1.6	3.8
Total	100.0	100.0	100.0	100.0	100.0

Table 2.7.3. For What Purpose Advice was Needed - No. of Farmers (%)

not Required	78.3	61.7	66.1	82.0	72.1
Cultivation Purpose	3.3	18.3	13.6	6.6	10.4
Diseases	13.3	16.7	11.9	9.8	12.9
Other	5.0	3.3	8.5	1.6	4.6
Total	100.0	100.0	100.0	100.0	100.0

Table 2.7.4. Did You Recieve Advice From these Sources - No. of Farmers (%)

Not Relevant	78.3	60.0	66.1	82.0	71.7
Yes	20.0	31.7	30.5	11.5	23.3
No	1.7	8.3	3.4	6.6	5.0
Total	100.0	100.0	100.0	100.0	100.0

Table 2.7.5. Place Where the Advices Was Recieved - No. of Farmers (%)

No Response	88.3	73.3	72.9	91.8	81.7
Office Premises	3.3	8.3	11.9	4.9	7.1
field	8.3	10.0	13.6	3.3	8.8
Other	-	8.3	1.7	-	2.5
Total	100.0	100.0	100.0	100.0	100.0

Table 2.7.6. Distances Traveled to Get Advice - No. of Farmers (%)

Not Relevant	93.3	81.7	79.7	91.8	86.7
Less than 1km.	1.7	4.7	8.5	3.3	6.3
1.00 - 2.00km.	-	3.3	-	-	0.8
2.00 - 3.00km.	3.3	1.7	1.7	1.6	2.1
4.00 - 5.00km.	-	1.7	3.4	-	1.3
5.00 - 6.00km.	-	-	-	1.6	0.4
12.00 - 13.00km.	-	-	1.7	-	0.4
15.00 - 16.00km.	-	-	5.1	-	1.3
18.00 - 19.00km.	-	-	-	1.6	0.4
19.00 - 20.00km.	1.7	-	-	-	0.4
All Distances	100.0	100.0	100.0	100.0	100.0

Table 2.7.7. Whether the Advices Were Useful - No. of Farmers (%)

Not Relevant	78.3	61.7	66.1	82.0	72.1
Yes	18.3	25.0	23.7	11.5	19.6
No	3.3	13.3	10.2	6.6	8.3
Total	100.0	100.0	100.0	100.0	100.0

Tables 2.7.8. Problems in Advisory Services - No. of Farmers (%)

No Problems	28.3	23.3	25.4	24.6	25.4
No Advisory Services	48.3	45.0	49.2	62.3	51.3
Advices are Not Useful	10.0	10.0	8.5	6.6	8.8
Unable to Meet the A.I.I.	8.3	16.7	10.2	4.9	10.0
Other	5.0	5.0	6.8	1.6	4.6
Total	100.0	100.0	100.0	100.0	100.0

Table 2.8.1. Sources of Borrowing for Cultivation Purposes - No. of Farmers (%)

Not Borrowed	56.9	74.1	71.2	71.7	68.5
Banks	29.3	20.7	27.1	11.7	22.1
NGO	-	-	1.7	-	0.4
Private	13.8	5.2	-	16.6	8.9
All Sources	100.0	100.0	100.0	100.0	100.0

Table 2.8.2. Relationship to the Lender - No.of Farmers (%)

Not Relevant	56.9	74.1	71.2	71.7	68.5
Organizational	34.5	20.7	28.8	11.7	23.8
Friends	8.6	5.2	-	13.3	6.8
Relatives	-	-	-	3.3	0.9
Total	100.0	100.0	100.0	100.0	100.0

Table 2.8.3. Other Obligations of the Borrowers - No. of Farmers (%)

Not Applicable	74.1	79.3	74.6	73.3	75.3
Must pay before the Grace Period is over	8.6	6.9	13.5	15.0	11.1
Pay interms of produce	3.3	1.7	-	11.7	4.3
Must produce Gurantors	10.3	8.6	10.2	-	7.2
Others	3.3	3.4	1.7	-	2.1
Total	100.0	100.0	100.0	100.0	100.0

Table 2.8.4. Amounts Borrowed - No. of Farmers (%)

Not borrowed	56.9	74.1	71.2	71.7	68.5
Less than Rs.5000	15.5	10.3	11.9	15.0	13.2
Rs.5001 - 10000	10.3	12.1	11.9	6.7	10.2
Above Rs.10000	17.2	3.4	5.1	6.7	8.1
Total	100.0	100.0	100.0	100.0	100.0

Table 2.8.5. Rates of Interest Paid - No. of Farmers (%)

No Response	67.2	79.3	71.2	85.0	75.7
Less than 5%	-	-	6.8	1.7	2.1
6 - 10%	12.1	5.2	11.9	1.7	7.7
11 - 15%	8.6	8.6	3.4	-	6.4
16 - 20%	6.9	6.9	6.8	5.0	6.4
21 - 25%	1.7	-	-	1.7	0.9
Above 25%	3.4	-	-	-	0.9
Total	100.0	100.0	100.0	100.0	100.0

Table 2.8.6. Reasons for Obtaining Loans From this Sources - No. of Farmers (%)

Not Borrowed	56.9	74.1	71.2	71.7	68.5
Convenience	10.3	-	-	8.3	4.7
Relations to pvt. traders	3.4	6.9	-	3.3	3.4
Relation to Bank Employees	27.3	19.0	18.6	11.7	19.1
Other	1.7	-	10.2	5.0	4.3
Total	100.0	100.0	100.0	100.0	100.0

Table 2.8.7. Problems Relating to Credit - No. of Farmers (%)

No Problem	74.1	81.0	84.7	70.0	77.4
Difficulty to find g'tors	15.5	17.2	10.2	8.3	12.8
Compelled to sell the produce to the lender	-	-	-	10.0	2.6
High Interest Rates	-	-	-	1.7	0.4
Loan is not Sufficient	6.9	1.7	3.4	3.3	3.8
Other	3.4	-	1.7	6.7	3.0
Total	100.0	100.0	100.0	100.0	100.0

Table 2.9.1. Costs of Production of Potatoes

No. of Reporting Farmers	11	20	2	8	41
Average Extent Cultivated (Perches)	85.5	127	60	170	121
COSTS IN RUPEES (%)					
Seeds	44.8	56.9	71.2	65.9	55.3
Fertilizer	18.7	16.9	12.1	12.3	16.4
Chemicals	9.9	6.9	5.8	7.0	7.8
Machine Hire	2.5	1.4	0.5	1.4	1.7
Capital Services	0.2	1.8	-	0.8	1.1
Land Rent	9.9	0.3	-	3.0	3.7
Transport	2.2	2.2	1.5	0.5	1.8
Packaging	1.5	2.2	1.2	1.0	1.7
Family Labour	3.0	4.8	-	2.4	3.7
Total Cost (%)	100.0	100.0	100.0	100.0	100.0
Total Cost (Rs.)	30,044	26,323	9,825	27,094	25,665
Qty. of Production (kg.)	1,566	1,645	550	1,481	1,538
Value of Producton (Rs.)	42,357	42,813	15,500	36,100	40,048
Net Income (Rs.)	12,313	16,490	5,675	9,006	13,383
Net Cash Income of the Family (Rs.)	13,218	17,760	5,675	9,644	14,370
Yield per Perch (kg.)	18.3	13.0	9.2	8.7	12.7
Net Income per Perch (Rs.)	144	130	95	53	111

Table 2.9.2. Costs of Production of Beans

No. of Reporting Farmers	-	5	17	13	35
Average Extent Cultivated (Perches)	-	104	111.8	86.2	101
COSTS IN RUPEES (%)					
Seeds	-	16.7	7.5	13.5	10.1
Fertilizer	-	22.2	27.9	19.0	24.0
Chemicals	-	6.6	14.9	8.2	11.5
Machine Hire	-	2.4	2.4	1.7	2.1
Capital Services	-	-	8.7	6.3	7.6
Land Rent	-	-	13.0	20.4	15.6
Transport	-	7.3	5.4	4.4	5.3
Packaging	-	4.5	4.9	2.8	3.9
Hired Labour	-	19.5	8.9	10.8	10.4
Family Labour	-	20.9	6.5	11.7	9.4
Total Cost (%)	-	100.0	100.0	100.0	100.0
Total Cost (Rs.)	-	6,167	9,813	6,858	8,456
Qty. of Production (kg.)	-	1,040	1,741	832	1,304
Value of Production (Rs.)	-	11,400	16,391	9,120	13,030
Net Income (Rs.)	-	5,233	6,578	2,262	4,574
Net Cash Income of the Family (Rs.)	-	6,520	7,213	3,062	5,373
Yield per Perch (kg.)	-	10	15.6	9.7	12.9
Net Income per Perch (Rs.)	-	50	59	26	45

Table 2.9.3. Costs of Production of Carrot

No. of Reporting Farmers	8	-	-	2	10
Average Extent Cultivated (Perches)	108	-	-	35	94
COSTS IN RUPEES (%)					
Seeds	6.7	-	-	5.1	6.8
Fertilizer	32.5	-	-	16.4	31.7
Machine Hire	7.2	-	-	5.9	5.8
Capital Services	0.6	-	-	23.5	2.8
Land Rent	28.3	-	-	4.7	26.2
Transport	0.3	-	-	3.3	0.5
Packaging	1.9	-	-	6.1	2.0
Hired Labour	12.8	-	-	18.8	14.2
Family Labour	3.8	-	-	4.7	3.7
Total Cost (%)	100.0	-	-	100.0	100.0
Total Cost (Rs.)	25,331	-	-	4,262	20,672
Qty. of Production(kg.)	2,771	-	-	525	2,272
Value of Production (Rs.)	33,985	-	-	5,775	27,897
Net Income (Rs.)	8,654	-	-	1,513	7,225
Net Cahs Income of the Family (Rs.)	9,620	-	-	1,713	8,000
Yield per Year (kg.)	25.7	-	-	15	24.2
Net Income per Perch (Rs.)	80	-	-	43	77

Table 2.9.4. Costs of Producton of Leeks

No. of Reporting Farmers	4	-	-	10	14
Average Extent Cultivated (Perches)	182	-	-	46	56
COSTS IN RUPEES (%)					
Seeds	18.8	-	-	11.8	14.7
Fertilizer	47.3	-	-	28.8	36.7
Chemicals	4.7	-	-	10.4	6.6
Machine Hire	6.5	-	-	1.9	4.7
Capital Services	0.5	-	-	7.6	2.5
Land Rent	-	-	-	14.4	7.7
Transport	-	-	-	8.2	4.4
Packaging	3.4	-	-	1.0	4.5
Hired Labour	13.1	-	-	7.6	12.4
Family Labour	5.6	-	-	8.2	5.8
Total Cost (%)	100.0	-	-	100.0	100.0
Total Cost (Rs.)	21,035	-	-	5,910	11,065
Qty. of Production(kg.)	4,850	-	-	1,135	2,197
Value of Production (Rs.)	34,865	-	-	8,407	16,801
Net Income (Rs.)	13,830	-	-	2,497	5,736
Net Cahs Income of the Family (Rs.)	15,005	-	-	2,982	6,374
Yield per Year (kg.)	59	-	-	25	39
Net Income per Perch	169	-	-	54	102

Table 2.9.5. Costs of Producton of Beetroot (Inter Cropped with Leeks/Carrot

No. of Reporting Farmers	-	2	-	4	5
Average Extent Cultivated (Perches)	-	20	-	85	63
COSTS IN RUPEES (%)					
Seeds	-	30.7	-	18.0	20.6
Fertilizer	-	28.8	-	35.1	31.3
Chemicals	-	11.4	-	14.1	12.5
Mechine Hire	-	-	-	-	-
Capital Services	-	-	-	-	-
Land Rent	-	-	-	-	-
Transport	-	6.3	-	5.9	5.7
Packaging	-	4.8	-	4.1	4.0
Hired Labour	-	18.0	-	9.3	12.4
Family Labour	-	-	-	8.2	12.3
Total Cost (%)	-	100.0	-	100.0	100.0
Total Cost (Rs.)	-	2,363	-	2,702	2,742
Qty. of Production(kg.)	-	325	-	693	570
Value of Production (Rs.)	-	3,938	-	5,757	5,041
Net Income (Rs.)	-	1,575	-	3,055	2,299
Net Cahs Income of the Family (Rs.)	-	1,575	-	3,422	2,666
Yield per Year (kg.)	-	16	-	8	9
Net Income per Perch	-	79	-	36	36

Table 2.9.6. Costs of Producton of Cabbages

No. of Reporting Farmers	4	4	2	-	10
Average Extent Cultivated (Perches)	85	80	120	-	87
COSTS IN RUPEES (%)					
Seeds	7.0	12.4	9.6	-	7.0
Fertilizer	28.6	25.3	66.9	-	25.6
Chemicals	20.4	11.9	18.8	-	15.1
Mechine Hire	4.2	1.1	-	-	2.9
Capital Services	-	14.6	-	-	6.4
Land Rent	1.8	-	-	-	2.3
Transport	2.2	3.4	-	-	2.1
Packaging	3.2	13.9	4.8	-	5.0
Hired Labour	26.9	9.2	-	-	28.0
Family Labour	5.7	8.2	-	-	5.7
Total Cost (%)	100.0	100.0	100.0	-	100.0
Total Cost (Rs.)	12,642	4,371	6,275	-	10,018
Qty. of Production(kg.)	3,188	1,680	2000	-	2,300
Value of Production (Rs.)	24,562	10,080	16,000	-	16,025
Net Income (Rs.)	11,920	5,709	9,725	-	6,007
Net Cahs Income of the Family (Rs.)	12,645	6,067	9,725	-	6,575
Yield per Year (kg.)	38	21	17	-	26
Net Income per Perch	140	71	81	-	69

Table 2.9.7. Costs of Producton of Tomatoes

No. of Reporting Farmers	-	7	15	3	25
Average Extent Cultivated (Perches)	-	108	80	40	83
COSTS IN RUPEES (%)					
Seeds	-	8.4	3.2	4.0	4.4
Fertilizer	-	21.6	20.0	29.7	20.2
Chemicals	-	17.6	21.5	29.5	19.9
Mechine Hire	-	2.4	2.6	7.7	2.7
Capital Services	-	8.3	11.3	-	10.2
Land Rent	-	2.4	-	-	2.3
Transport	-	3.0	9.4	4.9	7.3
Packaging	-	4.1	4.7	4.2	4.3
Hired Labour	-	18.5	15.5	16.1	15.9
Family Labour	-	16.3	12.0	3.9	12.9
Total Cost (%)	-	100.0	100.0	100.0	100.0
Total Cost (Rs.)	-	8,429	9,470	3,878	8,815
Qty. of Production(kg.)	-	1,475	1,491	650	1,357
Value of Production (Rs.)	-	14,100	14,271	6,175	13,091
Net Income (Rs.)	-	5,671	4,801	2,297	5,409
Net Cahs Income of the Family (Rs.)	-	7,046	5,936	1,447	5,409
Yield per Year (kg.)	-	14	19	16	16
Net Income per Perch	-	53	60	57	52

Table 2.9.8. Costs of Producton of Brinjals

No. of Reporting Farmers	-	2	5	-	7
Average Extent Cultivated (Perches)	-	120	128	-	125
COSTS IN RUPEES (%)					
Seeds	-	4.1	3.5	-	3.3
Fertilizer	-	33.7	38.0	-	33.9
Chemicals	-	25.3	12.6	-	13.9
Mechine Hire	-	2.1	4.6	-	3.7
Capital Services	-	-	3.0	-	3.1
Land Rent	-	-	-	-	-
Transport	-	18.0	4.8	-	9.4
Packaging	-	4.8	4.7	-	4.2
Hired Labour	-	-	17.4	-	17.8
Family Labour	-	12.0	11.3	-	10.8
Total Cost (%)	-	100.0	100.0	-	100.0
Total Cost (Rs.)	-	4,157	6,591	-	6,459
Qty. of Production(kg.)	-	1,500	1,460	-	1,471
Value of Production (Rs.)	-	11,250	10,950	-	11,033
Net Income (Rs.)	-	7,093	4,359	-	4,574
Net Cahs Income of the Family (Rs.)	-	7,593	5,104	-	5,270
Yield per Year (kg.)	-	13	11	-	12
Net Income per Perch	-	59	34	-	37

Table 3.1. Mostly Used Marketing Channels By Type of Vegetables - Haputale - No. of Farmers (%)

	Colombo WM	Brokers	Local C'ssion Agent	Fair
Potatoes	50.0	13.8	26.5	-
Beans	33.3	17.0	32.4	-
Carrot	-	17.2	5.9	-
Beetroot	-	10.3	2.9	-
Cabbage	8.3	-	5.9	-
Leeks	-	31.0	8.8	100.0
Raddish	-	3.4	11.8	-
Tomatoes	-	3.4	11.8	-
Other	8.3	3.4	5.9	-
Total	15.8	38.2	44.7	1.3

Table 3.2. Mostly Used Marketing Channel by Type of Vegetable - B'Wela - No. of Farmers (%)

	Colombo WM	Brokers	Local Cission Agent	Fair
Potatoes	10.7	-	11.8	-
Beans	35.7	25.0	41.2	30.8
Carrot	-	5.0	-	-
Cabbage	7.1	-	-	7.7
Tomatoes	42.9	30.0	47.1	23.1
Other	3.6	40.0	-	38.5
Total	35.9	25.6	21.8	16.7

Table 3.3. Mostly Used Marketing Channel by Type of Vegitable - Welimada - No. of Farmers (%)

Potatoes	41.2	38.2	15.8	33.3
Beans	29.4	20.6	47.4	33.3
Beetroot	2.9	-	-	-
Cabbage	8.8	8.8	10.5	-
Tomatoes	11.8	26.5	5.3	33.3
Other	5.9	5.9	21.1	-
Total	37.8	37.8	21.1	3.3

Table 3.4. Mostly Used Marketing Channel by Type of Vegetable - N' Eliya - No. of Farmers (%)

Potatoes	45.5	24.2	-	60.0
Carrot	15.2	33.9	-	-
Beatroot	3.0	12.9	-	-
Cabbage	15.2	14.5	-	20.0
Leeks	15.2	6.5	-	-
Knc Kohl	-	1.6	-	-
Raddish	6.1	6.5	-	20.0
Total	33.0	62.0	-	5.0

Table 3.5. Marketing Channel Occationally Used by Type of Vegetables - B'wewala - No. of Farmers (%)

	Not Applicable	C'mbo WM	Brokers	Fair	Others
Potatoes	7.1	25.0	-	5.9	-
Beans	31.0	50.0	25.0	41.2	28.6
Carrot	2.4	-	-	-	-
Cabbage	2.4	-	-	11.8	-
Tomatoes	40.5	25.0	50.0	17.6	57.1
Other	16.7	-	25.0	23.5	14.3
Total	53.8	5.1	10.3	21.8	9.0

Table 3.6. Marketing Channels Occationally Used by Type of Vegitable - Welimada - No. of Farmers (%)

Potatoes	25.0	28.6	33.3	50.0	44.4
Beans	27.8	14.3	44.4	35.0	11.1
Beetroot	-	-	-	-	11.1
Cabbage	13.9	14.3	5.6	-	11.1
Tomatoes	25.0	42.9	5.6	10.0	-
Other	8.3	-	11.1	5.0	22.2
Total	40.0	7.8	20.0	22.2	10.0

Table 3.7. Marketing Channels Occationally Used by Type of Vegetable - N'Eliya - No. of Farmers (%)

Potatoes	31.3	14.3	41.7	28.6	-
Carrot	20.8	42.9	29.2	14.3	50.0
Beetroot	12.5	14.3	4.2	14.3	-
Cabbage	12.5	28.6	16.7	14.3	50.0
Leeks	10.4	-	4.2	28.6	-
Kno Kohl	-	-	-	-	-
Raddish	12.5	-	4.2	-	-
Total	48	7.0	24.0	7.0	2.0

Table 3.8. Marketing Channels Occationally Used by Type of Vegetable - Haputale - No. of Farmers (%)

	Not Ap.	C'mbo WM	Brokers	Fair	Local C'ssion Agent	Others
Potatoes	52.6	10.5	21.1	5.3	5.3	5.3
Beans	35.0	20.0	20.0	10.0	15.0	-
Carrot	85.7	-	-	-	14.3	-
Beetroot	75.0	25.0	-	-	-	-
Cabbage	33.3	-	66.7	-	-	-
Leeks	92.3	-	-	-	7.7	-
Radish	100.0	-	-	-	-	-
Tomatoes	40.0	20.0	20.0	-	20.0	-
Other	50.0	25.0	25.0	-	-	-
Total	57.9	11.8	15.8	9.2	3.98	1.3

Table 3.9. Marketing Channels Available But Not Used by Type of Vegetable - N'Eliya - No. of Farmers (%)

	Not Ap.	C'mbo WM	B'kers	Local C'n Agent	Fair	P'sing C'ter	Othe -rs	Total
Potatoes	9.1	30.3	15.2	-	33.3	6.1	6.1	33.0
Carrot	19.2	42.3	7.7	-	19.2	-	11.5	26.0
Beetroot	44.4	22.2	33.3	-	-	-	-	9.0
Cabbage	40.2	6.7	6.7	6.7	13.3	13.3	13.3	15.0
Leeks	22.2	33.3	33.3	-	11.1	-	-	9.0
Kno Kohl	-	-	-	-	-	100	-	1.0
Raddish	14.3	42.9	28.6	-	14.3	-	-	7.0
Total	21.0	30.0	16.0	1.0	20.0	5.0	7.0	100.0

Table 3.10. Marketing Channels Available, But Not Used by Type of Vegetable - Welimada - No. of Farmers (%)

	Not Ap.	C"mbo WM	Brokers	Fair	P'sing Centre	Others	Total
Potatoes	3.2	41.9	12.9	35.5	3.2	3.2	34.4
Beans	3.7	29.6	22.2	33.3	3.7	7.4	30.0
Beetroot	-	-	100.0	-	-	-	1.1
Cabbage	12.0	5.0	62.5	12.5	12.5	-	8.9
Tomatoes	6.7	20.0	26.7	40.0	-	6.7	16.7
Other	-	62.5	25.0	-	-	12.5	5.6
Total	4.4	37.8	20.0	30.0	2.2	5.6	100.0

Table 3.11. Marketing Channel Available, But Not Used by Type of Vegetable - B'wela - No. of Farmers (%)

Potatoes	-	-	40.0	20.0	20.0	20.0	6.4
Beans	-	42.3	23.1	26.9	3.8	3.6	33.3
Carrot	-	100.0	-	-	-	-	1.3
Cabbage	-	33.3	33.3	33.3	-	-	3.8
Tomatoes	17.2	37.9	10.3	27.6	-	6.9	37.2
Others	7.1	50.0	-	35.7	-	7.1	17.9
Total	6.4	33.3	1.3	3.8	37.2	17.9	100.0

Table 3.12. Marketing Channels Available, But Not Used by Type of Vegetable - Haputale - No. of Farmers (%)

	Not Ap.	C'mbo WM	B'kers	Local C'ssion Agent	Fair	Others	Total
Potatoes	15.8	47.4	-	15.8	-	21.1	25.0
Beans	5.0	50.0	5.0	5.0	5.0	30.0	26.3
Carrot	14.3	28.6	14.3	42.9	-	-	9.2
Beetroot	25.0	-	25.0	50.0	-	-	5.3
Cabbage	-	66.7	-	-	33.3	-	3.9
Leeks	7.7	61.5	7.7	23.1	-	-	17.1
Raddish	-	-	-	100	-	-	1.3
Tomatoes	-	60.0	-	-	20.0	20.0	25.0
Others-	25.0	25.0	-	25.0	25.0	25.0	5.3
Total	9.2	46.1	6.6	17.1	5.3	15.8	100.0

Table 3.13. Why Prefer To Sell to the Present Dealer - No. of Farmers (%) by Marketing Channel.

	N' Eliya	W'mada	B'wela	H'tale	All
No Special Reason	18.3	3.4	18.3	19.8	12.5
Spot Cash	10.0	15.3	13.3	4.9	10.8
Fair price/weighing equip. & Trustworth's	11.7	18.6	11.7	14.8	14.2
Loan Facilities	15.0	16.9	3.3	18.0	13.3
Competitive Price	15.0	15.3	15.0	16.4	15.4
Easy Transportation	25.0	10.2	6.7	23.0	16.3
Easy Sale	3.3	16.9	20.0	-	10.0
No other alternative	1.7	3.4	11.7	13.1	7.5
Total	100.0	100.0	100.0	100.0	100.0

Table3.14. Relationship To Regular Dealer - No. of Farmers (%) by Marketing Channel

No Relation	63.3	55.9	65.0	62.3	61.7
Friend	23.3	16.9	11.7	11.5	15.8
Relative	1.7	6.8	1.7	6.6	4.2
1,2	11.7	20.3	21.7	19.7	18.3
Total	100.0	100.0	100.0	100.0	100.0

Table3.15. Wholesale Market At Which Produce is Sold - No. of Farmers (%)

Not Applicable	65.0	39.0	38.3	36.1	44.6
Colombo W'sale	35.0	40.7	33.3	13.1	30.4
Weekly Fair	-	20.3	26.7	-	11.7
Purchasing Centres	-	-	1.7	-	0.4
Other Comission Agents	-	-	-	50.8	12.9
Total	100.0	100.0	100.0	100.0	100.0

Table3.16. Reasons for Selling to Single Dealers- No. of Farmers (%) by Marketing Channel

No	76.7	74.6	88.3	63.9	75.8
Trust & Friendship	20.0	25.4	11.7	18.0	18.8
Loans	3.3	-	-	18.0	5.4
Total	100.0	100.0	100.0	100.0	100.0

Table 3.17. Capability of Changing the Buyer- No. of Farmers (%) by Marketing Channel

Buyer can be changed	96.7	100.0	98.3	80.3	93.8
Buyer cannot be changed					
- Reasons					
Loans obtained	3.3	-	1.7	6.6	2.9
Contracts	-	-	-	9.8	2.5
Other (Friend)	-	-	-	3.3	0.8
Total	100.0	100.0	100.0	100.0	100.0

Table 3.18. Weaknesses of the Present Dealer - No. of Farmers (%) by Marketing Channel

Not Applicable	33.3	13.6	16.7	14.8	19.6
Incorrect Weights	11.7	35.6	23.3	29.5	25.0
Lower Prices	20.0	13.6	30.0	26.2	22.5
Extra High C'ssion	1.7	3.4	1.7	6.6	3.3
1,2,3	25.0	25.4	25.0	21.3	24.2
No Faults	3.3	6.8	-	-	2.5
Other	5.0	1.7	3.3	1.6	2.9
Total	100.0	100.0	100.0	100.0	100.0

Table 3.19. Problems of Marketing Agricultural Produces - No. of Farmers (%) by Marketing Channel

Not Applicable	10.0	13.6	3.3	3.3	7.5
Inability to obtain a Reasonable Price	66.7	57.6	55.0	68.9	62.1
Use of incorrct weighing scales	1.7	-	-	1.6	0.8
Transportation Diff.	3.3	-	5.0	3.3	2.9
1,2,3	18.3	28.8	36.7	23.0	26.7
Total	100.0	100.0	100.0	100.0	100.0

Table 3.20. Advantages of State Sponsored Marketing Channels - N' Eliya - No. of Farmers Who have had Experience (%)

	Not App.	Markfed	Mark. Dpt.
No Experience	89.4	6.4	4.3
Buying Directly	-	100.0	-
High Prices	-	-	100.0
Provide Transport	-	-	100.0
Use of correct Weights	-	33.3	66.7
Ability to Sell	-	-	100.0
Other	-	33.3	66.7

Table 3.21. Disdvantages of State Sponsord Marketing Channels - N'Eliya - No of Farmers (%)

No Experience	77.8	3.7	18.5
Low Prices	-	100.0	-
Need of Transport	-	100.0	-
Corruption	-	50.0	50.0
Choosing Only	-	50.0	50.0
Total	68.9	11.5	19.7

Table 3.22. Solutions to Marketing Problems - No. of Farmers (%)

	N'Eliya	W'mada	B'wela	H'tale	All
Not Applicable	6.7	6.8	1.7	1.6	4.2
Establish P'sing C'trs.	71.7	78.0	73.3	85.2	77.1
Organize Transport	6.7	-	3.3	-	2.5
Farmers Org's	1.7	-	1.7	-	0.8
1,2	11.7	15.3	20.0	13.1	15.0
Providing cold st'rage	1.7	-	-	-	0.4

Table 3.23. Mode of Transportation from Farm to Dispatch Point - No. of farmers (%)

	N'eliya	W'mada	B'wela	H'tale	All
Not Applicable	71.7	30.5	31.7	31.1	41.3
Back of Labourer	20.0	62.7	66.7	67.2	54.2
By Tractor or Lorry	8.3	3.4	1.7	1.6	3.8
Other	-	3.4	-	-	0.8

Table 3.24. Problems of Transportaion from Farm to Dispatch Point - No. of Farmers (%)

	N'Eliya	W'mada	B'wela	H'tale	All
Not Applicable	73.3	32.2	36.7	31.1	43.3
No Problem	6.7	13.6	6.7	16.4	10.8
Wages to be Paid	10.0	13.6	10.0	1.6	8.8
Dff.in Tr'port ation	3.3	39.0	45.0	49.2	34.2
2,3	6.7	1.7	1.7	1.6	2.9

Table 3.25. Problems Encountered in Transportation - No. of Farmers (%)

Not Applicable	68.3	45.8	42.3	62.3	55.0
Delays of LOrries	6.7	16.9	18.3	19.7	15.4
High Transport costs	3.3	13.6	16.7	11.5	11.3
Damages during Transportation	11.7	1.7	13.3	3.3	7.5
1,2,3	1.7	18.6	8.3	3.3	7.9
Other	8.3	3.4	-	-	2.9

Table 3.26. Mode of Transport of Vegetables - No. of Farmers (%)

Not Applicable	65.0	39.0	38.3	36.1	44.6
By Lorry	35.0	55.9	56.7	57.4	51.3
Others	-	5.1	5.0	6.6	4.2

Table 3.27. Owners of the Means of Transport - No. of Farmers (%)

Not Applicable	65.0	39.0	38.3	36.1	44.6
Private Transport	18.3	59.3	61.7	30.7	50.0
Transport Union	16.7	1.7	-	-	4.6
Other	-	-	-	3.2	0.8

Table 3.28. Standard Weight of Package / Bundle by Type of Vegetable -

	No standard	40 kg	50 kg	53 kg	55kg	60kg	Total
	100.0	-	-	-	-	-	47.1
Potatoe	-	-	36.0	100.0	75.0	-	19.1
Carrot	-	25.0	24.0	-	-	50.0	11.8
Beetroot	-	-	12.0	-	-	-	4.4
Cabbage	-	-	16.0	-	25.0	50.0	8.8
Leeks	-	50.0	4.0	-	-	-	4.4
Raddish	-	25.0	8.0	-	-	-	4.4

Table 3.29. Type of Packaging by Type of Vegetable -

	Not App.	Gunny Bags	Bundles	Other	Total
	(32) 100.0	-	-	-	47.1
Potatoe	-	50.0	-	-	19.1
Carrot	-	26.9	-	25.0	11.8
Beetroot	-	3.8	16.7	25.0	4.4
Cabbage	-	15.4	-	50.0	8.8
Leeks	-	3.8	33.3	-	4.4
Raddish	-	-	50.0	-	4.4

Table 3.30. Sources of Information on price - No. of Farmers (%)

	N' eliya	W'mada	B'wela	H'tale	All
Traders in the Town	62.0	52.5	56.8	60.3	58.0
Neighbouring Farmers	15.5	14.8	24.2	19.0	18.3
Brokers	12.7	13.1	6.5	14.3	11.7
Others	9.9	15.7	12.9	6.3	12.1
Total	27.6	23.7	24.1	24.8	100.0

Table 3.31. Timing of the availability of Price Information - No. of Farmers (%)

Before Cultivation	6.5	[illegible]	-	[illegible]	[illegible]
Before Harvesting	38.7	37.5	50.0	42.0	42.[illegible]
Harvesting Season	51.6	29.2	25.0	41.4	39.7
After Harvesting	3.2	20.8	25.0	13.2	14.[illegible]
After Selling	-	8.3	-	2.3	2.7
Total	12.1	9.3	10.9	67.7	100.0

Table 3.32. Was Price Information Useful ? - No. of Farmers (%)

Yes	77.4	54.2	82.1	90.8	84.8
No	19.4	45.8	17.9	8.6	14.4
Total	12.1	9.3	10.9	67.7	100.0

Table 3.33. How Price Information was Useful? - No. of Farmers(%)

Not applicable	16.1	33.3	7.1	6.9	10.5
In Planning Cultivation	6.5	4.2	7.1	-	1.9
To Decide the Seller	38.7	45.8	50.0	49.4	47.9
to Decide the Market	3.2	12.5	14.3	32.8	25.7
To Decide the Timing of Harvesting	35.5	4.2	21.4	10.9	14.4
Total	12.1	9.3	10.9	67.7	100.0

Table 3.34. Price Range for Vegetables (Rs.)

COMMODITY	PRICE RANGE		
Beens	7.00	-	8.00
Tomatoes	7.00	-	8.00
Egg Plant	3.00	-	5.00
Capsicums	4.00	-	7.50
Potatoes	30.00	-	35.00
Leeks	7.00	-	13.00
Carrot	7.50	-	10.00
Beet Root	6.00	-	9.00
Raddisn	2.00	-	4.00
Knol Khol	5.00	-	6.00

Table 3.35. Whole Sale market Prices (Rs.)
- Obtained at Colombo Whole Sale Market

	07.11.1991	08.11.1991	19.11.1991
Potatoes	28.00	30.00	30.00
beans	10.00	10.00	13.00
Carrot	6.00	5.50	6.00
Beet Root	12.00	13.00	14.00
Cabbages	4.50	5.00	5.00
Leeks	8.00	8.00	7.00
Knol Khol	6.00	6.00	7.00
Raddish	3.00	2.50	2.50
Tomatoes	8.50	1.00	1.00
Egg Plant	5.00	4.00	4.00

Appendix 1: Varieties of Seeds / Planting Materials Used During the Last Season - No. of Land Blocks Cultivated (%)

	N'Eliya	W'mada	B'wela	H'tale	All
POTATOES					
Delcora	5.2	12.3	1.0	7.2	6.5
Esna	24.7	2.8	2.0	2.1	7.7
Disairi	-	13.2	1.0	7.2	5.5
Other Potatoes	1.0	0.9	2.0	4.1	2.0
BEANS					
Butter	-	10.4	15.8	5.2	8.0
Gusrole	-	8.5	5.0	4.1	4.5
Katugastota	-	3.8	5.0	6.2	3.7
Murunga	-	5.7	9.9	12.4	7.0
Other Beans	-	2.8	-	1.0	1.0
CARROT					
Kruuta	10.3	-	-	2.1	3.0
Kreechop	3.1	-	-	4.1	1.7
Kurudaa	3.1	-	-	-	0.7
Taaki	4.1	-	-	2.1	1.5
Kamemarket	4.1	-	-	1.0	1.2
Other	1.0	-	-	-	0.2
BEETROOTS					
Preemose	5.2	0.9	-	5.2	2.7
Plants	2.1	-	-	-	0.5
Other Beetroots	3.1	-	-	-	0.7
CABBAGES					
Hercules	7.2	3.8	2.0	4.1	4.2
A.S	5.2	-	-	-	1.2
Other Cabbages	3.1	5.7	4.0	2.1	3.7
LEEKS					
Vilmoreen	8.2	-	-	10.3	4.5
Preemose	-	-	-	10.0	0.7
Other Leeks	1.0	-	-	2.1	0.7

RADDISH					
Taaki	5.2	-	-	-	1.2
Yaatus	1.0	-	-	-	0.2
Other Raddish	1.0	-	-	1.0	0.5
TOMATOES					
Taage' Laap	-	5.7	23.8	2.1	8.0
Treser	-	8.5	7.9	5.2	5.5
Other Tomatoes	-	1.8	4.0	-	0.2
OTHER VEGETABLES	1.0	13.2	16.8	6.2	9.5

Appendix 2 : Sample Selection For The Household Survey

AREA	VILLAGE	NO. OF FARMERS
Nuwara Eliya	Hawaeliya	10
	Shanthipura	10
	Mahagastota	10
	Kuda - Oya	10
	Sita Eliya	10
	Kadapola	10
Welimada	Tennekonewela	10
	Uva - Paranagama	10
	Uduhawara	10
	Ambagasdowa	10
	Nirahawatte	10
	Nadungamuwa	10
Bandarawela	Amunudowa	10
	Hela Halpe	10
	Heel - Oya	10
	Kurukudegama	10
	Perahettiya	10
	Dulgolla	10
Haputale	Aluthwela	10
	Haputalegama	10
	Pitarathmale	10
	Dambetenne	10
	Boralanda	10
	Walgahawela	10
Total		240

Appendix 3: Distribution of Major Crops in the Field Areas

N' Eliya	W'mada	B'wele	H'tale
1. Leeks	1. Potatoe	1. Beens	1. Beens
2. Carrot	2. Beens	2. Tomatoe	2. Tomatoe
3. Beet Root	3. Tomatoe	3. Cabbages	3. Leeks
4. Potatoe	4. Cabbages	4. Brinjals	4. Carrot
	5. Brinjals		5. Beet Root
			6. Cabbages
			7. Salad Leaves

Distribution of Minor Crops in the Field Areas

1. Cabbages	1. Carrot	1. Potatoe	1. Potatoe
2. Raddish	2. Beet Root	2. Carrot	2. Knol Khol
3. Salad Leaves	3. Radish	3. Raddish	3. Raddish
4. Knol Khol	4. Knol Khol	4. Knol Khol	
	5. Pumpkin	5. Pumpkin	

Appendix 4: Sample of Dealers Interviewed

	N'Eliya	W'mada	B'wela	H'tale	Total
Transport Agent	4	4	5	5	19
Broaker	5	5	8	3	21
Purchasung Centres	1	4	2	-	7
Outside Ttaders	3	5	5	5	18
Commissoin Agent	-	-	-	7	7

Appendix 5: Scheme to Set Up Purchasing Centres

The establishment of three hundred and fifty two Purchasing Centres has been approved in 210 A.G.A. divisions in 17 districts with the objective of providing systematic and better marketing facilities for the products of these areas. Out of these, the Badulla district boasts of 25 such purchasing centres out of which 12 concentrate on the purchase of potatoes and highland vegetables amongst other products (fruits, flowers, minor export crops). In the Nuwara Eliya district 17 such purchasing centres have been established out of which 11 concentrate on the purchase of highland vegetables and potatoes.

SELECTION

The selection of suitable candidates for setting up these purchasing centres is done by a Steering Committee appointed by the President comprising 7 representatives chosen from various government and private sector organisations, i.e. a representative each from the Peoples Bank, Bank of Ceylon, Ministry of Agriculture and Marketing, Ministry of Trade and Commerce, Ministry of Policy Planning, Dept. of Co-operatives, the Ceylon Chamber of Commerce.

This committee follows a certain criterion in the selection of candidates -

1. The ability to establish their credit worthiness
2. Ownership of a building
3. Transport facilities

Wherever possible land and storage facilities are provided by the government.

OBJECTIVES

The primary objective of this scheme is to offer a reasonable price to both the consumer and the producer by strenthning the compitition emanating from the private sector. It also hopes to replace the services of the unnecesary middlemen such as brokers as far as possible. In the selection of areas preference is given to areas where there are no marketing facilities. Thus, in the selection of agents for setting up these centres priority is given to such areas.

The main idea behind this concept is to obtain the best possible price for these products/produce by selling it in Colombo & other areas where there is a demand for such produce In order to achieve this, a number of purchasing centres are engaged in inter-purchasing centre trade activities,channelling produce from rural areas to major cities and towns where they could fetch better prices. This practice limits total price manipulation by the Pettah Wholesale Market, thus helping both the consumer and the producer.

PURCHASING CENTRE ACTIVITIES

* Purchasing Centres also offer producers advice and information on what to produce according to consumer demand. This enables purchasing centres to monitor supply and thus reduce price fluctuations.

* The government also expects these centres to help the producers financially by giving him a loan for cultivation purposes. The producer in turn sells his produce to the purchasing centre.

* Purchasing Centres have also been made agents for the sale of fertilizer.

* Those centres which could organise wholesale trade in Colombo have been provided with facilities to sell their products at the Kirillapone Market. In this regard, five shops have already been opened at the Kirillapone Marketing Complex. A wholesale and retail market will also be in operation at the Tripoli Market premises shortly.

CONDITIONS & SAFE GUARDS

The government grants a financing facility of Rs. one million for the setting up of a purchasing centre. This facility is provided through the Bank of Ceylon and the Peoples Bank in the form of a loan or overdraft. However, the banks do not necessarily give the full amount to the prospective candidate. Rather, each candidate is given a portion of this money in proportion to the quantity and variety of produce he can purchase in that area. The following incentives are given when granting these loans -

1 There is a grace period of three years with regard to the repayment of capital and interest.

2. The interest due to the banks in respect of the loan will be paid by the government to the relevent banks during the first 3 years.
3. The repayment of capital and interest will commence at the end of this three year period, and will be spread over a period of five years and should be paid in equal installments.
4. The first five years of operation of these purchasing centres will be exempted from income tax.

In order to monitor the functioning of these centres, the A.G.A. 's of different districts submit a weekly record to the Ministry of Policy Planning of all the purchases made by these centres. In addition, regional and branch managers of the Peoples Bank and the Bank of Ceylon visit these centres to check on their progress.

SUCCESS RATE

According to the Ministry of Policy Planning and Implementation , only about 2% has been found to be dishonest. In its one and a half years of operation, this scheme has shown a 75% rate of success, with the Badulla district being especially successful.

Appendix 6: The Questionnaire

A STUDY OF PRODUCTION AND MARKETING OF HIGHLAND VEGETABLES IN SRI LANKA

Serial No. --------

1.0. Identification Particulars

1.1 Name of the Respondent

1.2 Address

1.3 Name of Village

1.4 District

1.5 Name of Investigator

1.6 Interview Date and Time

1.7 Checked By

1.8 Date

2.0. Household Characteristics

Serial No	Relationship to the Respondent	Age	Sex	Education	Activity Status	Primary Occupation	Farming F/P time	Remarks

Codes:

R'ship	Sex	Education	O'pation	A'Status	F'Status
1 Husband	1 Male	1 No S'ling	1 Farmer	1 Employed	1 Ful-Time
2 Wife	2 Fe'le	2 Primary	2 Artison	2 U'ployed	2 P- Time
3 Son		3 Post P'mary	3 H'wife	3 Student	
4 Daughter		4 GCE OL/AL	4 Wage labourer	4 Student	
5 Other Relations			5 Blue collar job	5 Too young/ old to work	
6 Dom. Servants			6 White c. job		
7 Labourers			7 Trader		

3.0. Land Owned and/or Operated and Crops Grown

Serial no. Parcel	Extent	Land Type	Irrigation	No of crops/ year	Ownership /Tennacy	Rent Paid/ received	Crops Grown		
							Yala	Maha	Other Seasons

Codes:

Land Type

1 Low Land
2 High Land
3 Home Garden

Irrigation

1 Gravity Irrigation
2 Pump Irrigation
3 Manual
4 Rain Fed

Ownership/ Tenure

1 Single Owned
2 Jointly Owned
3 Rented In
4 Rented Out
5 Leased In
6 Leased Out
7 LDO Lands
8 Encroachments

Crops Grown

1 Rice
2 Potatoes
3 Beans
4 Carrot
5 Cabbage
6 Cabbage
7 Leeks
8 Knol Khol
9 Raddish
10 Lettuce
11 Tomatoes
12 Other

3.1. Why did you choose these crops ?

3.2. If its a leased in land, who is the owner ?

3.3. What are the inputs, advices and other facilities provided by your land owner ?

3.4. What are the problems relating to land and land tenure ?

4.0. Input Supplies During the Previous Season

4.1. Seeds and Planting Material

Crops	Type/ Variety of Seed	Obtained From Whom?	Where Purchased?	Qty.	Price	Was it available in time? Yes/No

4.1.1. What Problems do you face in obtaining seeds/planting materials? (eg. quality, price, availability, distance travelled etc.)

4.2. Credit Obtained During the Previous Season

Purpose	Obtained From Whom? (name & place)	Relationship to Lender	Amount Borrowed (Rs.)	Rate of Interest (%)	Other Obligations to lender

4.2.1. Why did you obtain loan from this source ?

4.2.2. Problems faced with regard to credit.

4.3. Fertilizer/Compost Purchased During the Previous Season

Type of Fertilizer with Brand Name	Qty. Purchased	Purchased from Whom? (Name & Place)	Price Paid (Rs.)	Purchased on Credit or Cash

4.3.1. Why do you use this type of fertilizer ?

4.3.2. Why did you buy from this seller / place ?

4.3.3. If purchased on credit , why ?

4.3.4. Problems faced with regard to fertilizer.

4.4. <u>Agro-Chemicals Purchased During the Previous Season</u>

Type	Brand Name	Qty. Purchased	Purchased From Whom? Name & Place	Price Paid	Purchased on Credit or Cash

4.4.1. Why do you use these types of Aro-chemicals ?

4.4.2. Why do you prefer this Brand Name ?

4.4.3. If purchased on credit , why ?

4.4.4. Problems faced with regard to Agro-chemocals.

4.5. Use of Hired Laobour During the Prvious Season

Crop	Labour Hired (Days)			Wages Paid (Rs.)		
	Men	Women	Children	Men	Women	Children

4.5.1. **Problems faced with regard to hiring labour.**

4.6. Agro-Extension and Technical Advisory Services

4.6.1. Are there any services regarding agro-extension and technical assistance ?

4.6.2.

From whom did you seek Advices ?	Why did you need Advices ?	Did you receive Advices ?	Where did you receiv Advices ?		Distance to the office	Were the advices useful ?
			Farm	Office		

4.6.3. Problems with regard to extension and technical assistance.

5.0. Costs of Production and Value of Output (Per Crop)

Item	Crop 1		Crop 2		Crop 3		Crop 4	
	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value
Seeds/Pl. Mat.								
Fertilizer								
Agro Chemicals								
Machine Hire								
Capital Services *								
Land Rent								
Transport								
Packaging								
Labour (Hired)								
Labour Family)								
Total Production								
Land Are (ha)								

* Includes fuel for tractor, water pump, depreciation etc. ownrd by the grower.

6.0. Preperation of Produce for Sale by the Producer

Crop	Activities							
	Washing	Cleaning	Removing Leaves	Sorting	Grading	Weighing	Package	
							Type	Cost

6.1. Do you feel that the above preperational activities are not necessary when your produces are offerd for sale in the way they are expected by the consumers ?

Crop	Activity	Reasons for Omitting

6.2. Do you pack the same quantity of produces in all the containers ?
Yes / No

Crop	Type of Package	Accepted weight (kg)

6.3. Do you categorise your producers? State the categories if you are doing so.

Crops	Category	To Whom do You Sell

6.4. Special problems relating to any of the above activities.

7.0. Transport

7.1. From Farm to Dispatch/Sale Point

(a) Is your produce picked-up from farm itself ? (Yes/No)

(b) If not how do you transport your produce ? (Mode)

(c) What is the distance from farm to dispatch/sales point ? (km)

(d) How much does it cost to transport this distance ? (Rs./Unit)

(e) What problems do you face in transporting vegetables to dispatch/sales point ?

7.2. From Farm/Dispatch Point to Wholesale Market

(a) At which Wholesale Market your produce is sold ?

(b) What is the distance to the Wholesale Market ? (km)

(c) What is the mode of tranportaion ?

(d) Who owns this mode ?

(e) How much does it cost ? (Rs./Unit)

Crop	Weright of a Package	Cost
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(f) What problems do you face in tranporting vegetables to the Wholesale Market ?

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9.0. Price and Market Information

Type of Inf.	Source of Inf.	When Received?	Was the Inf. Useful?	How?
Farm-gate Price (in your own area)				
Wholesale Price - Colombo				
- Kandy				
Retail Price - Colombo				
- Kandy				
Production (Volume)				
Demand (Level)				

Codes:

When Received ?
1 Before Planting
2 Before Harvesting
3 Harvesting Time
4 After Selling

How ?
1 In Productio Planning
2 In Deciding Whom to Sell
3 In Timing the Harvest
4 In Timing the Harvest

10.0. Main problems faced in marketing of vegetables.

11.0. Suggestions for improvement.

12.0. Investigator's Remarks.

Marketing Channels	Advantages in Selling to these Channels	Disadvantages of Selling to these Channels

8.8. Can you change the dealer when you need to ?

8.9. If not , why ?

8.10. Price received, Commissions paid and other expences incurred during the last season

Crop	Channel 1				Channel 2			
	Qty.	Pric/ Unit	Comm. %	Other	Qty.	Price/ Unit	Comm. %	Other

8.0. Marketing Channels

Crop	Most Frequent Marketing Channel	Other Channels Used at Times	Other Channels Available but not Used at all

8.1. How long have you been using this most frequent channel ?

8.2. Do you sell to one particular trader within this channel ? (Yes/No)

8.3. Why do you prefer this particular channel ?

8.4. What is your relationship to the trader with whom you frequently deal ?

8.5. What are the short-comings of this channel ?

8.6. Why don't you sell to the other channels ?

Channel	Reason
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