USAID Firms Project

Baseline Survey of Peach Growers of District Swat (2013)

August 2013

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Data Page

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Author's Name:	Dr. Nadeem, Nasir & Dr. Hijazi, L.A. (APEX Consulting Pakistan)
Study Design and Methodology:	Ahmed, Shakaib. Nasir, Rida. Tahir, Shahzad. & Zaighum, B. Ishaq. (USAID Firms Project)
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Abstract

The peach value chain sectors create employment opportunities for a large number of people in the Swat district of Khyber Pakhtunkhwa. Despite this, a significant amount of produce is wasted due to pre- and post-harvest losses. Additionally, the growth of these sectors is limited due to a lack of access to inputs supplies, market information, market linkages, and credit facilities as well as an untrained work force, poor management practices, inability to meet product standards (quality, consistency, hygiene, etc.), and unavailability of pulping units to utilize B, C, and D grade fruit for pulp processing and value additions. Increasing the economic value of these sectors begins with minimizing losses during pre- and post-harvest, increasing yields, and diversifying end market opportunities for producers. The USAID Firms Project has devised peach sector development projects to improve production and increase sales revenue for the identified horticulture value chains in the vulnerable areas of Pakistan and by doing so, is supporting the rehabilitation and recapitalization of small and medium enterprises (SMEs) affected by the conflict and the 2010 floods.

The purpose of this study is to establish baselines for the newly focused peach growers to assess farm management, production, and marketing practices with an additional focus on access to credit services/facilities, technical advice and training facilities, input supplies, market information, and market linkages. The findings of this survey informed the USAID Firms project and helped develop appropriate response strategies for better production and sales revenue. The current document presents the findings of this baseline survey.

Table of Contents

EXECUTIVE SUMMARY x

1. INTRODUCTION 1

1.1. BACKGROUND 1

1.2. DISTRICT SWAT 1

1.3. USAID FIRMS PROJECT BRIEF 1

1.4. OBJECTIVES OF BASELINE SURVEY 2

1.5. SCOPE OF WORK 2

1.6. BASELINE SURVEY METHODOLOGY 2

1.7. SAMPLE SIZE CALCULATION 2

1.7.1. Peach Growers 2

1.8. SAMPLING STRATEGY 3

1.8.1. Data Collection of Peach Farm 3

1.9. RESPONDENTS 4

1.10. SURVEY INSTRUMENT 4

1.11. SELECTION OF FIELD TEAMS 4

1.11.1. Field Teams Composition 4

1.11.2. Survey Training for the Orientation of Tools 5

1.11.3. Data Editing, Entry and Cleaning 5

1.11.4. Data Analysis 5

1.11.5. Informed Consent 5

1.11.6. Quality Control 6

2. FINDINGS 7

2.1. BASIC INFORMATION OF PEACHORCHARD 7

2.1.1. Types of Farm Ownership, Management and Source of Irrigation 7

2.1.2. Distance and Time Taken by Foot from Farm to Main Road 7

2.1.3. Landholding Size of Peach Orchards 8

2.1.4. Number of SMEs with Different Cultivars, their Acreage and Trees 8

2.1.5. Usage of mobile phone and mobile banking 10

2.2. FARM EMPLOYMENT DETAILS 11

2.2.1. Details of different catagories of Labor in Peach Orchards 12

2.2.2. Working days and hours with FullTime Equivalent (FTE) for All Labor Categories 13

2.3. SALE VALUES, PRODUCTION, DOMESTIC USAGE &WASTAGE OF PEACH FRUIT REPORTED BYSMES IN 2011 &2012 13

2.3.1. Channels of Marketing Adopted by Peach Producers 15

2.3.2. Market Venue 16

2.3.3. Usage of Technology in Peach Production 17

2.3.4. Difficulties Faced by Peach Farmers in Production of Quality Peaches 18

2.3.5. Financing Sources of Peach Farmers 19

2.3.6. Financial Requirements of Peach Farmers 19
2.3.7. Peach SMEs'Sources and Degreeof Information 20
2.3.8. Types of Trainings Received by Peach Orcharders 21
2.3.9. Scale of Training Utilization....22
2.3.10. Improved Practices Adopted After Training Received....22
2.3.11. Future Training Needs of Peach Orcharders 23
2.3.12. Record Maintained by the SMEs 24
3. CONCLUSIONS AND RECOMMENDATIONS....26
3.1. PEACH SURVEY CONCLUSIONS 26
3.2. RECOMMENDATIONS TO IMPROVEPEACHPRODUCTIONINDISTRICT SWAT 27
3.3. KEY INFORMANT INTERVIEW (KII)....28
4. APPENDICES....29
APPENDIX 1: SCOPE OF WORK AND DELIVERABLES....29
APPENDIX 2: PEACH QUESTIONNAIRE....37
APPENDIX 3: PEACH KEY INFORMANT INTERVIEW GUIDE 49
APPENDIX 4: TEHSIL WISE PRODUCTION 52
APPENDIX 5: PEACHFARMERS' STATUS IN DIFFERENT SALES CATEGORIESIN2011 53
APPENDIX 6: RESPONDENT'SEDUCATIONALLEVEL....53
APPENDIX 7: REFERENCES....53

List of Tables

Table 1: Peach Farms Visited by Clusters..... 3
Table 2: Types of Farm Ownership, Management &Irrigation..... 7
Table 3: Distance and Time Required by Foot to Reach from Farm to the Main Road 8
Table 4: Farms' Classification by Area with No. of Farmers in Each Category 8
Table 5: Farmers with Different Peach Cultivars, Their Acreage& No. of Trees in 2011 9
Table 6: Farmers with Different Peach Cultivars, Their Acreage& No. of Trees in 2012 9
Table 7: Farmers with *Different* Peach Cultivars andtheirtransplanted Distance in feet.....10
Table 8: Usage of Mobile phone 10
Table 9: Ability of Peach Producers regarding SMS Message Reading 10
Table 10: Preferred Language of Peach Producers regarding Message Reading 11
Table 11: Status of Bank Accounts of Peach Farmers 11
Table 12: Peach Producers Status of Transactions Through Mobile Banking 11
Table 13: Partially Dependent Households on Peach Farmers 12
Table 14: Fully Dependent Household on Peach Farmers 12
Table 15: Partially Dependent Persons on Peach Farmers 12
Table 16: Fully Dependent Persons on Peach Farmers 12
Table 17:Different Labor Categories Employment Status on Peach Farms in 2012 13
Table 18: Employment Figures in Peach Farms in 2012 13
Table 19: Full Time Equivalent (FTE*) 13
Table 20: Sales.....13
*Table 21: Peach Farmers' Status in Different Sales Categories in*2012.....14
Table 22: Peach production details in 2011 and 2012.....14
Table 23: Domestic Usage of Peach.....15
Table 24: Channels of Marketing Adopted by Peach Producers.....15
Table 25: Market Places 16
Table 26: Degree of Satisfaction with Present Financial Arrangements, willingness for Loans & Amount Requirements.....20
Table 27: Change in Farming Practices after Receiving Trainings 22

List of Figures

Figure 1: Field Team Structure..... 4
Figure 2: Channels of Marketing Adopted by Peach Producers 15
Figure 3: Marketing Channel of Peach.....16
Figure 4: Distribution of Usage of Technology in Peach Orchards.....17
Figure 5: Difficulties Faced by Farmers in Production of Quality Peaches.....18
Figure 6: Distribution of Financing Source of Peach Farmers.....19
Figure 7: Distribution of Sources of Information.....20
Figure 8: Distribution of Training Received.....21
Figure 9: Distribution of Training Utilization after Receiving Trainings 22
Figure 10: Different Practices Used by Farmers after Adopting Good Farming Techniques 23
Figure 11: Distribution of Types of Training Needed 24
Figure 12: Different Records Maintained by Farmers 25

CONVERSION TABLE

1 PKR	0.0115 USD 0.0106 USD	Average of April – September 2011 Average of April – September 2012
1 Acre	2.0234 Jeribs	Afghan Jeribs System

GLOSSARY

Acre	A unit frequently used for land measurement
District	The second tier of administrative division in Pakistan following the Provinces
Tehsil	It is the third tier of administrative division in Pakistan following the District
Union Council	It is the fourth tier of administrative division in Pakistan following the Tehsil/Taluka
Jerib	The jerib or djerib is a traditional unit of land measurement in Middle East and southwestern Asia. It is used to measure landholdings (real property) in much the way that an acre and hectare are
Peach Cultivars	Trees of No.5 (Peach Cultivar NJC 84), Trees of No.8 (Peach Cultivar Indian Blood), Trees of No.6 (Peach Cultivar Elberta), Trees of No.7 (Peach Cultivar Maria Delezia), Trees of No.4 (Peach Cultivar Carmon), Trees of early green Cultivar, Other Cultivars (i.e. Golden, Hartley, Sohani, Haljan), Trees of No.1 (Peach Cultivar Spring Crest) Trees of No.3 (Peach Cultivar A-6-9)

ACRONYMS

APEX		APEX Consulting Pakistan (Consultants)
CSPro		Census and Survey Processing System
Project		USAID Firms Project
GOP		Government of Pakistan
HH		Household
IP		Implementing Partner
KP		Khyber Pakhtunkhwa
M&E		Monitoring and Evaluation
NGO		Non-Governmental Organization
SMEs		Small and Medium Enterprises
SOW		Scope of Work
SPSS		Statistical Package for Social Science
ToR		Terms of Reference
UC		Union Council
USAID		United States Agency for International Development
USD		United States Dollar

EXECUTIVE SUMMARY

Introduction

The objective of the USAID Firms Project (the 'Project') is to improve government service delivery and develop dynamic, internationally competitive firms to accelerate sales, investment, and job growth. Swat is one region that could potentially become the recruiting ground for radical groups. Nearly half of the economic activity of Swat depends upon horticulture and related agro-based industries. The peach sector creates employment opportunities for a large number of people in Swat. But this sector suffers from the usual bottlenecks (lack of certified inputs, non-standardization, unavailability of pulping facilities, etc.) that hamper the realization of higher economic value. The Project has devised plans to raise the income levels of peach growers by rehabilitating flood-affected orchards and through value chain upgrades.

Baseline Survey of Peach SMEs

The survey's overall objective is to establish a baseline of the peach SMEs with reference to farm management, production and marketing practices with a specific focus on access to credit services and facilities, technical advice and training facilities, inputs supplies, market information, and market linkages. The findings are to help the project develop appropriate response strategies for better production and sales revenue for beneficiaries.

For survey design, the consultants followed the sample size of 189, agreed upon during the kick-off meeting for the peach growers. This sample was distributed among 11 peach-growing clusters. The field-tested survey tool provided by the Project was refined by the consultants before administration. The team collected data from the 19th to the 22nd of May 2013. Aside from the survey, two key informant interviews were also conducted. Data entry, data cleaning, table generation, analysis and narrative report-writing were done in-house by the consultants.

The following is the summary findings of the survey for the peach sector.

Finding of Peach Survey

The survey was conducted in three tehsils, namely Matta, Charbagh, and Babuzai of district Swat with 189 Peach SMEs to develop a holistic picture of peach production covering all aspects.

- 72 (38%) out of 189 SMEs have the education up to secondary school level that is also called Matric in Pakistan whereas 49 (26%) attended college
- 90% of the respondents have mobiles, out of this 79% can read SMS, 51 and 46% preferred Urdu and English, respectively as SMS language
- Farmers having bank account are 33%, out of these only 20% do mobile banking
- 1-2 and 3-4 households depend partially on 37% farmers each, whereas the corresponding percentage of farmers having fully dependent households are 82 and 13%, respectively
- More than 7 people are partially and fully dependent on 169 (89%) and 154 (83%) farmers, respectively
- More than 7 people depend partially and fully on 89% and 83% farmers, respectively
- Majority of peach-producing farms are self-cultivated (85%) and self-managed (98%). Main source of irrigation is river/stream, used by 71% farmers

- Most of the farms (93%) are situated at a distance from less than a kilometer to 2kms from the main road and 22% of farmers take only up to 5 minutes to reach the road
- 70% of farmers are small landholders that own less than 6 acres of land
- 55 and 43% of farmers use No. 5 and 8 cultivars, respectively covering 243 acres out of 516 total acreage
- Average peach trees per acre range from 171 to 198 depending on cultivar and location
- Inter-row and inter-plant transplanting distances range from 14.5 to 16.6 feet and from 15.2 to 16.1 feet respectively, again due to different cultivars and locations
- Total farm area is 521 acres with a total production of 5487986kgs; the total sales were 1684140 USD, which comes to 3231USD per acre and 0.362 USD per kg in the year 2012
- Average production per acre in 2011 and 2012 were found to be 10667 and 10529, respectively
- Wastage per acre in 2011 and 2012 was found to be 1210kg and 1610kg, respectively
- Percent wastage of total production ranged from 8 to 22 depending on cultivar and harvesting months
- Personal usage of total production was only 1%
- Lahore is the biggest market supplied by 60% farmers, followed by Rawalpindi and Peshawar used by 21 and 20% of growers respectively in the year 2012 with the same trend in the year 2011. Self-marketing was conducted by 93% farmers
- Permanent labor is kept by 91% of growers, temporary labor by 100% and family labor by 96%. Total employed labor is 844 in permanent category whereas values for temporary and family labor are 1464 and 492, respectively.
- Permanent laborers worked 20 days per month, whereas temporary and family laborers worked for 12 and 22 days, respectively.
- FTE for permanent labor is 59 and for temporary and family labor the values are 56 and 38 respectively. Corresponding values for FTE per acre are 0.12, 0.11, and 0.08.
- Women-specific activities are very important as they prepare food and tea etc. for laborers working in peach orchards.
- Tractor is the most common technology, used by 92% of farmers, followed by power sprayer by 84% and harvesting kit by 76%. The pruning kit is the most important tool in peach gardening but is used only by 8% of farmers.
- Major difficulties faced by peach growers are diseases by 87%, insects by 86%, and nutrient deficiencies by 70%. Availability of tools and identification of insects and diseases by 57% each. 85% farmers are self financed, 39% took loans from commission agents and money lenders. Financial institutions catered only to 2% growers.
- 91% farmers want credit. Majority of them needs from 1060 to 5300 USD.
- 85% farmers received information to improve farming from Firms project, 23% from friends and relatives. Role of agriculture department and print media is negligible.
- 96% received training on pruning techniques, 90% on insect control, 84 and 77% on irrigation and water management, respectively. Access to credit was received only by 14% and is at the tail end.
- After training only 30% fully adopted good farming practices.
- As far use of good farming techniques after the training is concerned 82% controlled diseases, 77% improved their irrigation techniques, 71% improved nutrition, and only 10% improved their access to credit.

- 71%farmers wanted further training in nutrient management, 70% in soil sampling and testing, and 64% in insect control. Storage was the least demanded one only by 41%.
- 123 (93%) farmers each keep financial and sales record. Whereas 106 (80%) farmers each keep records of fertilizers application time and of full time employment. The lowest trend of record keeping of 12 (9%) is about diseases attacks with types and timings followed by 15 (11%) for forms of tillage carried on.

Key Informant Interviews (KII) Findings

- The main diseases are leaf curl, shot hole, brown rot, powdery mildew, root rot, fire blight and gummosis.
- Nutrition deficiencies are due to limited use of FYM, DAP, SSP, NPK, and other urea fertilizers along with deficiency of Fe, B, K and Ca
- Fruit is damaged by insects like fruit fly, aphids, mites, flat headed borer and gall midge fly
- Non availability of picking tools and kits
- Manual grading/sorting of peaches is done as there is no use of machinery for grading/sorting
- No field cooling facilities in orchards are available
- No resources with Govt. Departments for regular and in-time training and monitoring are available
- Losses of irrigation water is huge due to improper and non-cemented water channels
- Private nurseries deceive the farmers and provide verities other than demanded
- There is a large production potential which can be achieved through adopting mechanized farming and better field practices along with;
- Provision of certified and true to type cultivars
- Provision of interest free loans
- Provision of cold chain systems
- Establishment of value added units in the district
- Capacity building of farmers
- Improvement in marketing system
- A maximum of 16000 kg per acre production can be achieved by removing the above mentioned constraints.

Recommendations for Peach Sector

After thoroughly analyzing the data the following suggestions can be made to increase peach production and farmers' income:

- Role of farmers' groups, agriculture department and related government agencies, and NGOs need to be enhanced as their present contribution is negligible.
- Institutions providing supervised micro credit should be brought in the area.
- Latest market information should be provided to growers.
- Collective marketing and transport should be encouraged.
- In time quality inputs should be insured in sufficient quantities.
- Supply of certified high yielding true to type transplants of peach should be ensured from registered nurseries

- Use of machinery and efficient orchard tools/kits should be encouraged by making them available in the local markets.
- Frequent interactions with farmers to resolve their major hindrances are suggested.
- If possible local seasonal forecasts will help in damage control along with an increase in production and quality.
- Future trainings should be arranged according to growers' priorities. Post training utilization should be supervised and encouraged by providing full back up services and monitoring to increase training implementation.
- Farmers should be trained in the areas of pruning, standardized plant to plant spacing, leaf analysis, and nutrient spraying.
- **Nutrition**: soil & plant analysis is needed for nutrition update and for fertilizer application, for micro nutrients leaf analysis or deficiency symptoms identification and nutrient spraying is required. For help contact NARC, Islamabad
- **Insects**: insect scooting and spraying should be done before threshold is achieved. contact CIBA GEIGY, LAHORE for scooting manuals and training
- **Diseases**: symptoms identification of main peach diseases in the area and in time treatment with spraying is worthwhile for disease control. Help can be sought from peach experts from agriculture directorate in Swat particularly from peach agronomist.
- Cultural and tillage methods for insect and disease control may be incorporated in training programs
- **Input supplies**: in time supply of quality inputs particularly agrochemicals and phosphoric fertilizers, which can be ensured by getting supply directly from producer on the basis of area requirements. Phosphoric fertilizer purity field testing kits from NFC, Lahore can be provided to the farmers.
- Transplanting and pruning techniques are important to ensure proper plant vigor and fruit bearing capacity
- Harvesting and post-harvesting techniques are necessary to minimize fruit damages and to keep desired fruit quality

  Credit arrangements without interest should be made as local culture does not allow interest

1. INTRODUCTION

1.1. Background

The objective of the Project is to improve government service delivery and develop dynamic, internationally competitive firms to accelerate sales, investment, and job growth and undercut the basis of extremism. The Project aims to work in at-risk districts such as Swat. Known for its fruits (apples, peaches, plums, apricots, and persimmons) and vegetables (onions, potatoes, tomatoes, turnips, peas, cabbage, etc.), currently 44% of the Swat district economy is based on horticulture, which indirectly supports other sectors such as tourism and other agro-based industries.

The peach sector creates employment opportunities for a large number of people. Despite this, a significant amount of produce is wasted due to pre and post-harvest losses. Additionally the growth of this sector is limited due to a lack of access to inputs supplies, market information, market linkages, and credit facilities as well as an untrained work force, poor management practices, inability to meet product standards (quality, consistency, hygiene, etc.), and unavailability of pulping units to utilize B, C, and D grade fruit for pulp processing and value additions. Increasing the economic value of this sector begins with minimizing losses during pre- and post-harvest, increasing yields, and diversifying end market opportunities for producers. The Project has devised peach sector development projects to improve production and increase sales revenue for the identified horticulture value chains in vulnerable areas of Pakistan and by doing so, is supporting the rehabilitation and recapitalization of conflict and flood-affected Small and Medium Enterprises (SMEs).

1.2. District Swat

An administrative district in the Khyber Pakhtunkhwa province, Swat is a valley located close to the Afghan-Pakistan border. It is the upper valley of the Swat River, which rises in the Hindu Kush range. A princely state which was dissolved in 1969, its capital is Saidu Sharif but the main town is Mingora. Dominated by ethnic Pashtuns, with Pashto/Pakhto as the main language, the valley with high mountains, green meadows and clear lakes is a place of great natural beauty popular with tourists.

According to the last census in Pakistan carried out in 1998, Swat's population was 1,257,602. However the population was 715,938, according to the census in 1981.

The people of Swat are mainly Pakhtuns, Yusufzais, AkhundKhelMiangan (Syed), Chitralis, Kohistanis, Gurjar (or Gujar is the major tribe of the district; its people are divided in different clans like Khatana, Bajarh, Chichi, Ahir, Chuhan, Pamra, Gangaletc), AkhundKhelYousafzai, Nooristani, and Awans.

1.3. USAID Firms Project Brief

The Project is developing a dynamic, internationally competitive, business sector in Pakistan that is increasing exports, employing more people and producing higher value added products and services. The Project is accomplishing all this by working at the policy level, with business sectors and with individual firms to improve productivity and competitiveness with a focus on 20 of Pakistan's fastest growing districts.

1.4. Objectives of Baseline Survey

The overall objective is to establish a baseline of the peach growers with reference to farm management and marketing practices with a specific focus on access to credit services and facilities, technical advice and training facilities, inputs supplies, market information, and market linkages. The findings of this survey would help the Project develop appropriate response strategies for better production and sales revenue for beneficiaries. The collected data that would serve as a basis of comparison with endline data as well as helping the Project team in project design and implementation of interventions. The survey's specific objectives are:

- Assessment of farms management practices, market information and market linkages for peach growers;
- Mapping of different varieties of peach being cultivated by farmers and assessment of production and yield for each variety.
- Assess the extent to which peach growers have access to input supplies.
- Conduct training needs assessments of the peach growers.
- Assess the extent to which peach growers have access to credit services/facilities.

1.5. Scope of Work

The specific tasks for the baseline survey are;

- **Questionnaires finalization:** Detailed review of the questionnaire and updated the questionnaire in the light of ToR/Objective of the study.
- **Data collection:** Supervise implementation of survey in target areas in accordance with the approved design
- **Analysis:** Development of the data entry programme then performance of data cleaning and detailed analysis in light of descriptive statistics for all variables and inferential statistics for planned comparisons included in the data analysis plan.
- **Report writing:** produce a statistical report with sufficient narrative content to facilitate understanding and utilization by those with limited statistical background and provide a draft to USAID firms' project for review and comment.

Detailed scope work is included in Terms of Reference attached as Appendix 1.

1.6. Baseline Survey Methodology

The first step was assignment structuring in which our Team Leader and Assignment Coordinator worked with the Project's team to understand the survey objectives, its use, and level of efforts required to successfully complete the baseline survey.

1.7. Sample Size Calculation

1.7.1. Peach Growers

The baseline survey target population for the peach sector is those growers who agreed to participate in the peach sector initiative. Following formula is used to calculate the sample size for the study:

$$\text{Sample Size } (n) = \text{Deff } [(Z\alpha + Z\beta)^2 * \{Pb\ (1 - Pb) + Pe\ (1 - Pe)\}] / (Pe - Pb)^2$$

Where,

Design effect (Deff) was set at 1.2

Zα (significance) set at 1.645 and the Zβ (power) is set at1.645

Proportion at baseline is set to 0.5 (50%)

Proportion at end line is set to 0.65

By applying this formula the total required sample comes to 276.

As the total number of beneficiary farmers (450) is relatively small, the sample does not need to be large. We thus adjusted n by a finite population correction factor to obtain the required sample size as follows:

$N = n_o / [1+\{(n_o-1)/N\}]$

Where,

n = sample size

N = Population size (i.e. total number of participating peach growers)

n_o = sample size to be adjusted

The total sample required came to 171.

However, the sample also took into account the fact that some farmers refuse to participate. Some of the farmers were absent, (non-participation-NP) at the time of the survey and the possibility of missing or doubtful values (non-response - NR). We estimated that NP = 5% and NR =5%.

ST=ROUNDUP(n*(1+NP)*(1+NR))

By applying this formula the total required sample came to 189.

These 189 peach growers were randomly selected from the 11 clusters. The selection was made by proportional allocation of the sample size to each cluster and the sample of 189 was proportionally distributed among these 11 clusters on the basis of their size.

After the survey was conducted, it was found that all 189 farmers responded to the questionnaires, increasing accuracy and decreasing errors.

1.8. Sampling Strategy

1.8.1. Data Collection of Peach Farm

To reach the sample target of 189 peach farmers in Swat district, a two-stage cluster sampling strategy was adopted. Eleven clusters were visited to randomly interview selected farmers from each cluster. Table 1 show that a total of 189farmers were interviewed by field teams in the clusters.

Table 1: Peach Farms Visited by Clusters

Cluster Name	Farmers Interviewed (n = 189)	
	#	%
MattaKharrerai	18	9.5
Manz and KuzPalaoBaidara	18	9.5
Sumbat	17	9.0
Kuz and Bar Droshkhela	17	9.0
Charbagh	17	9.0
Miagano Cham & Bar Palau Baidara	17	9.0
Bar Sherpalam	17	9.0
KozSherpalam	17	9.0
Shakardara	17	9.0
Jehanabad	17	9.0
Qambar	17	9.0

1.9. Respondents

The respondents were defined as the peach growers who agreed to participate in peach sector development initiative.

1.10. Survey Instrument

Since the Assignment was mainly based on primary data, it was of great importance to develop data collection tools with extra concentration and seriousness. Data collection instruments in English and Urdu versions were developed by Client and provided to Consultants after pre-testing. Final questionnaire was developed with the approval of Client by considering the following characteristics:

- It was clear and understandable;
- It was designed as per the field settings of the selected region;
- Responses were simple to record;
- It was easy to assign codes to the open-ended questions; and
- No section was left open to allow for ambiguity while writing responses.

Final questionnaire of peach in English and Urdu versions are attached as Annex III.

1.11. Selection of Field Teams

To ensure that quality data is collected, the following steps were followed for field team selection and composition:

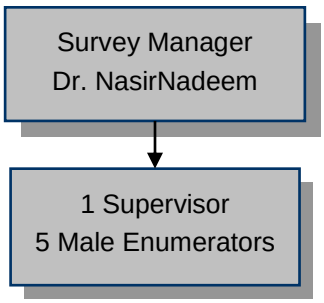
The Consultants interviewed the supervisor and enumerators from its current database. The enumerators were selected based on following indicative criteria:

- Education; Bachelor (equivalent to 14 years of education);
- Preferably a local of the district;
- Understanding of the agriculture/horticulture sector and related issues;
- Well versed with local languages and geography;
- Prior field research experience preferred; and
- Pleasant personality and honesty.

1.11.1. Field Teams Composition

The Consultants engaged one field team. Team consisted of 1field supervisor and 5male enumerators. Thus, 1 supervisor and 5 males were appointed to accomplish the data collection activity before deadline. The Consultants also trained 2 extra male enumerators as a backup for the field teams. The figure below represents the field team composition:

Figure 1: Field Team Structure



1.11.2. Survey Training for the Orientation of Tools

Various support activities were also planned and performed together with the core tasks. The pre-field activities included training of enumerators, mock survey, logistic arrangement, boarding & lodging etc.

Survey guidelines were developed by supervisors and enumerators as part of the training activities. It was ensured by trainer during the training that each trainee developed his own comprehensive survey guidelines to be used in the field. It was developed in handwritings of trainees and its contents were finalized after detailed discussions on each of the indicators of the data collection tool. After training on quality control, mock exercise was conducted by each trainee. Every participant filled the training evaluation form at the end.

All issues related to survey were recorded and addressed by trainers. The objective was to impart the following knowledge and skills:

- Overview of the Assignment
  - Explaining project background and its future Impact.
  - Survey objectives and methods.
- Company and self-introduction.
- Ethical guidelines and issues regarding survey.
- Informed consent presented and discussed.
- Detailed instructions on procedures and questionnaire
  - Method of replacing respondents.
  - Training on how to select respondents.
  - Method of asking questions (mode of addressing the respondents).
  - Participants training on how to conduct an interview.
  - Participants discussed and understood selection biases.
  - Participants discussed challenges with the questionnaire.
- Complete understanding of what each of the questions is intended to ask;
  - Practice reading questionnaire in field.
  - Field exercises, additional instructions to follow during field stay.
  - Practice on recording the responses.
- Protocol for data/information security.
- Logistics and field security training.

1.11.3. Data Editing, Entry and Cleaning

Data editing was conducted at two stages. The completed questionnaires were reviewed by Supervisors daily in the field and again when questionnaires were pooled in at central office for data entry. Data entry module was developed in CSPro with inbuilt checks to avoid errors. Data entry was done simultaneously with collection of data. The Data Entry Supervisor in the team was in-charge of the data entry process and later cleaning. The data file was then generated using Statistical Package for Social Sciences (SPSS 20) to clean the data.

1.11.4. Data Analysis

Consultants developed the analysis plan to meet the objective of the study. Data tables were generated using SPSS, which were analyzed by subject expert.

1.11.5. Informed Consent

The data enumerators were trained to observe the ethical considerations. It was considered that every individual had the right to refuse to participate or answer specific questions. A verbal consent was obtained from every respondent before asking questions and it was ensured that

the survey was conducted solely on the willingness of the respondent. The field staff was trained in clarifying apprehensions of the respondents if there were any.

1.11.6. Quality Control

As per Consultants policy, additional enumerators were appointed to account for dropouts during training and data collection activity. Training was conducted by trainers according to the monitoring protocols developed with the coordination of Client. During data collection, survey supervisors observed and checked most of the questionnaires to ensure that interviewers were collecting and recording data accurately, and that questionnaires were filled in completely. Supervisors checked the questionnaires before the interviewers left the cluster so that they could be corrected. They also maintained sample tracking form for continuous monitoring and also investigated all farmers that refused or were not at farm. The Supervisor reported to Project's team; the respondents that were not at farm and the survey issues, which were addressed after coordination. Additionally random monitoring checks were carried out by Field Manager appointed by Consultants.

Sample tracking form was also used by supervisor containing cluster wise detail of daily targets and questionnaire status. During survey some farmers not available at farms were visited by field team second time to ensure that the same randomly selected farmers was interview under the instruction of Project's field representative. Project monitored the whole activity of Assignment, specifically field work through spot checks, reviewing of the filled questionnaires, edited questionnaires and observed the data collection method of enumerators.

The role of firm's Project was remarkable at every stage of training, survey and data processing. Project shared the list of quality checks for training and survey. Training was continuously monitored by Project's representative. The representative attended the training and observed/monitored closely the training process and gave his valuable contribution in finalization of tools. The mock exercises were also conducted in the presence of representative documenting the learning of trainees. During the field visits he made spot checks, checked the forms, monitored the editing process, and guided the teams in filling the forms and in execution of field plan. After the survey he also checked the data entry process which was carried out in APEX head office in Islamabad. Presentation on preliminary findings of survey was presented at USAID Islamabad office and the feedback was incorporated in the survey report.

Training schedule was shared with Project along with detailed field calendar for easy and surprise monitoring of activities. Following key parameters were checked and validated by Project during training and survey:

- Survey objectives and methods.
- Ethical guidelines and issues.
- Training of participants on selection of respondents, selection biases, how to conduct interview, challenges with the questionnaires and quality controls.
- Role playing in pairs and mock exercise.
- Training evaluation form and issues recorded addressed appropriately.
- Supervisor evaluated all interviewers.
- Enumerators filled the questionnaires under the supervisor.
- Supervisor spot checked the interviews.
- All questionnaires were edited in the field following consistency check procedures.
- None of the questionnaires signed by the supervisor had missing and inconsistent data.
- Supervisor prepared the questionnaire tracking form.
- Supervisor reported the problems to Field Manager.

2. FINDINGS

2.1. Basic Information of Peach Orchard

2.1.1. Types of Farm Ownership, Management and Source of Irrigation

Table 2showsthe status of ownership, management, and irrigation sources in Swat. Out of a total of 189orchards a majority of 161 (85%) are self-cultivated and the rest 28 (15%) released. As far as orchard management is concerned 186(98%) are self-managed and only 3 (2%) are managed by tenants. River/stream followed by Tube wells are the main irrigation sources irrigating 145 (71%) and 44 (22%) orchards, respectively while only four orchards are spring irrigated.

Table 2: Types of Farm Ownership, Management &Irrigation

Description	**Farmers responded in each category with yes**	
Status of Ownership	**(n=189)**	
	#	**%**
Self-cultivated	161	85.2
Leased	28	14.8
Status of management	**(n=189)**	
	#	**%**
Self-managed	186	98.4
Tenants	3	1.6
Source of Irrigation	**(n=189)**	
	#	**%**
River/Stream	145	71
Tube well	44	22
Partially rain supplemented	11	5.
Spring	4	2

2.1.2. Distance and Time Taken by Foot from Farm to Main Road

Marketing depends on time taken and distance of orchard to main road, particularly in hilly terrain where walking up to the main road is the only option available. Table 3 shows that 78 (41%) orchards are situated at less than 1 km of distance from the main road, 97 (51%) at 1 to 2km, 9 (5%) and 5 (3%) area 3 to 4 and more than 4 km distances, respectively. Only 5 farmers reported being at a distance greater than 4 Km.

Besides distance from main road farmers were also asked to report time taken to reach the road as distance becomes less important than time taken due to differences in slopes. Their answers show that for 41 (22%) farmers it takes up to5 minutes to reach the main road followed by 104 (55%) farmers who reach the road between6 to20minutes. Time taken from 21 to 30 and beyond 30 minutes are reported by 18 (9.5%) and by 26 (14%), respectively.

Table 3: Distance and Time Required by Foot to Reach from Farm to the Main Road

Description	Farmers Responded in each category with Yes	
Distance	**(n=189)**	
	#	**%**
< 1 KM	78	41.3
1-2 KMs	97	51.3
3-4 KMs	9	4.8
> 4 KMs	5	2.6
Time Required	**(n=189)**	
	#	**%**
0-5 minutes	41	21.7
6-20 minutes	104	55.0
21-30 minutes	18	9.5
> 30 minutes	26	13.8

2.1.3. Landholding Size of Peach Orchards

Majority of farmers in Swat are small landholders. Landholding size in rural areas determines wealth and influence of the owner. Therefore, farmers interviewed about their acreage were classified into different categories presently used in Pakistan. Their responses in Table 4 show that a vast majority 132 (70%) in 2011 & 2012aresmall farmers having up to 6 acres. 55 (29 %) farmers in both years lie in medium farm category, which is up to 25 acres. Out of 189 farmers interviewed only two farmers in mentioned years have more than 25 acres (large category).

Table 4: Farms' Classification by Area with No. of Farmers in Each Category

Farm Category in Acres	2011		2012	
	Farmers Responded in each category with Yes (n=189)		Farmers Responded in each category with Yes (n=189)	
	#	**%**	#	%
Small (< 6)	132	69.8	132	69.8
Medium (6 – 25)	55	29.1	55	29.1
Large(>25)	2	1.1	2	1.1

2.1.4. Number of SMEs with Different Cultivars, their Acreage and Trees

In our survey area, 10 peach cultivars are cultivated. We investigated farmers' preference for the cultivars and number of farmers planting a particular cultivar. The results are tabulated in Table 5 in descending order in their percent importance. Out of 189 farmers, 104 (55%) and 82 (43%) used cultivars No. 5 (NJC 84) and cultivars No. 8 (Indian Blood) respectively, followed by cultivar No. 6 (Elberta) and cultivar No. 4 (Carmon) by 58 (31%) and 54 (29%) farmers, respectively. No. 7 (Maria Delezia) and No. 2 are cultivated by 46 (24%) and 35 (19%) farmers, respectively. Other cultivars listed in table are used only by 8to 4% farmers. Reasons for higher preferences for certain cultivars are their higher yields and higher sale price. Low preference cultivars yield less and also fetch low price. A combination of factors like unavailability of better cultivars, financial constraints, low fertility and remotely situated lands, lack of technical know-how and family traditions compel a small minority of farmers to use low yielding cultivars.

Total acreage and total tree columns follow approximately the same descending pattern ranging from 125.7 to 4 and from 21593 to 970, respectively, reflecting the degree of preference for cultivars.

Average trees per acre ranged from 171 to 219, the highest being for the lowest yielding cultivar No. 1 with the lowest acreage and preference.

The same data for 2012 in Table 6 show no difference in any pattern, which was to be expected as orchard plantation is a multi-year culture.

Table 5: Farmers with Different Peach Cultivars, Their Acreage& No. of Trees in 2011

Peach Cultivars	Responded in each Category with Yes (n=189)		Total Area in acre	Total Trees	Average trees per acre
	#	%			
No.5 (NJC 84)	104	55	117.1	20,525	175.2
No.8 (Indian Blood)	82	43	125.7	21,593	171.8
No.6 (Elberta)	58	31	52.8	9,012	170.6
No.4 (Carmon)	54	29	63.6	10,903	171.3
No.7 (Maria Delezia)	46	24	49.9	8,644	173.2
No.2	35	19	35.8	7,076	197.8
Early grand	19	10	41.5	8,151	196.3
No.3	13	7	13.1	2,335	178.3
Other Cultivars (i.e. Golden, Sohani, Haljan)	8	4	12.1	2,320	191.6
No.1	5	3	4.4	970	219.2
Total			**516**	**91,529**	

Table 6: Farmers with Different Peach Cultivars, Their Acreage& No. of Trees in 2012

Peach Cultivars	Responded in each Category with Yes (n=189)		Total Area in acre	Total Trees	Average trees per acre
	#	%			
No.5 (NJC 84)	100	52.91	117.1	20,785	177.5
No.8 (Indian Blood)	81	42.85	125.7	21,398	170.3
No.6 (Elberta)	60	31.74	53.8	9,975	188.8
No.4 (Carmon)	54	28.57	63.6	11,993	188.5
No.7 (Maria Delezia)	46	24.33	49.9	8,735	175.0
No.2	35	18.51	36.0	6,980	195.2
Early grand	19	10.05	45.5	9,054	218.1
No.3	13	6.87	13.1	2,440	186.3
Other Cultivars (i.e. Golden, Sohani, Haljan)	7	3.70	12.1	2,315	191.2
No.1	4	2.11	4.4	970	219.2
Total			**521.2**	**94,645**	

Proper distancing in orchards is a major component of orchard management as it plays a big role in agronomic practices to be carried on, flower and fruit bearing and abortion, light penetration, weeds and soil born insects and diseases and resultantly on yield. Therefore, it was important to know transplanting distances in the area.

In Table 7 data on plant to plant and row to row distance in feet for 2011 and 2012 show in general row to row distance is between 14 to16 and from plant to plant is from 15 to 16 feet.

Table 7: **Farmers with *Different* Peach Cultivars and their transplanted Distance in feet**

Peach Cultivars	2011				2012			
	Responded in each Category with yes (n=189)		Row To Row	Plant to Plant	Responded in each Category with yes (n=189)		Row To Row	Plant to Plant
	#	%			#	%		
No.5 (NJC 84)	104	55	15.63	15.59	100	52.91	15.62	15.57
No.8 (Indian Blood)	82	43	15.75	15.40	81	42.85	15.62	15.38
No.6 (Elberta)	58	31	15.35	16.13	60	31.74	14.98	15.33
No.4 (Carmon)	54	29	15.25	15.37	54	28.57	15.25	15.37
No.7 (Maria Delezia)	46	24	15.28	15.17	46	24.33	15.28	15.17
No.2	35	19	15.74	15.91	35	18.51	15.28	15.82
Early grand	19	10	16.42	15.31	19	10.05	16.42	15.31
No.3	13	7	14.53	16.15	13	6.87	14.53	16.15
Other Cultivars (i.e. Golden, Sohani, Haljan)	8	4	16.57	15.57	7	3.70	16.57	15.57
No.1	5	3	16.25	15.25	4	2.11	16.25	15.25

2.1.5. Usage of mobile phone and mobile banking

Presently mobile phone in Pakistan is used by a great number of people, so it was appropriate to know the percentage of farmers in the area having this facility in order to communicate with them and use it as an information channel so as for knowing market demand and rates and for banking purposes. To avail SMS facility it was necessary to know respondents' reading and writing ability and their preferred language. Information on all above was collected and the results are in Tables from 8 to 12 below. Data on mobile phone usage in Table 8 show that 90% of the respondents use it.

Similarly results in table 9 indicate that 79% of mobile holders can read SMS. When asked if other persons in their homes can read as well 58% replied with yes, which indicates that mobile can be used as a tool to enhance peach production, sale and income. When they were asked about their language preference for SMS 51% said Urdu, 47% English and 3% Pashto. On repeating the same question for other members in the family 67% said Urdu and 33% replied English (Table 10). Question of mobile banking comes only if the respondents have bank accounts. Data in Table 11reflects that only 33% respondents have a bank account. Table 13 says that only 20% farmers do mobile banking.

Table 8: **Usage of Mobile phone**

Responses	Respondent who use mobile phone(n=189)	
	#	%
Yes	170	89.9
No	19	10.1

Table 9: **Ability of Peach Producers regarding SMS Message Reading**

Sr. No.	Responses (SMS reading)	Farmers		Other Person at Home	
		Farmers Responded in each Category (Who use mobile phone=170)		Farmers Responded in each Category (n=36)	
		#	%	#	%
1	Yes	134	78.8	18	58.3
2	No	36	21.2	18	41.6

Table 10: **Preferred Language of Peach Producers regarding Message Reading**

Sr. No	Languages (For SMS)	Farmers		Other Person at Home	
		Farmers Responded in each Category with Yes (n=134)		Farmers Responded in each Category with Yes (n=21)	
		#	%	#	%
1	Urdu	68	50.7	14	66.7
2	English	62	46.3	7	33.3
3	Pashto	4	3.0	-	-

Table 11: **Status of Bank Accounts of Peach Farmers**

Sr. No.	Responses	No. of Farmers Responded in each Category(n=189)	% of Farmers Interviewed
1	Yes	63	33.3
2	No	126	66.7

Table 12: **Peach Producers Status of Transactions Through Mobile Banking**

Sr. No	Responses (Mobile banking)	Farmers Responded in each Category(Bank A/c holders=63)	
		#	%
1	Yes	13	20.3
2	No	50	79.7

2.2. Farm Employment Details

As farm employment is not only an important part of peach production, but it also provides labor opportunities to the local population as an important employer due to the absence of other enterprises in the area. So, it was decided to study this in details. It was found worthwhile to know the number of households and persons partially and fully dependent on peach production. The details are tabulated in Tables from 13 to 16below.In table 13, 1 to 2 and 3 to 4 households are partially employed by 70 (37%) farmers each. The corresponding values for 5 to 7 and more than 7 depend on 32 (17%) and 17 (9%) farmers, respectively. In Table 14 data on fully dependent households indicate that 152 (82%) farmer's employee 1 to 2 households, whereas 3 to 4 households are employed by 25 (13%) farmers. Corresponding figures for 5 to 7 and more than 7 are 7 (4%) and 1 (0.5%), respectively. A comparison of both tables indicates that full dependence of 1 to 2 households has drastically increased whereas for3 to more than 7 households it has decreased. This comparison on the one hand shows the importance and demand of seasonal labor and on the other it indicates dirth of permanent employment opportunities.

Data on partial (Table 15) and full dependant persons (Table 16) demonstrate that more than 7 persons are partially and fully dependant on 169 (89%) and 154 (83%) farmers, respectively. Values for lower person categories in both tables are comparatively very small.

The facts show the importance of peach gardening for temporary farm labor in the area as alternative sources of employment are extremely few.

It can be safely said that peach gardening plays a backbone role in the local economy.

Table 13: **Partially Dependent Households on Peach Farmers**

Sr. No.	Households	Farmers Responded in each Category with Yes(n=189)	
		#	%
1	1-2	70	37
2	3-4	70	37
3	5-7	32	17
4	>7	17	9

Table 14: **Fully Dependent Household on Peach Farmers**

Sr. No.	Households	Farmers Responded in each Category with Yes(n=185)	
		#	%
1	1-2	152	82.2
2	3-4	25	13.5
3	5-7	7	3.8
4	>7	1	0.5

Table 15: **Partially Dependent Persons on Peach Farmers**

Sr. No.	Persons	Farmers Responded in each Category with Yes(n=189)	
		#	%
1	>7	169	89.4
2	5-7	15	8
3	3-4	5	2.7
4	1-2	-	-

Table 16: **Fully Dependent Persons on Peach Farmers**

Sr. No.	Persons	Farmers Responded in each Category with Yes(n=185)	
		#	%
1	>7	154	83.2
2	5-7	26	14.1
3	3-4	4	2.2
4	1-2	1	0.5

2.2.1. Details of different categories of Labor in Peach Orchards

Labor is one of the most important inputs in peach farming. Therefore, total numbers of laborers employed in each category in 2012 with total work days are tabulated in Table 17. Data in the table show that in permanent category 844 laborers were employed who worked for 20280days on 480 acres of orchard with 42 average days per acre. The same values for temporary labor are 1464 for 13158days on521acres which is 25 days per acre. A total of 492 family laborers worked for 24186 days on493 acres which come to 49 days per acre. If values for average days per acre are compared among each other than it becomes clear that family labor is the highest employed labor followed by permanent and temporary labor which clears that family labor plays a pivotal role.

***Table 17:Different Labor Categories Employment Status on Peach Farms* in 2012**

Labor Category	Farmers Responded in each Category with Yes(n=189)		Total Employed Labor	Total Estimated Days	Total Acre in each category	Average Days Per Acre
	#	%				
Permanent	173	91.5	844	20280	480.45	42.21
Temporary	189	100	1,464	13158	521	25.25
Family	182	96.3	492	24186	492.80	49.07
Total			2,800	57624		

2.2.2. Working days and hours with Fulltime Equivalent (FTE) for All Labor Categories

In Table 18 number of laborers in each category with average working days per month and average working hours per day are given. A look at the table shows that permanent laborers worked 20 days per month, whereas temporary and family laborers worked for 12 and 22 days, respectively. Interestingly all types of laborers on average worked for 7 hours per day.

In Table 19 Full Time Equivalent (FTE) job for all labor categories is calculated by using the formula given in the table. FTE for permanent labor is 59 and for temporary and family labor the values are 56 and 38, respectively. Corresponding values for FTE per acre in the same table are 0.12, 0.11, and 0.08. The highest values for FTEs are for permanent and the lowest are for family labor.

***Table 18:* Employment Figures in Peach Farms in 2012**

Total Number of employees			Average Working Days/Month			Average Working Hours/Day		
Permanent	Temporary	Family	Permanent	Temporary	Family	Permanent	Temporary	Family
844	1464	492	19.54	11.60	22.27	7.43	6.92	7.31

Table 19: Full Time Equivalent (FTE*)				Full Time Equivalent (FTE) Per Acre**			
Permanent	Temporary	Family	Total	Permanent	Temporary	Family	Total
58.9	56.5	38.5	153.9	0.1225	0.1092	0.0781	0.3098
* FTE = (# of employee * average working days per month*average working hours) / 2080				** FTE = (Full Time Equivalent / Corresponding acres)			

2.3. Sale Values, Production, Domestic Usage &Wastage of Peach Fruit Reported by SMEs in 2011 &2012

As sale and income is the final target of any business so all peach farmers were interviewed to collect their sales data for 2011 and 2012. InTable20total sales were USD 1,701,742 and 1,684,140 for 2011 and 2012, respectively. As total acreage is different in both years so average per acre sales were calculated which turned out to be little higher in 2012, values are in the same table. Detailed table on wastage and sale volume is attached in Appendix 6.

***Table 20:* Sales**

Year	No. of Farmers Responded in each Category with Yes	Total Farm Area (Acres)	Total Sales in USD	Average Sales Per Acre in USD
2011	189	516	1,701,742	3297.50
2012	189	521	1,684,140	3232.51

Table 21 reveals that cultivar No. 5 yielded the highest sale of USD 425915 followed by No. 8 with 412282 the lowest sale of 18857 was fetched by cultivar No. 1. Sale values of other cultivars are in between. As far as price per Kg is concerned no big differences among cultivars are found. This means that total sale value primarily depends on total production. As acreage and total production is different in different cultivars so is the value of total wastage, but a look at percent wastage of total production reveals that 18% wastage in cultivar No. 5 is higher than 15% in No. 8 although total production in former is far lesser. The highest% wastage of 20 is in cultivar No. 3 though it yielded much less than many other cultivars. Percent wastage patterns in different cultivars indicate that besides total yield a bigger role is played by cultivar type and monthly weather fluctuations.

***Table 21: Peach Farmers' Status in Different Sales Categories in*2012**

Peach Cultivars	Total Area in Acre	Total Trees	Production in KG	Wastage in KG	% Wastage of total production	Total Sales in USD	Price per kg in USD
No.5 (NJC 84)	117.1	20,785	1,201,455	211535	17.6	425,914.8	0.43
No.8 (Indian Blood)	125.7	21,398	1,635,256	242,957	14.9	412,281.7	0.30
No.6 (Elberta)	53.8	9,975	536,580	73,100	13.6	185,317.5	0.40
No.4 (Carmon)	63.6	11,993	530,920	84,795	16.0	182,185.0	0.41
No.7 (Maria Delezia)	49.9	8,735	534,285	82,783	15.5	157,442.4	0.35
No.2	36.0	6,980	314,240	49,970	15.9	126,400.3	0.48
Early green	45.5	9,054	459,300	41,140	9.0	110,812.4	0.27
No.3	13.1	2,440	134,050	26,770	20.0	45,498.6	0.42
Other Cultivars (i.e. Golden, Sohani, Haljan)	12.1	2,315	101,900	22,548	22.1	19,429.8	0.24
No.1	4.4	970	40,000	3,360	8.4	18,857.4	0.51
Total	**521**	**94,645**	**5,487,986**	**838,958**		**1,684,140**	

A comparison among total yield and yield components between 2011 and 2012 is made to assess seasonal effects in Table 22 data show that total production, average production per acre so as per tree is higher in 2011 than in 2012 although acreage and number of trees is lesser, which shows that 2011 was a friendlier year for peach production than 2012 may be due to seasonal variations.

***Table 22:* Peach production details in 2011 and 2012**

Year	No. of Farmers Responded in each Category with Yes	Total Farm Area in Acre	Total Number of Fruit Bearing Trees	Total Production in KG	Average Production Per Acre in KG	Average Production Per Tree in KG
2011	189	516	91,529	5,505,210	10667.6	60.1
2012	189	521	94,645	5,487,986	10529.1	58.0

As total sale values are exclusive of domestic usage so it was important to know the percentage of total production consumed domestically. Table 23 shows that only 1% of total production is consumed domestically which is 54879 Kg. Even if the highest sale price of USD 0.48, from table 21, per Kg is taken it comes to USD 263 which is negligible as compare to total sale values in Table 21.

***Table 23:* Domestic Usage of Peach**

Year	No. of Farmers Responded in each Category with Yes	Percent of Farmers	Total Farm Area in Acre	Total production in Kg	Total Domestic Usage in KG	% usage of Total production
2012	189	100	521	5,487,986	54437	0.99

2.3.1. Channels of Marketing Adopted by Peach Producers

Farmers use different channels for marketing depending on their suitability and availability for them. Different marketing channels also affect sale price and profit, which shows their importance in the farming system. Survey results on marketing channels in Table 24 show that out of 189 farmers, 175 (93%) did self-marketing, whereas only 14 (7%) used the services of sub-contractor. The marketing Chanel is well established as farmers sell their product to wholesalers who sell to sub-wholesalers and retailers from them consumer's purchase.

This channel produces maximum benefits for the middle men whereas producers get very less and consumers pay very heavily. If allowed to recommend than project should also work to reduce intermediaries which will be beneficial both for producer and consumer.

Complications of present marketing channel are also detailed in Figure 3 below.

Table 24: Channels of Marketing Adopted by Peach Producers

Sr. No.	Sell/ Market Farm Produce	FarmersRespondedin each Category with Yes(n=189)	
		#	%
1	Self	175	92.6
2	Sub-contractor	14	7.4

Figure 2: Channels of Marketing Adopted by Peach Producers

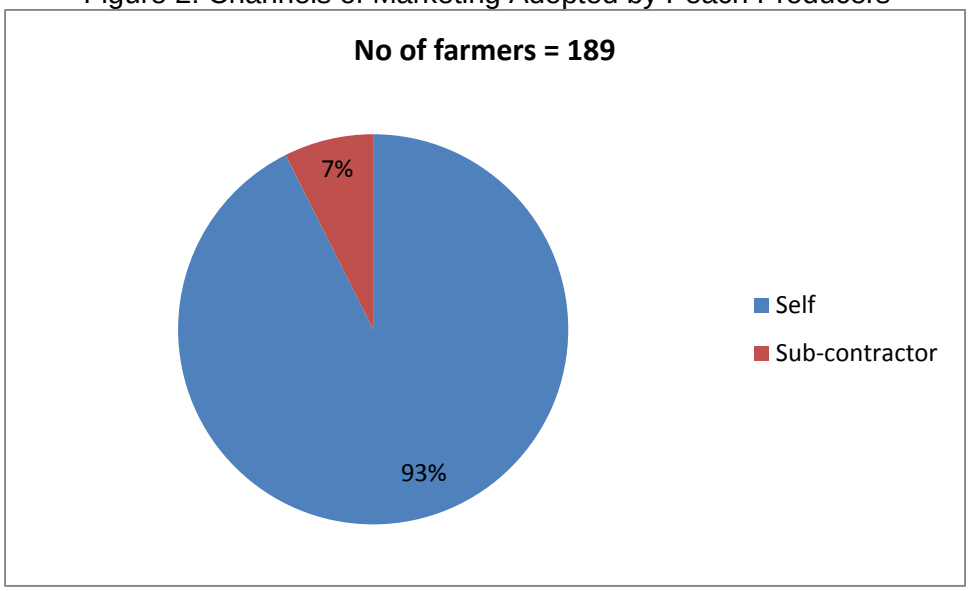
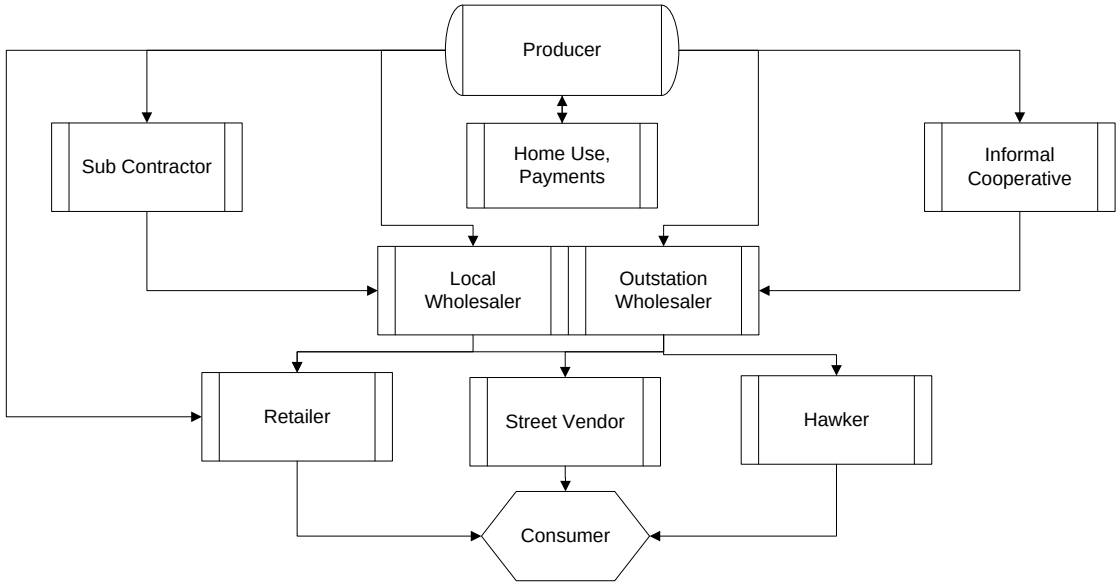


Figure 3: Marketing Channel of Peach



2.3.2. Market Venue

Different market venues are used by peach farmers depending upon their total produce, month, relationships and financial position. In Table 25 they were probed to know venues for 2011 and 12. No significant differences were found between the years except Rawalpindi which was used by 39% farmers in 2011 but only 21% in 2012. Lahore was the most prefferdvanue utilized by 59% followed by Rawalpindi and Peshawar. Gujranwala and Karachi are the least preferred used only by 2 to 3% producers. Other venues remained in between.

Table 25: **Market Places**

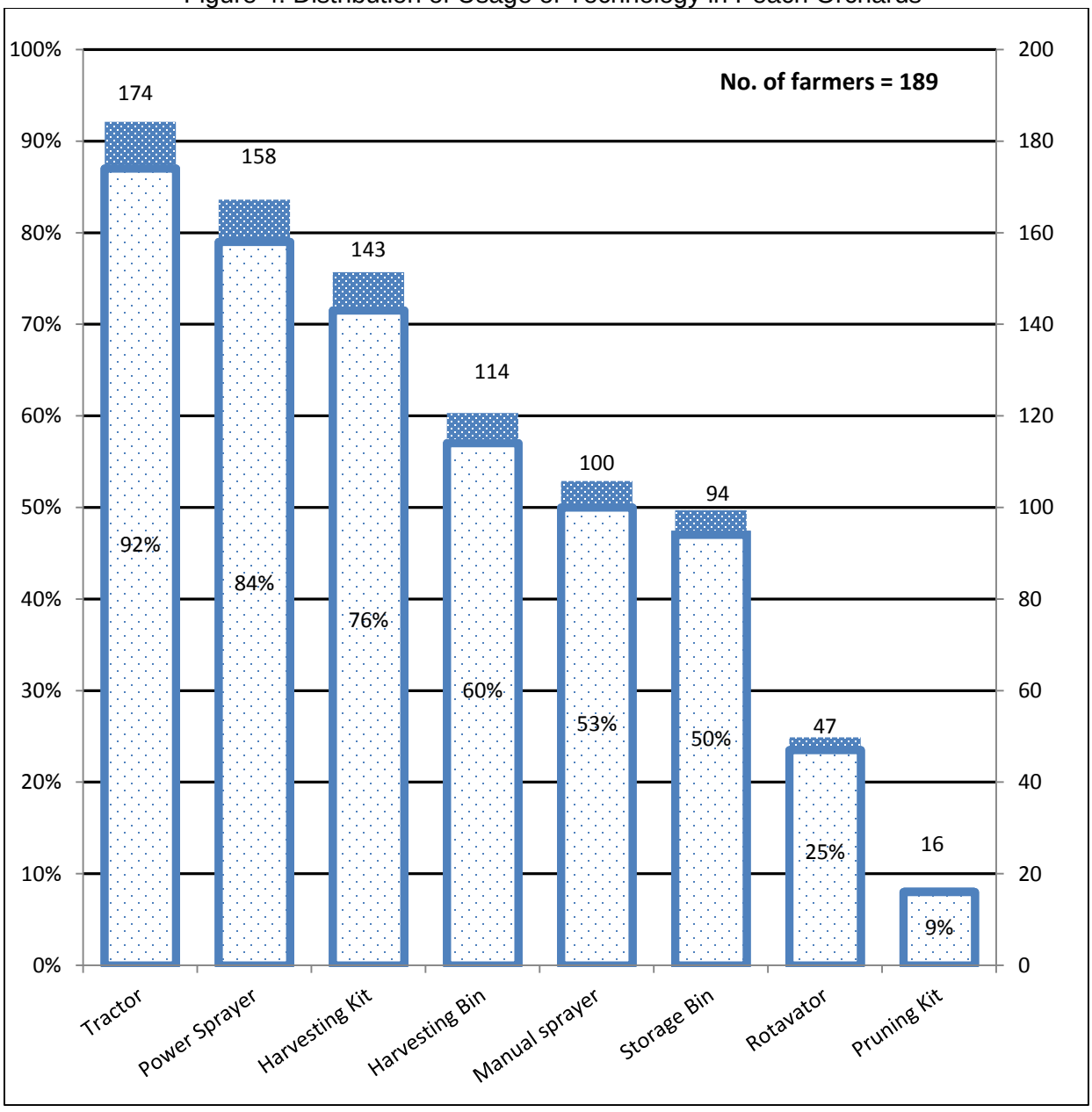
Market Venue	2012		2011	
	Farmers Responded in each Category with Yes(n=189)		Farmers Responded in each Category with Yes(n=184)	
	#	%	#	%
Lahore	113	59.8	109	59.2
Rawalpindi	40	21.2	72	39.1
Peshawar	39	20.6	36	19.6
Swat	23	12.2	22	12.00
Faisal Abad	15	7.9	13	7.10
Sialkot	7	3.7	8	4.30
Gujranwala	5	2.6	4	2.20
Karachi	3	1.6	4	2.20
			5 SMEs did not produce and sell in 2011	

2.3.3. Usage of Technology in Peach Production

Peach is a delicate cropneeding proper technology and care. Moreover today's agriculture is not profitable if appropriate technology is not used.Therefore, all 189 farmers were surveyed for their use of different technologies. In Figure 4, out of a list of 8 technologies prevalent in the area, 174 (92%) farmers used tractors, 143 (76%) harvesting kits, 114 (60%) harvesting bins, 100 (53%) manual sprayers, and 94 (50%) storage bin. Other technologies in the table were used only by few farmers. Pruning kit is at the lowest end used only by 16 (8%) farmers.

According to experts use of pruning kit and proper pruning is the mother of desired plant growth and flower and fruit bearing, but unfortunately it is the least employed technology. It is suggested that efforts be made to inhance its use to get maximum fruit yield.

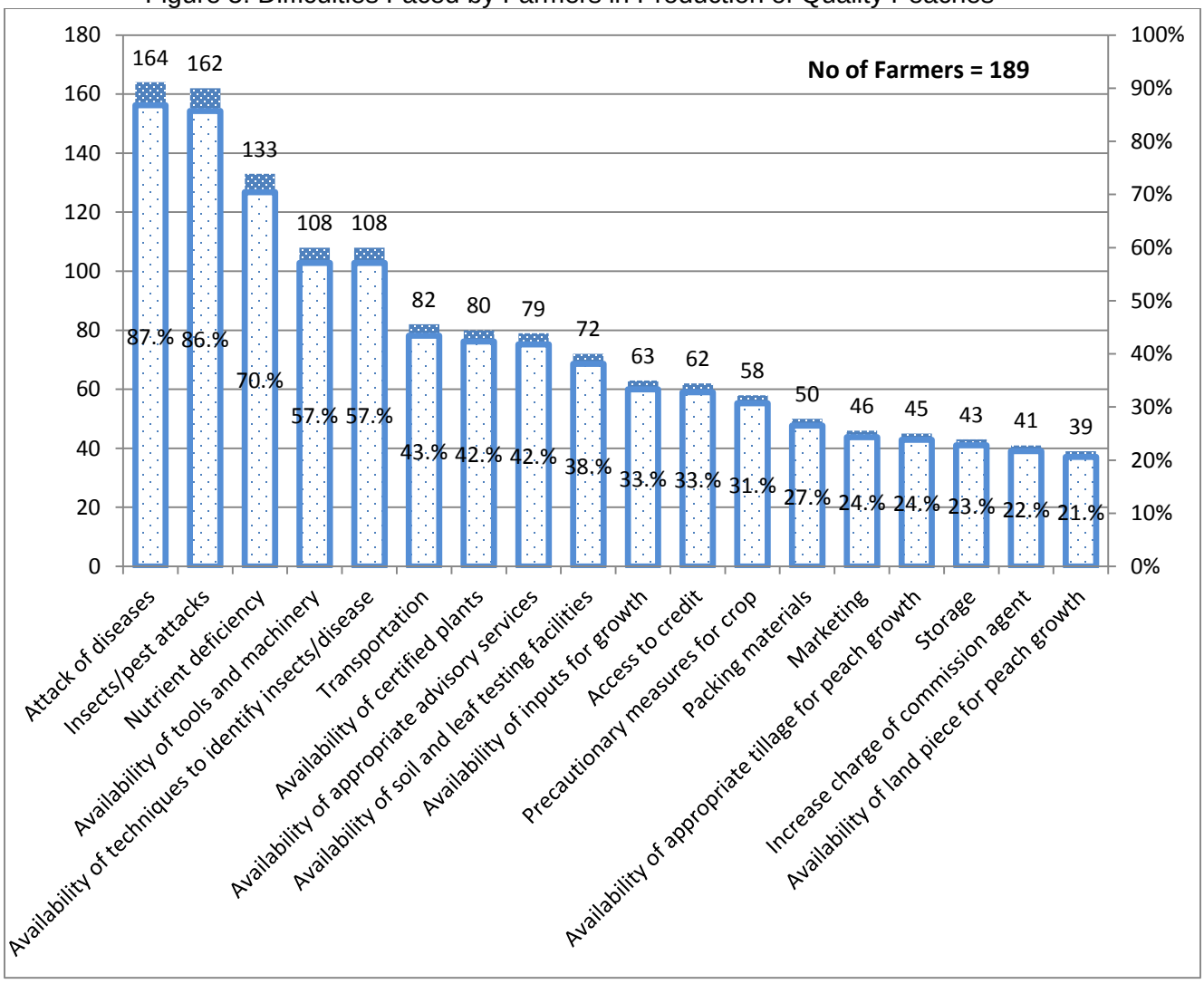
Figure 4: Distribution of Usage of Technology in Peach Orchards



2.3.4. Difficulties Faced by Peach Farmers in Production of Quality Peaches

Peach growers face a lot of problems because of difficult terrain. Farmers were surveyed to rank the most pressing problems out of a possible list of 19 commonly reported problems in the area. Results are tabulated in descending order in Figure 5. Out of the 189 surveyed sample, 164 (87%) farmers mentioned attack of diseases, followed by 162 (86%) who mentioned pest attack while third most pressing problem reported by 133 (70%) was nutrient deficiency. Availability of tools and machinery and techniques to identify insects and diseases by 108 (57%) each. Increased cost of production is at the end mentioned by 28 (15%) growers only. Other problems in the figure fell in between. First three problems mentioned above seem to have the growers in grip and need special attention in future trainings to inhance yield.

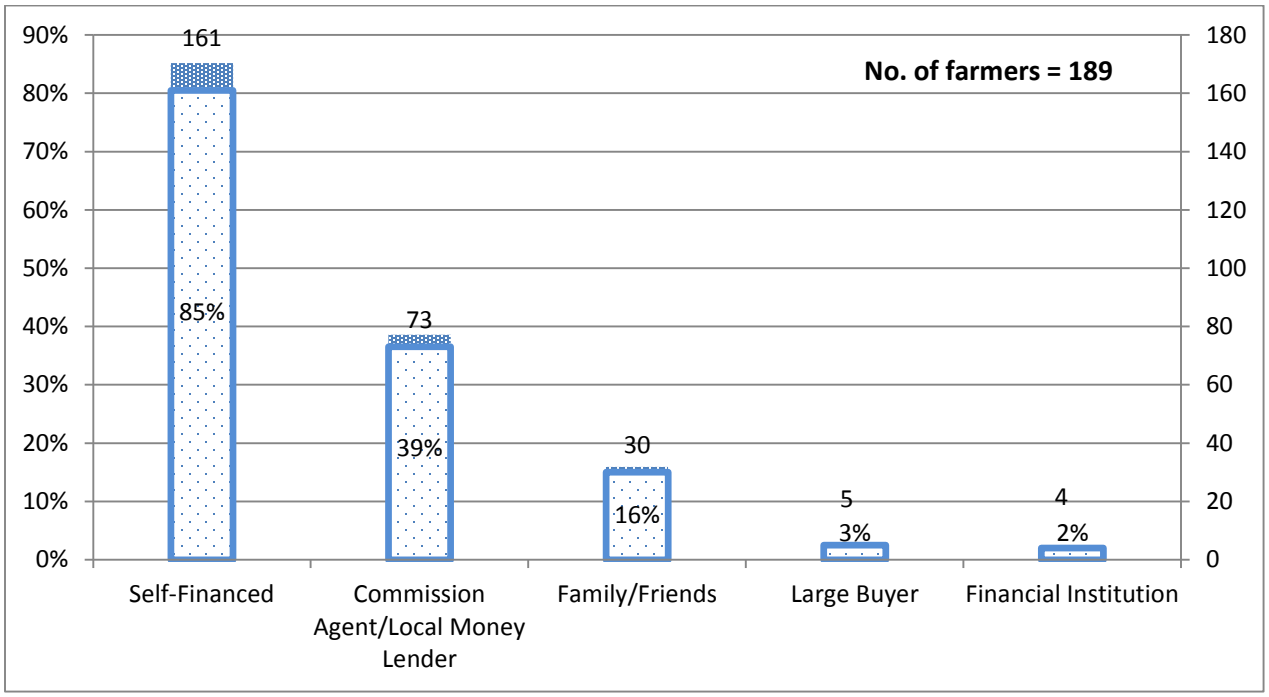
Figure 5: Difficulties Faced by Farmers in Production of Quality Peaches



2.3.5. Financing Sources of Peach Farmers

Like all businesses availability of enough finances is essential for successful orchard farming .In Figure 6 different finance sources are listed. 161 (85%) and 73 (39%) farmers mentioned self-financing and loans from commission agent/local money lenders, respectively. Another 30 (16%) took loans from family and friends. At the tail endonly4 (2%) farmers took credit from financial institution (ZTBL) which shows that these institutions are not active enough in the area. There is a dire need to bring financial institutions with supervised credit facilities in the area.Experience tells that supervised credit is utilized better than non-supervised ones.

Figure 6: Distribution of Financing Source of Peach Farmers



2.3.6. Financial Requirements of Peach Farmers

The same 189 farmers were further probed to know their degree of satisfaction with their current financial arrangements and if they need further loans and the amounts needed.The results in Table 26 show that 150 (79%) farmers are not satisfied with their available finances. Only39 (21%) farmers reported that their present financial arrangements are sufficient. When asked about their consent for credit, 172 (91%) farmers said they want credit. Inquiries made from these 172 farmers reveal that credit amounts needed by 22 (13%) range from USD106 to1060. Further 52 (30%) farmers need credit in USD ranging from 1060 to 2120 and another 71 (41%) wanted from 2120 to 5300range.The highest demand above USD 5300and up to 53000is from 20 to 12% farmers, respectively. As majority of farmers needed small amounts of credit, micro credit arrangements should be made.

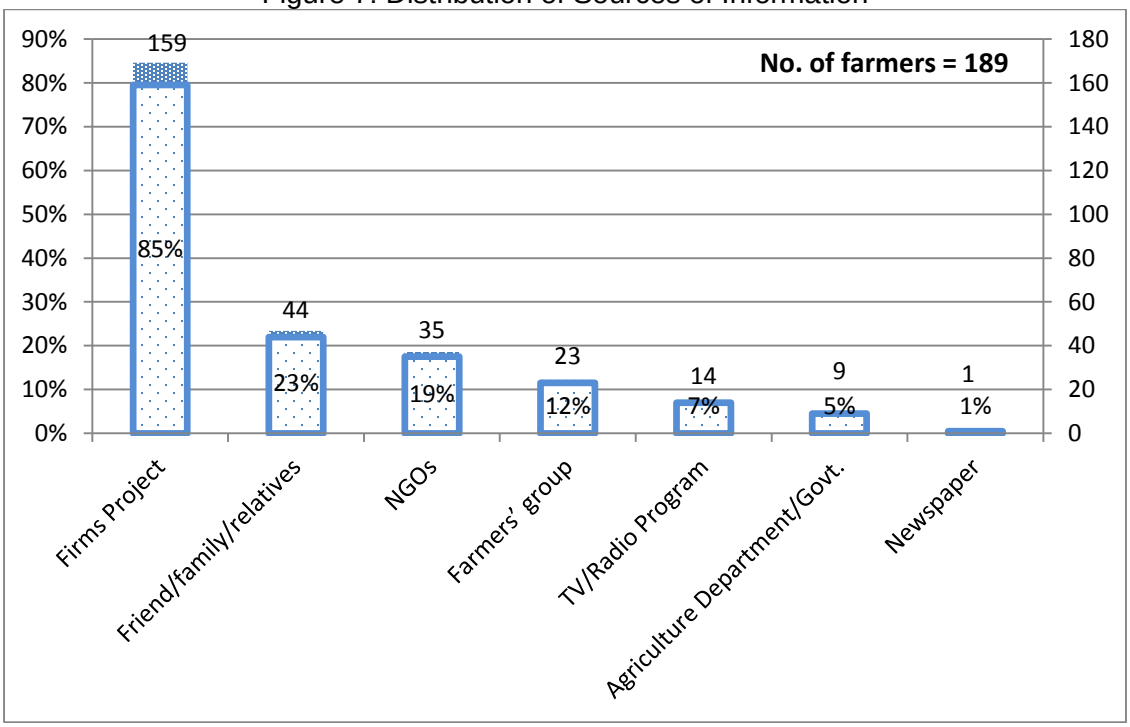
Table 26: **Degree of Satisfaction with Present Financial Arrangements, willingness for Loans & Amount Requirements**

Description	Farmers Responded in each Category with Yes (n=189)	
Satisfaction with Available Finances	**#**	**%**
Yes	39	20.6
No	150	79.4
Willingness for Credit		
Yes	172	91.0
No	17	9.0
Required Amount of Credit (USD)	**Farmers Responded in each Category (n=172)**	
	#	**%**
106 - 1060	22	12.8
1060.0106 - 2120	52	30.2
2120.0106 - 5300	71	41.3
5300.0106 - 10600	20	11.6
10600.0106 - 53000	7	4.1

2.3.7. Peach SME's Sources and Degree of Information

Latest information about farming techniques and markets situation is important for profitable agriculture in general and for orchards in particular. Out of 189 farmers interviewed, all said that they had received information.Theirresponses in Figure 7 show that 159 (85%) farmers received information from the Project, 44 (23%) from friends and relatives and 35 (19%) from NGOs. Farmers' groups, TV/radio, agriculture department and newspapers provided information only to small percentage ranging from 12% to 0.5%, newspapers provided the least information. Miserable performance of agriculture department is not understandable as it is their primary duty. Efforts should be made to mobilize them.

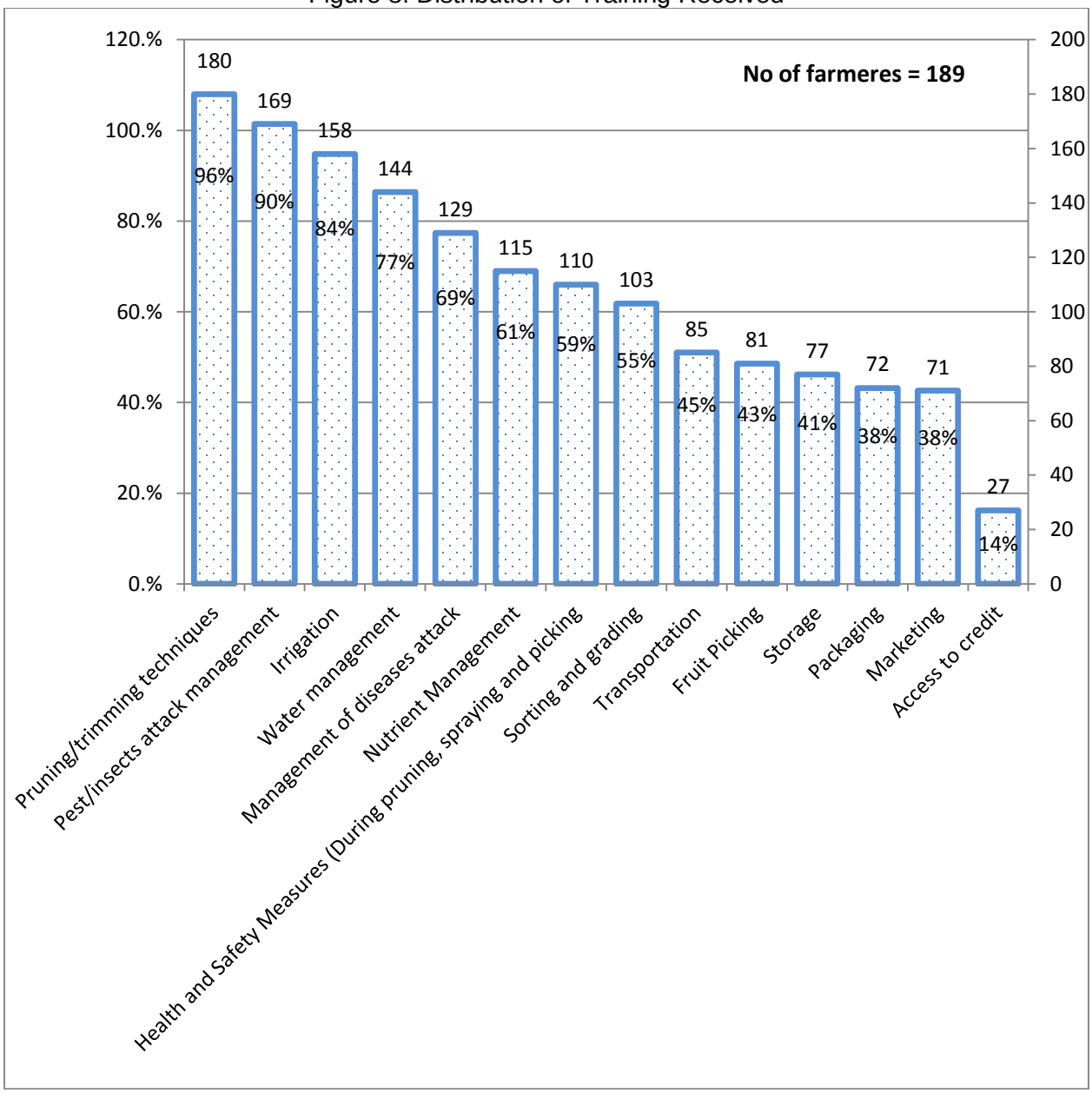
Figure 7: Distribution of Sources of Information



2.3.8. Types of Trainings Received by Peach Orcharders

Due to rapid research advances in agriculture, farming practices are being continuously improved. Improved farming practices can only be adopted by farmers if they receive proper training from outreach agencies. A total of 189 farmers were interviewed to know the types of training they received in 2012. Out of 14 types of training mentioned inFigure 8,180 (96%) farmers received training on pruning/training of orchard trees as fruit bearing capacity of trees depends on it. 169 (90%) received training on insect attack control. While 158 (84%) and 144 (77%) farmers got training on irrigation and water management, respectively. Other trainings mentioned in the table were imparted from 67% to 14% of farmers in the descending order with disease control at the upper and credit at the lowest end of the list.

Figure 8: Distribution of Training Received



2.3.9. Scale of Training Utilization

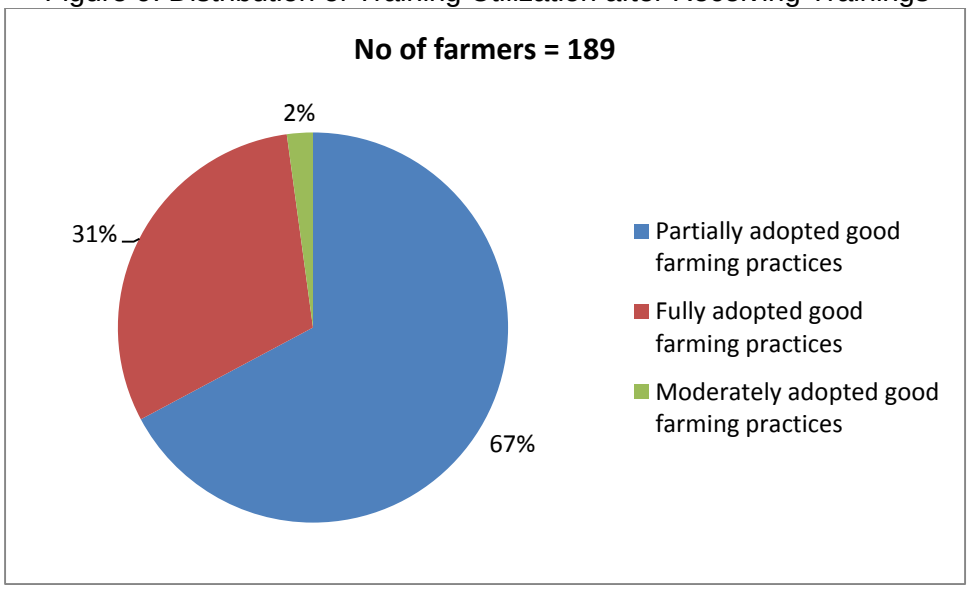
Utilization of training creates an impact and improves productivity. A total of 189 farmers were interviewed for training utilization. Results in Table27 show that only 57 (30%) of the farmers fully applied the training. While 125 (66%) and 4 (2%) farmers adopted the practices learned in the training partially and moderately, respectively.

Degree of training utilization is the real soul of imparting training, if utilization is poor than it is a wastage of time, resources and efforts. Training utilization can easily be improved through back up support and regular monitoring and evaluation, naturally selection of appropriate trainees is the real gurantee for success.

Table 27: **Change in Farming Practices after Receiving Trainings**

Practices	Farmers Responded in each Category with Yes(n=189)	
	#	%
Partially adopted good farming practices	125	66.1
Fully adopted good farming practices	57	30.2
Moderately adopted good farming practices	4	2.1

Figure 9: Distribution of Training Utilization after Receiving Trainings

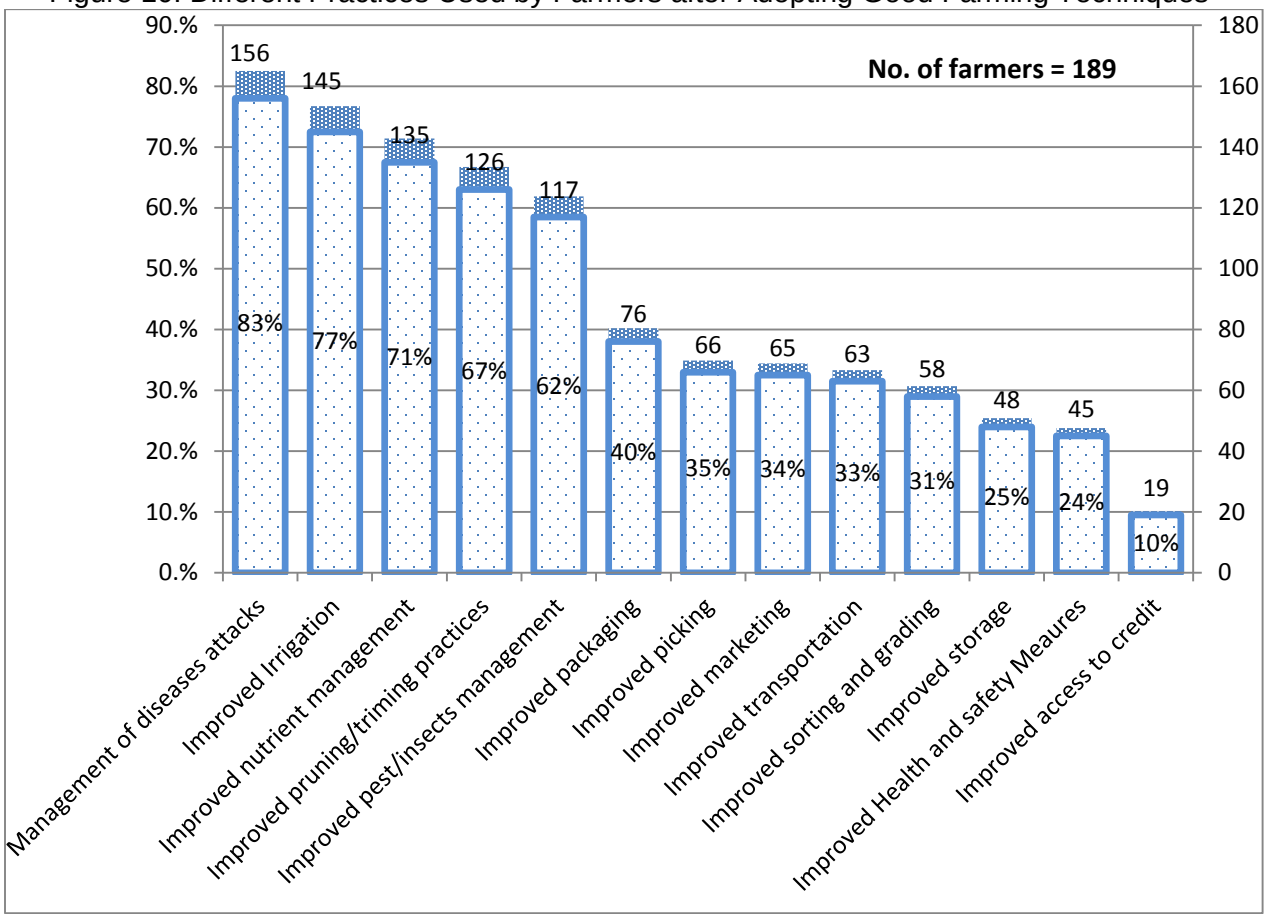


2.3.10. Improved Practices Adopted After Training Received

Varying degree of utilization in the last table necessitated to go into details and know utilization level in various agronomic practices. So, when asked about thefields ofadopted practices in Figure 10, 156 (82%) farmers reported adopting improved management of diseases. While 145 (77%) and 135 (71%) mentioned improved irrigation and nutrient management, respectively. Further down the line 126 (67%) and 117 (62%) replied improved pruning and insect control, respectively. Percentage of other adopted practices ranged from 40% to 10% with improved packaging at the highest and credit at the lowest end.

These results show appropriateness of trainings imparted and right selection of trainees. These two criteria are prerequisite for any successful training initiative.

Figure 10: Different Practices Used by Farmers after Adopting Good Farming Techniques

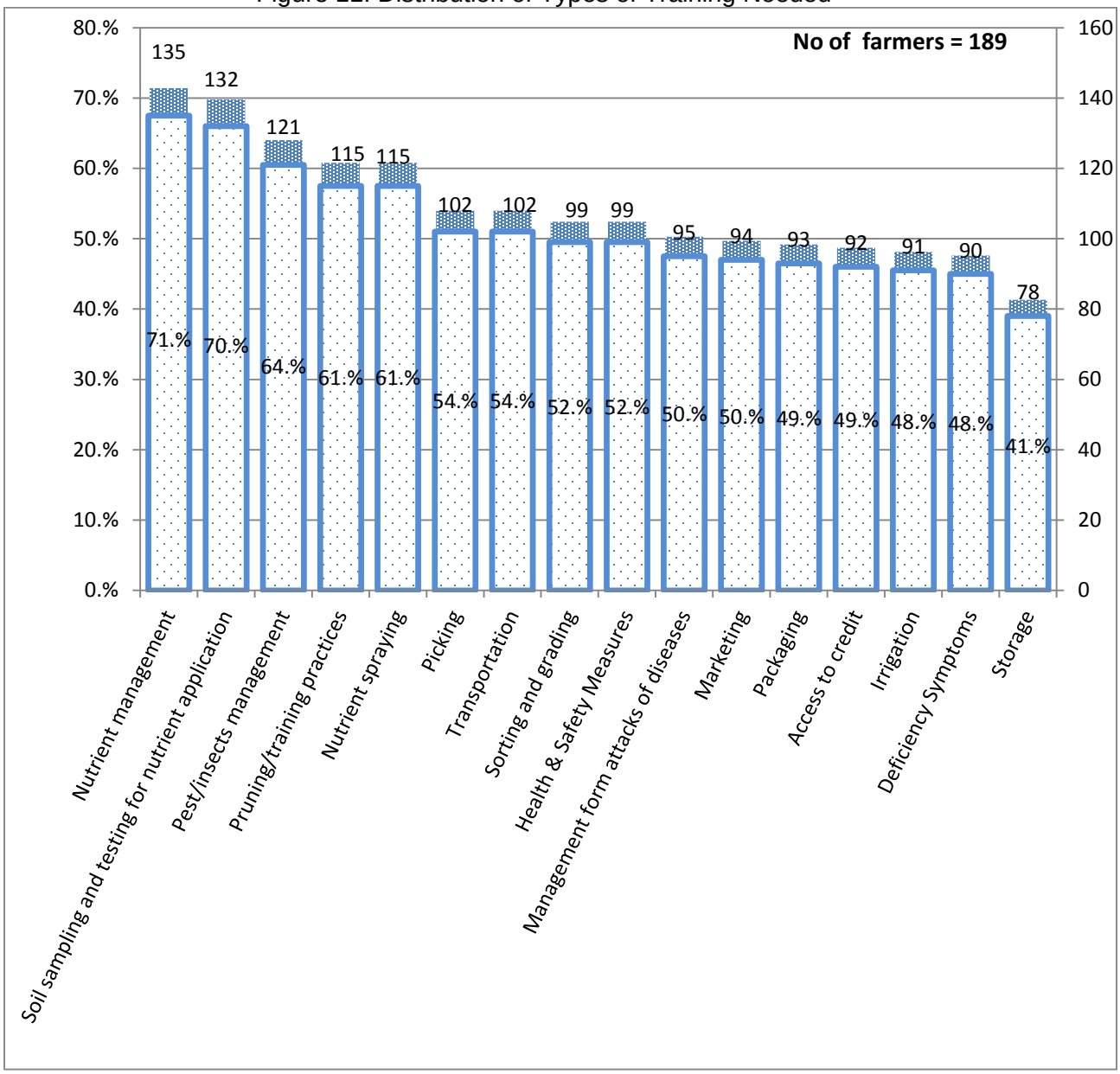


2.3.11. Future Training Needs of Peach Orcharders

Certain agronomic practices learned in the training were adopted with high degree, which raised our interest to probe for further traning demands.

So, farmers were asked if they need further trainings, 100% replied in positive. About the types of trainings their interestsfrom a list of 16 types in Figure 11 are listed in descending order. 135 (71%) and 132 (70%) farmers mentioned nutrient management and soil sampling and testing, respectively. Insect control came as answerfrom121 (64%), pruning and nutrient spraying from115 (61%) each and Picking and transportation from 102 (54%) respondents each. Other types of trainings were demanded from 52%to 41% farmers in descending order with sorting & grading and storage at the highest and the lowest ends, respectively.

Figure 11: Distribution of Types of Training Needed

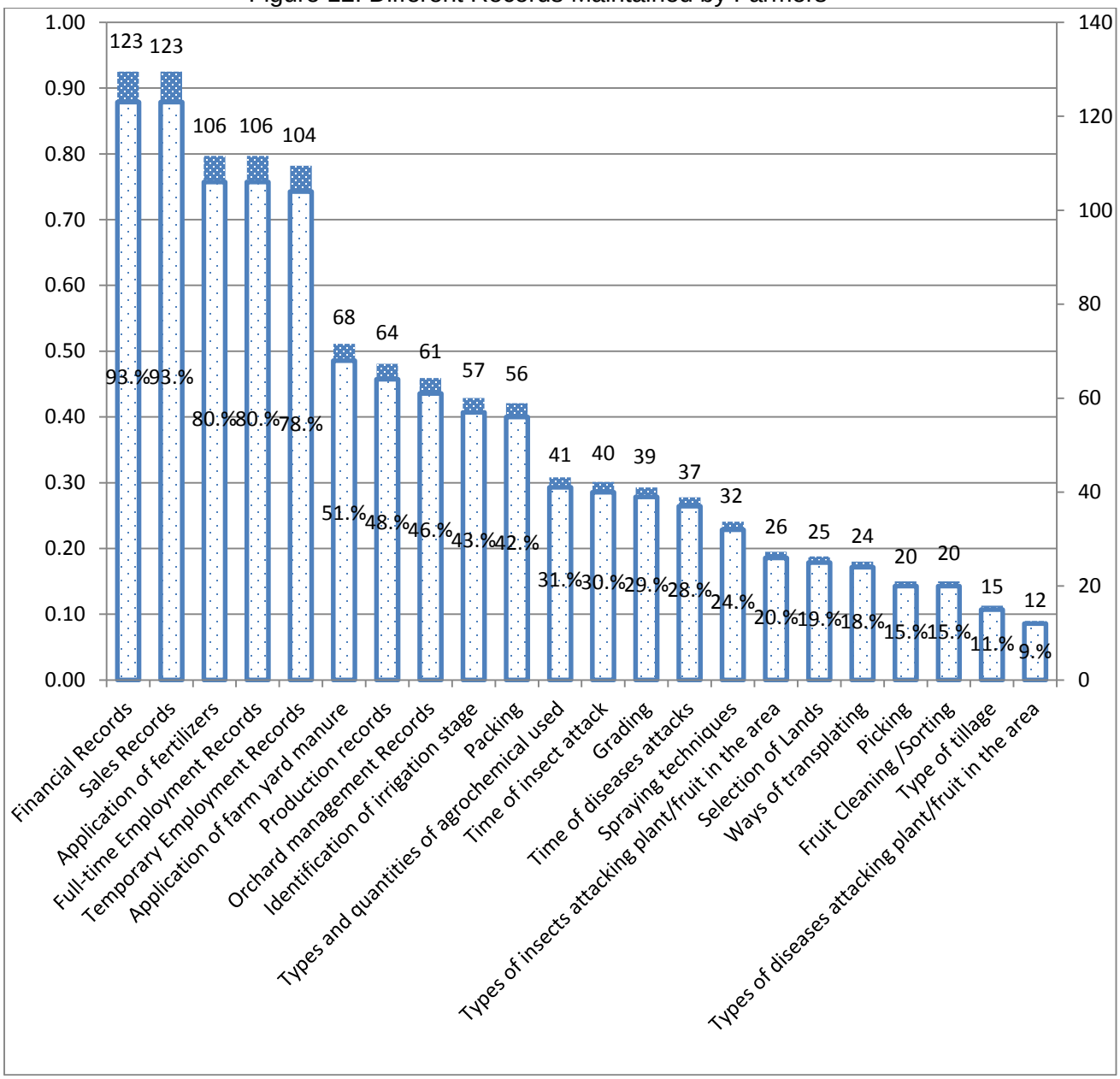


2.3.12. Record Maintained by the SME's

It is necessary to keep records for check and balance as well as forfuture strategies. Farmers' responses on record keeping are presented in figure 12 below.

123 (93%) farmers each kept financial and sales record. Wheareas 106 (80%) farmers each kept records of fertilizers application time and full time employment. 104 (78%) farmers kept record of temporary employees.Record of total production wasmainatained by 64 (48%) farmers. The lowest trend of record keeping 12 (9%) was on types and attacks of diseases followed by 15 (11%) types of tillage.

Figure 12: Different Records Maintained by Farmers



3. CONCLUSIONS AND RECOMMENDATIONS

3.1. Peach Survey Conclusions

- 72 (38%) out of 189 SMEs have the education upto secondary school level that is also called Matric in Pakistan whearas 49 (26%) attended the college.
- 90% of the respondents have mobiles, out of this 79% can read SMS, 51 and 46% preffered Urdu and English, respectively as SMS language.
- Farmers having bank accont are 33%, out of these only 20% do mobile banking.
- 1 to 2 and 3 to 4 households depend partially on 37% farmers each. Whereas the corresponding percentage of farmers having fully depenant households are 82 and 13%, respectively.
- More than 7 persons are partially and fully dependant on 169 (89%) and 154 (83%) farmers, respectively.
- More than 7 persons depend partially and fully on 89% and 83% farmers, respectively.
- Majority of peach producing Farms are self cultivated (85%) and self managed (98%). Main source of irrigation is river/stream used by 71% farmers.
- Most of the farms (93%) are situated at a distance from less than a KM to 2 KMs from the main road and 22% farmers take only up to 5 minutes to reach the road.
- 70% farmers are small landholders having less than 6 acres of land.
- 55 and 43% farmers use No. 5 and 8 cultivars, respectively covering 243 acres out of 516 total acerage.
- Average peach trees per acre range from 171 to 198 depending on cultivar and location.
- Inter row and inter plant transplanting distances range from 14.5 to 16.6 feet and from 15.2 to 16.1 feet again due to different cultivars and locations.
- Total farm area is 521 acre with total production of 5487986 Kgs; total sales of 1684140 USD were made which comes to 3231 USD per acre and 0.362 USD per kg in year 2012.
- Avearge production per acre in 2011 and 2012 are found to be 10667 and 10529, respectively.
- Wastage per acre in 2011 and 2012 was 1210 kg and 1610 kg, respectively
- Percent wastage of total production ranged from 8 to 22 depending on cultivar and harvesting months.
- Personal usage of total production was only 1%.
- Lahore is the biggest market supplied by 60% farmers followed by Rawalpindi and Peshawar used by 21 and 20% growers, respectively in year 2012 and same trend was in year 2011. Self marketing was conducted by 93% farmers.
- Permanent labor is kept by 91% growers, temporary labor by 100% and family labor by 96%. Total employed labor is 844 in permanent category whereas values for temporary and family labor are 1464 and 492, resoectuvely.
- Permanent laborers worked 20 days per month, whereas temporary and family laborers worked for 12 and 22 days, respectively.
- FTE for permanent labor is 59 and for temporary and family labor the values are 56 and 38, respectively. Corresponding values for FTE per acre are 0.12, 0.11, and 0.08.

- Women specific activities are very important as they prepare food and tea etc for laborers working in peach orchards.
- Tractor is the most common technology being used by 92% farmers, followed by power sprayer by 84% and harvesting kit by 76%. Pruning kit is the most important tool in peach gardening but is used only by 8% farmers.
- Major difficulties faced by peach growers are diseases by 87%, insects by 86%, and nutrient deficiencies by 70%. Availability of tools and identification of insects and diseases by 57% each. 85% farmers are self financed, 39% took loans from commission agents and money lenders. Financial instituions catered only to 2% growers.
- 91% farmers want credit. Majority of them needs from 1060 to 5300 USD.
- 85% farmers received information to improve farming from Firms project, 23% from friends and relatives. Role of agriculture department and print media is negligible.
- 96% received training on pruning techniques, 90% on insect control, 84 and 77% on irrigation and water management, respectively. Access to credit was received only by 14% and is at the tail end.
- After training only 30% fully adopted good farming prctices.
- As far use of good farming techniques after the training is concerned 82% controlled diseases, 77% improved their irrigation techniques, 71% improved nutrition, but only 10% improved their access to credit.
- 71%farmers wanted further training in nutrient management, 70% in soil sampling and testing, and 64 % in insect control. Storage was the least demanded one only by 41%.
- 123 (93%) farmers each keep financial and sales record. Wheareas 106 (80%) farmers each keep records of time of fertilizers application and full time employment records. The lowest trend of record keeping 12 (9%) is on attacks and types of diseases followed by 15 (11%) on types of tillage.

3.2. Recommendations to ImprovePeachProductioninDistrict Swat

After thoroughly analyzing the data the following suggestions can be made to increase peach production and farmers' income:

- Role of farmers' groups, agriculture department and related government agencies, and NGOs need to be enhanced as their present contribution is negligible.
- Institutions providing supervised micro credit should be brought in the area.
- Latest market information should be provided to growers.
- Collective marketing and transport should be encouraged.
- In time quality inputs should be insured in sufficient quantities.
- Supply of certified high yielding true to type transplants of peach should be ensured from registered nurseries
- Use of machinery and efficient orchard tools/kits should be encouraged by making them available in the local markets.
- Frequent interactions with farmers to resolve their major hindrances are suggested.
- If possible local seasonal forecasts will help in damage controlalongwith an increase in production and quality.
- Future trainings should be arranged according to growers' priorities. Post training utilization should be supervised and encouraged by providing full back up services and monitoring to increase training implementation.
- Farmers should be trained in the areas of pruning, standardized plant to plant spacing, leaf analysis, and nutrient spraying.

- **Nutrition**: soil & plant analysis is needed for nutrition update and for fertilizer application, for micre nutrients leaf analysis or deficiency symptoms' identification and nutrient spraying is required. For help contact NARC, Islamabad
- **Insects**: insect scooting and spraying should be done before threshold is achieved. contact CIBA GEIGY, LAHORE for scooting manuals and training
- **Diseases**: symptoms' identification of main peach disease in the area and in time treatment with spraying is worthwhile for disease control. Help can be sought from peach experts from agriculture directorate in Swat particularly from peach agronomist.
- Cultural and tillage methods for insect and disease control may be incorporated in training programs
- **Input supplies**: in time supply of quality inputs particularly agrochemicals and phosphatic fertilizers, which can be ensured by getting supply directly from producer on the basis of area requirements. Phosphatic fertilizer purity field testing kits from NFC, Lahore can be provided to the farmers.
- Transplanting and pruning techniques are important to ensure proper plant vigor and fruit bearing capacity
- Harvesting and post-harvesting techniques are necessary to minimize fruit damages and to keep desired fruit quality

  Credit arrangements without interest should be made as local culture does not allow interest

3.3. Key Informant Interview (KII)

According to an old wisdom indigenous wisdom is the best wisdom keeping this in mind local experts were interviewed, the contents are reproduced as it is.

- The main diseases are leaf curl, shot hole, brown rot, powdery mildew, root rot, fire blight and gummosis.
- Nutrition deficiencies are due to limited use of FYM, DAP, SSP, NPK, and other urea fertilizers along with deficiency of Fe, B, K and Ca
- Fruit is damaged by insects like fruit fly, aphids, mites, flat headed borer and gall midge fly
- Non availability of picking tools and kits
- Manual grading/sorting of peaches is done as there is no use of machinery for grading/sorting
- Field cooling facilities in orchards are lacking
- No resources with Govt. Departments for regular and in-time training and monitoring are available
- Losses of irrigation water is huge due to improper and non-cemented water channels
- Private nurseries deceive the farmers and provide varities other than demanded
- There is a large production potential which can be achieved through adopting mechanized farming and better field practices alongwith;
- Provision of certified and true to type cultivars
- Provision of interest free loans
- Provision of cold chain systems
- Establishment of value added units in the district
- Capacity building of farmers
- Improvement in marketing system
- A maximum of 16000 kg per acre production can be achieved by removing the above mentioned constraints

4. APPENDICES

Appendix 1: Scope of Work and Deliverables

Below is the SOW for the RFP. For this RFP, the term "Subcontractor" means the successfUlofferor who is awarded the subcontract as a result of this RFP.

1.1 Programme Overview

The objective of the USAID Firms Project (the 'Project') is to improve government service delivery and develop dynamic, internationally competitive firms to accelerate sales, investment, and job growth.

The USAID Firms Project aims to work in at-risk districts such as Swat. Swat is known for its fruits (apples, peaches, plums, apricots, and persimmons) and vegetables (onions, potatoes, tomatoes, turnips, peas, cabbage, etc.). Currently, 44 percent of the Swat district economy is based on horticulture, which indirectly supports other sectors such as tourism and other agro-based industries.

The peach sector creates employment opportunities for a large number of people. Despite this, a significant amount of produce is wasted due to pre- and post-harvest losses. Additionally, the growth of these sectors is limited due to a lack of access to inputs supplies, market information, market linkages, and credit facilities as well as an untrained work force, poor management practices, inability to meet product standards (quality, consistency, hygiene, etc.), and non-availability of pulping units to utilize B, C, and D grade fruit for pulp processing and value additions. Increasing the economic value of these sectors begins with minimizing losses during pre- and post-harvest, increasing yields, and diversifying end market opportunities for producers. The USAID Firms Project has devised peach sector development projects to improve production and increase sales revenue for the identified horticulture value chains in vulnerable areas of Pakistan and by doing so, is supporting the rehabilitation and recapitalization of conflict and flood-affected small and medium enterprises (SMEs).

The Project intends to work in coming two years with additional 450 peach and growers in Swat. A better understanding of their agriculture/horticulture and marketing practices is a prerequisite to identify and develop appropriate interventions.

2.2 Scope of Work

The purpose of this study is to establish base lines of the newly identified peach growers to assess farm management, production, and marketing practices with an additional focus on access to credit services/facilities, techuical advice and training facilities, input supplies, market information, and market linkages. The findings of this survey will help Firms develop appropriate response strategies for better production and sales revenue.

The overall objective of this survey is to collect base line information from the prospective 450 growers that will serve as a basis of comparison with end line data as well as help the project team in design and implementation. The specific objectives of the survey are:

1. Survey of farm management practices for peach growers.
2. Map the different varieties of peach being cultivated by the farmers and assess theproduction and yield for each variety.
3. Assess the extent to which peach growers have access to input supplies.
4. Conduct training needs survey of the peach growers.

5. Assess the extent to which peach growers have access to credit services/facilities.
6. Assess the market information and market linkages of the peach growers.

2.3 Survey Methodology:

Baseline Survey of Peach Growers:

The baseline survey will only target those growers who agreed to participate in the peach sector Initiative. The following formula is used to calculate the sample size. This formula is appropriate for baseline measurements of multi-variable surveys. It establishes variation and expected proportions of key variables which subsequent surveys can use to base sample sizes required for estimating differences in means or proportions. This formula also takes into account the magnitude of change that can be detected with 95 percent confidence given the expected standard deviations for the indicators of interest.

Sample size	$n = Deff((Za + Z(J)^2 * 1Pb (1- Pb) + Pe (1- Pe)))/(Pe- Pb)^2$		
Design effect	Deff	1.2	Design effect is set at 1.2
Significance	Za	1.645	set at 0.95
Power	zp	1.645	set at 0.95
Proportion at baseline'	Pb	0.5	Baseline value is set to 50%
Proportion at endline	Pe	0.65	Expected change at the end line
Sample size		276	Sample Required

The equations above include "deff' for the design effect. This provides a correction for the loss of sampling efficiency resulting from the use of cluster sampling instead of simple random sampling, and the gain of sampling efficiency resulting from stratification. It is the factor by which the sample size must be multiplied by in order to produce survey estimates with the same precision as a simple random sample. It was assumed a priori that inter-household variation is small compared to that of population- based surveys that are based on severity classes. Thus, a design effect (deff) of 1.2 is used.

By applying this formula the total required sample comes to 276

The total number of beneficiary farmers (450) is relatively small, so the sample does not need to be large. We thus adjust n by a finite population correction factor to obtain the required sample size as follows:

Finite Population Correction

$$N = n_o / [1+\{(n_o-1)/N\}]$$

Where:

n = sample size

N = Population size (i.e. total number of participating peach growers)

n_o= sample size to be adjusted

The total sample required is 171.

However the sample will also take into account the fact that some farmer will refuse to participate. We also expect some of the farmers to be absent, (non-participation-NP} at the time of the survey and the possibility of missing or doubtful values (non-response-NR). We estimate that NP = 5% and NR =5%. ST=ROUNDUP (n*(1+NP)*(1+NR))

Sample target=189

Hence 189 peach growers will be randomly selected thus expecting to reach a sample size to 171 farmers.

Selection of Farmers:

A multi-stage sample design will be used for this survey. The project is expected to mobilize the farmersin 11 clusters as part of its implementation scheme. The target sample of 189 will be proportionatelydistributed in these 11 clusters. Finally the required number of farmers will be randomly selected from each cluster from a list of cluster members.

2.4 Study Instruments:

A pre-coded questionnaire will be administered for the survey. This USAID Firms Project team has developed the questionnaire for the survey.

2.5 Specific Tasks:

The successful contractor (survey team) will conduct the survey including study design and plan for data analysis, data collection instruments, time frame and work plan. The survey team will perform the following specific tasks:

a. Develop/finalize the survey protocols including detailed data collection instruments, time frame, work plan, and detailed analysis plan
b. Develop/finalize a set of individually administered surveys targeting beneficiaries as defined by the study design in close collaboration with the USAID Firms Project M&E and technical assistance teams
c. Collaborate with USAID Firms Project M&E and technical assistance teams to design survey methodology and quantitative study instruments for the collection of information related to this survey
d. Seek approval from USAID Firms Project M&E Advisor Team Lead on survey design, methodology, time frame, and any instruments to be used during the study
e. Collect GPS coordinates for each farm visited
f. Where possible and required, coordinate with relevant government and local government representatives and other relevant organizations for the smooth implementation of the survey
g. As per the USAID Firms Project guidelines, design and facilitate a workshop (or series of workshops) to train enumerators, supervisors, and other members of survey team to carry out data collection associated tasks
h. Directly supervise the enumerators, field supervisors, field editors and other members of the field teams
i. Conduct pilot testing of data collection instruments and, where necessary, work with the USAID Firms Project M&E and technical assistance teams to make minor modifications to the survey instruments based on the results of pilot testing, if required
j. Conduct a mock survey as part of the training of the survey team
k. Supervise implementation of the survey in target areas in accordance with the approved design
l. As part of the supervisionprocess, conduct spot quality-assurance checks to ensure adequate performance of enumerators involved in data collection as per the guidelines/checklist provided by the USAID Firms Project
m. Conduct key informant interviews and/or focus group discussions with key stakeholders of the peach sector to document official statistics

n. Develop an analysis plan and seek USAID Firms Project approval
o. Develop appropriate entry program in MS Access and any other relevant software (Not Excel) for data entry and perform random checks to ensure the quality of the entered data
p. Before the data analysis, perform data cleaning on the entered data to ensure that data is clean of any entry errors and reflects the data gathered through questionnaires
q. Undertake a detailed analysis of the data collected in SPSS or other relevant software (Not Excel) and provide descriptive statistics for all variables and inferential statistics for planned comparisons included in the data analysis plan
r. Establish baselines for sales, production, employment or any other indicator provided by the USAID Firms Project
s. Produce a statistical report of the above (with sufficient narrative content to facilitate understanding and utilization by those with limited statistical background) and provide a draft to USAID Finns Project for review and comment
t. Conduct any supplemental analyses based on feedback from USAID Finns Project and includeresults in the final report
u. Work closely with the USAID Firms Project focal point and M&E team in Lahore throughout the contract period
v. Adhere to all relevant policies and procedures of the USAID Firms Project

2.6 Deliverables

The following are considered to be the key deliverables for this Assignment: Survey protocols, data collection instruments, training & data collection plan, data entry software, analysis plan, presentation of findings to the USAID Firms Project's management, and the survey reportare the main deliverables that would be required as per the following schedule.

1. Submit baseline survey protocols to USAID Firms Project for approval before the start of the survey
2. Submit a brief report (maximum four pages) of the enumerators/supervisors trainings within three calendar days after finishing the training.
3. Submit a detailed analysis plan within 5 calendar days of the start of the field work to USAID Firms Project for approval.
4. Submit soft copy of the data entry program within 5 calendar days of the start of the field work to USAID Firms Project for approval.
5. Regularly provide brief written updates on the survey processes.
6. Present the preliminary fmdings in English to the USAID Firms Project management and relevant staff within ten calendar days of the completion of the field work.
7. Submit the draft report in English language as per the format provided by USAID Firms Project within 15 calendar days of the completion of the field work.
8. Submit final Survey Report in English language within one week after receiving the feedback from the USAID Finns Project on the draft report.
9. Submit data set on SPSS or any analysis software used including programmed syntaxes, final copy of the entry program and soft copies of the information collected from the field (e.g. photo) used for data analysis.
10. Submit properly filed/archived hard copies of filled-in questionnaires and any other instrument /data collection tool used during the survey.

2.7 Deliverable Schedule

The Subcontractor shall submit the deliverables described in 2.3 in accordance with the following Deliverables Schedule stated there in (in accordance with those mentioned in 2.3):

Deliverable	Date of Submission
Deliverable1: Baseline Survey Protocols	2 Days after signing of contract
Deliverable 2: Training Report	3 Days after conducting training
Deliverable 3: Detailed Analysis Plan	5 Days after start of fieldwork
Deliverable 4: Data Entry Program	5 Days after start of fieldwork
Deliverable 5: Preliminary Findings	10 days after completion of fieldwork
Deliverable 6: Draft Report	15 days after completion of fieldwork
Deliverable 7: Final Survey Report	7 days after receiving feedback on draft report
Deliverable 8: SPSS Files	2 days after approval of final report
Deliverable 9: Filled Questionnaires	2 days after approval of final report
Deliverable 10: Photo Files	2 days after approval of final report

The Payment Schedule will be as follows:

Deliverable	Payment
After completing deliverables 1, 2, 3	30% of total
After completing deliverables 4, 5, 6	30% of total
After completing deliverables 7, 8, 9, 10 and completion of assignment	40% of total

*Deliverable numbers and names refer to those fully described in Section 2.3 above.

2.8 Period of Performance

This assignment is planned to take place between February 2013 and April 30, 2013. The period of performance and deliverable time lines under this assignment are subject to change with approval from USAID.

Location of Performance

The assignment will take place in Swat.

2.9 Supervision and Reporting

The Subcontractor will report on technical matters to the USAID Firms Project Monitoring & Evaluation Team Leader [redacted].

2.10 Key Personnel

Chemonics will, from the list of persons provided by the subcontractor for the positions (mentioned below) required to effectively complete the scope of work, select the positions that are to be considered Key Personnel for this subcontract and those positions will be considered to be essential to the work being performed here under. Prior to replacing key personnel, the Subcontractor shall immediately notify Chemonics reasonably in advance and shall submit written justification (including proposed substitutions) insufficient detail to permite valuation of

the impact on the work to be performed. No replacement of key personnel shall be made by the Subcontractor without the written consent of Chemonics.

2.11 Qualification of Key Personnel

The Subcontractor shall ensure that key personnel are sufficiently qualified for effectively completing the scope of work as mentioned below. Team Leader: One (1) will be required for at least 17 days. She/he will be responsible for overseeing the entire data collection and analysis. The team leader will be the point of contact for obtaining feedback on the progress of the survey. It is the duty of the team leader to ensure that the timelines are followed and any challenges are reported. S/he will also present the preliminary and final findings of the survey.

Team Leader must meet the following qualification and experience requirements:

1. Minimum Education: Master's degree in Social Science or related research discipline.
2. Minimum Experience: At least five years of experience in business/economic growth and/or development sector, preferably with USAID
3. Excellent understanding of the impact studies, qualitative and quantitative research methods.
4. Excellent training and facilitation skills with experience in suing different research techniques such as questionnaire administration and conducting focus group discussions (FGDs).
5. Must possess good communication and interpersonal skills.
6. Available to verify data at any time needed, including morning, afternoon and evening.
7. Willing to be deployed in all locations of the Swat region.
8. Must have an excellent command in written and spoken English.

Agriculture/Horticulture specialist (for technical support and report writing): One (1) will be required for at least 15 days. S/he will be responsible for providing technical knowledge and writing the draft for survey findings.

Agriculture/Horticulture specialist must meet the following qualification and experience requirement.

1. Minimum Education: Masters/PHD in Agronomy, Horticulture, Agricultural Economics or related subjects.
2. Minimum Experience: At least 10 years of experience in carrying out benchmarking exercises, preferably for agricultural research in peaches.
3. Good understanding of the survey research.
4. Must be willing to work in partnership with the survey manager/team lead and the data analyst toensure sound technical direction for the survey results
5. Proven recent experience with managing horticulture developments in post-conflict contexts
6. Fluency in English language
7. Proven communications and reporting skills

Data Analyst: One (1) will be required for at least 10 days. The data analyst will be responsible for accurate data analysis.

1. Data Analyst must meet the following qualification and experience requirements:
   I. Minimum Education: Master's in Statistics.
2. Minimum Experience: At least four years of data analysis experience in analyzing and interpreting data.

3. Excellent understanding of qualitative and quantitative research methods.
4. The personnel should follow a methodical and logical approach in order to examine the findings of the data collection exercise.
5. Expert/Professional level skills in database such as SPSS or other relevant data analysis applications.

Supervisor: Two (2) will be required for at least 11 days. They will be responsible for overseeing the collection and verification of data. The supervisors will perform spot checks on random days and times. During the six days of the data collection phase. The supervisors must meet the following qualification and experience requirements:

1. Minimum Education: Bachelor's in research oriented agriculture or social science discipline;
2. Minimum Experience: At least two years of experience in overseeing surveys or field research studies;
3. Experience implementing survey plans;
4. Experience in research techniques such as questionnaire administration and conducting focus group discussions (FGDs).
5. Good understanding of research methods.
6. Must possess good communication and interpersonal skills;
7. Available to verify data at any time needed, including morning, afternoon and evening
8. Willing to be deployed in all locations of the Swat region
9. Must be able to speak Pashto and Urdu and understand English

Enumerators: Ten (10) will be required for at least 11 days. Each enumerator should preferably be from Swat/Malakand or KPK. They will be responsible for accurate data collection, photography, and supporting documents.

Enumerators must meet the following qualification and experience requirements:

1. Minimum Education: Bachelor's in Agriculture, Business Administration, Economics or ther relevant discipline
2. Minimum Experience: At least two years of data collection experience in research techniques such as questionnaire administration and Experience in research techniques such as questionnaire administration and conducting focus group discussions (FGDs).
3. Good understanding of research methods
4. Must possess good communication and interpersonal skills
5. Available to collect data at any time needed, including morning, afternoon and evening
6. Willing to be deployed in all districts of Swat and Malakand region
7. Must be able to speak Pashto and Urdu, and understand English

Data Entry Operators: Four will be required for five days. Each data entry operator will be responsible for entering accurate data into the data base provided.

Data Entry Operators must meet the following qualification and experience requirements:

1. Minimum Education: College graduation
2. Minimum Experience: At least one year of data entry experience in any database
3. Good understanding of research techniques
4. Must possess good communication and interpersonal skills
5. Must be able to read and write in English and UrduThe level of effort (LOE) of this activity will be as follows:

Consultant	No. of days per individual	Description of tasks	Total LOE per individual (days)
Teamlead (1)	1	Background reading	17
	1	Develop study protocols (data collection instrument(s))	
	1	Provide training and orientation to the study team	
	10	Supervise data collection and conduct key Informational interviews and/or focus group discussion (including 2 travel days and 1 Contingency day)	
	1	Give presentation on the preliminary findings of the data collection	
	3	Contribute to report writing and review	
Agriculture/Horticulture Specialist(1)	1	Background reading	15
	1	Develop study protocols (data collection instrument(s))	
	1	Provide training and orientation to the study team	
	1	Give presentation on the preliminary findings of the data collection	
	8	Report writing	
	3	Improve draft and finalize report	
Data Analyst (1)	10	Data analysis and cleaning	10
Supervisor (2)	2	Attend training and orientation	1
	9	Data collection (including 2 travel days and 1 contingency day)	
Enumerator (10)	2	Attend training and orientation	11
	9	Data collection (including 2 travel days and 1 contingency day)	
Data Entry Operator (4)	5	Data entry	5

Appendix 2: Peach Questionnaire

Peach Questionnaire:
Swati Peach Sector Development Program–Baseline Survey: **Peach Farmer Questionnaire**

سواتی شفتالو سیکٹر ڈیولپمنٹ پروگرام
بیس لائن سروے: برائے اندراج شفتالو زمینداران

Questionnaire Number (For official use only) سوالنامہ نمبر (صرف دفتری استعمال کیلئے)						

USAID Firms Project– Swati Peach Sector Development Program
Farmers Baseline Survey Questionnaire
یو ایس ایڈ فرمز پراجیکٹ – سواتی آڑو سیکٹر ڈیولپمنٹ پروگرام
کسانوں کے بنیادی سروے سے متعلق سوالنامہ

Introduction:

Good Day/Morning/Afternoon! My name is _____. I/We come on behalf of the USAID Firms Project. We are carrying out a base line survey of the partner peach farmers in Swat district with the objective to assess their production, farm management and marketing practices. The focus of this survey is to assess farmers' access to inputs, tools and machinery, technical advice and training facilities, market information/linkages and access to credit facilities. The findings of this survey will help Firms Project to develop appropriate response strategies for better production and sales revenue.

تعارف:
السلام علیکم! میرا نام _____ ہے۔ میں/ہم یہاں فرمز پراجیکٹ کی طرف سے حاضر ہوئے ہیں۔ ہم ضلع سوات میں آڑو کاشتکاروں سے متعلق ایک بنیادی سروے کرنے آئے ہیں۔ جس کا مقصد ہے کہ ان کی پیداوار، کھیت کے انتظام اور مارکیٹنگ کے طریقوں کا تَعیُن کیا جا سکے ۔ اس سروے کیتوجہ ہے کہ کسانوں کی ان پٹ تک رسائی، آلاتاور مشینریتک رسائی، تکنیکی مشورہ اور تربیت کی سہولیات، مارکیٹ کی معلومات / رابطوں اور کریڈٹ کی سہولیات تک رسائی کا اندازہ لگانا ہے۔ اس سروے کے نتائج کسانوں کو بہتر پیداوار اور فروخت کی آمدنی کے لئے مناسب حکمت عملی تیار کرنے کے لئے مدد کرے گا

You, being a peach grower, were chosen for this interview based on your participation in the program through the respective peach cluster. Are you kindly willing to participate in this interview?
آپ کیونکہ آڑو اگانے یا لگانے کی صلاحیت رکھتے ہیں، اورآپ نے اس پروگرام میں شمولیت کی درخواست کی ہے اس لیے آ پ کو اس انٹرویو کے لیے منتخب کیا گیا ہے۔ کیاآپاپنیمرضیسےاسانٹرویومینشاملہوناچاھتےہیں؟

All the answers are confidential. Your participation and the information you share with us won't affect your relationship with your community or Firms Project because whatever you are saying as a person won't be shared with others. Your name will not be quoted in the report. Your answers will not be judged either right or wrong.
آپ کے تمام جوابات صیغہ راز میں رکھے جائیں گے۔ آپ جو معلومات بھی فراہم کریں گے اس سے آپ کے کمیونٹی(متعلقین)یا فرمز پراجیکٹ کے ارباب اختیار کے ساتھ تعلقات پر اثر نہیں ہوگا۔ کیونکہ آپ کے ذاتی خیالات دوسروں تک نہیں پہنچ پائیں گے۔ آپ کا نام رپورٹ میں نہیں آئے گا۔ آپ کے جوابات غلط یا صحیح کے پیمانے پر نہیں پرکھے جائیں گے

We are very grateful for your sincere answers. **Would you like to participate in this survey?**
ہم آپ کے جوابات کے لیے بہت بہت شکریہ کہتے ہیں! کیا آپ سروے میں شامل ہونا چاہتے ہیں؟
Start the Interview(انٹرویوشروع کیجیے**)**
(See your watch and enter) (گھڑی دیکھ کر وقت نوٹ کیجیے) _____
*If permission is given, begin the interview. If the respondent does not agree to continue, thank him/her and go to the next interviewee. Discuss this result with your supervisor for a future revisit***.**
نوٹ : اگر اجازت ملے، تو انٹرویو شروع کیجئے۔ اگر مدعا علیہ جاری رکھنے کے لئے رضامند نہ ہو، تو اسکا شکریہ ادا کیجیے اور اگلے کسان کی طرف جائیے۔ ان جوابات کو اپنے سپروائزر کے ساتھ ڈسکس کیجیے تاکہ آئندہ (دوبارہ ملاقات) کا فیصلہ کیا جا سکے۔

Result of Interview: (انٹرویو کا نتیجہ) *(to be completed at end)* (انٹرویو کےآخر میں مکمل کیا جائے گا)	Completed(مکمل)..... 1 Refused to answer(جواب دینے سے انکار کر دیا)..... 2 Partly completed(جزوی طور پر مکمل)..... 3 Other (specify)_____ دیگر (وضاحت)

	Questionnaire ID (شناخت جواب دہندہ)	**Response (جواب)**	**Note**
ID1	Province Name: (صوبےکا نام)		
ID2	District Name: (ضلع کا نام)		
ID3	Village Name: (گاوں کا نام)		
ID4	Farmer's Cluster Name/#: (کسان کے گروپ کانام/ نمبر)		
ID5	Interview date: (DD/MM/YYYY) (انٹرویو کی تاریخ)		

ID6	**Interviewed by:** Name of Enumerator:(شمار کنندہ کا نام) (APEX Consulting) Date (DD/MM/YY)		
ID7	**Checked by:** (تصدیق کنندہ) Name of Supervisor(نام سپروائزر) (APEX Consulting) Date (DD/MM/YY)		

ID8	**Entered by:** (ا ندراج کنندہ) Name of the Data Entry Operator (نام ڈ یٹا انٹری آپریٹر) (APEX Consulting)		
ID9	**Checked by:** (تصدیق کنندہ**)** Name of the Data Entry Manager (نام ڈیٹا انٹری منیجر) (APEX Consulting): *(check questionnaire for completeness and assign sequential ID on top of this page data entry)* (تسلی کر لیں کہ فارم مکمل ہو گیا ہے۔ اور فارم کے اوپری حصہ پر ترتیب وار شناختی نمبر کا اندراج کریں)		

Q#	Questions & Instruction (سوالات و ہدایات)	Responses ..... (جوابات/ردِعمل)	Note
A - Personal Information (ذاتی معلومات)			
A1	Respondent's Name: (جواب دہندہ کا نام)		
A2	Respondent's Father's Name: (جواب دہندہ کی ولدیت)		
A3	Respondent's CNIC #: (جواب دہندہ کا کمپیوٹرائزڈ شناختی کارڈ نمبر)		
A4	Sex of the Respondent: (جواب دہندہ کی جنس)	Male(مرد) ..... 1 Female(عورت) 2	
A5	Respondent's Age : (in completed years) (جواب دہندہ کی عمر(سالوں میں))	_____	
A6	Respondent's Educational Level: (جواب دہندہ کا تعلیمی معیار)	Adult literacy school(بالغخواندگیاسکول) .....1 Primary school(پرائمریاسکول تک).....2 Secondary school(میٹرکاسکول تک).....3 College and above(کالجاوراسسےاوپر تک).....4 None (کوئیبھینہیں).....5 Others (Specify)((دوسرے (وضاحتکریں).....6 _____ __ _____	
A7	Do you use mobile phone? (کیا آپ کے پاس موبائل فون ھے)	Yes(ہاں) ..... 1 No(نہیں) 2	**If No go to A12**
A8	Respondent's Phone / Cell Number: (جواب دہندہ کا فون/ موبائل نمبر)	_____	
A9	Can you read message received on the mobile? (کیا آپ موبائل پر موصول شدہپیغام پڑھ سکتے ہیں)	Yes(ہاں) ..... 1 No(نہیں) 2	**If No go to A12**
A10	If yes, in which language you can read message received on the mobile. (اگرہاں،تو کسزبانمیںآپموبائلپرموصولپیغامپڑھسکتےہیں) (Multiple answers) (ایک سے زیادہ جواب ممکن ہیں)	English(انگریزی) ..... 1 Urdu(اردو) ..... 2 Pashto(پشتو) ..... 3 Others (Specify)(اس کے علاوہ) ..... 4 _____ _____	
A11	Priority for language of the message? (پیغامکےلئےترجیحیزبان؟) (Multiple answers) (ایک سے زیادہ جواب ممکن ہیں)	English(انگریزی) ..... 1 Urdu(اردو) ..... 2 Pashto(پشتو) ..... 3 Others (Specify)((دوسرے (وضاحتکریں).....4 _____	**If 1, 2, 3 or 4 go to A16**

A12	Is there any other person in your home who uses mobile phone? (اگرنہیںتوپھرگھرمینکوئیاوربھیموبائلفونکااستعمالکرتاہے؟)	Yes(ہاں)..... 1 No(نہیں) 2	**If No go to A16**
A13	Can he/she read message received on the mobile? (کیا وہ موبائل پر موصول شدہپیغام پڑھ سکتے ہیں)	Yes(ہاں)..... 1 No(نہیں) 2	**If No go to A16**
A14	If yes, in which language he/she can read message received on the mobile. (اگرہاں،تو کسزبانمینوہموبائلپرموصولپیغامپڑھسکتےہیں)	English(انگریزی)..... 1 Urdu(اردو)..... 2 Pashto(پشتو) ..... 3 Others (Specify)(اس کے علاوہ)..... 4 _____	
A15	Priority for language of the message? (پیغامکےلئےترجیحیزبان؟)	English(انگریزی)..... 1 Urdu(اردو)..... 2 Pashto(پشتو) ..... 3 Others (Specify)(اس کے علاوہ)….. ……4 _____	
A16	Respondent's Email (if any) (جواب دہندہ کا ای-میل ایڈریس (اگر ہو تو))	_____	
A17	Complete Address of the Respondent: (جواب دہندہ کا مکمل پتہ)	Village(گاؤں) ..... UC(یونین کونسل)..... Tehsil (تحصیل) ..... District (ضلع)	
A18	Complete address of the Respondent's Peach Orchard: (جواب دہندہ کے آڑو فارم کا مکمل پتہ)	Village(گاؤں) ..... UC(یونین کونسل)..... Tehsil (تحصیل) ..... District (ضلع)	
A19	Do you have bank account? (کیاآپکابینکاکاؤنٹہے)	Yes(ہاں)..... 1 No(نہیں) 2	**If No go to A21**
A20	If yes, then do you make your transactions through mobile banking? (اگرہانتوکیاآپاسسےکوئیلینڈینکرتےہیں)	Yes(ہاں)..... 1 No(نہیں) 2	
A21	How manyhouseholds dependent on your peach farm? (کتنےگھرانونکاانحصارآپکےآڑوکےباغپرہے)	Partially Dependent (No's)(کچھانحصار) _____	Fully Dependent (No's)(مکمّلانحصار) _____

A22	How manypersons dependent on your peach farm? (کتنےلوگونکاانحصارآپکےآڑوکےباغپرہے)	Partially Dependent (No's(کچھانحصار))	Fully Dependent (No's)(مکمّلانحصار)	
		_____	_____	

Q#	Questions & Instruction	Responses	Note
B - Peach Farm Information			
B1	Status of farm ownership (فارم کی حیثیت ملکیت)	Self-Cultivated (خود کاشت کرتے ہیں).....1 Leased In (پٹا/جارہ پر لیا ہے) .....2 Other (Specify) (اس کے علاوہ) ..... ( ) _____	
B2	How do you manage your peach orchard? (اپنے شفتالو کے فارم کا انتظام کس طرح کرتے ہیں؟)	Self-managed (خود انتظام کرتے ہیں).....1 Tenants(کرائے پر).....2 Other (Specify) (اس کے علاوہ) ..... ( ) _____	
B3	What is your source of irrigation water? (آپ کے آبپاشی کےذرائع کیا ہیں؟) (Multiple answers) (ایک سے زیادہ جواب ممکن ہیں)	Tube well (ٹیوب ویل).....1 River/Stream (دریا / ندی وغیرہ).....2 Spring (چشمہ) .....3 Rain fed (بارشکاپانی) .....4 Other (Specify) (اس کے علاوہ) ..... ( ) _____	
B4	What is the distance and time taken from your farm to the main road? (مین روڈ سے فارم کا فاصلہاوروقت کتنا لگتا ہے)	_____KM (کلومیٹر) _____Hrs(گھنٹے)	
B5	Please mention name of Peach variety with area (Jareeb), number of fruit bearing trees planted on your orchard with row to row and plant to plant spacing. (براےمہربانیآپاپنےباغمینبوئےگئےآڑوکےپودونکابلحاظعلاقہ،قسماورپھلدارپودونکیتعدادکاانمینموجودقطارسےقطاراورپودےسےپودےتککےفصلےکاذکرکریں)		

Variety	2012 Jareeb (جرب)	2012 Spacing (ft.) (فاصلہ) Row to Row (قطار سے قطار)	2012 Spacing (ft.) (فاصلہ) Plant to Plant (پودےسےپودےتک)	2012 No. of Plants (پودوں کی تعداد)	2011 Jareeb (جرب)	2011 Spacing (ft.) (فاصلہ) Row to Row (قطار سے قطار)	2011 Spacing (ft.) (فاصلہ) Plant to Plant (پودےسےپودےتک)	2011 No. of Plants (پودوں کی تعداد)
i. Trees of early green variety								
ii. Trees of No.4 Peachvariety								

Variety	2012 Jareeb (جرب)	2012 Spacing (ft.) (فاصلہ) Row to Row (قطار سے قطار)	2012 Spacing (ft.) (فاصلہ) Plant to Plant (پودےسےپودےتک)	2012 No. of Plants (پودوں کی تعداد)	2011 Jareeb (جرب)	2011 Spacing (ft.) (فاصلہ) Row to Row (قطار سے قطار)	2011 Spacing (ft.) (فاصلہ) Plant to Plant (پودےسےپودےتک)	2011 No. of Plants (پودوں کی تعداد)

Q#	Questions & Instruction			Responses						Note
	iii. Trees of No.5 Peachvariety									
	iv. Trees of No.6 Peachvariety									
	v. Trees of No.7 Peach variety									
	vi. Trees of No.8 Peachvariety									
	vii. Trees of other varieties (name)									
	Total									
	Note: If there is no tree in 2011 but in 2012 there is tree than ask why it increased or decreased? _____ _____ _____ _____									

B6

Variety	2012					2011				
	Total Production (Kg) (کلپیداوار)	Wastage (Kg) (ضیاع)	Total Sales (Kg) (فروخت)	Total Sale value (Rs) (فروختکیقیمت)	Market Venue (مارکیٹکیجگہ)	Total Production (Kg) (کلپیداوار)	Wastage (Kg) (ضیاع)	Total Sales (Kg) (فروخت)	Total Sale Value (Rs) (فروختکیقیمت)	Market Venue (مارکیٹکیجگہ)
i. Trees of early green variety										
ii. Trees of No.4 Peach variety										
iii. Trees of No.5 Peach variety										
iv. Trees of No.6 Peach variety										

Variety	2012					2011				
	Total Production (Kg) (کلپیداوار)	Wastage (Kg) (ضیاع)	Total Sale (Kg) (فروخت)	Sale Price (Rs) (فروختکیقیمت)	Market Venue (مارکیٹکیجگہ)	Total Production (Kg) (کلپیداوار)	Wastage (Kg) (ضیاع)	Total Sale (Kg) (فروخت)	Sale Price (Rs) (فروختکیقیمت)	Market Venue (مارکیٹکیجگہ)
v. Trees of No.7 Peach variety										
vi. Trees of No.8 Peach variety										
vii. Trees of other varieties (name)										
Total										

Note: If there is no tree in 2011 but in 2012 there is tree than ask why it increased or decreased?

Q#	Questions & Instruction	Responses	Note
	_____ _____		
B7	How did you sell/market your peach produce in 2012? (2012میں آپ نے شفتالو کی پیداوار کو کس طرح فروخت کی)	Self (خود فروخت کیا) .....1 Sub-contractor (بیوپاری کے ذریعے فروخت کی) .....2 Other (Specify) (اس کے علاوہ) ..... ( ) _____ _____ _____	
B8			

	Total Number of Employees (ملازمینکیکلتعداد)			Average Working days per month (کلکامکےدنونمیں)			Average Working Hours per Day (اوسطکامکےگھنٹے)		
Gender	**Permanent (مستقل)**	**Temporary (عارضی)**	**Family (خاندان)**	**Permanent (مستقل)**	**Temporary (عارضی)**	**Family (خاندان)**	**Permanent (مستقل)**	**Temporary (عارضی)**	**Family (خاندان)**
Male									
Female									

B9	What are the women specific activities related to peach farming? (اگر آپ کے فارم پر خو اتین کا م کر رہی ہیں تو برائے مہربانی انہوں نے کس طرح کے کاموں میّ حصہ لیا؟)	_____ _____ _____ _____ _____	
B10	Which tools and machinery were used on your farm in 2012? (2012 میں آپ کے فارم پر کون سی مشینری یا زرعی آلات استعمال کیےگئےتھے) (Multiple answers) (ایک سے زیادہ جواب ممکن ہیں) Prompt with following examples: (درجذیلمثالونسےاشارہدیں) • Tractor • Rotavator	Tractor(ٹریکٹر) .....1 Rotavator (روٹیویٹر) .....2 Manual sprayer (دستی سپرئیر) ....3 Power Sprayer(پاورسپرئی).....4 Tractor mounted Sprayer (ٹریکٹرپرنسبشدہسپریرسے) 5 Pruning Kit (شاختراشی).....6 Harvesting kit/Fruit picking Kit (پھلاتارنےکیکٹ) .....7 Harvesting Bin (ہارویسٹنگبن).....8 Storage Bin (سٹوریج بن).....9 Other (Specify) (اس کے علاوہ کوئی (نام لکھیں)) ..... ( ) _____ _____	
B11	What are the main difficulties you face in the production of quality peaches? (اعلیٰ قسم کے شفتالو کی کاشت اور پیداوار میں کس قسم کی مشکلات کا سامنا کرنا پڑا؟) (Multiple answers) (ایک سے زیادہ جوابات ممکن ہیں) Prompt with following examples: (درجذیلمثالونسےاشارہدیں) • Availability of Certified plants • Nutrient Deficiency	Availability of appropriate land piece for peach growth ..... 1 (آڑوکیترقیکےلئےمناسبزمینکاٹکڑاکیدستیابی) Availability of appropriate tillage for peach growth ..... 2 (آڑوکیترقیکےلئےمناسبزمین کی تیاری) Availability of Certified plants(مصدقہ پودے کی دستیابی) ..... 3 Availability of appropriate inputs(e.g. agrochemicals, fertilizers) for peach growth ..... 4 Nutrient Deficiency (غذائیت کی کمی) ..... 5 Insects/pests attack (کیڑ وں کا حملہ) ..... 6 Attack of diseases (بیماریوں کا حملہ) 7	

Q#	Questions & Instruction	Responses	Note
		Availability of tools & machinery (مشینری و آ لات کی دستیابی) ..... 8 Availability of appropriate advisory services (مناسبمشاورتیسروسزکیدستیابی) ..... 9 Availability of soil and leaf testing facilities (مٹیکیدستیابیاورپتیکیجانچسہولیات) ..... 10 Availability of techniques to identify insects and diseases types (کیڑوناوربیماریونکیاقسامکیشناختکرنےکیتکنیککیدستیابی) ..... 11 Packaging material (پیکیجنگمواد) ..... 12 Storage (سٹو ریج) ..... 13 Transportation (نقل و حمل) ..... 14 Marketing (فروخت) ..... 15 Access to credit (قرض تک رسائی) ..... 16 Precautionary measures for crop (فصل کی حفاظتی تدابیر) ..... 17 Increased charges of commission agent (آڑھتی کمیشن زیادہ لیتے ہیں) ..... 18 Increased cost of production (زیادہ پیداواری لاگت) ..... 19 Other (Specify)(اس کے علاوہ) ..... ( ) _____ _____ _____	
B12	How did you finance the production cost of peach? (آپ نے2012میں اپنے فارم کے پیداواری اخراجات کیسے برداشت کیے؟) (Multiple answers) (ایک سے زیادہ جوابات ممکن ہیں) Prompt with following example: (درجذیلمثالونسےاشارہدیں) • Self-Financed • Family/Friends	Self-Financed(خود برداشت کیے ہیں) ..... 1 Family/Friends (خاندان/ دوست احباب سے) ..... 2 Commission Agent/ Money Lender (ساہوکارسے) ..... 3 Large Buyer(بڑے خریدار سے) ..... 4 Financial Institution(مالیاتی ادارے سے) ..... 5 Other (Specify) (اس کے علاوہ) ..... ( ) _____	
B13	Please name the financial institution you accessed for credit services for peach production in2012. (آپ اپنے شفتالو کےباغ کی نگہداشت کے لیے مالی قرضے کن مالیاتی اداروں سے حاصل کرتے ہیں؟)	(نام لکھیں) _____	
B14	Has financial institution supervised the loan? (کیا ما لیا تی ادارے نے قرض فراہم کرنے کے بعد اس کی نگرانی کی؟)	Yes(ہاں) ..... 1 No(نہیں) 2	
B15	Are your finances sufficient to meet your orchard management needs for 2013 and 2014? (کیا آپ کی مالی حالت فصل کی مناسب پیداوار حاصل کرنے کے لیے کافی ہے؟)	Yes(ہاں) ..... 1 No(نہیں) ..... 2 Other (Specify)(اس کے علاوہ) ..... ( ) _____	
B16	Would you like to receive credit services for 2013 and 2014? (کیا آپ کسی مالیاتی ادارے سےقرض کی سہولت حاصل	Yes(ہاں) ..... 1 No(نہیں) 2	**If No go to B18**

Q#	Questions & Instruction	Responses	Note
	کرنا چاہتے ہیں؟)		
B17	What is your requirement for credit for 2013 and 2014? (آپ کو سا ل 2013 کے لے کتنے قرض کی ضرورت ہے؟)	PKR(روپے) _____	
B18	In the last 6 months did you receive any information/training on how to improve farming practices for management of peach orchard? (کیا آپ نے پچھلے دو سال میں آڑو کی پیداوار کو بہتر کرنے اور شفتالو کے باغات کی بہتر منصوبہ بندی اور نگہداشت کے سلسلہ میں کوئی معلومات حاصل کیں؟)	Yes(ہاں).....1 No(نہیں).....2 Other (Specify)(اس کے علاوہ) ..... ( ) _____	**If No go to B23**
B19	From which source did you receive that information/training? (آپ نے یہ معلومات کن زرائع سے حاصل کیں؟) (Multiple answers) (ایک سے زیادہ جوابات ممکن ہیں) Prompt with following examples: (درجذیلمثالونسےاشارہدیں) • Training received from Firms Project • Agri Dept./Govt	Training received from Firms Project... .....1 (فرمز پراجیکٹ کی تربیت) TV/Radio Program)(ٹی وی/ریڈیو پروگراموں سے) .....2 Agri Dept./Govt(حکومت کے زرعی محکمہ سے) .....3 Farmer Cooperative(فارمر کوآپریٹیو).....4 Friend/family/relatives.....5 (دوست احباب/خاندان/ رشتہ داروں سے) NGOs (غیر سرکاری تنظیموں سے) .....6 Other (Specify)(اس کے علاوہ) .....( ) _____ _____	
B20	What types of information/training have you received? (آپ نے کس طرح کی معلو مات / تربیت حا صل کی؟) (Multiple answers) (ایک سے زیادہ جوابات ممکن ہیں) Prompt with following examples: (درجذیلمثالونسےاشارہدیں) • Pruning/trimming techniques • Nutrient Management	Pruning/trimming techniques(شاخ تراشی کرنے کا طریقہ کار)1 Nutrient Management(غذائیتانتظام) .....2 Pest/insects attack management (کیڑ وں کا حملہ) .....3 Management of diseases attack(بیماریوں کے حملہ کا انتظام)4 Fruit Picking(پکنگ یا چناو) .....5 Sorting and grading(چھانٹ اور گریڈ).....6 Packaging(پیکجنگ).....7 Storage(سٹو ریج).....8 Transportation(نقل و حمل).....9 Access to credit(قرض تک رسائی) .....10 Health and Safety Measures (During pruning, spraying and picking) .....11 (صحتاورسیفٹیکےاقدامات) Irrigation (آبپاشی) .....12 Water management (پانیکاانتظام) .....13 Marketing(فروخت).....14 Other (Specify)(اس کے علاوہ) .....( ) _____ _____ _____	
B21	Has the information/training you received changed your farming practices at all? (کیا حاصل شدہ تربیت یا معلومات نے آپ کے باغبانی کے انداز کو بدل دیا ہے؟)	Fully adopted modern farming practices .....1 (باغبانی کا مکمل طور جدید انداز اپنایا ہے) Partially adopted modern farming practices .....2 (جزوی طور پر جدید انداز اپنایا ہے)	

Q#	Questions & Instruction	Responses	Note
		Moderately adopted modern farming practices ....3 (معمولی سا جدید انداز اپنایا ہے) Not adopted modern farming practices .....4 (جدید انداز نہیں اپنایا) Other (Specify)(دیگر جوابات واضح کریں) .....( ) _____ _____ _____	
B22	What are you now doing differently because of the training? (اگر آپ کا جواب مثبت ہے تو آپ باغبانی میں کیا نیا کر رہے ہیں؟) (Multiple answers) (ایک سے زیادہ جواب ممکن ہیں) Prompt with following examples: (درجذیلمثالونسےاشارہ دیں) • Improved pruning/trimming techniques • Improved nutrient management	Improved pruning/trimmingtechniques .....1 (شاخ تراشی کا بہتر طریقہ کار) Improved nutrient management (غذاییت کا بہتر انتظام) .....2 Improved pest/insects management .....3 (کیڑ وں کے حملہ کا انتظام) Management of diseases attacks (بیماریوں کا انتظام) .....4 Improved picking(پکنگ کا بہتر طریقہ کار).....5 Improved sorting and grading.....6 (چھانٹ اور گریڈ کا بہتر طریقہ کار) Improved packaging(پیکجنگ کا بہتر طریقہ کار).....7 Improved storage(سٹو ریج کا بہتر طریقہ کار).....8 Improved transportation(بہتر نقل و حمل).....9 Improved access to credit(قرض تک رسائی میں بہتری) .....10 Improved marketing(فروخت کا بہتر طریقہ کار) .....11 Improved irrigation (بہترآبپاشی) .....12 Improved Health and Safety Measures .....13 Other (Specify) (اس کے علاوہ) .....( ) _____ _____ _____	
B23	Are you interested in attending relevant trainings in future? (کیا آپ مستقبل میں اسی طرح کی تربیت حا صل کر نا چا ہیں گے؟)	Yes(ہاں).....1 No(نہیں).....2	**If No go to B25**
B24	If yes, what are the areas you on which you would like to receive training? (اگر آپ کا جواب مثبت ہےتو آپ آئندہ کس شعبہ میں تربیت حاصل کرنا چاہتے ہیں) (Multiple answers) (ایک سے زیادہ جواب ممکن ہیں) Prompt with following examples: (درجذیلمثالونسےاشاربدیں) • Pruning/trimming techniques • Soil and leaf sampling and testing for nutrient application	Pruning/trimming techniques.....1 (شاخ تراشی کرنے کا بہتر طریقہ کار) Soil and leaf sampling and testing for nutrient application ...2 (مٹی کے نمونے لینے اور غذاییت کو چیک کرنے کا طر یقہ کار) Nutrient management (غزا ٔییت کا انتظام).....3 Nutrient spraying (غزائی چھڑکا ٔو).....4 Identification of Deficiency Symptoms.....5 (کمی کی علاماتشناخت) Pest/insects management (کیڑوں کے کنٹرول کا انتظام) .....6 Management form attacks of diseases.....7 (بیماریوں کا انتظام) Picking (پکنگ).....8 Sorting and grading (چھانٹ اور گریڈ).....9 Packaging (پیکجنگ).....10 Storage (سٹوریج).....11 Transportation (نقل و حمل).....12	

Q#	Questions & Instruction	Responses	Note
		Access to credit (قرض تک رسائی) ..... 13 Marketing (فروخت)..... 14 Irrigation (آبپاشی)..... 15 Health & Safety Measures (صحتاورسیفٹیکےاقدامات) ..... 16 Other (Specify) (اس کے علاوہ) .....( ) _____ _____ _____	
B25	Do you maintain records of agricultural practices? (کیا آپ زرعی طریق کار کے مختلف مراحل کا ریکارڈ رکھتے ہیں؟)	Yes(ہاں).....1 No(نہیں).....2	**If Yes go to B26**
B26	If yes, mention which record/s, do you maintain. (اگر ہاں تو بتائیے آپ کیا کیا ریکارڈ رکھتے ہیں؟) (Multiple answers) (ایک سے زیادہ جواب ممکن ہیں) Prompt with following examples: (درجذیلمثالونسےاشارہدیں) • Financial Records • Sales Records	Financial Records:(مالی ریکارڈ).....1 Sales Records (فروخت کا ریکارڈ) ..... 2 Orchard management Records: ..... 3 (باغ کی پیدا وار اور انتظام کا ریکارڈ) Selection of land (زمینکاانتخاب) ..... 4 Types of tillage (e.g. Ploughing, Planking, pit formation)..... 5 (مٹٹیکیتیاری (ہل، پٹراکیمددسےمٹیبنانا، گڑھاکیتشکیل)) Ways of transplanting (رپائیکےطریقے) ..... 6 Application of farm yard manure (قدرتی کھادکااطلاق) .. 7 Application of fertilizer(کھادکااطلاق) ..... 8 Identification of irrigation Stage ..... 9 (آبپاشیکےمرحلہ کا اطلاق) Spraying Techniques (چھڑکاوکیتکنیک) ..... 10 Picking (چناو) ..... 11 Fruit Cleaning/ Sorting(پھلونکیصفائی چھانٹ) ..... 12 Grading(گریڈنگ) ..... 13 Packing(پیکنگ) ..... 14 Export Records (برآمدات کا ریکارڈ) ..... 15 Full-time Employment Records(مُستقل ملازمین کا ریکارڈ).16 Temporary Employment Records ..... 17 (عارضی ملازمین کا ریکارڈ) Production records (کا شت کا ریکا رڈ).....18 Types of insects attacking plant/fruit in the area: ..... 19 (علاقےمیں پلانٹ / پھلپرحملہ کرنے والی کیڑونکیاقسام) Time of insect attack (کیڑےکےحملےکےاوقات).....20 Types of diseases attacking plant/fruit in the area .... 21 (پلانٹ / پھلپرحملہ کرنے والےبیماریوں کیاقسام) Time of diseases attacks (کیڑےکےحملےکےاوقات).....22 Types and quantities of agrochemical used ……23 (زرعی ادویات کی تعد اد اور ان کی اقسام کا ریکا رڈ) Other (Specify) (کوئی اور بات واضح کیجئے) .....( ) _____ _____ _____	

Remarks

Thanks for cooperating with me for sharing and providing information. I will keep and respect the confidentiality of your responses. Please let me ask you if you have any questions to ask beforemeend.
(میں معلومات کے تبادلہ پر تعاون کرنے پر آپ کا مشکور ہوں اور یقین دلاتا ہوں کہ میں آپ کے جوابات کو خفیہ رکھوں گا۔ لیکن انٹرویو ختم کرنے سے پہلے اگر آپ کسی قسم کا سوال پوچھنا چاہیں تو پوچھ سکتے ہیں۔)

Questions Asked By Respondents:

i. ----------
ii. ----------
iii. ----------

End the Interview: انٹرویو ختم کریں

(See your watch and enter) (گھڑی دیکھ کر وقت نوٹ کیجیے!)_____

Appendix 3: Peach Key Informant Interview Guide

Introduction

اسلام و علیکم؛ میرا نام ---------- ہے۔ میں ایپکس کی طرف سے**آیا**ہوں۔ ہم ایک انٹرنیشنل ادارے کے لیے معلومات اکھٹی کر رہے ہیں۔ ہم یہاں فرمز پراجیکٹ کی طرف سے حاضر ہوئے ہیں ۔ آپ سے حاصل کی گئ معلومات اس علاقے کے لوگوں کی ترقی کے لیے بہت اہم ہے۔ اس سلسلے میں، میں آپ سے کچھ آسان سوالات کروں گا جن سے حاصل کردہ معلومات صرف ہمارے تک محدود رہیں گی۔ اس انٹرویو میں آپکے پچیس سے تیس منٹ لگیں گے۔ میں آپکے اس تعاون کی شکر گزار ہوں گی/گا۔ اگر آپ کی اجازت ہو تو میں انٹرویو شروع کروں؟

Verbal Consent

1. Yes: ☐ 2. No: ☐

Enumerator's Statement:

I, the undersigned, have explained to the respondent in the language he/she understands, the procedure to be followed in the KII, and the risks and benefits involved and have obtained his/her verbal consent to conduct this KII.

Time Start: ____:____ am/pm Time End: ____:____ am/pm

Date of Interview ----------|----------|2013

Province:_____ ___|___

District:_____ ___|___

Tehsil:_____ ___|___

Union Council:_____ ___|___

Name of interviewee:_____ ___|___

Designation/ Position: _____ ___|___

Department: _____ ___|___

Official Address: _____

Office Contact Number: ___|___|___|___ - ___|___|___|___|___|___|___

Mobile Contact Number: ___|___|___|___ - ___|___|___|___|___|___|___

Interviewer Name _____|___ Signature: _____

Questions for Key Informant Interview (KII)

Q 1. Please provide us with peach data in Swat region in 2011 and 2012 as requested under

Variety	Technical Name	Total No. of Plants		Total Yield		Total Area Under plantation	
		2011	2012	2011	2012	2011	2012
viii. Trees of early green variety							
ix. Trees of No.4 Peachvariety							
x. Trees of No.5 Peachvariety							
xi. Trees of No.6 Peachvariety							
xii. Trees of No.7 Peach variety							
xiii. Trees of No.8 Peachvariety							
xiv. Trees of other varieties (name)							

Q 2. What you please enlighten us on the problem of peach growers:

1) Provision of certified true to type transplant:
2) Irrigation:
3) Nutrition (Fertilization, manure etc):
4) Insect attack and their control:
5) Diseases and their control
6) Nutrition deficiency (manure use, fertilizer use and aerial spraying:
7) Picking problems (cleaning, sorting and storage problem):

Q 3. Marketing strategy:

Small level peach growers:

Middle level peach growers

Large level peach grower

Q 4. Classification of total peach production as under:

Variety	Total production of Small level peach growers	Total production of Medium level peach growers	Total production of Large level peach growers	
i. Trees of early green variety				
ii. Trees of No.4 Peach variety				
iii. Trees of No.5 Peach variety				
iv. Trees of No.6 Peach variety				
v. Trees of No.7 Peach variety				
vi. Trees of No.8 Peach variety				
vii. Trees of other varieties (name)				

Q 5. What is the credit system in this area?

How it can be improved

Role of institutional supervised credit

Q 6. Present level of training and monitoring of peach farmers?

Q 7. Do you give suggestions to peach farmers for Improved peach production?

Q 8. Variety wise recommendation on spacing

Variety	Spacing (ft.)	
	Row to Row	Plant to Plant
i. Trees of early green variety		
ii. Trees of No.4 Peach variety		
iii. Trees of No.5 Peach variety		
iv. Trees of No.6 Peach variety		
v. Trees of No.7 Peach variety		
vi. Trees of No.8 Peach variety		
vii. Trees of other varieties (name)		

Q 9 Are you satisfied with the present peach growers practices if not please give your recommendations to improve the practices?

_____

Q10 What is the peach production potential in the area and how can be achieved?

_____

Appendix 4: Tehsil Wise Production

Tehsil Name	2012				2011				% Change in Average Production Per Acre of Peach
	No. of Farmers Responded in each Category	Total Orchard Area in Acre	Total Production in Kg	Average Production Per Acre	No. of Farmers Responded in each Category	Total Orchard Area in Acre	Total Production in Kg	Average Production Per Acre	
Matta	130	341	3,974,766	11,646.9	126	327.5	4,048,208	12,360.66	-1.814
Charbagh	32	122	1,095,270	8,946.9	32	119.5	968,155	8,103.82	13.130
Bebuzai	17	41	417,950	10,120.4	16	40.3	488,847	12,125.79	-14.503
Total	179	505	5,487,986		174	487.3	5,505,210		

Appendix 5: Peach Farmers' Status in Different Sales Categories in 2011

Peach Farmers' Status in Different Sales Categories in 2011

Peach Cultivars	Total Area in Acre	Total Trees	Production in KG	Wastage in KG	Wastage (of total production) %	Total Sales in USD	Price per kg in USD
No.5 (NJC 84)	117.1	20,525	1161050	146826	12.6	334,827.4	0.33
No.8 (Indian Blood)	125.7	21,593	1,951,238	224,183	11.5	483,033.9	0.28
No.6 (Elberta)	52.8	9,012	471,980	54,080	11.5	159,953.7	0.38
No.4 (Carmon)	63.6	10,903	532,530	66,285	12.4	135,496.7	0.29
No.7 (Maria Delezia)	49.9	8,644	485,412	59,972	12.4	145,458.0	0.34
No.2	35.8	7,076	265,220	22,280	8.4	93,016.6	0.38
Early grand	41.5	8,151	398,130	32,413	8.1	102,665.9	0.28
No.3	13.1	2,335	105,550	8,220	7.8	47,148.4	0.48
Other Cultivars (i.e. Golden, Sohani, Haljan)	12.1	2,320	94,100	6,820	7.2	19,488.6	0.22
No.1	4.4	970	40,000	3,360	8.4	17,877.6	0.49
Total	516	91,529	5,505,210	624,439		1,538,967	

Appendix 6: Respondent's Educational Level

Respondent's Educational Level			
		Frequency	Percent
	Adult literacy school	4	2.1
	Primary school	29	15.3
	Secondary school	72	38.1
	College and above	49	25.9
	None	28	14.8
	Others	7	3.7
	Total	189	100.0

Appendix 7: References

- Currency exchange rate from April to September 2011 and 2012.www.oanda.com
- Afghan Jerib system for the measurement of land in Swat i.e. 1 acre = 2.0234 jeribs. http://en.wikipedia.org/wiki/Jerib

USAID Firms Project

info@epfirms.com