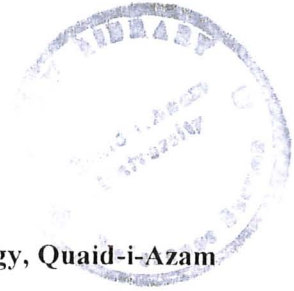


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AGRICULTURAL LAND AND DEFORESTATION IN CHITRAL



“Thesis submitted to the Department of Sociology, Quaid-i-Azam
University, Islamabad, for the partial fulfillment of the degree of
Master of Science in Sociology”

By

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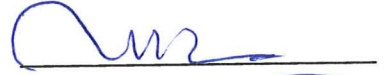
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FINAL APPROVAL OF THESIS

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Abstract

Deforestation has increased in Chitral. Agricultural land use, fuel wood consumption and illegally selling of wood are the primary factors of deforestation in Chitral. The researcher conducted a survey in the Booni valley of district Chitral. The researcher took a sample size of one hundred and twenty (120) respondents and collected data on the basis of a structured questionnaire. The major cause of deforestation like agricultural land usage has been discussed in "Land Use Theory". The research found that the forestry department of the area was not active. This study revealed that there was improper implementation of policies from the part of government that has allowed the deforestation to increase. There prevailed a thought that crops growing fields would have no trees surround it. This study indicated that the people of the area considered it as their duty to protect the forests and trees of the area. According to them the nature took revenge from them in the form of natural disasters as they were unable to protect their forests. It was hypothesized that the agricultural land usage was considered as the major cause of deforestation in the area. The data was highly significant and supported the alternate hypothesis of the study.

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Chapter 1

INTRODUCTION

Deforestation in simple word refers to the lavish cutting of trees in an area. It is also called clearing. The land which is made clear after deforestation is used for various purposes like the construction of buildings, industries, firms, and mostly for cultivation. It has been found that the deforestation is increasing day by day. In the modern era, industrialization requires more land for the construction of firm and industries. For this purpose, the trees in forests have been cut down in order to make a clear plain for the construction of these buildings. It has been estimated that more than 13 million ha area is deforested every year (Sedjo 2012:3-10). It is a serious issue which is increasing day by day.

There were several reasons of deforestation. One of the important reasons of deforestation was that the people were using the timber for the manufacturing of buildings and furniture. The wood was also used as a fire wood. A large number of population in villages were depending on trees, using wood as a fire material (fuel wood).

Another important reason of deforestation was the illegal smuggling of wood for earning money. Beside this, there were various other reasons of deforestation, but what may be or what may not be the reasons of deforestation, has affected the environment. It was critical and even it has been seen that the environment was taking a revenge in the form of flood, melting glaciers and drying of springs. The deforestation has a severe effect on the whole living world.

The oxygen which is necessary for the survival of all living organisms is produced by green trees (forests). Without these trees, even the survival of living organisms is not possible. The roots of these trees are playing an important role in binding the soil together. If the trees do not remain the soil can be easily eroded by the rain water and can bring devastation in the form of flood.

The trees are also helpful in maintaining the temperature of the environment by absorbing the carbon dioxide gas. If the level of carbon dioxide gas increases, the temperature also increases rapidly because the thick layer of carbon dioxide gas cannot allow the reflected rays of sun to escape. Thus the hot rays remain close to the surface of the earth resulting global warming.

The trees and grasses also serve as a pasture for cattle's and also act as shelter for several wild animals. Owing to the deforestation, a large number of animals are dying and it has become a threat for several lives. Ultimately these effects of deforestation have direct or indirect effect on self-responsible human being.

1.1 Deforestation in Chitral

Chitral is the district of Khyber Pakhtunkhwa, situated at the North of Pakistan and has a connection with Afghanistan (Wakhan). Chitral is famous for its natural beauty, because God has gifted the area with beautiful plains, green forests and gigantic mountains. Pakistan is not self-sufficient in forest wealth. An ideal country should have 25% area of forest,

but in Pakistan, it is only 4%, and its considerable part is present in Khyber Pakhtunkhwa province. District Chitral has some part of it. The forest of Chitral was at enough proportion, but it has undergone a severe deforestation during the last several years.

One of the important reasons of the deforestation in Chitral is that the trees are used as a fire wood or fuel wood. There are no other substituting materials of wood, that can be used for fire purpose (like gas). Although the district is richly gifted with natural resources, but the access to these resources for a backward district like Chitral is not possible. Being a cold region, in winter season a large amount of wood is used for burning. The whole population of Chitral is depending on forest trees. For burning, the forests of Deodar and Quercus baloot are mostly used. Besides, deodar trees are used for manufacturing furniture and also for the construction of buildings. The forest of these trees is abundantly found in Chitral but there is also occurring a severe deforestation because of its commercial uses. Other trees of the area are also not safe from cutting. The thought that the large trees close to the crops growing land affect the crop growth is also an agent of deforestation in several areas of Chitral. Large trees prevent sunlight from reaching the crops. Also the trees close to the fields bind the soil and make it hard for cultivation. Thus they are mostly cut down.

The Shishikoh valley of Chitral district was one of the examples where the deforestation was common. The nomadic (*Gujar*) tribe of lower Chitral was involved in the deforestation, because they have thousands of livestock's

and their whole dependence was on these forests. Owing to this there was occurring overgrazing. Besides, they were also involved in the smuggling of timbers and were selling these in the market (Nazir 2011).

The timber mafia is another contributing factor to local deforestation. They are politicians and they have agents in the villages to sell the timbers. These agents buy the trees on very cheap price from the villagers and sell them in the market at a high price. In this the way they earn large amount of money. The timber mafias are strong political people, thus they are always safe from the country laws.

1.2 Research Question

Was the product earned from the crops greater than the product earned from trees because the trees were cut down in many areas in order to make a clear field for crops growth?

1.3 Objective of the Study

The main emphasis of the study is on deforestation in Chitral. The main objectives of the study are:

- 1 To highlight the lavish cutting of trees or deforestation in Chitral. A large number of trees have cut down.
- 2 To find the fact behind deforestation in the name of agricultural land usage. Because the usage of land for agricultural products (crops) has greater influence on over tree cutting.

1.4 Significance of the Study

On the basis of this study the researcher would like to inculcate that how the issues of deforestation have been highlighted through various time. The study can provide information to the dwellers about the causes, consequences and even certain policies which have been made globally to controll deforestation. The study based on recognizing information would encourage the coming generation as well as the existing generation to think critically, how such issues become a hurdle in the path of development particularly in the backward areas like Chitral.

Chapter 2

LITERATURE REVIEW

It is necessary to understand the root causes of deforestation. One of the major factors of deforestation has been the rapid increase in population. Particularly the developing countries of the world are characterized by rapid population growth. Their purpose is to grow more food and build homes. For this purpose more land is made clear, so deforestation is occurring more rapidly (Mitten 1997:549-553). The continuous increase in human population has compelled the people to use the forests products like wood and timber for the construction of building and houses. So these needs for food and wood by the increasing population have led to deforestation (Adedire 2002:33-40).

Although the increase in population has led to deforestation but it is not always necessary that every increase in population lead to deforestation. It depends on the behavior of the people. Even a small number of people can bring a heavy deforestation in an area. The interaction between various sector like agriculture, socio-economic, energy and livestock sector has influenced the forestry (Saxena, Jagdish C. Nautiyal and David K. Foot 1997:57-110). The people used to cut trees in order to grow agricultural products from the cleared area. Agricultural land is the main source of wealth for many countries and particularly for the developing countries of the world. Thus in order to expand the agricultural land more trees are cut down and the land is made clear. This conversion of forest into agricultural land has led to deforestation in certain areas. It means that about 32% of the world tropical forests are made clear for the sake of agricultural land (Barbier 2004: 1347-1353). Similarly the forest land is used for

constructing industries, road and dams by cutting trees which accounts for socio-economic sector. Similarly in energy sector we can take an example of fuel wood which is a product of forest. People are lavishly cutting trees for fuel wood. Now if we can take a livestock sector, the best instance is overgrazing by cattle which accounts for deforestation. So in short, there is a relationship between population growth and deforestation. According to 1991 Food and Agricultural Organization Study, it has been found that the tropical deforestation rate is around 17 million hectare every year. It is 50% higher than the deforestation rate that was occurring in 1970s. Commercial loggers are considered as the major factors contributing to such deforestation particularly in Asia Pacific. (Dauvergne 1998:114-135)

Another major cause which is contributing to the deforestation has been the cattle breeding. In order to supply a large amount of meat certain countries are keeping a large number of cattle. These cattles are the major factor of overgrazing and destroying a large part of greeneries (Mitten 1997:549-553).

Besides, there is another important factors has been the greater usage of timber in the modern era. The legal or illegal supply of timber to the market has influenced the forestry very much. Also the demand for the fuel wood has been a contributing factor of deforestation (Mitten 1997:549-553). The demand for this fuel wood is increasing day by day. These factors have a severe effect on all living organisms including birds, animals and human

beings. So effective programs must be designed to save the environment as soon as possible.

In order to control the rapid increase of deforestation, there has emerged a scheme in the name of Reducing Emission from Deforestation and Degradation (REDD). The purpose of this scheme is to give rewards or give economic incentives to the landowners for avoiding deforestation (Sedjo 2012:3-10). Such benefits will be helpful in controlling the deforestation. In World Polity Theory, there is a focus on how the world non-governmental organizations are playing an important role in controlling deforestation. The technique that they are using is the “debt-for-nature swap”. They are providing funds, technical support at local level. In this technique they are paying certain portion of a country or nation debt and in return, they are asking for certain area, that they (INGOs and DNGOs) will protect these areas. The main purpose of these NGOs is to protect the natural environment. One of the best examples of this tactic is in Ecuador (Shandra, Louis E. Esparza and Bruce London 2012: 251-269). Such tactics will also be helpful in other countries of the world. These schemes are, although, there in certain countries of the world, but the need is that such policies and schemes should be adopted globally, particularly in those countries where the deforestation is occurring rapidly.

Pakistan is among those countries where the deforestation is more common. About 4.6 million hectare of total land in Pakistan is covered with forest, out of which about 40% of the forest is in Khyber Pakhtunkhwa and 15% is

in Northern area (Ali, Baber Shahbaz and Abid Suleri 2006:107-110). But the deforestation rate in Pakistan has been recorded 1.5% annually. The state of Pakistan has provided less attention towards the issue of deforestation. Instead of providing protection to forests, the state in itself has been involved in deforestation. The timber has been used for constructing railway lines, cantonments etc. (Hasan 2008:1189-1203). The quantity of forests existing in Pakistan is not sufficient to be used by this way. So the state's failure in this regard is an issue of concern.

Chitral is the largest district of Khyber Pakhtunkhwa which is famous for its lush greenery, is also not safe from deforestation. The factors that have been highlighted above are all there in Chitral accounted for deforestation. Those factors which are causing for deforestation globally are also the major factor of deforestation in Chitral. The deforestation in Chitral district especially in Kalash valley (Bumboret) where the trees are cut by the timber contractors (Mehmood 2011) with the support of local officials of the forest department is an example of deforestation in Chitral. Timber mafia in Chitral has been the top list factor, responsible for smuggling of timber(Mehmood 2011). This illegal deed provides the timber mafia an opportunity to earn a large income in a limited time. Thus it is clear that the forest of Chitral is in danger.

More than seven million trees have been cut down since 1967 (Farooqi and Naveed Ullah Anjum 2013). The wood is in use for fire purposes, because Chitral district has no facility of other substituting material of wood like

natural gas. There is a large number of people in Chitral whose dependency is on agricultural products which they are growing. In order to grow these products, sufficient amount of land is required. Thus in order to fulfill the demand for agricultural products a large number of trees are cut down which account for deforestation in certain areas of Chitral. In addition, timber mafia has left no chance to take the opportunity from both hands. If these people are not monitored properly then in the name of marking or forest harvesting, they will totally destroy the forest of the area. Different types of policies have been made in order to check the deforestation but still the phenomenon is in progress and seeking for its treatment.

2.1 Major assumptions

The major assumptions of the study are as below:

1. Deforestation is occurring at increase level in Chitral.
2. More than seven millions of trees have been cut since 1967 which is an alarming situation.
3. Mismanagement of the forestry department, timber mafia and the local population (using the wood as a fuel wood) are equally responsible in the destruction of forest in Chitral.
4. The demand for agricultural land and agricultural product is also a source of deforestation in certain areas of Chitral.
5. The policies structured to reduce deforestation are not useful because of improper implementation.
6. The new generation has got sense of this issue and trying to encourage forestry in Chitral.

Chapter 3

THEORATICAL FRAMEWORK

3.1 Land use Theory and Deforestation

The land use theory focus was on economic gain (profit). If there could be more land available then it can result in more production. The forest trees were cut down and the clear land was used for agricultural products. The deforestation was examined from the perspective of price and response to resource scarcity (Hyde, Gregory S. Amacher and McGrath Williams 1996:223-248). If there would be scarcity of agricultural products then in order to obtain more clear land for agricultural products, the forest trees were cut down. There has been found a competition between forest land and agriculture. If the forest land was found fertile, then the opportunity to convert the land for production (agricultural production) increased. However in certain cases the converted land may not be helpful for agricultural production. So in this situation it can cause biodiversity and other ecological loss.

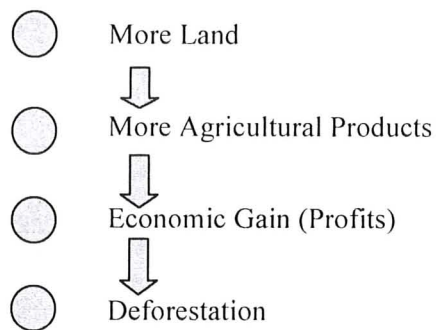


Fig 3.1

Fig 3.1 indicated a relationship between land usage and deforestation. In order to gain more profit, more agricultural products were grown. More

agricultural product also required more land. For this purpose more land was made clear by deforestation.

3.2 Fuel wood Gap Theory

The fuel wood gap theory emphasized, that the wood was consumed as a fuel wood. It has been argued that in many countries the consumption of wood was greater than the supply of wood to the market. So in order to meet this demand of fuel wood a large amount of wood was required. This demand was met by the deforestation and the forest degradation. Certain areas have no facilities of substitute materials of wood and they were depending on these forests trees or wood for fire and burning purposes. The developing countries were mostly involved in such kind of wood cutting because they were unable to utilize their other natural resources i.e. natural gas properly. This has raised a lot of concerns among various national and international agencies regarding the future of the forest.

3.3 Application of theories

In Chitral, although land is available for agricultural products but such kind of land is not available for certain people like (nomadic tribe). These people are living close to forest for grazing their cattle. One's these people felt the need of agricultural product, they started cutting the forest trees in order to make certain area plain for growing these products. Such people have scarcity of resources (especially the products like vegetable and other crops). So the land use theory was applicable in the scenario existing in Chitral. There was a thought existing in Chitral that trees would not be

close to the cultivated land. If there would be trees close to the cultivated land (where crops are grown) then these trees can make shadow and did not allow the sunlight to reach on crops properly. Thus it can affect the growth of the crops. Trees were also cut down on this base.

The natural location of Chitral valley has strengthened its isolation from the rest of Pakistan. So the access of the people to resources in such an isolated area was also difficult. The people have to depend on these limited resources which were at their access. Natural gas is not available in Chitral and thus the people have to use the forest woods as a fuel wood. These forests are the main sources, which are fulfilling their demand of fuel wood. But on the other hand this demand is creating an issue of deforestation. Although the Fuel wood theory has been criticized on the ground that at present time most of the fuel wood were not gained from forests but they originated from non-forest sources. But still it was applicable in case of Chitral.

3.4 Proposition

1. Globally occurring factors of deforestation like fuel wood factor, mismanagement and most importantly the timber mafia are also common factor in Chitral and are not allowing to strengthen the steps (policies) taken for avoiding deforestation in the area.
2. In certain areas of Chitral, people do not have proper land for cultivation. In order to grow certain agricultural

products, the forests are made clear and the trees are cut down to grow these products.

3.5 Hypothesis

The more the usage of land for agricultural products, the more it leads to deforestation.

Alternative hypothesis (Land usage for agricultural products is likely to lead to deforestation in Chitral).

Null hypothesis (Land usage for agricultural products is not likely to lead deforestation in Chitral).

Chapter 4

CONCEPTUALIZATION AND OPERATIONALIZATION

4.1 Conceptualizations

Conceptualization is the process of designing the concepts with the help of existing literature. In this study the researcher has two variables, deforestation and the agricultural land use. These concepts are conceptualized here.

4.1.1 Deforestation

According to Pappas Deforestation refers to;

“Process of clearing forest. (...) Deforestation can lead to erosion, drought, loss of biodiversity through extinction of plant and animal species, and increased atmospheric carbon dioxide” (Pappas 1768:516)

For Pappas (1768) deforestation simply means cutting of trees. It is a cause of environmental imbalance.

However the definition of deforestation in by Crystal (1994) vary from the above definition of Pappas.

“The removal of forest area, either to make use of the wood or to clear the land for agricultural, industrial or urban purposes” (Crystal 1994:330).

For Crystal (1994) deforestation is a clearing of land by cutting trees. The land is used for agricultural as well as industrial purposes.

For Pappas and Crystal deforestation refers to the tree cutting. However, the definition of deforestation according to the Business Dictionary differs from the above definitions.

“The intentional destruction and the removal of trees and other vegetation for agricultural, commercial, housing or firewood use without replanting and without allowing time for the forest to regenerate itself” (Business Dictionary).

In the literature, the deforestation is considered as the removal or cutting of trees and other vegetation in order to make use of the wood as well as the cleared land for agricultural purpose.

4.1.2 Agricultural land

The definition of agricultural land mentioned on Intergovernmental Panel on Climate Change is:

“Agricultural land is the land that is arable and regularly tilled for the production of annual field crops, with or without irrigation” (Intergovernmental Panel on Climate Change 2013).

For IPCC agricultural land is the land used for growing crops, however the definition mentioned by the Provincial Agricultural Land Commission differ from the above definition.

“Agricultural land is the land base upon which agriculture is practiced. Typically occurring on farms, agricultural activities are undertaken upon agricultural land to produce agricultural products” (Provincial Agricultural Land Commission 2013).

According to Provincial Agricultural Land Commission agricultural land is used for producing agricultural products but the definition mentioned in the Free Encyclopedia differ from this definition.

“Arable land is agricultural land occupied by crops both sown and harvested during the same agricultural year, sometime more than once”
(The Free Encyclpedia)

The literature has discussed the agricultural land as the land which is used for the cultivation of different kinds of crops.

4.2 Operationalization

4.2.1 Deforestation

The lavish cutting of trees in an area is known as deforestation. The land is used for multiple purposes after deforestation.

Deforestation is a process in which a land is made clear by cutting trees and the wood or timber obtained are used for burning, manufacturing furniture and also sold in the market for earning income.

Deforestation means bringing destruction to the forest of a particular area by cutting of trees and other vegetation. When the trees are cut down the soil become exposed to the rain water and can be easily eroded thus causing destruction.

4.2.2 Agricultural Land

A piece of land in which various crops like wheat, maize, rice and several other crops are grown is known as agricultural land.

The land in which crops are grown and harvested during various seasons in order to meet the demand of food for human as well as other livestock.

The part of lithosphere other than water which is used for the cultivation of a variety of crops and also human beings, animals and plants are living there. The agricultural products are grown in a variety of ways and it vary from one place to other.

Chapter 5

RESEARCH METHODOLOGY

The researcher chose Chitral for research project because deforestation has become more common in the area. Being an inhabitant of this particular area (Chitral), the researcher felt that he can easily make an access to the information about deforestation in the area. The data at various times showed that Chitral has become a victim of cutting of large number to trees. A quantitative survey research method was used in this study and the data were obtained through structured questionnaire.

5.1 Universe

Booni valley of District Chital was selected for the research project. It was easy access to this area and also the above highlighted cause of deforestation which include consumption of fuel wood, and the thought that the trees should be away from crops growing fields are common in the area. A researcher can make an effective research in the area.

5.2 Target population

Here the researcher included male population (old, and youth). The reason is that the women of the area were lacking information about such societal issues and they are mostly confined to household activities. Beside the information from children on such issue was not satisfactory.

5.3 Sampling Frame

Purposive sampling method was used for collecting samples. It was difficult for every member of the area to fill the questionnaire accordingly. Therefore the researcher decided to choose a purposive sampling method

where the concerned people or those people who were willing to fill the questionnaire precisely, filled the questionnaire.

5.4 Sample size

The researcher collected data from a chosen sample of one hundred and twenty (120) respondents. A sample size of one hundred and twenty is enough to get required information about the critical issue of deforestation (tree cutting).

5.5 Tools for data collection

The researcher designed a questioner and collect data on the basis of that questioner. If the respondents were given a specific time to fill the questionnaire, the respondent were able to fill the questionnaire appropriately.

5.6 Techniques for data collection

The researcher used a telephone as a technique for data collection. Because it was difficult to stay among the population for a long period of time, as it was time consuming. The researcher was also in contact with certain respondents through telephone. Telephonic communication was effective because a researcher directly talked to the respondent and collected information. Also the researcher did face to face interview.

5.7 Pretesting

The researcher took ten respondents in order to pretest the questionnaire. The respondents were taken in such a way that they were also belonging to the area of research where the researcher did his research.

5.8 Data Analysis

The whole data was analyzed through a proper Statistical Package for Social Science (SPSS) System. The researcher used a Chi-square test in order to check the significance level of the data.

5.9 Opportunities and Limitations

The research work provide an opportunity to the local people to understand the root cause of deforestation in the area. Once a root cause of any phenomenon could be found, then the treatment would be accordingly. The research work also provides an opportunity for the younger generation that they can keep in mind such environmental issues and can take careful steps in dealing with such environmental issues.

There are certain limitations of the research work as well. The data have been collected on the basis of a written questionnaire and there might be certain people who could not respond to each and every question accordingly. So there might be a possibility that certain important data could miss.

5.10 Ethical concerns

Ethical standards are the necessary parts while conducting a research. A researcher should keep confidential, all the personal information about the respondents. Besides, a researcher should ask questions in such a way that the respondent must not feel any kind of discomfort while answering such questions.

Chapter 6

RESULTS

The findings of the research are presented with the help of data below.

Table 6.1 Age of Respondents

Age	Frequency	Percent
15-29	82	68.3%
30-44	14	11.7%
45-59	18	15.0%
60 and above	6	5.0%
Total	120	100.0%

Table 6.1 showed that out of 120 respondents 82 were having an age of 15-29 which was making 68.3 percent of the total, 18 were of the age of 45-59 which was making a percent of 15.0, 14 were of the age of 30-44 which was making a percent of 11.7 and 6 were of the age of 60 and above which was making a percent of 5.0. The table also indicates that majority of the respondents taken were youth. The reason was that the younger generation had more information about deforestation in the area because they were educated.

Table 6.2 showed that from the total of 120 respondents 34 respondents were qualified up to higher secondary level which was 28.3 percent, 28 were graduates which was 23.3 percent, 26 were post graduate which was 21.7 percent, 22 were secondary qualified which was 18.3 percent and 10

were primary qualified which was 8.3 percent. Table also indicates that majority of the respondents were attaining college level education. They had more information as compared to the other people of the society. Thus the researcher focused them.

Table 6.2 Education of Respondents

Education	Frequency	Percent
Primary	10	8.3%
Secondary	22	18.3%
Higher Secondary	34	28.3%
Graduation	28	23.3%
Post-Graduation	26	21.7%
Total	120	100.0%

Table 6.3 Marital status of Respondents

Marital status	Frequency	Percent
Single	79	65.8%
Married	41	34.2%
Total	120	100.0%

Table 6.3 showed that out of 120 respondents 79 were single (unmarried) which made 65.8 percent and 41 respondents were married which made 34.2 percent of the total. Majority of the respondents taken were youth and they were receiving education. Thus they were also unmarried.

Table 6.4 Family pattern of Respondents

Family	Frequency	Percent
Nuclear	21	17.5%
Joint	77	64.2%
Extended	22	18.3%
Total	120	100.0%

Table 6.4 showed that out of the total of 120 respondents 77 were belonging to joint family which made 64.2 percent, 22 were belonging to extended family which made 18.3 percent and 21 were belonging to nuclear family which made 17.5 percent of the total. Joint and extended family system were mostly common in rural areas. The researcher universe was also a rural area. Thus majority of the respondents were belonging to joint and extended families.

Table 6.5 Deforestation means cutting of trees, shrubs and herbs

Deforestation	Frequency	Percent
Agree	62	51.7%
Strongly agree	44	36.7%
Disagree	7	5.8%
Strongly disagree	1	0.8%
Don't know	6	5.0%
Total	120	100.0%

Table 6.5 indicated that out of 120 respondents 62 were agreed with the question which was 51.7 percent, 44 were strongly agreed with the question which made 36.7 percent, 7 respondents were disagree which made 5.8 percent, 1 was strongly disagree which made 8 percent and 6 respondents were in the category of do not know which made 5.0 percent of the total. The table indicates that for majority of respondents, deforestation was the destruction or cutting of all greeneries. According to them deforestation did not means the cutting of trees only.

Table 6.6 Deforestation occurring in the area

Deforestation occurrence	Frequency	Percent
Agree	80	66.7%
Strongly agree	35	29.2%
Disagree	2	1.7%
Strongly disagree	2	1.7%
Don't know	1	0.8%
Total	120	100.0%

Table 6.6 showed that in response to a question “deforestation was occurring in your area” 80 respondents out of 120 were agreed which made 66.7 percent, 35 were strongly agreed which made 29.2 percent, 2 were disagreeing, 2 were strongly disagreeing which made 1.7 and 1.7 percent respectively. 1 respondent out of the total of 120 was in the category of “do not know” which made 0.8 percent of the total. The table also indicates that deforestation has occurred in their area because in their daily life they had seen the usage of large amount of wood. It was a fact that these wood came from forest trees.

Table 6.7 Deforestation has increased in the area

Deforestation increased	Frequency	Percent
Agree	71	59.2%
Strongly agree	30	25.0%
Disagree	7	5.8%
Strongly disagree	2	1.7%
Don't know	10	8.3%
Total	120	100.0%

Table 6.7 showed that out of 120 respondents 71 agreed with the question that deforestation has increased during last years. It made 59.2 percent of the total respondents. 30 of the respondents were strongly agree which made 25.0 percent, 10 respondents were in the category of “do not know” which made a percent of 8.3. While 7 respondents disagreed which made a percentage of 5.8. 2 respondents were strongly disagree which makes 1.7 percent of the total. For majority of the respondents deforestation has increased because the advancement in the modern era has compelled the people to use the land for various purposes. Also the increase in population has lead to increase in the demand of wood for construction houses, furniture and buildings and fuel wood.

Table 6.8 Deforestation has an effect on the environment

Deforestation affects environment	Frequency	Percent
Agree	37	30.8%
Strongly agree	79	65.8%
Disagree	2	1.7%
Don't know	2	1.7%
Total	120	100.0%

Table 6.8 showed that out of 120 respondents 79 were strongly agreed with the question that deforestation has an effect on our environment which made 65.8 percent, 37 respondents were agreed which made 30.8 percent of the total, 2 respondent were disagree which made 1.7 percent and 2 were in the category of “do not know” which also made 1.7 percent of the grand total. According to the majority of respondents deforestation has severe effects on environment. Because once the trees, herbs and shrubs are cut down the soil become exposed and can be easily eroded by water, rain water and wind. Trees are also absorbing the carbondioxide and helps in maintaining the earth temperature. When trees are cut down the level of carbondioxide increases and the ozone layer become depleted. It has a bad effect on environment.

Table 6.9 Fuel wood consumption, a cause of deforestation

Fuel wood and deforestation	Frequency	Percent
Agree	51	42.4%
Strongly agree	50	41.7%
Disagree	3	2.5%
Strongly disagree	3	2.5%
Don't know	13	10.8%
Total	120	100.0%

Table 6.9 showed that in response to a question that “fuel wood consumption was a cause of deforestation” 51 respondents were agreeing and 50 were strongly agree which made 42.4 and 41.7 percent respectively. Out of 120 respondents 13 were in the category of do not know which made 10.8 percent of the total. Beside these 3 respondent were disagree and 3 were strongly disagree which made 2.5 percent and 2.5 percent respectively. The table also indicated that most of the respondents considere the fuel wood consumption as a cause of deforestation. The people of the area were mostly relying on wood for burning purposes. Because the area has no other source that can be used for this purpose.

Table 6.10 Cattle breeding, also a cause of deforestation

Cattle breeding and deforestation	Frequency	Percent
Agree	67	55.8%
Strongly agree	37	30.8%
Disagree	14	11.7%
Don't know	2	1.7%
Total	120	100.0%

Table 6.10 indicated that in the total of 120 respondents 67 respondents agreed with the statement that cattle breeding are also a cause of deforestation which made 55.8 percent, 37 were strongly agreed which made 30.8 percent, 14 were disagree which made 11.7 percent and 2 did not respond to the statement which made 1.7 percent of the total respondents. Cattle breeding was a cause of deforestation because the forests and other green areas were used as pastures. A large number of cattles have destroyed the greeneries, shrubs and herbs, which counted for deforestation in Chitral.

Table 6.11 Farmers are cutting trees in the area

Farmers in deforestation	Frequency	Percent
Agree	71	59.2%
Strongly agree	21	17.5%
Disagree	26	21.7%
Strongly disagree	1	0.8%
Don't know	1	0.8%
Total	120	100.0%

Table 6.11 showed that in the total of 120 respondents 71 respondents agreed with the question that farmer were cutting trees in the area which made 59.2 percent, 26 were disagree which made 21.7 percent of the total, 21 were strongly agreed which made 17.5 percent, 1 was strongly disagree and 1 was in the category of do not know which made 0.8 percent and 0.8 percent respectively. Farmers were involved in deforestation because in order to grow more agricultural products they were clearing more land by cutting trees. They considered that agricultural products have more advantages over trees.

Table 6.12 The nomadic tribes is also involved in deforestation

Deforestation by nomads	Frequency	Percent
Agree	47	39.2%
Strongly agree	37	30.8%
Disagree	17	14.2%
Strongly disagree	1	0.8%
Don't know	18	15.0%
Total	120	100.0%

Table 6.12 indicated that out of 120 respondents 47 respondents agreed with the question that nomadic tribe were involved in deforestation which made 39.2 percent of the total. 37 were strongly agree which made 30.8 percent, 18 remained neutral which made 15.0 percent, 17 were disagreeing with the statement which made 14.2 percent and 1 was strongly disagree which made 0.8 percent of the total. The nomadic tribes have large herd of cattles and were moving in different areas of Chitral for grazing their cattles. The cattle grazed on herbs, shrubs and grasses. The nomadic people themselves used the trees for burning purposes. Thus they were involved in trees cutting (deforestation).

Table 6.13 The local people are mostly involved in deforestation

Deforestation by local people	Frequency	Percent
Agree	75	62.5%
Strongly agree	33	27.5%
Disagree	4	3.3%
Don't know	8	6.7%
Total	120	100.0%

Table 6.13 indicated that 75 respondents were agreeing with the question that local people were mostly involved in deforestation. It made 62.5 percent of the total. 33 respondents were strongly agreed which made 27.5 percent of the total, 8 were neutral which made 6.7 percent and 4 were disagree which made 3.3 percent of the total. According to majority of the respondents the local dwellers have been involved in cutting trees. The wood obtained has numerous uses on local level including fire wood, making furniture and constructing houses. Although there were illegal cutting of trees but the local people mostly cut the trees which they have grown for their own purposes.

Table 6.14 People cut large tree close to their houses

Trees close to houses are cut down	Frequency	Percent
Agree	57	47.5%
Strongly agree	36	30.0%
Disagree	14	11.7%
Strongly disagree	6	5.0%
Don't know	7	5.8%
Total	120	100.0%

Table 6.14 showed that 57 respondents out of 120 agreed with the question which made 47.5 percent, 36 respondents were strongly agreed which made 30.0 percent, 14 were disagree which made 11.7 percent, 7 were neutral which made 5.8 percent and 6 were strongly disagree which made 5.0 percent of the total. The people usually cut the trees close to their houses because it was considered dangerous when these trees fell. It caused harms to the houses as well as the people. So this type of cutting of trees also counted for deforestation in Chitral.

Table 6.15 There is also an illegal cutting of trees (wood)

Illegal cutting of trees	Frequency	Percent
Agree	53	44.2%
Strongly agree	19	15.8%
Disagree	26	21.7%
Strongly disagree	3	2.5%
Don't know	19	15.8%
Total	120	100.0%

Table 6.15 showed that in response to a question of illegal cutting of trees 53 respondents out of 120 respondents were agreed which made 44.2 percent of the total. 26 respondents were disagree which made 21.7 percent, 19 were strongly agreed and 19 were neutral which made 15.8 and 15.8 percent respectively and 3 were strongly disagree which made 2.3 percent of the total. Majority of the respondents were of the view that there has been illegal cutting of tree in Chitral. In thickly forested areas the people cut trees and sell them to earn income. The wood cutters were considered as political people and they have also remained safe the law of the the country.

Table 6.16 Non-fruit bearing trees are mostly cut down

Non-fruit bearin trees are cut down	Frequency	Percent
Agree	65	54.2%
Strongly agree	48	40.0%
Disagree	2	1.7%
Strongly disagree	2	1.7%
Don't know	3	2.5%
Total	120	100.0%

Table 6.16 indicated that in response to a question that non-fruit bearing trees are mostly cut down as compared to fruit-bearing tree, 65 of the respondent were agreed which made a percentage of 54.2 of the total. 48 respondents were strongly agreed which was 40.0 percent, 3 were neutral which was 2.5 percent, 2 were disagree which was 1.7 percent and also 2 were strongly disagree which made 1.7 percent. According to majority of the respondents the non-fruit bearing tree were mostly cut down. Because the fruit bearing trees yields a variety of fruits. These fruits were eaten and also sold in the market to generate income. Because of their utility the fruit bearing trees were not commonly cut down.

Table 6.17 Deforestation increases with population increase

Population increase cause deforestation	Frequency	Percent
Agree	54	45.0%
Strongly agree	55	45.8%
Disagree	4	3.3%
Strongly disagree	1	0.8%
Don't know	6	5.0%
Total	120	100.0%

Table 6.17 showed that out of 120 respondents 55 were strongly agreed with the statement and 54 were agreed with the statement which made 45.8 percent and 45.0 percent respectively. 6 respondents were in the category of “do not know” which was 5.0 percent, 4 were disagreed which made 3.3 percent of the total and 1 were strongly disagreeing which was 0.8 percent of the total. For most of the respondents the increase in population was a cause of deforestation. When the population was increasing the demand for wood was also increasing. Because the people were constructing new houses. For this purpose wood was mostly used.

Table 6.18 The remaining forests is sufficient to be consumed

Forests are sufficient	Frequency	Percent
Agree	26	21.7%
Strongly agree	4	3.3%
Disagree	43	35.8%
Strongly disagree	28	23.3%
Don't know	19	15.8%
Total	120	100.0%

Table 6.18 indicated that in response to a question, the remaining forests were sufficient for consumption, 43 respondents were disagree which made 35.8 percent, 28 respondents were strongly disagree which made 23.3 percent, 26 respondents were agree which was 21.7 percent of the total, 19 were neutral which was 15.8 percent and 4 were strongly agreed which made 3.3 percent of the grand total. There has been lavish cutting of trees but the reforestation has been very rare. Therefore most of the respondents were of the view the remaining tree were not sufficient, if the trees depleted in such a rapid way.

Table 6.19 Wood is the most used commodity

High consumption of wood	Frequency	Percent
Agree	60	50.0%
Strongly agree	43	35.8%
Disagree	7	5.8%
Strongly disagree	3	2.5%
Don't know	7	5.8%
Total	120	100.0%

Table 6.19 showed that in the total of 120 respondents 60 agreed with the question that wood is the most used commodity in their daily life. It made 50.0 percent of the total. 43 respondents were strongly agreed which made 35.8 percent. 7 respondents disagreed and 7 were neutral which made 5.8 percent and 5.8 percent respectively while 3 respondents were strongly disagreeing with the question which made 2.5 percent of the total. The majority of respondents have experienced in their daily life that wood was mostly used commodity. It is used for burning purposes, for cooking foods. Because the area has no facilities of substitute material of wood.

Table 6.20 It takes a long time for a tree to grow and yield

Tree growing takes long time	Frequency	Percent
Agree	74	61.7%
Strongly agree	31	25.8%
Disagree	5	4.2%
Don't know	10	8.3%
Total	120	100.0%

Table 6.20 indicated that out of 120 respondents 74 agreed with the question which made 61.7 percent, 31 were strongly agree which made 25.8 percent, 10 were in the category of “do not know” which made 8.3 percent of the total and 5 were disagree which made 4.2 percent of the total. Majority of the respondents were of the opinion that it take long time for trees to grow and yields. Thus the people have preferred to grow other crops rather than growing trees.

Table 6.21 Forestry department is unable to implement proper policies

Improper policies	Frequency	Percent
Agree	65	54.2%
Strongly agree	44	36.7%
Disagree	4	3.3%
Strongly disagree	2	1.7%
Don't know	5	4.2%
Total	120	100.0%

Table 6.21 showed that in the total of 120 respondents 65 agreed with the question that forestry department is unable to implement proper policies which made 54.2 percent of the total. 44 respondents were strongly agree which made 36.7 percent, 5 were neutral which made 4.2 percent, 4 were disagree which made 3.3 percent of the total and 2 were strongly disagree which made 1.7 percent. According to majority of the respondents the forestry department in Chitral was unable to protect trees. There were improper policy implementation. Thus the forest of the area has undergone severe deforestation in the recent years.

Table 6.22 Deforestation can be controlled by using substitute materials of wood

Substitute material of wood controls deforestation	Frequency	Percent
Agree	47	39.2%
Strongly agree	61	50.8%
Disagree	5	4.2%
Don't know	7	5.8%
Total	120	100.0%

Table 6.22 indicated that in response to an above question 61 of the respondents were strongly agreed with the question which made 50.8 percent of the total. 47 respondents were agreed which made 39.2 percent, 7 were neutral and 5 were disagree which made 5.8 percent and 4.2 percent of the total respectively. If there have been substitute material of wood like natural gas, then according to majority of the respondent deforestation can be controlled. Because the wood was mostly used for burning and cooking food. If gas can take the place of this wood, then the lavish cutting of trees can be controlled for most of the respondents.

Table 6.23 Deforestation can be controlled by awareness programs

Importance of awareness program	Frequency	Percent
Agree	55	45.8%
Strongly agree	46	38.3%
Disagree	10	8.3%
Don't know	9	7.5%
Total	120	100.0%

Table 6.23 showed that in the total of 120 respondents 55 agreed with the statement that deforestation can be controlled by bringing awareness to the local dwellers which made 45.8 percent of the total. Similarly 46 were strongly agree which made 38.3 percent, 10 were disagree which made 8.3 percent and 9 were neutral which made 7.5 percent of the total. If the people were given an awareness about the harms of deforestation then according to majority of the respondent deforestation could have been controlled. Due to the lack of education and awareness the people were cutting trees without considering the negative aspect of deforestation on environment. They were not growing more trees.

Table 6.24 Forestation can be encouraged by rewarding people

Encouraging forestation by rewarding people	Frequency	Percent
Agree	63	52.5%
Strongly agree	43	35.8%
Disagree	7	5.8%
Strongly disagree	2	1.7%
Don't know	5	4.2%
Total	120	100.0%

Table 6.24 indicated that in response to a question “Forestation can be encouraged by rewarding those people who are growing more trees”, 63 respondents were agreeing which was 52.5 percent. 43 respondents were strongly agree which made 35.8 percent, 7 were disagree which made 5.8 percent, 5 were neutral which made 4.2 percent and 2 were strongly disagree which made 1.7 percent of the total. There has existed a policy in certain countries that those people who grew more trees were rewarded. So according to majority of the respondent if this policy would be adopted then forestry could be encouraged.

Table 6.25 Crops are best grown in the area

Crops are best grown	Frequency	Percent
Agree	55	45.8%
Strongly agree	22	18.8%
Disagree	35	29.2%
Strongly disagree	5	4.2%
Don't know	3	2.5%
Total	120	100.0%

Table 6.25 indicated that in a total of 120 respondents 55 agreed with the question that crops were best grown as compared to trees which made 45.8 percent of the total. 35 respondents were disagree which was 29.2 percent, 22 were strongly agreed which was 18.8 percent, 5 were strongly disagree which was 4.2 percent and 3 were in the category of do not know which was 2.5 percent of the total. According to majority of the respondents crops growth were important for them because their depanyancy was mostly on agriculture. Being a backward area the people have to produce most of the agricultural product for themselves. Thus they mostly preferred crops growth over trees growth.

Table 6.26 Crop cultivation is better in those fields having no trees surround it

Better crops in treeless field	Frequency	Percent
Agree	66	55.0%
Strongly agree	43	35.8%
Disagree	6	5.0%
Strongly disagree	3	2.5%
Don't know	2	1.7%
Total	120	100.0%

Table 6.26 showed that 66 respondents out of 120 respondents agreed with the above statement which was 55.0 percent, 43 were strongly agreed which was 35.8 percent, 6 were disagree which was 5.0 percent, 3 were strongly disagree which was 2.5 percent and 2 were neutral which was 1.7 percent of the total. According to majority of the respondents, trees close to the field affects the crop growth. Because the trees prevented the sun light from reaching the crops. The sunlight was considered as integral ingredient for better crops growth. Thus the trees were mostly cut down in order to grow better crops.

Table 6.27 There should be no trees close to the cultivating land

No trees close to cultivating land	Frequency	Percent
Agree	65	54.2%
Strongly agree	22	18.3 %
Disagree	14	11.7%
Strongly disagree	5	4.2%
Don't know	14	11.7%
Total	120	100.0%

Table 6.27 indicated that out of 120 respondents 65 were agreeing with the question which was 54.2 percent. 22 were strongly agreed which was 18.3 percent of the total. 14 respondents were disagreeing and also 14 were neutral which were 11.7 and 11.7 percent respectively. 5 respondents were strongly disagree which was 4.2 percent of the total. Most respondents have responded positively on this regard that there would be no trees close to the crops growing fields. Because the trees trapped sunlight and the root of the trees made the fields hard for cultivation. Therefore the trees have been mostly removed.

Table 6.28 Trees close to the crop growing field's traps the sunlight

Large trees traps sunlight	Frequency	Percent
Agree	64	53.3%
Strongly agree	48	40.0%
Disagree	5	4.2%
Strongly disagree	1	0.8%
Don't know	2	1.7%
Total	120	100.0%

Table 6.28 showed that out of 120 respondents 64 of the respondents were agreeing with the question that large trees close to the crops growing fields were trapping the sunlight. It made 53.3 percent of the total. 48 respondents were strongly agree which made 40.0 percent, 5 were disagree which made 4.2 percent, 2 were neutral which made 1.7 percent and 1 was strongly disagree which made 0.8 percent of the total. Sun light was considered as important ingredient in the photosynthesis thus useful for healthy crops cultivation. Therefore the trees close to the crops growing fields were cut down, so that the sun light reach the crops easily.

Table 6.29 Roots of trees close to the field bind the soil and make it hard

Root of trees make ploughing difficult	Frequency	Percent
Agree	60	50.0%
Strongly agree	49	40.8%
Disagree	5	4.2%
Strongly disagree	2	1.7%
Don't know	4	3.2%
Total	120	100.0%

Table 6.29 showed that out of 120 respondents 60 agreed with the statement that trees close to the fields bind the soil and make it hard for cultivation. It made 50.0 percent of the total. 49 respondents were strongly agree which made 40.8 percent, 5 were disagree which made 4.2 percent, 4 were neutral which is 3.2 percent and 2 were strongly disagree which was 1.7 percent of the total. Large trees possess long roots. Those roots were a hurdle during ploughing. In order to prevent this the trees close to the fields were cut down.

Table 6.30 Healthy crop cultivation in the field surrounded by trees is difficult

Trees affects crop growth	Frequency	Percent
Agree	76	63.3%
Strongly agree	27	22.5%
Disagree	6	5.0%
Strongly disagree	1	0.8%
Don't know	10	8.3%
Total	120	100.0%

Table 6.30 indicated that out of 120 respondents 76 agreed with the above statement which was 63.3 percent, 27 were strongly agreed which was 22.5 percent, 10 respondents were neutral which was 8.3 percent, 6 were disagree which was 5.0 percent and 1 respondent was strongly disagree which was 0.8 percent of the total. Majority of the people were of the view that in the presence of large trees close to the crops growing fields, healthy crops growth was difficult. These factors have already been highlighted in table 6.28 and 6.29.

Table 6.31 Agricultural land usage is a cause of deforestation

Agricultural land usage and deforestation	Frequency	Percent
Agree	71	59.2%
Strongly agree	15	12.5%
Disagree	22	18.3%
Strongly disagree	2	1.7%
Don't know	10	8.3 %
Total	120	100.0%

Table 6.31 indicated that in the total of 120 respondents 71 agreed with the question that agricultural land usage was a cause of deforestation. It made 59.2 percent of the total. 22 respondents disagreed with the question which made 18.3 percent, 15 were strongly agree which made 12.5 percent. 10 respondents were neutral which accounted for 8.3 percent and 2 were strongly disagreeing which made 1.7 percent of the total. According to majority of the respondents, the usage of land for agricultural products was a cause of deforestation. Because the population was increasing and the demand for agricultural products have also increased. Hence in order to meet this demand more land availability was also necessary. For this purpose more land was made clear by cutting trees.

Table 6.32 Fertile soil is available for agricultural products after the trees are cut down

Forest soil is fertile	Frequency	Percent
Agree	66	55.0%
Strongly agree	12	10.0%
Disagree	24	20.0%
Strongly disagree	2	1.7%
Don't know	16	13.3%
Total	120	100.0%

Table 6.32 showed that out of 120 respondents 66 respondents agreed with the question that fertile soil was available for growing crops after the tree are cut down and the land was made clear. It made 55.0 percent of the total. 24 respondents were disagreeing which made 20.0 percent, 16 were neutral which was 13.3 percent of the total. 12 respondents were strongly agree which made 10.0 percent and 2 were strongly disagree which made 1.7 percent of the total. Majority of the respondents were of the view that once the trees were cut down, the soil become fertile for crops growth. The reason was that the fallen leaf of trees made humus and the humus is considered as a fertile soil.

Table 6.33 Occupation of most people in the area is agriculture

Agriculture as occupation	Frequency	Percent
Agree	71	59.2 %
Strongly agree	33	27.5 %
Disagree	6	5.0 %
Strongly disagree	4	3.3%
Don't know	6	5.0%
Total	120	100.0%

Table 6.33 showed that out of 120 respondents 71 agreed with the question which made 59.2 percent, 33 were strongly agree which made 27.5 percent, 6 were disagreeing and 6 were neutral which made 5.0 percent and 5.0 percent respectively. At last 4 respondents were strongly disagree which accounted for 3.3 percent of the total respondents. Being a rural area the occupation of most of the people was agriculture. Crops were grown easily therefore people grew crops. Due to the lack of educational facilities the people were compelled to involve themselves in agriculture.

Table 6.34 Preferring growing crops over tree cuttings

Crops are preferred	Frequency	Percent
Agree	41	34.2%
Strongly agree	12	10.0%
Disagree	43	35.8%
Strongly disagree	13	10.8%
Don't know	11	9.2%
Total	120	100.0%

Table 6.34 showed that 43 respondents disagreed with the statement that they were preferring to grow crops over tree cutting and it made 35.8 percent of the total. 41 respondents were agreed which made 34.2 percent, 13 were strongly disagree which made 10.8 percent, 12 were strongly agreed which accounted for 10.0 percent and 11 of the respondents were neutral which made 9.2 percent of the total respondents. Although trees have been cut down in order to use the land for agricultural products, but majority of the respondents were of the view that they did not prefer to grow crops over tree cutting. Because the trees were considered more useful. Trees have provided fruits, timbers and woods and thus trees were more useful.

Table 6.35 The agricultural products are enough to meet the family demand

Crops meet family demand	Frequency	Percent
Agree	33	27.5 %
Strongly agree	9	7.5%
Disagree	55	45.8%
Strongly disagree	15	12.5 %
Don't know	8	6.7%
Total	120	100.0%

Table 6.35 indicated that out of 120 respondents 55 were disagreeing with the question “agricultural products were enough to meet their family demands” and it made 45.8 percent. 33 were agreed with the question which made 27.5 percent, 15 were strongly disagree which made 12.5 percent, 9 were strongly agree which made 7.5 percent and 8 were in the category of “do not know” which accounted for 6.7 percent of the total. Due to the lack of awareness, the people were unable to distinguish between profit and loss. According to majority of the respondents the agricultural product that they have grown were not enough to meet their demand. But still they gave importance to crops growth.

Table 6.36 Crops yields more products than the products from trees

Crops are more useful	Frequency	Percent
Agree	51	42.5%
Strongly agree	14	11.7%
Disagree	41	34.2%
Strongly disagree	5	4.2%
Don't know	9	7.5%
Total	120	100.0%

Table 6.36 showed that 51 respondents were agree with the above statement which made 42.5 percent, 41 were disagree which made 34.2 percent, 14 were strongly agree which made 11.7 percent, 9 were neutral which made 7.5 percent and 5 were strongly disagree which made 4.2 percent of the total. In certain areas the trees have been cut down and crops were grown. Because majority of the respondents were of the view that crops were better grown in those areas and also crops have more advantages over trees.

Table 6.37 A small land can generate more crop product than trees

product

Crop gives more products	Frequency	Percent
Agree	44	36.7 %
Strongly agree	9	7.5%
Disagree	46	38.3%
Strongly disagree	10	8.3%
Don't know	11	9.2%
Total	120	100.0%

Table 6.37 indicated that out of the total 120 respondents 46 were disagreeing with the statement “small land can generate more crop product than trees product” and it made 38.3 percent. 44 respondents were agreed which made 36.7 percent, 11 were neutral which made 9.2 percent, 10 were strongly disagree which made 8.3 percent and 9 were strongly agreed which accounted for 7.5 percent of the total. According to majority of the respondents if a land was properly utilized for growing trees then it gave better results. Instead the same quantity of land was used for crops growth. Although the crops were grown but the products from crops were not satisfactory.

Table 6.38 Growing crops are comparatively easier than growing trees

Crops are easily grown	Frequency	Percent
Agree	62	51.7%
Strongly agree	13	10.8%
Disagree	34	28.3%
Strongly disagree	8	6.7%
Don't know	3	2.5%
Total	120	100.0%

Table 6.38 showed that in the total of 120 respondents 62 agreed with the question that growing crops was easier than growing trees. It made 51.7 percent of the total. 34 respondents were disagreeing which made 28.3 percent, 13 respondents were strongly agree which made 10.8 percent, 8 respondents were strongly disagree which made 6.7 percent and 3 respondents were neutral which made 2.5 percent of the total. For majority of the respondents it was easy to grow crops rather than growing trees. Thus the people were preferring to grow crops

Table 6.40 It is better to use the scientific method for increasing crop production

Scientific methods of crop production	Frequency	Percent
Agree	56	46.7%
Strongly agree	35	29.2%
Disagree	13	10.8%
Strongly disagree	1	0.8%
Don't know	15	12.5%
Total	120	100.0%

Table 6.40 indicated that out of 120 respondents 56 agreed with the above question which made 46.7 percent, 35 were strongly agree which made 29.2 percent, 15 were neutral which made 12.5 percent, 13 were disagree which made 10.8 percent and 1 respondent was strongly disagree which accounted for 0.8 percent of the total respondents. Majority of the respondents were of the view that scientific processes need to be used for growing better crops, rather than cutting trees around the fields. Because the trees have their own importance and the deforestation has severe effects on environment.

Table 6.41 Usage of land for constructing roads and buildings account for deforestation

Human activities accounts for deforestation	Frequency	Percent
Agree	81	67.5%
Strongly agree	25	20.8%
Disagree	7	5.8%
Strongly disagree	2	1.7%
Don't know	5	4.2%
Total	120	100.0%

Table 6.41 indicated that out of 120 respondents 81 were agreeing with the statement that “beside agricultural usage of land, other usage of land also accounts for deforestation”. It made 67.5 percent of the total. 25 respondents were strongly agreed with the statement which made 20.8 percent, 7 were disagree which made 5.8 percent, 5 were neutral which made 4.2 percent and 2 respondents were strongly disagree which made 1.7 percent of the total. From the above table it was also clear that several developmental processes like various construction have also affected the forests. Because forests trees were largely cut down whenever there has occurred a need for those construction (firms, buildings, bridges).

Table 6.42 It is a duty of every one of us to protect trees (forest)

Forest protection is compalsary	Frequency	Percent
Agree	28	23.3%
Strongly agree	86	71.7%
Disagree	1	0.8%
Strongly disagree	2	1.7%
Don't know	3	2.5%
Total	120	100.0%

Table 6.42 showed that in the total of 120 respondents 86 were strongly agreed with the question that it was a duty of every one of us to protect forests. It made 71.7 percent of the total. 28 respondents were agreed which made 23.3 percent of the total, 3 respondents were neutral which made 2.5 percent, 2 were strongly disagree which made 1.7 percent and 1 respondent was disagree which accounted for 0.8 percent of the total respondents. Majority of the respondents considered it necessary to protect trees. Because the trees have been depleted rapidly and it was an alarming situation for majority of the respondents. Every one has to play an important role for encouraging plantation.

Hypothesis testing

The more the crops growing, the more the tree cutting

Crosstab

Count		Crops are best grown in your area as compared to trees?					Total
		Agree	Strongly agree	Disagree	Strongly disagree	Don't know	
Do you think that deforestation is occurring in your area?	Agree	34	15	27	1	3	80
	Strongly agree	20	7	6	2	0	35
	Disagree	0	0	2	0	0	2
	Strongly disagree	1	0	0	1	0	2
	Don't know	0	0	0	1	0	1
Total		55	22	35	5	3	120

The table above shows that in response to a relationship between crops growing and deforestation, the majority of the respondents were agreed. According to the respondents there was a positive relationship between them. It means that the people prefer to grow crops and they were not paying attention towards the issue of deforestation which is occurring due to the clearance of trees for crops growing. According to the respondents crops were grown easily and also they have yielded better as compared to trees.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	45.700 ^a	16	.000
Likelihood Ratio	24.800	16	.073
Linear-by-Linear Association	.446	1	.504
N of Valid Cases	120		

a. 19 cells (76.0%) have expected count less than 5. The minimum expected count is .03.

The Pearson Chi-Square value in the above table is 45.700, df is 16 and the Asymp. Sig is 0.000. It was significant because the value was less than 0.005. So the alternate hypothesis was accepted and the null hypothesis was rejected.

Agricultural land usage leads to deforestation

Crosstab

Count

	The agricultural land usage is a cause of deforestation in your area					Total
	Agree	Strongly agree	Disagree	Strongly disagree	Don't know	
Agree	45	8	13	2	3	71
Strongly agree	20	4	4	0	2	30
Disagree	4	0	3	0	0	7
Strongly disagree	1	0	1	0	0	2
Don't know	1	3	1	0	5	10
Total	71	15	22	2	10	120

The above table highlighted that majority of the respondents were agreed with a hypothetical statement that the agricultural land usage was a cause of deforestation. In order to produce more agricultural products more land was made clear by cutting trees in the field as well as cutting the trees in the surroundings of crops growing fields.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	36.975 ^a	16	.002
Likelihood Ratio	29.261	16	.022
Linear-by-Linear Association	13.109	1	.000
N of Valid Cases	120		

a. 18 cells (72.0%) have expected count less than 5. The minimum expected count is .03.

The value of Pearson Chi-Square in the above table is 36.975; df is 16 whereas the Asymp. Sig is 0.002 which is less than 0.005. Hence it was that the data was significant, thus the alternate hypothesis was accepted and the null hypothesis was rejected.

Forests (trees) protection is important to avoid the environmental effects of deforestation

Crosstab

Count		Do you think it is a duty of every one of us to protect trees (forest)?					Total
		Agree	Strongly agree	Disagree	Strongly disagree	Don't know	
Deforestation has an effect on our environment	Agree	11	24	0	0	2	37
	Strongly agree	14	62	0	2	1	79
	Disagree	2	0	0	0	0	2
	Don't know	1	0	1	0	0	2
Total		28	86	1	2	3	120

The table above shows that majority of the respondents were strongly agreed with the statement that in order to avoid the environmental effects of deforestation, it was a duty of every individual to protect their forests (trees). Because the environments has taken revenge in the form of natural disaster like flood. Once the trees were cut down and the grasses were grazed, the soil become exposed to the rain water and can be easily eroded by rain water, which lead to floods.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	72.849 ^a	12	.000
Likelihood Ratio	23.033	12	.027
Linear-by-Linear Association	.006	1	.940
N of Valid Cases	120		

a. 16 cells (80.0%) have expected count less than 5. The minimum expected count is .02.

In the above table, the Pearson Chi-Square has a value of 72.849 with a df of 12 and Asymp. Sig of 0.000. It shows that the data was highly significant because it was less than 0.005. So the alternate hypothesis was accepted.

Population increase has an effect on deforestation because the usage of land for various activity increases

Crosstab

Count		Beside the usage of land for agricultural products, other usage of land for construction roads etc. much account for deforestation					Total
		Agree	Strongly agree	Disagree	Strongly disagree	Don't know	
With the increase in population the deforestation is also increasing in your area?	Agree	40	7	6	0	1	54
	Strongly agree	36	16	0	1	2	55
	Disagree	1	0	1	0	2	4
	Strongly disagree	0	1	0	0	0	1
	Don't know	4	1	0	1	0	6
Total		81	25	7	2	5	120

In response to a statement that either population increase has effects on deforestation, majority of the respondent were agreed. It means, with the increase in population the deforestation has also increased because the usage of land has also increased. These usages of land have ultimately led to the destruction of greeneries (trees, shrubs and herbs).

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	48.418 ^a	16	.000
Likelihood Ratio	33.061	16	.007
Linear-by-Linear Association	2.819	1	.093
N of Valid Cases	120		

a. 21 cells (84.0%) have expected count less than 5. The minimum expected count is .02.

A Pearson Chi-Square has a value of 48.418, d.f of 16 and the Asymp. Sig of 0.000. So it can be concluded that the data was significant. It meant the alternate hypothesis was accepted whereas the null hypothesis was rejected, because there was a relationship between population increase and the deforestation.

7.1 Discussion and Conclusion

The research was conducted in order to highlight the increasing deforestation in Chitral. 120 respondents were taken as a sample in order to find the root causes of deforestation. Initially the data from the sample suggested that the deforestation has increased in the area during the last years. About 65.8% of the respondents were strongly agreed that deforestation has affected their environments and they were suffering its consequences. As the data suggested that there were several reasons of deforestation out of which the most highlighted factors were the agricultural land usage, fuel wood consumption, increasing population and the large numbers of cattle breeding. In response to a question about the agricultural usage of land, 59.2% of the respondents were strongly agreed that it (agricultural land use) is a cause of deforestation. According to the data, the people of the area have their most dependency on agriculture. They are growing more and more crops in order to meet their family demands. For the growth of proper and healthy crops more clear land is required, which they are getting by cutting trees in the fields as well as in the surroundings of the crops growing fields. Majority of respondents were also of the view that the crops production is better for them and they are earning more products from crops than trees. There was a thought existed that those fields which are surrounded by close trees, can not produce the desired quantity of crops. A large number of trees have been cut in this regard as the data suggested. Also a large number of respondents were agreed that fuel wood consumption, cattle breeding and population increase

also account for deforestation in the area. It is evident from the data that mostly farmers are involved in deforestation. Also there are illegal cutting of trees in the area and 44.2% of the people agreed with this statement. This illegal cutting of trees was considered as a result of poor implementation of policies by the forestry department in the area. The forestry department was unable to make and implement proper policies thus there has occurred a continuous increase in deforestation. The data also suggest that if proper policies are made then the rapid deforestation can be controlled. Otherwise, if the deforestation remained in this continuous pace then there will be no more forests (trees) with us because the remaining forests are not sufficient to be consumed. The majority of the respondents (35.8%) were disagreeing with this statement that the remaining forests were sufficient to be consumed. The people of the area considered it as their important value that the forests and trees of the area should be protected. 71.7% of the respondents have responded positively in this regard. If proper awareness is brought about the harmful effects of deforestation, then according to the data, forestry can be encouraged but it requires necessary steps from the part of forestry department as well as the local dwellers of the area. The overall data suggests that due to the usage of land for agricultural products, a large number of trees were cut down which is supporting the alternate hypothesis of the research work.

7.2 Recommendation

In order to control the deforestation in Chitral, it is recommended on the basis of research work that if the area was provided with the substitute material for fire wood like natural gas, then the lavish cutting of trees can be controlled. Because the area has no facilities of natural gas thus the people are totally dependent on these trees for burning purposes. Also it is suggested on the basis of research work that if those people are rewarded who are planting more and more trees, then forestry can be encouraged. 52.5% of the respondents have responded positively in this regard. It was a kind of policy existing in the developed countries of the world where the local people have provided funds and technical support. In return they (certain organizations) were asking for certain area under their control. Their (certain organizations) purpose was to protect the natural environment. One of the best examples of this tactic was in Ecuador (Shandra, Esparza and London 2012: 251-269). So these policies could also be adopted in the area (Chitral) to control deforestation.

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ANNEX

Deforestation and the usage of Agricultural land in Chitral

This questionnaire is conducted for the fulfilment of thesis work and the purpose of this research is purely academic. This questionnaire will also provide you an opportunity to give your opinion about deforestation in Chitral. Please fill this Questionnaire precisely to give us important information.

Demographic Information

Name: _____ Age: _____

Education/Qualification: _____ Marital Status: _____

Family: _____ (Nuclear, Joint or Extended)

Deforestation

Q 1: Deforestation means cutting of trees, shrubs and herbs?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 2: Do you think that deforestation is occurring in your area?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 3: Deforestation has increased in your area during the last several years.

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 4: Deforestation has effects on our environment.

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 5: Do you think that fuel wood consumption is a cause of deforestation?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 6: A large number of cattle breeding are also a cause of deforestation.

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 7: Do you think that the farmers are cutting trees in your area?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 8: Do you think that the nomadic tribe in your area are also involved in deforestation.

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 9: Do you think that local people are mostly involved in deforestation at your area?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 10: People also cut large trees close to their houses, because it is dangerous when such trees fell down due to natural hazards.

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 11: Do you think that there is illegal cutting of trees (wood) in your area?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 12: The non-fruit bearing trees are mostly cut down as compared to fruit bearing trees in your area.

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 13: With the increase in population the deforestation is also increasing in your area?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 14: Do you think that the remaining forests are sufficient to be consumed?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 15: Have you ever experienced in your family, that wood is the mostly used commodity in daily life?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 16: It takes a long time for a tree to grow and yield from the time when it is sown?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 17: Deforestation is increasing, because forestry department is unable to implement proper policies.

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 18: If there will be substitute material of wood, then you think deforestation can be controlled?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 19: Deforestation can also be controlled by bringing an awareness program to the local people about the harm of deforestation.

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 20: Forestation can be encouraged by rewarding those people who are growing more trees.

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Agricultural Land usage

Q 21: Crops are best grown in your area as compared to trees.

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 22: The cultivation of various crops is much better in those fields which have no trees surround it?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 23: The thought that there should be no trees close to the cultivating land (crop growing field) has led to deforestation in your area.

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 24: The large trees close to the crop growing fields are trapping the sunlight, so people mostly cut those trees.

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 25: The roots of trees close to the field bind the soil and make it hard for ploughing and cultivation.

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 26: Healthy crop cultivation in the field which is surrounded by trees is difficult.

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 27: The agricultural land usage is cause of deforestation in your area.

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 28: A fertile soil is available for growing agricultural products after the trees are cut and the land is made clear.

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 29: Do you think that the occupation of most people of your area is agriculture?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 30: Do you prefer growing crops over tree cutting?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know

Q 31: Do you think the agricultural products that you growing are enough to meet you family demand?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree
- e) Don't know