

## **M.SC FORESTRY THESIS RESEARCH AT PAKISTAN FOREST INSTITUTE, PESHAWAR 1996-98 COURSE**

**Raja Mohammad Ashfaq<sup>1</sup>**

### **Fuelwood consumption pattern in rural areas of district Layya by Aamer Abbas Shah**

The fuelwood consumption pattern was studied in the rural area of district Layyah. A sample survey of ten selected villages with ten households from each village was conducted. The sample households were interviewed as per designed questionnaire. In all, 100 respondents were randomly selected and interviewed.

Data analysis revealed that fuelwood was the major source of household energy in the study. Area about 96% of the households used fuelwood in combination with varying quantities of other commercial and non-commercial fuels. The other household fuels used were dung (53%), agricultural residue (48%), kerosene oil (37%) and LPG (11%) to meet domestic energy needs. About 84% of the households had either their own sources of fuelwood at farmlands or collected it from adjoining forests. The remaining 16% households purchased fuelwood from the local market.

The per capita energy consumption was estimated at 8846 KJ. per annum. About 53.4% of the per capita energy consumption was met from the fuelwood, 21.4% from the agriculture residues, 21.0% from the cow dung and 2.4% from LPG whereas only 1.8% was met from commercial energy sources. Keeping in view the existing socio-economic conditions of the rural masses and the constraints faced by the farmer, a participatory agroforestry project in the area is recommended for future sustainable availability of the energy. Incentives in the form of seedlings, introduction of fuel efficient devices and technical know how can motivate people to improve their living standards.

---

<sup>1</sup> Director General, Pakistan Forest Institute, Peshawar.



## **Environmental improvement and biodiversity conservation through community participation in Machiara National Park Muzaffarabad, Azad Jammu & Kashmir by Mir Muhammad Ejaz**

Machiara National Park, a true representative of the Himalayan forest eco-type, harbouring at least five bird and mammal species listed as threatened. Encroachment of forest land for housing and agricultural practices and overgrazing threatened the biodiversity in the park. The above mentioned problems prompted the author to conduct study for the quantitative assessment of the flora and fauna of Machiara National Park.

Based on field observations and data collected during the period, the ecological zone analysis on the frequency, density and cover of different species was carried out to determine the importance and sustainable use of the biodiversity resources. The buffer zone user communities were interviewed to determine possible role in the effective management of the park. The study revealed that there is enough biological diversity in the area and needs proper management plan with participation of stakeholders.

## **The effect of development and growth of forest recreation on the socio-economic conditions of the local people of Patriata (Murree) by Jawad Ahmad**

The study aimed at assessing the effect of forest recreation on the local people. The study compared the socio-economic conditions of Patriata residents with those of undeveloped adjacent area i.e., Ban. For this purpose 25 households in each area were selected randomly. The data on socio-economic conditions were obtained by administering a structured questionnaire to the respondent. The data thus gathered were analyzed statistically which revealed that the development of forest recreation in Patriata had positive effects on the socio-economic conditions of the local people. Improvement was seen in household income, value of land, livestock number, greater occupational opportunity, involvement of females in jobs, and availability of public household utilities like electricity, telephone, drinking water, roads, market etc.

The people of Patriata had a mixed response towards further development of forest recreation in the area. The residents of Ban strongly favoured the development of recreation in their area for improving their socio-economic conditions so as to bring them at par with the people of Patriata.



## **Communication in community forestry of integrated rural development programme, Mardan by Mohammad Israr**

Integrated Rural Development Programme (IRDP) is trying to promote community forestry in Mardan. This project was launched in 1984 with collaboration of Germany. Although IRDP, Mardan is using interpersonal and group communication techniques, but mass media channels are also educating people regarding agriculture and rural developments. The influence of all these channels, was studied through their use and the perceived influenced by the respondents. The purpose of this study was to identify and evaluate effective means of dissemination of information and persuasion of farmers for community forestry by IRDP, Mardan. Sixty household heads were randomly selected and interviewed.

The results indicated that about sixty eight percent (68%) of the respondents consider interpersonal communication of extension worker as a most persuasive channel of communication. Twenty percent (20%) of the respondents considered television and seven percent (7%) considered radio while five percent (5%) of the respondents consider newspaper as best communication channel for the community forestry. All the respondents were aware of the project whereas ninety eight percent (98%) were satisfied with their forestry works. Seventy five percent (75%) of the respondents felt positive economic change and increase in personal income due to the project. Fifty three percent (53%) of the respondents were of the view that they can continue the activities even if project terminated. Almost all the people were happy with the project activities. It is recommended that interpersonal communication should be continued.

## **Causes of degradation of flora in Margalla Hills by Masood Khalid**

The major objective of the study was to find the influence of biotic pressure on native flora of Margalla hills, Islamabad. The study was conducted by social survey and sampling by Quadrante method. A questionnaire was also prepared and key information of the area was interviewed. It was found that human population pressure have degraded vast foothills and is likely to continue in this way in the future. The worst impact was found in the area near the village of Saidpur.

It was also found that paper mulberry (*Brussonetia papyrifera*) in some



places completely suppressed the native vegetation. The species such as *Lantana camara* also invaded the lower story with 100% density. Paper mulberry occupies the moist tracts whereas *Lantana camara* comes in drier areas. The construction of roads and hiking trails had increased the access of local villagers to the inner parts of the forest for grazing and fuelwood cutting. The pronounced impact of stone crushers, restaurants and cultivation was also found in the area. It also promoted the intensity of intentional fires in the area. The degradation of natural flora needs immediate remedial measures.

### **Economic analysis of watershed management activities during 1983-93 in Kunhar watershed**

In order to prove the worth of the Kunhar watershed management activities, it was essential to carry out the economic analysis. The proposed study was thus one step towards this goal. The activities taken for economic analysis included afforestation, terracing, fodder tree plantation and fruit tree planting. The cost calculated for various activities in million rupees were 23.948, 22.464, 10.53, 14.364, 15.369, 0.833 and 0.1718 for pure Chir, pure Robinia, pure Ailanthus, mixed plantations, terracing, fruit tree planting and fodder tree planting respectively. The benefits estimated in million rupees are 48.746, 86.501, 15.802, 60.855, 18.886, 1.263 and 0.381 for pure Chir, pure Robinia, pure Ailanthus, mixed plantations, terracing, fruit tree planting and fodder tree planting respectively. For each activity benefit-cost ratio (B/C) was calculated. The analysis showed that afforestation had the highest B/C ratio and is the most beneficial activity. The benefit-cost ratios (B/C) for plantation of various species raised in Kunhar Watershed are: 2.03 for pure Chir, 3.85 for pure Robinia, 1.5 for Ailanthus and 4.2 for mixed crop of Eucalyptus, poplar, Dodonaea etc besides other already mentioned three species.

Terracing had the benefit cost ratio of 1.228, fodder tree planting 2.22 and fruit tree planting 1.52. Further more, these works provided 477338 work days for the local inhabitants which contributed largely to the socio-economic uplift of these people.

Overall the project has the benefit cost ratio of 1.71. The analysis showed that the watershed management activities were beneficial and must be carried out in the future. But before drawing conclusions based on economic analysis, the



study suggested to introduce social analysis of the area to reach a transparent conclusion.

### **Impact of Malakand/Dir Social Forestry Project on Dargai Area by Abid Mumtaz Khan**

The Malakand/Dir Social Forestry Project started working in Dargai area in 1986. This study aimed at assessing impacts of the project on conservation, management, utilization of natural resources and changes in attitude and behaviour of the local people. Questionnaires were filled in by randomly selecting respondents from 7 out of 13 villages. On the basis of analysis it was confirmed that the impact of the project, as felt by the people, was positive. Due to project, developmental changes in land use pattern, increase in grass and wood production were observed. The project had also played an important role in building unity and harmony among conflicting groups by bringing them on one platform of development committee. There was felt need of more extension works to build relationship between various activities of the project with the local people and motivate small land owners for tree planting. Members of the Village Development Committee be selected through impartial and democratic system for reduction of heart burning of less advantaged groups. In addition to conservation of natural resources, the economic and infrastructural development in the village be carried out to attract people towards conservation of natural resources. Seedlings should be distributed free of cost. LPG/Gas cylinders be provided at subsidized rates to reduce pressure on natural vegetation. Field days and demonstrations were the most effective way of persuading rural people. Tree planting campaigns through school children be arranged to change the behaviour of coming generations.

### **Community participation mechanism of forestry sector project in Chakbhakhel, Lakki Marwat by Sahibzada Irfanullah**

Lakki Marwat, a Southern district of NWFP, is generally characterized by harsh climatic conditions, relatively low per capita income, high rate of illiteracy, inadequate nutrition, high birth and death rates and short life expectancy. The natural vegetation are considered degraded because of miss management by the local people and leading to severe soil erosion in various part of the area.



The purpose of the study is to determine the status of community participation mechanism used by the NWFP Forestry Sector Project. The major objectives of the study were to know whether the project objectives coincide with the people's need and point out major pit falls on the basis of collected base line data for evaluation.

A survey was conducted through questionnaire and personal interviews in all the three project villages. Fifty respondents in all were selected. The basic survey data was statistically analyzed.

The analysis revealed that project has introduced unity and harmony among villagers through establishing community organizations. Land holding size appeared to be the key factor. People with larger holdings are more familiar with the project and attended the meetings and contributed to various activities.

Education has also emerged as important factor. Educated people have been found more co-operative, hopeful and active in the programme. The people are expecting that their income will increase and vegetative cover will improve with the project. The people are willing to contribute money and labour for various works like erosion control. There is a great potential for social forestry in this area.

### **Palosi Khawar effluent water studies on the growth of eucalyptus seedlings by Syed Hassnain Abbas**

A study was conducted to determine the effect of different concentrations of effluent water on survival rate height and diameter growth, leaf size, root length, fresh and dry weight on one year old potted seedlings of *Eucalyptus camaldulensis* in the nursery. The experiment was laid out in Complete Randomized Block Design (CRBD) with four treatment and three replications. The results indicated that treatment  $T_1$  (50% effluent water + 50% tap water) was the best treatment as far as growth parameters are concerned. The maximum survival (100%) was obtained with treatment  $T_0$  (100% tap water) followed by treatment  $T_1$  (95.8%), which is comparable with treatment  $T_0$ . The lowest survival percentage (50.2%) was given by treatment  $T_3$  (100%) effluent water. It was concluded from the results that the effluent water may be used for raising *E.camaldulensis* seedlings if diluted to 100% with tap/irrigation water.



## **Socio-economic impacts of waterlogging and salinity on rural communities of district Jhang by Muhammad Atif Majeed**

This study was administered in 12 villages of district Jhang to assess the socio-economic impacts of waterlogging and salinity on rural communities and to evaluate the potential for the adoption of agroforestry technologies to reclaim such problematic lands. For this, six villages were selected from waterlogged and saline areas whereas balance 6 villages were not affected by waterlogging and salinity were grouped as "control" villages. A sample of 120 villagers from these 12 villages were randomly selected for responses.

Study revealed that affected farmers were well aware of causes of waterlogging and salinity. Canal seepage and poor drainage were the main causes of waterlogging while the salinity was the resultant of shortage of canal water and brackish groundwater. Farmers in the area were well aware of remedial measures but could not adopt because of poor economic conditions. Majority of the respondents were not aware of the beneficial role of trees in reclaiming waterlogged and saline soils. They had fears that trees might reduce agricultural production. Groundwater, in most of the areas, was not fit for agriculture and drinking purposes.

Average per acre income from agriculture was only Rs.3118 in the affected areas while it was Rs. 6378 in the control areas. Per household income was Rs. 58200 and Rs.91617 for affected families and unaffected families respectively. Respondents belonging to control areas were enjoying higher living standards than their counterparts. Waterlogging and salinity also affected the monetary values of their lands. The average rate of land for one acre was Rs.262333 in the control areas while it was only Rs. 57200 in the affected areas.

## **Household energy consumption pattern in district Toba Tek Singh by Mobia Kalsoom**

This study aimed at exploring the information about the sources of different types of fuels used in district Toba Tek Singh. Questionnaire-cum-interview technique was adopted. The study comprised of seven villages and three cities. Ninety seven respondents were randomly selected and interviewed for collection of information on socio-economic factors as well as fuel types used by each household. The data using simple statistical methods of mean with



percentage values were analyzed.

The study revealed that the average household size was 7 (seven) in district Toba Tek Singh. In rural area, 20.58% respondents were illiterate whereas in urban area, 13.79% were found illiterate. The majority of the sample population in rural area, were involved in agriculture and in urban area services and other occupations were found major occupations of the respondents. Fuelwood along with other cheaper fuels was the major source of domestic energy for rural people. About 76.47% rural and 3% of the urban population were using other fuels in addition to the fuelwood. About 14.70% rural and none of urban population were using LPG with fuelwood and agriculture waste etc. Only 6.89% urban people were using kerosine oil with fuelwood.

The per capita per month consumption of fuelwood estimated in the study area is 2.5 monds. So total demand of fuelwood for the population of the district Toba Tek Sindh is estimated about 2,854,602.5 monds/month. The consumption of fuel types with economic indicators such as landholding size, occupation, number of earning members, education level and preference for tree species showed very weak correlation. However, consumption of wood with respect to education level was found negative but remained positive with household size in both urban and rural area.

### **Perception of residents of district Shangla regarding wildlife conservation and preservation by Muhammad Faique Khan**

Wildlife is one of the most important natural resources. It is the synthetic indicator of: how well we are managing all of our resources. This natural resource of the district Shangla is declining with passage of time. Illegal hunting and lack of awareness were considered to be major reasons of decline. This study was conducted to determine the socio-economic conditions and perceptions of the residents of district Shangla regarding wildlife conservation, preservation and management. Six villages were randomly selected. Total sixty respondents were interviewed through a set of questions by using a questionnaire-cum-interview technique. the data were statistically analyzed and the simple averages and percentages were calculated to construct bi-variate tables.

The study revealed that majority of the people (60%) were of the view that wildlife resource was a common property. More than two third of the people



demanding that protected areas be established and strict enforcement of rules be framed. About half (48.3%) of the people enjoy wildlife watching and wished its sustainability, whereas 1/3rd of them were of the view that it should be hunted and killed. According to the perceptions of the people the main causes of wildlife decline were deforestation, inefficiency of department and increase in sophisticated weapons. A large number of people (43%) desired to extend their support to department for the protection of wildlife.

### **Gender role in existing agroforestry practices of district Attock by Asad Ali**

The present study was carried out to identify the role of genders in agroforestry practices of district Attock. The problems related to the gender role under existing agroforestry practices, prospects and opportunities and ensuring equal participation of gendering sustainable agroforestry practices were to be identified. Data were collected by using questionnaire and a random sample of 100 household heads. To make the data more realistic and authentic, both men and women were interviewed with the same of questions. In all, 58 males and 41 females could be interviewed.