

**1. Soil and water conservation measures in  
Hazara Division, N.W.F.P. Khan, S.A.  
1992.**

The main objective of the watershed management project (Pakistan 2451) was to stabilize the ecological situation in parts of the catchment areas of the Tarbela and Mangla dams in order to preserve a) the natural fertility of the land, (b) prevent damage to infrastructure, and (c) reduce the rate of erosion and sedimentation of the dams.

To this end, activities were carried on over a period of five years, including, a) reforestation (b) construction of forest roads (c) soil and water conservation (d) development of orchards and (e) pasture management.

Although the treatment measures undertaken by the project have had a significant impact on the local environment, the most important impact had been the damaging attitude in the forestry department and the increasing acceptance by the local people of the need to carry out conservation measures. The increased awareness among the farmers of the problem of environmental degradation and the need to undertake the conservation measures on their land was perhaps the most important achievement of the project. The project's overall achievement in terms of environmental impact, although locally significant, is small in relation to the overall scale of problem. (Advisor: Dr. Bashir Hussain Shah).

**2. Habitat deterioration in Registan tract  
and its effect on wildlife. Baloch, S.A.  
1992.**

The Thar and Nara region collectively known as Registan supports several wildlife species. Hubara bustard (*Chamidotis undulata*) the most important bird of the desert followed by peafowl (*Pavo cristatus*), Imperial-sand-grouses. Great Indian bustard is a very rare bird of the Region. Among reptiles, crocodiles, monitor lizards, python and several snakes species are found throughout the region.

The ecosystem remained somewhat undisturbed upto the recent past, but increasing population encroached the wilderness areas and destroyed ecological balance that existed in the area. Although there is great potential of the wildlife exploitation as a source of employment for rural population exists, still, the resource itself is threatened and may vanish before it is utilized. Major threats are unplanned developments, over stocking of livestock and hunting. Several development activities such as development of Agriculture, use of pesticides, construction of building and roads, in addition to uncontrolled grazing and fuelwood collection have greatly altered the natural habitat of several species. It may cause total extinction of these species if, corrective measures are not adopted. Whenever the development programmes are carried out the wildlife conservation should be a part of it. Efforts on the part of federal and provincial government are required to protect and develop the wildlife



habitat of Registan. It is proposed that the areas occupied by important wildlife should be excluded from all developmental activities and should be declared as wildlife sanctuary and protected areas. (Advisor: Dr. Bashir Hussain Shah).

**3. Habitat improvement in Khirthar National Park. Khani A.M.Q. 1992.**

Khirthar National Park (KNP) was created with the main purpose of protecting the unique flora and fauna of the Kohistan. The KNP provided the last refuge for some of the larger and rare wild animals. The most spectacular of these is the Sindh Ibex. However the Khirthar, which could have become one of the best national parks in Pakistan, is unfortunately threatened with habitat alteration even before it could be properly developed.

Due to habitat deterioration, several wildlife species found in plain areas are especially declining fastly although wild goat (*Capra aegagrus*) population are not facing serious threat because Ibex is cliff dweller ungulate. However upland soil erosion, particularly in monsoon, poses a serious danger for wild goat habitat.

The existing habitat degradation could be arrested with the help of improved forms of land use, better farming system, check on overgrazing and excessive removal of vegetation. On the other hand for improvement of habitat condition, small scale planting of xerophytic tree species could be done in selected areas of park, especially around watering places of lowlying areas of fertile valleys where water is evenly distributed in the monsoon each year. Besides, range operations, moisture and soil conservation techniques could be adopted to reduce the adverse effect of erratic rainfall, high temperature and drought causing hinderance in

improvement works. (Advisor: Dr. Bashir Hussain Shah).

**4. The Effect of different levels of salinity and sodicity on infiltration capacity and physical characteristics of soil at Risalpur experimental area. Omar, R.M. 1992.**

This study was conducted to investigate the effect of different levels of salinity and sodicity on infiltration capacity and physical characteristics of soil. The infiltration capacity of soil and other physical characteristics were determined at three depths in each test site. The result indicated that the infiltration rate was highest in normal soil (16-11 cm/hr) and lowest in sodic soil (0.17 cm/hr) while in saline and saline-sodic soil it was 7.89 cm/hr and 0.96 cm/hr respectively. Furthermore, infiltration rates were positively related to soil porosity and moisture holding capacity but negatively related to soil bulk density. (Advisor: Dr. Bashir Hussain Shah).

**5. An appraisal of dry zone afforestation techniques. Mehmood, S. 1992.**

Water is a limiting factor in low rainfall areas, therefore different techniques are applied for its conservation, harvesting and economic utilization. Mud plastering, a treatment used for water harvesting, was found effective in water conservation techniques such as micro catchment, hill side ditches, contour trenching in the hilly areas and eroded catchment in plain area. Tree species found more drought resistant and gave better growth are; *Acacia tortilis*, *A. nilotica*, *A. victoriae*, *A. albida*, *A. modesta*, *Prosopis cineraria*, *P. juliflora*, *Tamarix aphylla*, and *Zizyphus mauritiana* in different deserts of the country. (Advisor: Dr. Bashir Hussain Shah).



**6. Perception of the rangeland users about rangeland improvement in district Swat. Mian, Z.U. 1992.**

This study aimed to determine the perception of rangeland users about rangeland improvement in District Swat. The study covered the whole area of Swat Watershed Division. Survey was carried out in four randomly selected villages, where the Range Management Project started its activities. One hundred and twenty farmers were selected through stratified random sampling technique for interview, grouped equally in Range Management Association members and non-members. A questionnaire containing 26 open ended questions was used for this purpose.

Seventy percent of Range Management Association's members and 65% non-members responded positively to continue the project. They gave the reasons like, to get more fodder (88%), and to protect their rangelands (12%). The remaining respondents responded negatively giving reasons like, facing problems of grazing livestock when the nearby rangelands are closed to grazing and planting of trees are more beneficial than grasses. (Advisor: Dr. Sardar Muhammad Rafique).

**7. Perception of the rangeland users for the improvement of their rangelands in Malakand Agency. Mulk, S.U. 1992.**

This study was conducted in four selected villages of Malakand Agency, to find out the perception of the respondents about the problems of Range Management and strategies for improvement. Thirty household heads were identified through random sampling in each village and data were collected by structured interview schedule during the month of October, 1991. The data were analysed to determine the variability of

the responses of the respondents interviewed. The survey gave a clear picture of the husbandry system in four different villages of the Malakand Agency.

Based on the results, it is recommended to protect the rangelands, improve them by range improvement techniques and provide financial and technical help to the villagers by the government to develop their rangelands. (Advisor: Dr. Sardar M. Rafique).

**8. Perception of rangeland users about the improvement of their rangelands in Chakdara Range District Dir, Malakand Division. Khattak, M.T. 1992.**

This study was conducted in Chakdara, District Dir of Malakand Division, to find out the perception of rangeland users about the improvement of their rangelands. One hundred and twenty household heads were interviewed through multistage sampling and the data were collected by a structured interview schedule. It was found that 60% of the respondents owned both cultivated and grazing lands. Average number of livestock heads per family was 24 and there was severe scarcity of feed including fodder and grass in winter. The majority of them said that their land was being eroded but about an equal number of them said that excessive grazing was not a cause of it. The farmers having eroding lands said that they can do nothing to cope with the situation unless financial assistance is provided to them by the government. An overwhelming majority of the respondents indicated their willingness to join hands in a participatory Range Management development activities initiated by the government. (Advisor: Dr. Sardar M. Rafique).



**9. Integrated land use planning for Garhi Dupatta (AJ&K) sub catchment of river Jhelum. Butt, M.A. 1992).**

This study of integrated land use planning for Garhi Dupatta aimed at studying the support activities directed to protect the environment and restore the natural resources of the area. The data regarding the physical parameters of the study area were collected from the locally available records while socio-economic and socio-cultural data were obtained through a questionnaire cum interview techniques from 32 farm families heads at 2.15 percent sampling intensity.

The results indicated that the main constraints of the study area were shortage of agricultural land, fodder, fuelwood, small land holding, large family sizes, etc. Integrated land use plan of the study area was formulated and a map was prepared mostly depending on physical parameters.

The final integrated land use plan of the study area was prepared after incorporation of the socio-economic data of the study area. In the integrated land use plan different improvement/development activities for different land uses are recommended. (Advisor: Dr. Sardar M. Rafique).

**10. Socio-economic impact of watershed management activities in Simly Dam Catchment Area. Awan, A.Z.A. 1992.**

Socio-economic survey was conducted in two villages out of 48 main villages in 87.4 sq.km of Simly dam catchment area in Murree tehsil. Information about the social and economic conditions of the inhabitants were gathered through interview-cum-questionnaire technique. Study revealed that 43.3 percent were owing land below

1 ha., livestock population had decreased considerably due to watershed management and 36 percent consisted a family size of 7 members. Wood was the major source of household energy. The burden had shifted for household to alternate sources of energy.

Supply of cheap kerosine oil, subsidized condensed gas and other sources of energy, subsidized cereal grains, development of agriculture especially horticulture sector, and integrated management approach were suggested for the improvement in household economy of the inhabitants. (Advisor: Dr. Sardar M. Rafique).

**11. Soil and water conservation practices and their impacts on socio-economic condition in Loralai district (Balochistan). Kakar, M.A.K. 1992.**

Afghan refugees have caused a lot of damage to the land property through removal of vegetation, depletion of rangelands and forests, and degradation of water resources alongwith a number of other sociological problems. The establishment of fruit/orchards was made impossible due to tremendous damage to the soil. The socio-economic conditions of the people were deteriorating. Accordingly a UNHCR project was initiated in 1982 to rehabilitate the damaged watersheds and simultaneously to help Afghan refugees by providing employment in the Loralai district.

An area of 3000 acres was taken for treatment through check dams, contour trenches and direct sowing in the trenches. Through soil and water conservation practices throughout the Loralai area, the socio-economic conditions of the people living in the vicinity of watersheds improved in terms of employment in watershed works, increase in number and type of livestock,



plantation of fruit orchards on large areas, forage production for grazing animals, etc. (Advisor: Dr. Mohammad Hanif).

**12. Socio-economic factors responsible for the destruction of forest resources in Zhob district. Qazi, A.R. 1992.**

The study was conducted in the Zhob district of Balochistan province. 50 households were selected by using incidental sampling technique. At the end of the study, it was concluded that destruction of forest was done due to the following main socio-economic causes:

1. Poverty
2. Illiteracy
3. Large family size
4. Livestock rearing on large scale and dependance on agriculture: (Advisor: Dr. Mohammad Hanif).

**13. Constraints to adoption of farm forestry in Sindh. Wagan, R.A. 1992.**

This study deal with two main research problems

- a. To determine the perceived constraints to growing of trees on the farm and waste lands.
- b. To determine the influence of major socio-economic factors on non-adoption of farm forestry.

The study was conducted in Hyderabad and Jacobabad districts of Sindh province. Six village, three from each districts were selected for collecting data from sixty randomly selected respondents through the administration of an

interview schedule. The major constraints were identified as: (1) Lack of technical know-how and lack of knowledge about benefits, (2) Lack of interest and incentives, (3) Small land holdings, (4) Problem of protection, (5) Shortage of water, (6) Lack of nurseries and extension services, (7) Mortality due to salinity, (8) Preference for again and cash crops, (9) Adverse effects on agricultural crops, and (10) Long rotation and late revenue. Advisor, Safdar Ali Khan.

**14. Role of agroforestry and its effect on the socio-economic behaviour of farmers of Hyderabad district. Mughal, M.S. 1992.**

The study was conducted to find out the role of agroforestry and its effects on the socio-economic conditions of the farmers of Hyderabad district. Four villages of this district were selected for this purpose. A total of 50 respondents were selected farmers were interviewed through a set of questions. The data collected was analyzed statistically and it was concluded that farmers of the area prefer to grow trees on farmlands. However, the data also indicated that agroforestry in the area not only brought monetary gains to the farmers, but also met the fuel wood and constructional timber requirements of the area both for domestic and commercial use. Advisor: Safdar Ali Khan.

**15. Effect of livestock exclusion on range vegetation of Hazargangi Chiltan National park; Quetta. Muhammad, S.Y. 1992.**

This study was undertaken to determine the effect of twelve years livestock exclusion on the range vegetation of Hazarganji Chiltan National Park. The cover percent and air dried forage production and significantly higher in the exclosure



compared to area open to grazing. The air dried forage production in the grazed area was 530 kg/ha and 4070 kg/ha in the enclosure. A seven times increase in air dried forage production from twelve years livestock exclusion occurred. The carrying capacity increased from less than one AUM/ha to 6 A.U.M./ha due to livestock exclusion. The cover percent in the grazed area and livestock enclosure was 15.7 and 84.4 respectively, thus a 5 times increase in cover percent was due to livestock exclusion. No appreciable difference in species composition was observed between grazed area and the enclosure. The livestock exclusion and positive effect on range vegetation of Hazarganji Chiltan National Park. Advisor: Dr. Mohammad Noor.

**16. Effect of livestock exclusion on range vegetation Lehri Nature Park, Dina, District Jhelum. Ahmad, Q.M. 1992.**

This study was conducted in Lehri National Park during May, 1992. The purpose was to find out the effect of 5 years livestock exclusion on the vegetation of the area.

The cover percent in the exclusion area was 40.05 and in the unexcluded area was 14.32. The air dried forage production was 1252.2 kg/ha in the excluded area and 183.8 kg/ha in the unexcluded area. The data were statistically analysed using a paired t-test. This air dried forage production and cover percent were significantly higher on the excluded (ungrazed) area than the unexcluded area. The carrying capacity increased seven times in the excluded area. Species composition was not affected by livestock exclusion. The increased cover percent, air dried forage production and carrying capacity on the excluded area shows that livestock exclusion can be used as a range improvement practice to increase the productivity and promote succession

of depleted range lands of the Jhelum area. Advisor: Dr. Mohammad Noor.

**17. Effect of *Eucalyptus camaldulensis* shade on the production of grass and soil moisture at Jamrud. Ahmad F.U.D. 1992.**

This study was conducted on an already established plot of *Eucalyptus camaldulensis* and *Cenchrus ciliaris* in Target area Jamrud, Peshawar. Field data on air-dried forage production, cover percent and soil moisture percent were collected from under the shade of tree canopy and away from the canopy.

The analysis of variance for the data indicated that mean air-dried forage production, cover percent and soil moisture did not differ significantly between the shaded and unshaded areas.

The study revealed that there was no indication of depression effect of shade of *Eucalyptus camaldulensis* trees on the air-dried forage production, cover percent and soil moisture in Target area Jamrud. Advisor: Dr. Mohammad Noor.

**18. Crane migration through Dera Ismail Khan (N.W.F.P.) conservation problems and prospects. Farooque, M. 1992.**

Pakistan has been endowed with the four species of cranes i.e. Demoiselle Crane, Common/Eurasian Crane, Siberian Crane and Saris Crane. Only two of there 4 species i.e. Demoiselle and Common cranes still provide sportsmen hunting in Pakistan. Even these two species of cranes are decreasing with increasing rate. Every year more than 5000 birds are caught



or shot, throughout the country, and the number of hunters are increasing each year. Due to much intensive poaching, not only the number of cranes have decreased but they have also changed their route. Due to Afghan crisis, the route was also effected badly. A number of recommendations are given to ensure the perpetuity of these two cranes in Pakistan. Advisor: Mohammad Mumtaz Malik.

**19. Distribution of four species of partridges in Mardan District Rauf, K.N. 1992.**

Pakistan faces the problem of the conservation of wildlife. A relevant example is the four species of the partridges in the Mardan District that are decreasing in number day by day due to the deterioration of the habitats and illegal shooting/hunting. Thus it is an urgent priority to improve the habitats and to conserve these species by reseedling, afforestation, roosting of a wildlife park and running few projects for the conservation of these species will be helpful. Advisor. Mohammad Mumtaz Malik.

**20. Farm survey to estimate the contribution of farm lands in wood production in Sargodha tehsil of district Sargodha. Hussain, S.M.**

This study evaluated quantitatively existing tree resources on farm lands in Sargodha tehsil of district Sargodha. Average number of trees and volume per hectare was 29.7 and 5.82 m<sup>3</sup> respectively. Existing tree stock on farm lands was evaluated in term of money and which amounted to Rs.3092/hectare. More trees of all species felled in diameter classes upto 40 cms than planted. Beyond dbh 40 cm, number of trees decreased abruptly and showed that tree growing on farm lands in this area was a recently developed trend. Advisor: Dr. Ayaz Khan Khattak.

**21. Socio-economic constraints in the implementation of social forestry in Nasirabad District. Hamhi, G.M. 1992.**

This study aimed to determine the "socio-economic constraints prevailing in raising of trees on farms in two villages of Nasirabad District. 50 respondents were randomly selected, 30 from villages Ali Abad and remaining 20 from Jamu Khan Village. The study indicated that the shortage of irrigation water was due to non availability of irrigation network in the area. Problem of protection and grazing was attributed due to the lack of interest from the people. These constraints could be overcome by proper extension services and provision of incentives to farmers to plant trees. Advisor: Dr. Ayaz Khan Khattak.

**22. Bionomics of amaltas leaf sticher *Piesmopoda obliquifasciella* HMPS Kazi, A.J. 1992.**

Bionomics of Amaltas leaf sticher *Piesmopoda obliquifasciella* was studied on the avenue trees of Amaltas at Pakistan Forest Institute, Peshawar.

The adult insect activity was at peak during May-June, whereas, the maximum larvae were recorded during November - December. The range of larval population per single stitched leaf was 0-22, whereas, an average larval population per 5-stitched leaves was within the range of 1.8 to 30.2. Highest number of larvae were observed at bottom portion of the trees.

The study on extent of damage showed that the pest caused an average damage of 44.8% ranging from 23.3% to 51.6%. Middle portion of tree was found heavily infested showing 59.4% damage of foliage. Advisor: M. Ismail Chaudhry.



23. **Medium density particleboards from mesquite wood (*Prosopis juliflora*). Arshad, M. 1992.**

In this study the usefulness of mesquite wood for producing particleboards of density 500 to 800 kg/m<sup>3</sup> was tested theoretically by developing mathematical data base. It was estimated that as a single species it cannot be used to produce general use particleboards. The performances of this wood species was also tested by designing different wood mixtures from different density wood species.

It was estimated that 700 and 600 kg/m<sup>3</sup> density boards can be produced from mesquite wood if its particles are mixed with particles from 400 and 500 kg/m<sup>3</sup> density woods. It showed that mesquite wood could produce general use particleboards, 600 kg/m<sup>3</sup> and 700 kg/m<sup>3</sup> density boards by mixing it with 400, 500, 600 and 700 kg/m<sup>3</sup> density woods in equal proportions. Advisor: M. Yasin.

24. **Development of piece rate in three felling and conversion in Changa Manga. Bukhari, S.N.H. 1992.**

A multimoment time study was carried out in three felling and conversion in Changa Manga using a three members felling crew. The data were analyzed using computer and regression equations were developed to find standard time per cft for tree felling and conversion, taking time per cft and a dependent variable (y-variable) and tree diameter as an independent variable (x-variable). The piece-rate was formulated by multiplying the standard time per cft with rate per minute for felling and conversion adjusted according to the calculated labour tree felling and conversion. Dr. Muhammad Ayaz.

25. **Efficacy of *Beauveria bassiana* on *Heliothis Armigera* and *Plecoptera reflexa*. Raja, N.A. 1992.**

*Beauveria bassiana* was tested as a control agent against *Heliothis armigera* and *Plecoptera reflexa* in laboratory under controlled conditions. Different dose rates i.e., 0.8 x 10<sup>4</sup> spores/ml, 0.6 x 10<sup>4</sup> spores/ml, 0.4 x 10<sup>4</sup> spores/ml, were used for study of efficacy. The pathogenic fungus *Beauveria bassiana* gave significant results against *Heliothis armigera* and *Plecoptera reflexa* after 72 hours, 1 week and 2 weeks of treatment. The difference between treatments was not significant hence dose rates should be increased. Advisor: Hanif Gul.

26. **Mixed pulping of *Eucalyptus camaldulensis* with non-woody agricultural fibers. Mushtaq, M. 1992.**

Experimental trials were carried out for mixed species kraft pulping of *Eucalyptus* wood and agricultural fibers (wheat straw and bagasse) which showed that pulps obtained from mixed pulping gave higher values of cooked yield than individuals and had inferior values of strength properties than the *Eucalyptus* kraft pulp. However, these values were higher than physico-mechanical properties of pulp and agricultural fibers.

*Eucalyptus* pulp was also blended with grasses like wheat straw, bagasse, kahi grass and kana grass which indicated that *Eucalyptus* pulp mixture with bagasse pulp may produce a qualitative pulp comparable with hardwood chemical pulps and could be used for the packaging materials. It is concluded that pulp mixtures of *Eucalyptus* with non-wood fibers gave better results than of pulps gained from mixed pulping. Advisor: Nadeem Kausar.



27. **A worldwide review of the biological and economic effects of forest trees on the yield of agricultural crops. Kaleem, S. 1992.**

Agrisilvicultural system in its different forms such as shelterbelts/windbreaks, intercropping and alley cropping have proved to be effective and successful in developing world.

In all these types of agrisilvicultural systems a number of tree species have proved to be much affective in their positive influence on agricultural crops and soils. Examples of such species are, Eucalyptus, Leucaena, Coconut, Sesbania, Paulownia, Acacias, Pines, Teak, Gmelina, Poplar, Shisham, Gliricidia etc. Advisor: Fazal-e-Subhan.

28. **Impacts of integrated rural development on wildlife management in Northern Areas. Khan, Y.. 1992.**

The aim of this study was to determine the impacts of integrated rural development on wildlife management in Northern Areas. For this purpose 20 respondents were selected and interviewed randomly.

According to the respondents there was an abrupt decrease in the wildlife population in unprotected parts of the study area. The main reasons for the decrease in the wildlife population include infrastructure developments in the area. Majority of the respondents (80%) argued that reduction in wildlife population was due to integrated rural development. Advisor: Mian Mohammad Shafiq.

29. **Improving the moisture repelling properties of particleboard (post manufacturing techniques) Tabassum, M.S. 1992.**

Post manufacturing technique were tried to improved the water repellency of board. The performance of paint and varnish for water repelling agents were applied manually in the form of 10%, 25%, and 50% solutions of both paint and varnish were used separately to improved the water repellency of board. 50% solution of paint decreased linear expansion to the standard limits i.e. 0.35% and even lower in some cases. Similar results were observed in case of varnish. However, paint proved to be better water repelling agent than varnish. Advisor: Tanvir Ahmad Qureshi.