



Newsletter

Pakistan Forest Institute, Peshawar



Chief Patron: Syed Said Badshah Bukhari
Director General

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COMMUNITY FORESTRY TRAINING Muhammad Tahir Laeeq Senior Research Officer

Pakistan Forest Institute (PFI) has a commendable record of producing forestry professionals, enhancing the skill of field staff of Forest Departments through in-service trainings and delivering the technical know-how to farming community in various forestry related fields. In continuation of this service a training programme was organized for the Farming Community of FATA from November 7 to December 15, 2009 with the support of FATA Rural Development Project. The purpose of this training programme was to provide basic technical information on various forestry related fields to farmers and make them aware about importance of tree planting.

This training programme consisted of 10 training courses, each course of one day duration. The training courses were carried out on Nursery Raising Techniques, Planting Techniques, Apiculture, Range Management, Sericulture, Seed Collection, Extraction & Storage, Wildlife & Fisheries, Wood Utilization and Cultivation of Medicinal Plants. In addition to these courses, four exposure visits were also conducted. During these exposure visits the participants were given awareness on Bee Keeping activities, utilization of wood in the industry, Wildlife species of Pakistan, fisheries and nursery plants production by farmers. In the above mentioned ten training courses 68 participants attended the course, while 41 participated in the exposure visits.



The Director General PFI Syed Said Badshah Bukhari distributing certificates among the course participants

On completion of the training courses, a ceremony was held on 15th December, 2009 to award the certificates to course participants.

Syed Said Badshah Bukhari, Director General, PFI as Chief Guest and officials of FATA Rural Development Project including, Mr. Arif Rauf, Agency Project Manager, Mr. S.M. Nasim Jan, Training Coordinator, Mr. Adeel Khattak, Senior Social Organizer, Mr. Javed Akhter, Community Programme Manager and Mr. Kazim Jan, Community Mobilizer also attended the ceremony.

Mr. Tahir Laeeq, Training Coordinator presented a brief of the training activities and appreciated the support of colleague officers as resource persons in running the training programme successfully.

The Director General, PFI highlighted the importance of forests in the environment and appreciated the efforts of FATA Rural Development Project in skill Development and creating awareness about environment among people of FATA.

2009 UNITED NATIONS CLIMATE CHANGE CONFERENCE

Climate change is one of the major environmental challenge for sustainable livelihood and development across the globe. The world community has taken cognizance of the issue through kyoto protocol of 1997, but a lot of work has to be done to avert the deteriorating trend. In this connection, the 2009 United Nations Climate Change Conference, commonly known as the Copenhagen Summit, was held in Copenhagen, Denmark, between 7 December and 18 December. A senior level delegation from Pakistan, participated in the event to represent the national perspective on the subject.



The Copenhagen Accord was drafted by the US, China, India, Brazil and South Africa on December 18, and judged a "meaningful agreement" by the United States government. It was "recognised", but not "agreed upon", in a debate of all the participating countries the next day, and it was not passed unanimously. The document recognised that climate change is one of the greatest challenges of the present and that actions should be taken to keep any temperature increases to below 2°C. The document is not legally binding and does not contain any specific commitments for reducing CO₂ emissions. Leaders of industrialised countries, including Barack Obama and Gordon Brown, were pleased with this agreement but many leaders of other countries and non-governmental organisations were opposed to it. Notwithstanding the differences among various countries, the entire community of nations have to participate and move fast to arrest and revert the undesirable trends in global climate.

TRAINING OF FIELD STAFF OF AJK FOREST DEPARTMENT

Pakistan Forest Institute (PFI) is continuously rendering its services to produce forestry professionals and up-date the skill and knowledge of field staff of provincial and regional forest departments through short training courses. With this endeavour, Forestry Research Division of the Institute conducted a training course on "Forest Resource Conservation" for 33 Range Forest Officers of Forest Department, Azad Jammu & Kashmir from October 13th to 19th, 2009.

The opening session of the training course was inaugurated by the Director General, Pakistan Forest Institute. The Course-Coordinator, Mr. Tahir Laeeq, Senior Research Officer gave an introduction of the course. The Director General, PFI welcomed the participants and explained the importance of forests of Azad Kashmir and emphasized on their conservation. The training course covered important subjects of forestry including Silviculture, Seed Technology, Range Management, Soil Conservation, Tree Measurement. Moreover, important environmental issues like Biodiversity, Climate Change, Desertification were also discussed in detail during the training course. The subject specialists of PFI delivered lectures and gave practical demonstration wherever needed.



On completion of the training course, certificates were awarded to the course participants in a ceremony arranged on 19th October, 2009 in the Committee Room of PFI. The Chief Conservator of Forests, Azad Jammu & Kashmir (Chief Guest), the Director General P.F.I, Mr. Ashiq Ahmed Khan, Advisor to Ministry of Environment Senior Officers of PFI and the course participants attended the ceremony.

COMPUTER TRAINING COURSE

A computer training course was conducted by Pakistan Forest Institute, Peshawar from 26th to 31st October 2009. The course was sponsored by FATA Education Foundation. Initially 24 participants were nominated for the said training but due to security situation, the participants from the above-mentioned Agencies and FR Peshawar did not attend the training and only 15 participants (Ministerial Staff) from FATA Directorate, Peshawar attended the training. The objective of this training was to build the capacity of ministerial staff in Microsoft office, which includes Microsoft Word, Microsoft Excel and Power Point. The training was designed in two parts, in first session basic concept of each programme was explained and in the 2nd session, the participants were engaged in practical exercise (On hands exercise).



MEETING ON WORKING OF PFI

A review/ coordination meeting was held under the chairmanship of the Director General, Pakistan forest institute, Peshawar in Committee Room of the PFI on 19th & 22nd December, 2009. After recitation from Holy Qur'an, the Director

General formally opened the meeting by welcoming the participants. PowerPoint Presentations were given by the Directors, Project Directors and Coordinator sericulture on the working/progress of their respective divisions and on going projects at PFI. Presentations were also given by Raja Muhammad Zarif on Strategic Research Plan of PFI, Dr. Ghulam Ali Bajwa, on his Ph.D and Mrs. Ghazala Yasmeen on her MS study abroad. Detailed discussions were made at the end of each presentation, for the improvement in working of each division/project. In the end, The Director General, PFI made presentations on Problems and issues of PFI & Revitalization of PFI, and emphasized that PFI shall act as a team to improve its image and output.

SECURITY MEASURES

**Yusaf Khan,
Administrator Estate**

Apropos of coping with the prevailing incertitude regarding Law & Order situation, Pakistan Forest Institute took proper measures and improvised security of the Campus. Under the guidance of Director General, PFI. Flow of traffic and pedestrians has been ceased through all the entries except the main gate, where every visitor is checked in a polite manner. All the vehicles are provided with stickers issued by Campus Coordination Committee (CCC), without which no vehicle is allowed to enter the campus.



Moreover, almost all the openings have been blocked with barbed wire to stop the flow of miscreants in the premises. The Armed Guards on duty are quite alert to impede any untoward incident in the residential and official area.

ALKALOIDS AND THEIR IMPORTANCE

**Tanvir Ahmad Qureshi Forest Chemist
& Sanam Zarif Satti, Biochemist**

Alkaloids are naturally occurring chemical compounds containing basic nitrogen atoms. The name derives from the word alkaline. Alkaloids have been defined in various ways, but one definition comes fairly close to actuality. An alkaloid is a

plant-derived compound that is toxic or physiologically active, contains nitrogen in a heterocyclic ring, is basic, has a complex structure, and is of limited distribution in the plant kingdom.

Alkaloids are produced by a large variety of organisms, including bacteria, fungi, plants, and animals and are part of the group of natural products (also called secondary metabolites). Many alkaloids can be purified from crude extracts by acid-base extraction. Many alkaloids are toxic to other organisms. They often have pharmacological effects and are used as medications, as recreational drugs. Examples are the local anesthetic and stimulant cocaine, the stimulant caffeine, nicotine, the analgesic morphine, or the antimalarial drug quinine. Some alkaloids have a bitter taste.

Isolated originally from *Cinchona succirubra*, quinine is one of 31 alkaloids with related structures, and the principal antimalarial compound, in the plant. Prior to approximately 300 years ago, malaria was the scourge of Europe, likely having been introduced through the Middle East. Malaria is caused by protozoa of the genus *Plasmodium*, contained as spores in the gut of the *Anopheles* mosquitoes, which then spreads the spores to humans when it bites. As the Spanish and Portuguese explorers began to colonize South America, they discovered a cure for malaria known to the native Indians. This was the bark of the *Cinchona* trees. The use of *Cinchona* bark to treat malaria was first reported in Europe in 1633, and the first bark reached Rome about 12 years later. Teas made from the bark cured people suffering from malaria, one of the major scourges in Europe at the time, and the bark became known as Jesuit's bark.

Among the most famous of the alkaloids are the Solanaceae or tropane alkaloids. Plants containing these alkaloids have been used throughout recorded history as poisons, but many of the alkaloids do have valuable pharmaceutical properties. Atropine, the racemic form of hyoscyamine, comes from *Atropa belladonna* (deadly nightshade) and is used to dilate the pupils of the eye. Atropine is also a CNS (central nervous system) stimulant and is used as a treatment for nerve gas poisoning. Scopolamine, another member of this class is used as a treatment for motion sickness. Cocaine, from *Erythroxylum coca*, is closely related in structure, is also a CNS stimulant, and has been used as a topical anesthetic in ophthalmology. It is also a drug of abuse. Cocaine was found in very small amounts in the original Coca-Cola

formula. Caffeine was considered to be the major problem with the drink. *Datura stramonium* (Jimsonweed), a plant found in Virginia contains similar compounds.

ROLE OF HERBARIUM IN THE DEVELOPMENT OF RESEARCH AND EDUCATION

Muhammad Shabir Mughal
Forest Botanist

Pakistan has a diversity of climatic and edaphic conditions which is reflected in the form of rich and diverse plant communities, represented by over 6000 plant species of herbs, shrubs, trees and climbers both native and exotics. Ideally these plants communities as well as individuals are studied in their natural abode for research and education purpose and for taxonomical point of view. But it is some times difficult to approach plant habitats under financial constraint and rugged terrain. Moreover, the plants give best information when they are in full bloom and this condition occurs only once or twice a year. In order to overcome this obstacle, a herbarium was established in 1950.

Plant Collections

The herbarium is arranged according to Bentham and Hooker system of classification as it is very simple and can easily accessible to find out specimens accurately. This herbarium is of international repute with code "PPFI" from forestry point of view and many scientists are using it for taxonomical studies of different plants. A number of students and of different educational Institution visits and benefits in plant identification and establishment of herbarium. Efforts are made to collect plants from time to time from different ecological regions of the country including. Out of 30,000 plant specimens available, 18500 have been identified and documented covering 129 families, 872 genera and 2098 species. Seeds are preserved in jars and plants specimens in showcases. A century old plant collection of 1902 is lying in herbarium and is well maintained.

Herbarium Summary

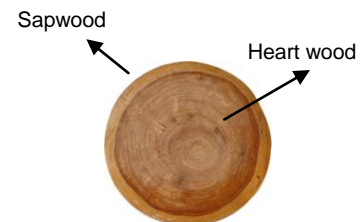
No. Plants:	30,000
Documented:	18,500
Families:	129
Genera:	872
Species:	2098

QUALITY OF SHISHAM TIMBER GROWN IN CHICHAWATNI PLANTATION (PUNJAB) G. M. Nasir, Logging officer

Shisham is an important commercial timber of Pakistan and grown on large scale in irrigated plantation such as Changa Manga

and Chichawatni. On the basis of its attractive figure and favorable wood properties, it is mostly used in furniture industry.

Quality of Shisham timber is influenced by the percentage of sapwood in logs as it is comparatively less durable than the heartwood due to the presence of food material susceptible to insects and fungi. Lower the percentage of sapwood, better may be the market value of the log. A study was undertaken to collect data for the percentage of sapwood in Shisham timber grown in Chichawatni and compare with the data already collected for Shisham timber grown in Changa Manga.



Cross surface of Shisham Wood

The overall average sapwood percentage in Shisham wood grown in Chichawatni has been determined as 43% for an average D.B.H. of 39cm and at an average height of measurement of 3.99 meters.

The reported value for sapwood percentage in Shisham wood grown in Changa Manga is 40% for an average D.B.H. of 46 cm and at a nearly the same height of measurement. The lower value of sapwood percentage in Shisham wood grown in Changa Manga may be because of the higher average diameter of logs. On the basis of results it can be concluded that the quality of Shisham wood grown in Chichawatni is almost similar to that grown in Changa Manga.

CRANE – A BIRD OF LOVE

Mian Muhammad Shafiq
Deputy Conservator Wildlife

Out of 15 species of cranes, Pakistan had been home of four species i.e. Common Crane (*Grus grus*), Demoiselle crane (*Anthropodes virgo*), Siberian crane (*Grus leucogoranus*) and Sarus Crane (*Grus antigona*). The Sarus crane has not been observed in Pakistan for three or four decades. However, in February 1993, seven birds were sighted in the Thar district of Sindh Province. The remaining three species migrate across Pakistan along Indus flyway. Two species i.e. Common crane and demoiselle crane are



still decreasing while Siberian crane is almost extinct on this flyway (Flyway No: 4).

In N.W.F.P. the cranes migrate through three different routes viz. Kashu, Bannu, Kurram, Gambella, and on river Indus.

A study in Bannu, D.I. Khan and Lakki Marwat Districts was conducted. It was observed that the live catching of cranes is a traditional activity. During hunting seasons (spring and autumn) all the hunters leave other activities and go for hunting. The majority of hunters are farmers while others are servicemen and businessmen. Their party comprises of 10-25 persons. The hunting method which is mostly used is called "SOYA" while only few hunters use weapons for hunting.

It has been observed that the number of hunters are increasing. Mostly, the capture cranes are used as pets and gifts to VIPs and other friends. Only few poor hunters sell the capture cranes in the market. The trained cranes are more expensive than the untrained ones.

In order to conserve the migratory crane species a hunter education programme and establishment of a network of crane refuge in crane hunting area is proposed.

BEAUVERIA BASSIANA - A BIOCONTROL AGENT

Dr. Ghulam Ali Bajwa

Beauveria bassiana is a well-known entomopathogenic fungus which has a worldwide distribution, and is used for biological control of pest insects for more than 100 years. *B. bassiana* was first observed in silkworm in about 900 AD in Japan. Historically, a 25 million year old worker ant embedded in amber was discovered with a fungus similar to the present day *B. bassiana* isolate. The mycelia of *B. bassiana* are white or slightly yellowish with a white fluffy to powdery appearance. The conidia (asexually produced spores) are formed in clusters like snow or cotton balls and are borne singly on a distinct apical zigzag rachis also called sterigmata. The conidium is a single celled, smooth walled, dry and hyaline with a length of 2.0 to 3.0 µm and

width of 2.0 to 2.5 µm.



B. bassiana sporulation on insect cadaver
The fungus has been reported from the Bahamas, East Siberia, Equatorial West

Africa, Central Africa, India, the Ivory Coast, Japan, Malaysia, Nepal, New Zealand, Pakistan, South Africa, Turkey and many other Asian countries. It has been isolated from diverse habitats ranging from running water, sand blows, sand dunes and desert soils. It is common in alpine, heathland and peat bogs soils, soils with savannah type vegetation, and forest and cultivated soils. It has also been isolated from rhizosphere of peat bog plants, the rhizosphere of clover, dead barks of trees, nests, feathers and droppings of free-living birds. The viable airborne *B. bassiana* conidia have been isolated at a concentration of 0.2 CFUs m⁻³ from the air in Turin (Italy). In Japan, *B. bassiana* was isolated from the air of a forest ranging from zero to 3.1x10³ CFUs m⁻³ day⁻¹.

B. bassiana has caused infectivity in several orders of class Insecta. Based on worldwide data 707 insect species have been enlisted as hosts of *B. bassiana*. These species belong to 521 genera, 149 families of 15 insect orders. Apart from class Insecta, 13 species of seven genera belonging to six families of class Acarina reported to be hosts of *B. bassiana*. In addition to the class Insecta and Acarina infectivity of *B. bassiana* has been reported also in phylum Gastropoda

POLLUTION TOLERANT TREES

Tanvir Hussain

Assistant Wood Technologist

Environmental pollution is increasing due to rapid urbanization and industrialization. The attention of whole world is now focused on this problem and a number of strategies are being adopted to combat this threat.

Botanical Name	Different wastewater / industrial effluent		
	Sewage	Textile	Tannery
<i>Acacia nilotica</i>	+	+	
<i>Azadirachta indica</i>	+	+	+
<i>Bombax ceiba</i>	+		
<i>Casuarina equisetifolia</i>	+	+	

<i>Eucalyptus camaldulensis</i>	+	+	
<i>Eucalyptus tereticornis</i>	+	+	
<i>Grevillea robusta</i>	+	+	+
<i>Syzygium cummini</i>	+	+	+
<i>Terminalia arjuna</i>	+	+	

Source: www.envis.nic.in

+ Suitable to tolerate

Pollution has many forms but the most drastic one is water pollution, which exists as industrial effluent, sewage and sediments/slugs etc. The use of this waste water as a preferred alternative for land base disposal/reuse for plantation has been promoted in most parts of the world, which not only helps to increase the forest area but also participate in the stability of economy and atmosphere of the country. In view of this scenario, following indigenous tree species are suggested, which have considerable potential for wastewater control.

PFI SCIENTIST COMPLETED HER MS DEGREE

Ms Ghazala Yasmeen, Assistant Forest Ecologist, joined back her duty at PFI on 3RD November 2009 after completion of M.Sc. from the School of Forest and Ecosystem Science, University of Melbourne Australia. Thesis title was "Aspects of Nitrogen and Phosphorus in Australian native woody legumes". She competed and won the AusAID scholarship as ADS (Australian development scholarship) a two year's Master level Degree course on Pakistan basis.

Research work was based on field work and followed by the green house experiment. The study was focused to assess the effects of fires on soil N and P levels and the role of legumes to recycle these nutrients back in to the system. The results were of great interest for land managers, Ecologists and department of sustainability and environment.

SHORT NEWS

Raja Muhammad Zarif took over the charge of Director, Biological Sciences Research Division on 17-12-2009. Earlier he was working as Director, Forest Education Division.

Mr. Hakim Shah, took over the charge of Director, Forest Education Division on 17-12-2009. Earlier he was working as Director, Forestry Research Division.

Mr. Tahir Laeeq took over the charge of Director, Forestry Research Division on 17-12-2009. Earlier he was working as Senior Research Officer.