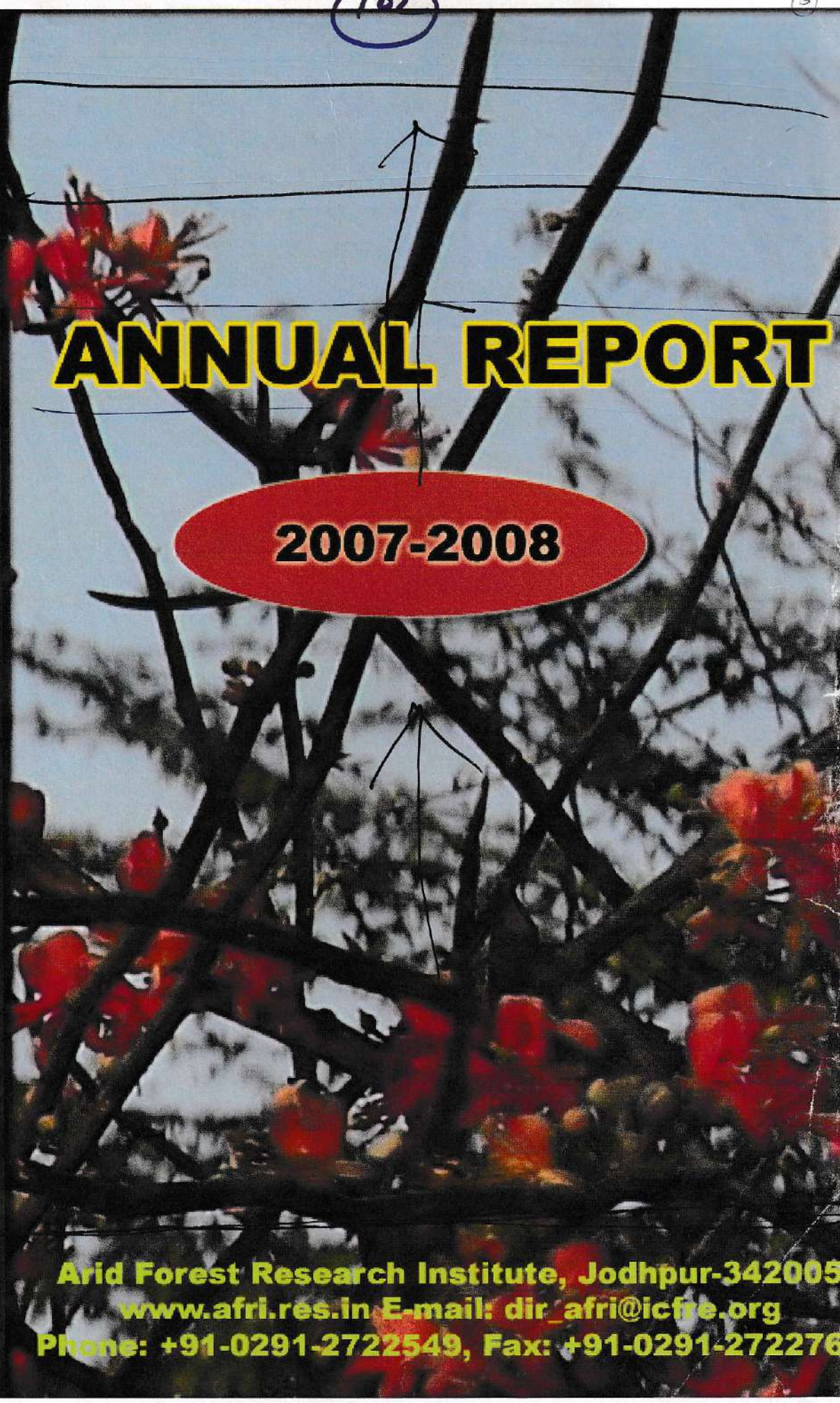
A F R I JODHPUR

ANNUAL REPORT

2007-2008



Arid Forest Research Institute, Jodhpur-342005
www.afri.res.in E-mail: dir_afri@icfre.org
Phone: +91-0291-2722549, Fax: +91-0291-272276

Arid Forest Research Institute
Annual Report 2007-08

Institute-At a Glance

Arid Forest Research Institute, Jodhpur (Rajasthan), is one of the eight institutes under the Indian Council of Forestry Research & Education (ICFRE), an autonomous body of the Ministry of Environment & Forests, Govt. of India. The objectives of the Institute are to carry out scientific research in forestry & allied fields to enhance the productivity & vegetative cover, to conserve the biodiversity and to develop the technologies for the end-users, especially in the hot arid and semi-arid region of Rajasthan, Gujarat and Dadra & Nagar Havelli.

The main thrust areas of the institute are soil, water & nutrient management, technologies for afforestation of stress sites, management of plantations, growth and yield modeling, planting stock improvement, bio-fertilizers and bio-pesticides, Agroforestry, JFM & extension, phytochemistry & non-timber forest products, integrated pest & disease management and forestry education. During 2007-08, thirty three projects were executed including thirteen externally funded projects from Rajasthan Forest Department, Gujarat Forest Department, Deptt. of Bio-technology, Govt. of India, New Delhi; National Medicinal Plant Board, N. Delhi and CSIR N.Delhi.

Significant achievements:

- Developed site index equation for *Tecomella undulata* plantations in Indira Gandhi Nahar Pariyojna (IGNP) area of Rajasthan.
- Raised performance trial from 23 elite accessions, native trials from 160 accessions and spacing and pollarding trials of *Jatropha curcas*
- SE Maturation percentage was significantly improved
- Severe infestation of a semilooper, *Achaea janata* (noctuidae) has been noticed on all mehndi (*Lawsonia inermis*) growing areas at Sojat road (Pali).
- The pathogens, *Rhizoctonia bataticola,* causing charcoal root rot and *Rhizoctonia solani* were isolated and identified from Guggal collected from Basan Nursery, Gandhinagar.
- The root infection was recorded 54 percent while, AM spores were found 210 /100 gm of soil in mehndi.

Projects completed during 2007-08 (Plan Funding)

Nil

Projects continued during 2007-08 (Plan Funding)

Project 1: Market survey on selected species in selected markets.

[AFRI-58/Silvi/Continue].

Principal Investigator – Dr. V.P. Tewari

Status:

The data regarding prices of various forest produces viz., timber, fuel-wood, bamboo were collected from the markets of Jaipur and Ahmedabad on quarterly basis. Data collected were compiled and submitted to the ADG (Stat.), ICFRE, Dehradun on prescribed format for publication of Timber and Bamboo Trade Bulletin.

Project 2 : Screening of exotic and indigenous plant species for their performance on salt affected soil with different management project.

[AFRI-49/NWFP/1997-2008].

Principal Investigator: Dr. Ranjana Arya

Status:

Experiment 8: For *C. mopane* 88% survival was observed in control compared to 94% on CDM after 48 months. However, for ber survival decreased by 6% (58.20%) on control and 13% on CDM (40.20%). Plants of *C. mopane* became leafless during summer; it gained growth after rain and micronutrient application. Flowering and seed setting was observed in 64.7 % plant of mopane compared to 56.8% plants in control.
Ex. 6: Field trial was laid in 2000 with three planting treatments (DRM, CDM and control) and three halophytic plant species (*S. nudiflora, A.lentiformis* and *A. stocksii*). Effect of structures continued and after 84 months mean survival was CDM (59.7%), DRM (63.9%) and control (21.1%). *S. nudiflora* was found as best species with 63, 80 and 55 % survival in DRM, CDM & control. Total (above and below ground) biomass studies were done in *S. nudiflora* plantation at the age of seven years.

Project 3: Quantitative estimation of biologically active secondary metabolites in some of the arid zone medicinal plants to ascertain correct harvesting time.

(AFRI-50/NWFP/2002-2007)

Principal Investigator: Dr. Mala Rathore

Status:

The total mean alkaloid content was maximum in summer season (4.0%) and minimum in monsoon season (2.54 %), total mean sterol content was maximum during winters (2.97%) and lowest in monsoon (2.38%). The mean flavonoid content was found maximum in winter season (75.8 mg CE/100g) and minimum during monsoon season (61.2 mg CE/100g). Also flowers collected from all the nine agro-climatic zones of Rajasthan were analysed for studying the variation in these secondary metabolites. Sterol content of the nine ACZ has been determined showed maximum sterol and alkaloids content was recorded from Jaisalmer region (ACZ IA).

Project 4: Genetic Improvement of T*ecomella undulata*. (AFRI- 44/FGTB/2002-06)

Principal Investigator: .C.J.S.K. Emmanuel

Status:

Tree improvement work on Rohida (*Tecomella undulata*) was started on the request of the Rajasthan Forest Department thirty CPTs in unirrigated and thirty five CPTs in irrigated regions were selected. Seeds of these CPTs were collected for raising of progeny trial cum seedling seed orchard in Rajasthan and Gujarat. Seeds were given to the Gujarat Forest Department for raising the trial in Gujarat and for Rajasthan an area has been selected in Beechiwal Range of Bikaner and AFRI experimental field at Jodhpur. Seedlings have been transferred to the Beechiwal Range for acclimatization and establishment in the nursery.

Project 5: Screening of high oil and azadirachtin in Neem.

(AFRI-45/FGTB/2002-06)

Principal Investigator: .C.J.S.K. Emmanuel

Status:

To assess the heritability pattern of Neem CPTs twelve hectares of progeny trials of summer and winter flowering CPTs at AFRI, Jodhpur and high azadirachtin and high oil CPTs at Govindpura Jaipur were laid out these trials are being maintained periodically phenological observations are recorded on the trial. The trials should have started flowering by now but due to frost and consistent drought conditions flowering has not started so far.

Progeny Trial at Jaipur

Flower buds at initiating stage

Project 6 : Multilocational trial of *Eucalyptus camaldulensis* and *D. sissoo* clones (AFRI-41/FGTB/2002-2006)

Principal Investigator: Dr. U.K. Tomar, Scientist E

Status:

Multilocational trials of *E. camaldulensis* and *D. sissoo* clones established in 2003 at four locations namely Deesa, Kheralu, Gandhinagar and Rajpipla, of Gujarat.state are being maintained. Preliminary data compilation and analysis reveals that there is a significant variation amongst clones of both species. Further analysis and estimation of genetic parameters is being done.

Project 7: Develop strategies and methodologies for extension of forestry research technologies in semi- arid and arid areas. [AFRI-71/AFE/2005-2009].

Principal Investigator- Shri C.S. Dange

Status:

AFRI brochures, pamphlets, achievements and expertise booklet being revised. Published 5000 leaflets and 3 banner slogans, coordinated the Ceremonial Planting and Shramdaan on "World Environment Day 2007" publicized 10,000 leaflets, 10 banner slogans, sticker, article and poem, participated in plantation programme on "International Day to Combat Desert and Desertification" and publicized 10,000 leaflets, 10 banner slogans, and participated in plantation programme on "Van Mahotsav,'07 for mass awareness. Documentation of regional workshop on "Challenges in Forestry Research Extension" (19-19th Oct.,05) finalized for printing. Dissemination of forestry extension services rendered to the stakeholders by participating in State Level Independence Day Celebration held at Jodhpur from 12.08.2007 to 16.08.07. Mela/Exhibition held at Polo Ground, Jodhpur from 31.10.2007 to 06.11.2007 and Western Rajasthan Hasthshilp mela 2008 held at Rawan Ka Chabutra, Jodhpur from 5th to 14th Jan., 2008.

Project 8: Relative resistance of Neem provenances to insect pests and mites and their bio management in arid areas. [AFRI-73/FP/2006-09]

Principal Investigator – Dr. S. I. Ahmed

Status:

Though the neem tree is endowed with spectacular pesticidal properties but it is itself infested by a number of insects and non insect pests at different stages of its growth. With the perusal and screening of the literature, it is obvious that a very few detailed account are available on the insect fauna attacking this medicinally and economically important tree species but the incidence of damage caused by insects and non insects pests and the possibilities of their management have not been known in detail.

Project 9: Management of potential insect pests and diseases of important medicinal plants grown in arid and semi-arid regions. [AFRI- 72/FPD/2006-2009]

Principal Investigator – Dr. S. I. Ahmed

Status:

Severe infestation of a noctuid caterpillar species has been noticed on all mehndi, (Lawsonia inermis), growing areas at Sojat road (Pali). The caterpillars are the semiloopers brown to black in colour depending on the number of instars. The larvae are voracious feeders of foliage. Heavy termite infestation was recorded in the Guggal (Commiphora wightii) plantation at Kailana (Jodhpur) wherein about 1.50 cm thick stem of Guggal were found infected by stem rot as well as termite infestation resulting drying of the stem and shoots. Guggal plants at AFRI Model Nursery were noticed infested severely by a lepidopteron pest and white fly. Severe infestation of termites has also been noticed in the root system of mature Guggal plants at Herbal Guggal Farm, Mangaliavas near Ajmer.

Project 10: Assessment of Neem International Provenance Trial. (AFRI- 78/ FGTB/ 2006-2009)

Principal Investigator : Sh. N. Ravi

Status :

Phenological observation in the selected trees was made from Feb '07 to July '07 in the 20 trees of each provenances. All the trees of the introduced provenances and national provenances started flowering in the 1st week of March except in the Thai provenances which came to flowering at the end of November. Large amout of flowers and immature fruits were fallen due to heat wave which occurred during the month of June. Fruits were collected in the month of July and August. Only five provenances produced fruits, though all of them showed high intensity of flowering. One Tanzanian Provenance and 4 Indian provenances produced the fruits. The quantity of the fruit yield was also very minimum in 4 provenances (10g -40 g) and the maximum amount of seed (467g) was only obtained from the Indian Provenance (Ghati Subramaniya).

Neem International Provenance Trial

Project 11: Demonstration trial of male and female *Ailanthus excelsa* plants raised through grafting and tissue culture. (AFRI- 79/FGTB/2006-2009).

Principal Investigator: Dr. U.K. Tomar

Status :

Method of grafting was further refined to improve grafting success. Stocks for raising demonstration plantation with male, female grafted plants and controlled seedlings are ready for plantations in July 2008. One hectare site has been identified at AFRI experimental area for establishing demonstration trail this fodder species. Progress of the project presented in SAC-DMRTD meeting by PI held at DBT, Delhi

Project 12: Development of economically viable and integrated Agroforestry models for arid region **(AFRI-55/Silvi/2004-09).**

Principal Investigator: Dr. Bilas Singh

Status:

Agroforestry model being maintained at farmer's field at village Harsh, Bilara. *Cordia mixa* plants obtained average maximum height 86 cm and followed by *Prosopis cineraria* (78 cm), *Colophospermum mopane* (75 cm) and *Ailanthus excelsa* (75 cm) respectively. The plant height was found higher in agroforestry plots as compared to the control (without crop). Similarly, collar diameter was found highest in *Ailanthus excelsa* (3.12 cm) and followed by *Cordia mixa* (2.89 cm), *Prosopis cineraria* (1.69 cm). The highest survival was observed in *Prosopis cineraria* (99%) followed by *Zyzyphus. mauritiana* (97%), *Colophospermum mopane* (92%) and *Cordia mixa* (90%) *species*.

Project 13: Development of suitable models for Eco-restoration of degraded lands in Thar desert. (AFRI-74/Silvi/2006-10).

Principal Investigator: **Shri P.H. Chawhann**

Status

Project was initiated at village Ostra, district Jodhpur over community land in 2007 but due to resistance of local people, work was stopped. Efforts were made to locate alternate site at village Salawas, Jodhpur district and Gram Panchayat was requested for granting no objection .

NEW PROJECTS INITIATED DURING 2007-2008 (PLAN)

Project 1: Survey selection, performance trial and estimation of yield potential of *Jatropha curcas* in Rajasthan and Gujarat.(AFRI-88/Silvi/2007-2012).

Principal Investigators – Dr. V.P. Tewari & Dr. D.K. Mishra

Status:

Jatropha population in Banswara and Saira, Rajasthan was surveyed. 15 CPPs in Banswara and 5 CPPs in Saira were marked. Similarly, 5 CPPs in Gandhinagar and 15 in SFD trials at Rajpipla were selected. Total height, girth and crown width of the CPPs have been measured. The variations for these traits were 3.5-4.0 m, 0.28-0.30 m and 3.1-3.3 m, respectively.Seeds collected from the CPPs selected at Gandhinagar and Rajpipla. Seeds were also obtained from DCF (Res.), Gandhinagar for the 16 CPPs identified by them. Seed yield variation in the CPPs at Gandhinagar was from 474 gm to 730 gm. Oil yield was estimated and it varied from 12.7% to 36.0% on seed basis. A total of 46 CPTs were tested for seed weight, kernel weight, seed & kernel ratio and estimation of oil.

Project-2: Studies on seed traits of seeds collected from seed stands / SPAs / SSOs / CSOs of important species of Gujarat state.**(AFRI-80/Silvi/2007-2012)**

Principal Investigators – Dr. D.K. Mishara

Status:

Collection of seeds: Seeds from 8 seed stands of *Acacia nilotica*, four stands of *Acacia catechu,* 2 stand of *Terminalia chebula* and 18 stands of *Tectona grandis* have been collected. **Seed Testing**: 100 seed weight of *Acacia nilotica*, *A. catechu* and 100 fruit weight of *T. grandis* and *Terminalia chebula* has been worked out. 100 seed weight of *Acacia nilotica* varied from 13.24g to 16.70g and *A. catechu* from 5.40 to g. 100 fruit weight of *Tectona grandis* and *Terminalia chebula* varied from 37.94g to 43.99g. **Seed Testing:** Various seed lots of *Acacia nilotica* (8) and two seedlots of Acacia catechu were tested for germinability. Seed germination in various seed lots of *A. nilotica* varied from 80.5% in seedlot no. 2429 and 96% in seedlot no. 2432. Seed germination in *A. catechu* varied from 73% to 82.25%. Fruit weight of 100 fruits of *Terminalia chebula* varied from 382.63g to 438g and in *Tectona grandis* it varied from 37.94g to 43.99g. The number of seeds in 100 fruits varied from 84-200 and seed viability from 30-70%. 100 seed weight of *T. chebula* also varied from 123.25 to 153.38g.

Project 3: Characterization and Classification of Forest Soils of Rajasthan. .(AFRI-85/FED/2007-2012)

Principal Investigator: **Shri N.Bala**

Status:

The project has been initiated in September 2007 with the objective to characterize and classify the forest soils of Rajasthan following the USDA classification system. Soil profiles have been studied at 14 places in Jodhpur, Banswara and Pratapgarh districts covering three subgroup types of forests under Tropical dry deciduous forests and Tropical thorn forests.

Project 4.: *In vitro* Mass Propagation of Jatropha *curcas* L. and Optimization of Low Cost Options for Economizing the Technology. .(AFRI-83/FGTB/2007-2012)*PI: Dr. Tarun Kant,*

Status:

Surveyed nearby Jatropha plantations including AFRI nursery. Plants for explant collection identified. Germplasm brought from Barmer and Saira being used.In vitro seed germination and sterilization protocol optimized. Cultures from seedling explants initiated on MS medium. Explants used: (A) Mature tree and shurb – Nodal segments, apical buds, leaf discs and petiole.Hormones tried: alpha-Naphthaleneacetic acid (NAA), 6 Benzyl aminopurine (BAP), Indole Butyric acid (IBA), Indole acetic acid (IAA) and 2,4-Dichlorophenoxy acetic acid (2,4-D).Bud break and micro-shoot multiplication has been achieved through nodal segment on MS media supplemented with different combination of BAP. Best response was observed on MS + 0.2 mg/l BAP and MS + 0.5 mg/l BAP.Apical buds when cultured on different combination of BAP & NAA supplemented MS medium gave 100% callus induction.

Project 5: Field efficacy of control measures for the management of khejri mortality in North Western Districts of Rajasthan. (AFRI-87/FPD/2007-10)

Principal Investigator – Dr. S. I. Ahmed; Co-Investigator – Dr. K.K.Srivastava

Status:

A study site was selected at Triloki (Sikar) and design of the experiment was finalized. MOU has been signed.Infected Khejri trees were randomly marked for treatment as per the design . Data of the '*loong*' production has been recorded from selected trees before treatment.Pre Treatment Observations were recorded on DBH, Root infection, Die-back, shoot borer attack and defoliation (%) etc.Root infection (60.90%) and shoot infection/borer attack (57.60%) was recorded before the treatment. The repeat treatment was conducted in the month of August 2007 and data has been recorded in the month of February 2008. After one year of the treatment the root infection reduced from 60.9% to 57.4% whereas borer attack reduced from 57.60 to 54.5% .

Project 6: Development of Web Portal for Forestry Research Extension. (AFRI-82/IT CELL/2007-11).

Status:

The process for the purchase of softwares was also started and the purchase orders have now been issued.The other activities were to decide the outline of the portal and to

identify the fields of the database. Discussions were made with the Co-PI and the other scientists in order to decide the outline of the portal and to decide the fields of the database. The areas to be covered under the web portal have been decided and the fields of the database have also been noted down to a large extent. The format for the collection of the data is under progress. Process has been started to collect the information about the research being carried out by AFRI since its inception.

Project 7: Mycorrhizal Dependency & Productivity Of Economic Important Medicinal Plants (Mehndi & Ashwagandha) Of Arid Zones (AFRI /FPD / 2007-2010) *Principal Investigator – Dr. K.K. Srivastava*

Status:

Five genera were identified in the rhizosphere of these selected plant species. A high diversity of AMF was observed which varied between different host plant species. Among the five genera, *Glomus* occurred most frequently, with ten species, *Acaulospora* and *Scutellospora* were found with three species, respectively, while *Gigaspora* and *Paraglomus* were detected with one species each. *Glomus constrictum, Glomus fasciculatum, Glomus geosporum, Glomus intraradices, Glomus mosseae* and *Glomus rubiforme* were the most dominant species. The spore density of AMF had a strong positive correlation with soil pH and organic carbon content and a negative correlation with Olsen's P content of the soil.

PROJECTS COMPLETED DURING 2007-08 (EXTERNALLY AIDED)

Project 1: Integrated management for qualitative improvement and increased production of rohida *(Tecomella undulata)* in Rajasthan. [AFRI-65/FP/2005-2008].

Principal Investigator – Dr. R. L. Srivastava

Component 1: Insect pests and disease studies

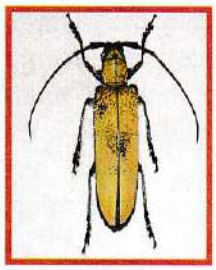
Investigator – Dr. S.I. Ahmed

Findings:

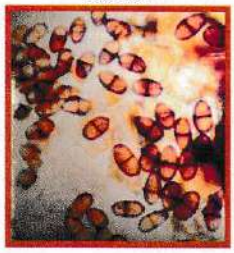
The entire IGNP area in Jaiselmer and Bikaner districts was surveyed and 21 sites were evaluated for the insect pests and disease studies. Subsequently, on the basis of infestation intensity, six sites *viz.,* were selected in IGNP area covering Jaiselmer and Bikaner districts. Three species of fungi belonging to the family imperfacti (*Phoma species, Fomes sp.* and *Botryodiplodia theobromae*) are primarily responsible for canker-rots in *T. undulata* in IGNP area at Mohangarh. It was observed that no significant hollowness problem was encountered in the rohida plantations raised in the IGNP area except in a few trees, which exhibited the initiation of canker formation in the main trunk

1. The brown rot of Rohida , caused by *Fames sp.*

2. *Patialus tecomella* attack



3. *Celosterna scabrator*



Component II: Rohida Macropropagation

Investigator – Dr. U.K. Tomar

Technology developed on macropropagation of important tree of arid region known as Marwar Teak and locally called Rohida (*Tecomella undulata*). Studies carried out in last two years indicate that rooting response of rohida stem cuttings is not only difficult influence by several factors such as donar trees health, physiological status of cuttings, and the external environmental conditions. However, tree has the potential to root relative high frequency if tree is managed well before collecting the stem cuttings. Selection of cuttings from well managed selected tree and established in mist chamber at proper time period after treating proper fungicide, insecticide and antibiotic treatments can be rooted successfully.

Component- III: Growth & Yield Studies on Rohida Plantations.

Investigator – Dr. V.P. Tewari

Findings:

Total wood volume equations have been constructed and validated which assume importance in projecting the total volume at different stages (thinnings and final harvest) as the plantations mature. Volume equations proposed may be applied on any population/sample of these species available in the study area as these equations have been validated for independent data set.The site index equation has been developed that may be used for assessing productive capacity of site and to select sites suitable for the particular species. These are also useful in estimating site index at a base-age given height at some other age as well as estimating height at some desired age given site index.Generalized diameter-height models have been developed which are useful tools for forest inventory purposes.

Project 2 'Studies on prediction of NTFP availability and potential for extraction in Aravali region of Rajasthan'

Principal Investigator- Dr.R.L.Srivastava

Findings :

Significant quantities of NTFPs are gathered in three forest divisions of the Aravali region and the annual estimated values of NTFPs realized per household are Rs.

2765.00, Rs. 1794.00 and Rs. 478.00 in Udaipur (central), Pratapgarh and Banswara forest divisions respectively, ignoring fuel wood and fodder grasses collection.Taking removal of fuel wood and fodder grasses from the nearby forests in to account, estimated annual financial values realized per household are Rs. 5965, Rs.4994 and Rs. 3678 in Udaipur (central), Pratap garh and Banswara forest divisions respectively. The financial value realized per ha or NTFP income generated from a hectare area of tropical dry deciduous forest of Aravali region was estimated as Rs. 1442.00 in Udaipur (central) forest division followed by the Pratap garh and Banswara forest divisions, yielding Rs.1006.00/ha and Rs.392.00/ha . Such species include important commercial and medicinal plant species like *Acacia catechu* (Khair), *Boswellia serrata* (Salar or Salai), *Lannea coromandelica* (Godal), *Sapindus trifolatus* (Aritha), *Anogeissus latifolia* (Dhavra), *Madhuca latifolia* (Mahua), *Chlorophytum borivilianum* (Safed Musli), *Dendrocalamus strictus* (Bamboo), and *Embelica officinalis* (Aonla) etc.

Project 3: Efficacy and economics of water harvesting devices in controlling run-off losses and enhancing biomass productivity in Aravalli ranges. [AFRI-39/FED/2002-2008]. (Note: Concluded from State Forest Department, Rajasthan but got Extension of one year in ICFRE Plan fund in 2008-09)

Principal Investigator: Dr. G. Singh

Findings:

Experiment was started in July 2005 by financial assistance of Rajasthan Forest department. 75 plots of about 700 m2 area were laid in 0-10, 10-20% and >20% with five treatments (control, contour trench, gradonie, Box trench and V. ditch rainwater harvesting structure) in five replicates. Growth and seedling survival were recorded in June and December 2008. Runoff measured from July to September (8 times) and water samples collected (two times) for soil and nutrient loss. Vegetation and shrub/ tree diversity monitored and diversity indices calculated. Vegetation productivity estimated. Data analyzed for all the three years. Report prepared and submitted to funding agency i.e., State Forest Department, Rajasthan.

Project 4: Baseline survey study on biological diversity in Mangala, Sarswati and Rageshwari Areas of Rajasthan Hydro Carbon Project.

[AFRI- 75/FED/2006-2008].

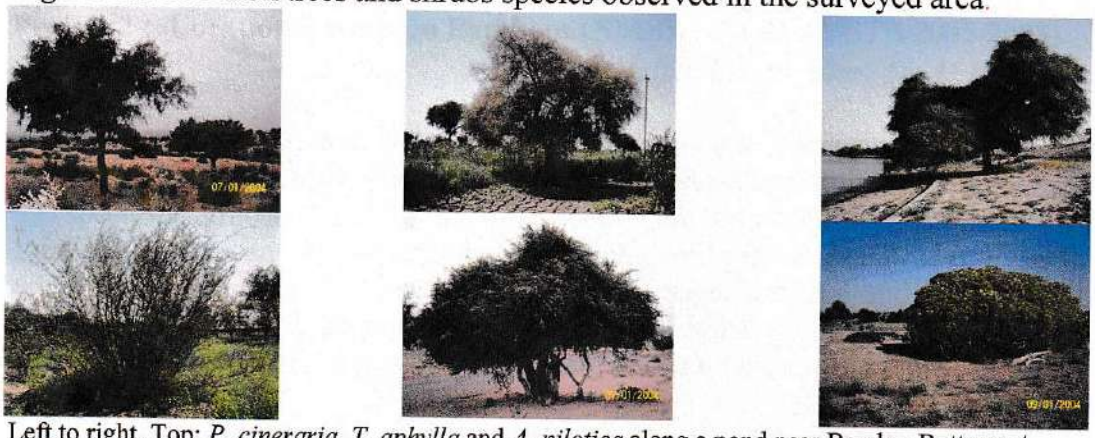
Principal Investigator: Dr. G. Singh, Scientist E

Findings:

Presence of coarse fragment in most of the plots of >20% slope facilitated the infiltration and subsurface drainage reducing surface loss and enhanced duration of soil water availability for vegetation. Preparation of RWH structures further enhanced water availability increasing vegetation production and soil organic carbon, a benefit of carbon sequestration. Highest run-off (11.43%) was from the Control and lowest was from V-ditch plots (9.33%). The losses in other treatments were 11.28% from Box trench, 10.89% from Gradonie and 10.82% from Contour trench plots. Thus adoption of

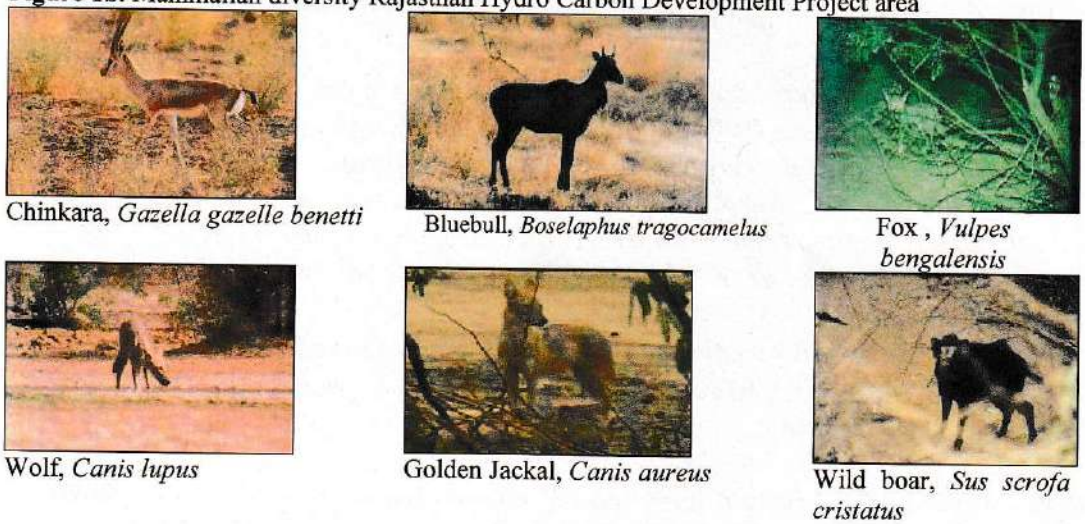
rainwater harvesting devices reduced run-off losses as the water loss in V-ditch plots was reduced by 2.1% of the total rainfall when compared with the control.

Figure 1a. Common trees and shrubs species observed in the surveyed area.



Left to right, Top: *P. cineraria*, *T. aphylla* and *A. nilotica* along a pond near Bandra; Bottom: *A. jacquemontii*, *S. oleoides* associated with *C. phlomides*, and *E. caducifolia*.

Figure 1b. Mammalian diversity Rajasthan Hydro Carbon Development Project area



Chinkara, *Gazella gazelle benetti*

Bluebull, *Boselaphus tragocamelus*

Fox , *Vulpes bengalensis*

Wolf, *Canis lupus*

Golden Jackal, *Canis aureus*

Wild boar, *Sus scrofa cristatus*

PROJECTS CONTINUED DURING 2007-08 (EXTERNALLY AIDED)

Project 1. Genetic improvement of *Jatropha curcas* for adaptability and oil yield. [AFRI-66/Silvi/CSIR/2005-2010].

Principal Investigators : Dr. R.L. Srivastava & Dr. D.K. Mishra

Status:

Collection of Jatropha Elite and Native Accessions and field trials: we have collected 23 elite accessions and 160 native accessions. The survival percentage ranged from 12.50 percent to 100 percent. Native accessions collected and exchanged with various partner institutes have been planted in July/August 2006 in RBD design with three replications having single plant per replication at 2.5 x 2.5m spacing. **Agro-technology Trials:** Various trials on spacing, pollarding, irrigation and fertilizer have been initiated as per the design agreed upon during meeting held on February 2007 at

New Delhi. Spacing trial: Trial was initiated from the seedlings raised from seeds received from Bhav Nagar. Plants were planted in RBD design with 16 plants per treatment and in five replications in July 2007.

Project 2 : Locational trials on Bamboos (NMBA) [AFRI-43/GTB/2005-2008].

Principal Investigator: Dr. U.K. Tomar

Status:

The initial results in the species trial of Bamboo at Banswara, Rajasthan indicated that *Dendrocalamus asper* is not suitable for the selected site. The survival per centage of this species is almost nil (<1%). All other species are found suitable for this agro climatic zone. *D. strictus* and *B. vulgaris* are performing well than *B. bambos, B. nutans* and *B. tulda.* The *B. bambos* is planted in the water management trial and different irrigation patterns are followed in this trial. The initial results do not show any significant difference in the experiment, since this experiment is only one year old.

Project 3: Multiplication and field trial of Bamboos through tissue culture in Rajasthan & Gujarat. [AFRI-68/GTB/2005-2008].

Principal Investigator: Dr. U.K. Tomar

Status:

Initial data collected from all the trails after one month indicates that survival percentage was 100% in *Dendrocalamus strictus* and 99% in *Bambusa bambos* at Jhalod site in Gujarat, whereas survival percentage was relatively less in both the species (95% in *Dendrocalamus strictus* and 96% in *Bambusa bambos*) at Kushal Garh site in Rajasthan. Survival percentage further decreased after one year and it was ranging from 97.2 % to 100.0 for both the species in Gujarat and 67.6 % to 96.8% Kushal Garh site in Rajasthan.

Project 4: Study of Characteristic Features Pertaining to Bio-drainage Potential of Some Selected Tree Species. [AFRI-38/FED/2004-2008].

Principal Investigator- N. Bala

Status:

This is an externally funded project that has been funded by the Ministry of Water Resources (MoWR), New Delhi. It was initiated in 2004 with two field experiments in Indira Gandhi Nahar Pariyojana (IGNP) and one in in-filled non weighing type of Lysimeters (2 x 2 x 2 m^3) at Jodhpur. Root growth and spread was maximum in *E. rudis* followed by *Corymbia tessellaris*, *E. camaldulensis* and *E. fastigata*. In all the species root spread was concentrated along the bunds. Rooting depth was restricted up to the ground water level which receded to a maximum level of 125 cm in *E. rudis* plantation within a period of four year.

Project:5 Productive propagation of remunerative medicinal plants for establishment of Silva-Ayurveda demonstrative models in the arid and semi arid areas, their preservation for further improvement, research, extension, development and diversification.

[AFRI-70/AFE/2006-2009].

Principal Investigator: Dr.R.L. Srivastava

Status:

Silva Ayuervada demonstrative models were planted in farmers' fields at Tibna and Jadan villages in Jodhpur and Pali districts of Rajasthan respectively. 15 field beneficiaries were selected at Tibna - two of one hectare and thirteen of one bhigha area. Total area planted is 5.75 ha. at village Tibna. The species of gunda, karoda, guggal,ber, khejeri, rohida sahjan, aloe vera and ashwagantha were planted after the advance works. At Jadan, species of rohida, khejeri, gunda, ber , aonla guggal and nimbu were planted over 2 ha. with 384 no. of plants. Field nursery has been established and maintained at Tibna. It contains about 40,000 seedlings of aloevera. neem khali, tabacoo dust, vermi-compost, and gomutra were distributed to the farmers for application in plants. Survival and growth observations were recorded (84%) in February 08.

Project-6: Source variation, extraction and cultivation Practices for *Commiphora wightii* Arn. Bhandari .

Investigators: Dr. Dr. D.K. Mishra, Dr. R. Arya and Dr. Tarun Kant

Status:

Establishment of Performance Trial: Clonal Material collected from 25 Districts of Rajasthan was raised in the polyhouse and planted in RBD design with 4 replications and each replication has 8 plants per accession in September 2007. Clonal material collected from Baran, Bundi, Chittorgarh and Jhalawad districts have shown distinct characteristics and showed higher sprouting and rooting than other accessions.
Establishment of Agri-trial: For assessing proper growth requirement of guggal plants under arid conditions, an agri-trial has been initiated with three level of irrigation frequency (Survival, 30 and 45 days) and seven levels of fertilizer.

Component –II:

48 guggul trees were selected with the objective to enhance gum production by non-destructive means. All trees were multi-branched having number of branches (> 2 cm dia.) from 2-12 per tree. Organic manure was applied in September' 07 as per the treatments prescribed. Irrigation at the interval of 20 and 30 days was given Nov. 07-Jan. 08. Tapping experiments, with different doses of gum enhancer (ethephone- 0, 150, 300, 450 mg /plant), were initiated in Feb.' 08. Three semi-circular cuts/plant were made. First gum collection was done after fifteen days, however, gum exudation was not observed in all the trees. Thereafter, gum was collected every ten days and gum yield (4.20 g to 59.22 g), was recorded till March end from all the trees, though the yield was minimal under control conditions. All the trees were healthy up to 31st March 08, even those branches did not dry where cuts were given

Component –III: Tissue culture

A. Characterization of immature seeds for use as right explant: Fruit length, weight and volume was measured for selecting appropriate size for getting immature seeds as explant. Seed size of 1cm , weight of 300mg and volume of 0.23cc was best.**B. Hormonal treatment**: Green embryos were supplemented with varieng concentration of 2,4-D for 30-90 days and was observed that 0.5mg/ml concentration of for incubation of 60 days were best for callus biomass and embryogenic potential. **C. Maturation of**

somatic embryoids: Experiment was carried out by culturing somatic embryos clumps on modified MS media supplemented with 5 g/l Activated charcoal + 0.1 mg/l IBA + 0.25 mg/l BAP + 0.8 % Agar + 3 % Sucrose + pH-5.8..**D. Maintenance of somatic embryoids:**Somatic embryoids were maintained with or without hormonal supplementation.

Project 7: Enhancing productivity of saline wastelands in Kachchh through improved tree planting techniques and silvipastoral study.

Principal Investigator- Dr. Ranjana Arya

Status:

In plantation trials at Kordha (Patan), only 33% plants of *A. ampliceps* (with wheat husk) survived from previous year trials hence new trials were laid in July 07 on highly saline $EC_2(dSm^{-1})$ 7.8 to 20.7 black silty clay soil (medium), Soil depth: 40-75 cm.. Plant species were *Acacia ampliceps & A. bivenosa, S. persica and Atriplex spp.* with control, WH (1/2 kg), FYM (5kg), WH + FYM, Bajara Husk (250g) and FYM + BH treatments in RBD with 3 replication for all the trials. Spacing adopted was 4 m x 4 m for *A. bivenosa* and *S. persica*, and 3m x 3m for *A. ampliceps* and *Atriplex* spp. All the three tree species recorded appreciably high mean survival, *S. persica* (95%), *A. bivenosa* (88.8%) and *A. ampliceps* (82.9%), after eight months. Survival of Atriplex spp. was not good (max *A. amnicola* 18%). In silvipastoral trial (Bhuj), maximum overall plant survival was 99.3% in *D. annulatum* followed by *C. setigerus* 93.3% and *C. ciliaris* 91.6% after 19 months. However, species-wise maximum survival was in *P. cineraria* (99.4%) followed by *C. gharaf* (99.7%), *Z. mauritiana* (96.5%) and *C. mopane* (81.7%). While all other species nearly maintained the survival there is slight decrease in survival for *C. mopane*. After 14 months, effect of grass on tree growth was very pronounced in *C. setigerus* where control trees recorded 36.6 % and 38.9 % more height and crown diameter, respectively. Overall maximum mean tree height and crown diameter was recorded with *D. annulatum*, followed by *C. ciliaris* and minimum with *C. setigerus*. Species-wise growth was in the order of *C. gharaf* > *Z. mauritiana* > *P. cineraria* > *C.mopane*.

NEW PROJECTS INITIATED DURING THE YEAR 07-08 (Externally aided)

Project 1: Establishment of a network to facilitate collection, processing and dissemination of statistics pertaining to tropical timber and other forestry parameters in India (ITTO sponsored ICFRE Coordinated project). (AFRI-86/Silvi/ITTO/2007-09)
Principal Investigator – Dr. V.P. Tewari

Status

Field assistant engaged and formats for statistical data collection modified in view of the recommendations of the Stakeholder's meet organized at ICFRE during Nov. 2006. Data regarding forestry statistics 2004-05 & 2005-06 collected from Rajasthan, Gujarat and Dadra & Nagar Haveli, compiled on various formats and sent to the ADG (Stat.), ICFRE. Regional workshop on Forestry Statistics organized at AFRI on 18th Sept. 07 and recommendations finalized.

Project-2: Establishment of multilocational clonal trial and seedling seed orchard of *Jatropha curcas*(AFRI-81/Silvi/DBT/2007-10) PI:Dr. D.K. Mishra,Scientist E

Status:

Site Selection and Soil Analysis: Site at Haldu Ki Ghati, Kewda Ki Naal in Udaipur has been selected. The mean minimum and mean maximum temperatures goes from 6 to 45^{0}C and mean annual rainfall is 600mm. The soil analysis has been performed. Establishment and Observations in Field Trial: PDKV, Akola, MSSRF, Chennai, Biotech Park, Lucknow, AFRI, Jodhpur, TERI, Guwhati, Garhwal University and Raipur University, Chattisgarh will participate in network multilocational trial.

STATE WISE PROJECT ALLOCATION (under Institutes jurisdiction)

me of state	No. of Projects completed in 2007-08	No. of Ongoing Projects in 2007-08	No. of Projects initiated in 2007-08
Rajasthan	04	**16**	**05**
Gujarat	**00**	**02**	**01**
Raj. & Gujarat	**00**	**02**	**02**
Raj., Gujarat , Dadar &Nagar Haveli	**00**	**00**	**01**

Total No. of Projects in 2007-2008: 33

Abstract: Number of projects:

	No. of Project completed in 2007-08	**No. of ongoing Project in 2007-08**	**No. of Project initiated in 2007-08**
Plan projects	**00**	**13**	**07**
External projects	**04**	**11**	**02**
Total	**04**	**24**	**09**

Technology Assessed and Transferred

Nil

Education and Training:

(b)Training attended by AFRI Scientists

International: Nil

National:

- Shri Ashok Kumar, IFS, GCR, AFRI , attended one week compulsory IFS training course at IWST, Banglore from 7th Jan. to 11th Jan. 2008 on the subject "Biotechnology for forest conservation".

- Dr. Mala Rathore, Scientist D, NWFP Division and Dr. Abha Rani, Scientist D, Ecology Division attended two week training programme on Research Methodology at IASRI, New Delhi from 7.1.08 to 18.1.08.
- Shri Ashok Kumar, GCR, AFRI, Dr. R. Arya, Scientist –E and Shri P.S. Chawhan, Scientist –E attended the training on Research Management & Administration at ASCI Hyderabad from 3rd March to 14th march 2008.

(c)Training imparted by Institute:

- Imparted training on tissue culture to the students of different colleges and Universities in the Biotechnology laboratory of AFRI.

(d) Educational visits at the Institute:

- 38 Forest Guards accompanied by their D.C.F. faculty member of 91 Forest Guard Course Trainees from NRMC Sohna of Haryana Forest Department made a visit to A.F.R.I., Jodhpur from 05-09-2007 to 06-09-2007.
- A class of 24 numbers of Foresters trainees from State Forest training Centre, Alwar, Rajasthan visited AFRI model nursery and Medicinal plants germ-plasm bank. They were told about nursery raising and planting technique of arid zone species and the importance of cultivating medicinal plants in arid environment by the farmers.
- A class of 16 forest guards from Maru Van Prashikshan Kendra, New Pali Road, Jodhpur paid a visit to AFRI model nursery and Medicinal plants Germ Plasm bank on 21/11/07 along with Sh. Upkar Borana, ACF, Incharge.
- As a part of their training programme, a class of 21 Forest Guard trainees from Natural Resource Management Centre, Sohna, Haryana visited AFRI experimental fields, Model Nursery and Medicinal Plants Germ Plasm Bank on 21/12/07 under the supervision of Sh. S.K.Wason, HFS. They were told about nursery technology of arid zone species and importance of cultivating medicinal plants in arid zone..
- A group of 200 farmers under the guidance of Gyandeya Shiksha Samiti, Kapasan, Chittorgarh, Rajasthan (a NGO) visited AFRI Model nursery and Medicinal plants Germ Plasm Bank on 24/12/07. They were briefed about nursery raising and field planting technology of arid zone species and about cultivation of medicinal plants.
- A group of 100 farmers from the Water shed development area of Dataramgarh (a NGO) under the guidance of Sujas Sanskritik Seva Sansthan, Jaipur, Branch Sikar, visited AFRI Model nursery and Medicinal plants Germ Plasm Bank on 03/01/08. They were briefed about nursery raising and field planting technology of arid zone species and about cultivation of medicinal plants in arid and semi arid areas.
- A class of students of wood science and technology (Msc.), IVth semester from FRI deemed university visited AFRI from 14th to 15th Feb. 2008.
- A group of students of Natural Resource Management (NRM) and Non Wood Forest Product (NWFP) Of FRI deemed university, Dehradun visited Forest Ecology Experimental field and laboratories from 23rd Feb to 27th feb 2008.

- A group of 150 farmers, water shed development committee members and NGOs from Tehsil Raipur, Distt Pali, visited AFRI model nursery and medicinal plant germ plasm bank on 17/08/07 along with Sh. Upendra Sharma, Project officer.

Linkages and Collaboration:

National:

- Tata Energy Research Institute, N. Delhi
- Central Arid Zone Research Institute, Jodhpur
- Jai Narayan Vyas University, Jodhpur
- Council of Scientific and Industrial Research, N. Delhi.
- National Medicinal Plants Board, N. Delhi.
- Department of Biotechnology, Govt. of India, N. Delhi.
- National Mission on Bamboo Application, N. Delhi
- Ministry of water resources, N. Delhi.
- Rajasthan Forest Department
- Gujarat Forest Department.

PUBLICATIONS:

AFRI Darpan

- Ahmed, S.I. and Sharma Meeta (2007) :Prepared and published an article on "Rajasthan me Rohida (*Tecomella undulata*) utpadan vradhi avum uske Gunatmak sudhar hatu samakit prabandhan"" in AFRI Darpan in Hindi, Jan-Dec. 1(4).
- के.के. श्रीवास्तव एंव **नीलम वर्मा** (2007). शुष्क क्षेत्रों में रोहिड़ा *(टेकोमेला अन्डुलेटा)* के वृक्षारोपण क्षेत्रों में वैम प्रजातियों एवं बीजाणुओं की संख्या पर मौसम का प्रभाव, *आफरी दर्पण*

Extension brochure/pamphlets

- Prepared pamphlet on Programme at a glance for UNESCO MAB International Workshop "Ensuring the future of Dry Lands: Towards Implementing the MAB Agenda for a Sustainable Future of Dry Lands.
- AFRI Published a Brochure regarding the mandate, research highlights and Research facilities of the Institute.

Research Papers Presented in Seminars /Workshops/ Conferences:

- V.P. Tewari.(2007).Modelling growth and yield in the IGNP area plantations for their sustainable management. Paper presented in the National Seminar on 'Revisiting Indira Gandhi Canal Command' organized by RICAREWES and CAZRI at CAZRI, Jodhpur during 15-16 Dec. 07.
- P. Chaudhry. (2007).Recreational value of urban parks & gardens; including the Rock Garden of Chandigarh, India,).Paper presented in the international conference on the occasion of diamond jubilee celebrations of Rock Garden, Chandigarh at Chandigarh during 7-10 Nov, 07.
- R.L. Srivastava, D.K. Mishra and Tarun Kant (2007) Seed Germination, Vegetative Propagation and *in vitro* mass multiplication of *Commophora wightii* (Arn.) Bhandari Workshop on The Present status and improvement of guggal in Gujarat state; 20th April, 2007, Gandhinagar.

- D. K. Mishra, R. L. Srivastava and A. S. Apte (2007). Market potential of medicinal plants in Rajasthan. National workshop on conservation and cultivation of medicinal plants. April. 15-16, 2007.
- Ranjana Arya, Hemant Kumar & R.K. Gupta (2007): Commiphora wightii-natural occurrence and startegies for conservation. Presented in the National Seminar on Gugglu at National Institute of Ayurveda, Jaipur 17-19 November, 2007.
- S.I. Ahmed (2008). *"Role of IPM Approach for Sustainable Development of Fragile Ecosystem in Arid and Semi-arid Region"*. Research Papers presented in National Symposium on Integrated Pest and Disease Management in Arid and Semi-arid Areas held on March 12-13, 2008 at AFRI, Jodhpur
- Sundararaj, R, Pandey, V. P. and Ahmed, S.I. (2008). Whiteflies of Indian Arid Zone with Special Reference to the Bioecology and Management of the Babul Whitefly *Acaudalyerodes rachipora* (Singh). Research Papers presented in National Symposium on Integrated Pest and Disease Management in Arid and Semi-arid Areas held on March 12-13, 2008 at AFRI, Jodhpur
- Meeta Sharma, S.I. Ahmed (2008). "Integrated Pest Management of Marwar Teak Defoliator in Arid and Semi Arid Region." Research Papers presented as a poster in National Symposium on Integrated Pest and Disease Management in Arid and Semi-arid Areas held on March 12-13, 2008 at AFRI, Jodhpur
- M. Mohanasundaram, Sahadev Chouhan and S.I. Ahmed (2008). "Biodiversity of The Eriophyid Mite (Eriophyidae: Acari) Fauna of The Forest Ecosystem of India and its Significance." Research Papers presented in National Symposium on Integrated Pest and Disease Management in Arid and Semi-arid Areas held on March 12-13, 2008 at AFRI, Jodhpur
- S. I. Ahmed and Sangeeta Tripathi (2008). "Nuclear Polyhydrosis of Babul Defoliator, *Streblote siva* (Lepioptera : Lasiocampid)." Research Papers presented in National Symposium on Integrated Pest and Disease Management in Arid and Semi-arid Areas held on March 12-13, 2008 at AFRI, Jodhpur
- K.K. Srivastava and Neelam Verma (2008). "Interaction of AMF and *Rhizoctonia solani* – A Damping-Off causing pathogen of Rohida (*Tecomella undulata* Sm. Seem) seedlings." Research Papers presented in National Symposium on Integrated Pest and Disease Management in Arid and Semi-arid Areas held on March 12-13, 2008 at AFRI, Jodhpur
- Neelam Verma, K. K. Srivastava and J.C. Tarafdar (2008). "Bio- Efficacy of AM Fungi against Charcoal Root Disease in Khejri (*P. cineraria* L. Druce) Seedlings seedlings." Research Papers presented in National Symposium on Integrated Pest and Disease Management in Arid and Semi-arid Areas held on March 12-13, 2008 at AFRI, Jodhpur
- R.L. Srivastava, N. Bala, P. Kumar and G. Singh (2007). Afforestation of Degraded lands for Natural Resources Conversation in western Rajasthan. Presented in Seminar on 'Recent Advances in natural appraisal for sustainable management' held at State remote sensing application centre, Jodhpur on 15th March 2007.
- R.L. Srivastava and G. Singh (2007). Climate change adaptation and livelihood. Presented in the consultation workshop for Indo-German Technical Cooperation Project on 'Climate Change Adaptation' held at Jaipur on 31st August 2007.

- G. Singh, N. Bala and P. Kumar (2007). Challenges and strategies for sustainable development of Indira Gandhi Nahar area of Rajasthan. Presented in seminar on 'Revisiting Indira Gandhi Canal Command, held at CAZRI, Jodhpur on 15-16 December 2007.
- N. Bala, P.Kumar and G. Singh (2007). Growth and physiology of tree species growing under water logged conditions in IGNP with emphasis on bio-drainage. Presented in seminar on 'Revisiting Indira Gandhi Canal Command, held at CAZRI, Jodhpur on 15-16 December 2007.

Consultancy

- The works were carried out under the consultancy project entitled *"Identification of mycorrhizal and rhizobial association, establishing gene bank and technology transfer to farmers in field"* funded by Gujarat State Biotechnology Mission. Imparted training on VAM technology to 35 participants (ACFs, RFOs,Foresters, JRFs and Progressive farmers at Training and Research Centre, Gandhinagar. Laboratory training was given time to time for identification to the JRFs workimg under the project at Basan nursery, Gandhinagar and AFRI,Jodhpur.

Patents Obtained/filed

Nil

Commercialisation of technology

Nil

Conference / meetings /workshops / seminars / symposia / exhibitions /awareness programme Organised

Awareness programme Organised

- World Environment Day was celebrated on 5th June, 2007 .On this occasion, a roadside Industrial Avenue ceremonial planting of *Azadirachta indica* and Bougainvelia was done after clearing the site which was full of industrial debris. Sh. Rajender Gehlot, Chiarman, Urban improvement trust, Jodhpur was the Chief Guest on this occasion. Dr. Om Kumari Gehlot, Mayer, Nagar Nigam presided over the function. Other dignitaries who attended the function were Dr. (Smt.) Kiran Soni Gupta, I.A.S., Divisional Commissioner, Jodhpur, Smt. Surya Kanta Vyas, City MLA, Sh. P.R. Meghwal, GM, RIICO and Sh. N.P. Gangwar, Deputy Commissioner, Jodhpur. A pamphlet for mass awareness was also released on this occasion. A quiz programme of two hour duration on Jodhpur FM Radio was broadcasted by the institute on the occasion of world environment day.
- World Day to Combat Deserts & Desertification was celebrated on 17th June, 2007 at village Tibna, Tehsil Balesar in Jodhpur district. Multi-tier, multi-purpose NMPB-funded Silva-Ayurveda Project was also launched on this day at Tibna Village. The Chief Guest on the occasion was Dr. B.L. Gaur, the Vice Chancellor of Rajasthan Ayurved University, Jodhpur. Director, AFRI presided over the function. A logo/Sticker and two pamphlets were also released for mass awareness and educating the people on this day.

- The 58th Van Mahotasava was celebrated at Gaushala Maidan, Jodhpur on 7th july 2007 by AFRI in collaboration with urban improvement trust, Jodhpur. The function was held under the chairmanship of Mrs. Surya Kanta Vyas, MLA, Jodhpur city and the chief guest of the function was Shri Rajender Gehlot, Chairman, UIT, Jodhpur. More than 100 plants of *Holoptelea integrifolia , Cassia siamea, Azadirachta indica, Ficus religiosa and Aloe vera* were planted by dignitaries, officials of AFRI and school children of Madhuban public school.

Workshop/ seminars/symposia Organised

- A one-day regional workshop on Forestry Statistics was organized at AFRI on 18th Sept. 2007 under the ICFRE-ITTO project with the aim to sensitize the agencies & review the formats designed to collect forestry statistics data to make them more meaningful and at the same time to get the feedback from the SFDs regarding problems faced in collecting, compiling and sending the required data on these formats.
- AFRI organized the workshop on Guggal cultivation, production and collection on 24th Sept.07. The PCCFS from many states participated in the meeting.
- AFRI and CAZRI in co-ordination organized a workshop "UNESCO-MAB International Workshop" on 'Ensuring the future of drylands: Towards implementing the MAB agenda for a sustainable future of drylands'from 11-15 Nov. 2007. This workshop was a follow up of Tunis declaration,2006.
- An introductory workshop on E-governance was organized in conference hall of AFRI. The discussions was made with Dr.Harish Sharma Scientist D, Incharge IT Cell FRI, Dehradun on 16 Nov. 2007
- A National Symposium on "*Integrated Pest and Disease Management (IPDM) in Arid and Semi-arid Areas*" was organized by Forest Protection Division on March 12-13, 2008 at Arid Forest Research Institute, Jodhpur. The organizing secretary of this seminar was Dr. S.I. Ahmed, Scientist-F & Head Forest Protection. The total no. of 79 research papers were received on above themes. About 102 delegates participated in the symposium from 13 various states *viz.*, (Orrisa, Karnataka, T.N., Maharashtra, M.P., U.P., Uttrakhand, Haryana, Gujarat, Rajasthan, H.P, Delhi, Kerala) etc. There were 10 technical sessions during which 36 multi-media presentations on various aspects of IPDM delivered by renowned delegates. A part from these 39 posters were presented during the symposium.

Inauguration of symposium

Group Photo of the participants

Technical Session

Poster Session

Exhibition

- An exhibition "Sanskriti- Sarokar and Sankalp" was organized in Gaushala maidan, by Jodhpur district administration on the occasion of 60th Independence day celebrations in Jodhpur, from 13th to 16th Aug 2007. The exhibition was inaugurated on 13th Aug by Smt Vasundhara Raijay , The Hon'ble chief minister of Rajasthan. In this exhibition various institutes of art /culture /science/ development/ agriculture /mineral /dairy and Railway of Jodhpur, Jaisalmer, Barmer and Pali participated and displayed their items. Our Institute exhibited various research findings/works in the exhibition. Important medicinal plants viz. Ashwagandha, Guarpatha, Ratanjot, sonamukhi, Guggul, were displayed in the stall along with their useful parts and processed products. Two models depicting the natural sand drift conditions and bio-drainage were displayed in the stall. Brochures on medicinal plants, food from forests etc. were distributed in the exhibition .The exhibits were well praised by the visitors.
- AFRI participated in Swadeshi Mela, organized by district administration, Jodhpur at polo ground of Jodhpur from 31st Oct. to 6th Nov. 2007.
- AFRI participated in Hastshilp Mela, organized by Marudhar Industries Association and district administration, Jodhpur at Rawan ka Chabutra of Jodhpur from 5th January 2008 to 14th January 2008.

Awards

- Third prize awarded for poster presentation to Dr. Meeta Sharma, Research officer, AFRI on the paper entitled *"Integrated Pest Management of Marwar Teak Defoliator in Arid and Semi Arid Region"(2008).* in "National Symposium on Integrated Pest and Disease Management in Arid and Semi-arid Areas" held on March 12-13, 2008 at AFRI, Jodhpur.

Distinguished visitors:

- Dr. (Smt.) Kiran Soni Gupta, I.A.S., Divisional Commissioner, Jodhpur Division visited the Institute on 04-04-2007 and interacted with the Scientists/Officers. She visited Extension & Interpretation Centre, model nursery, arboretum and Germ-plasm of medicinal plants developed by the institute. She appreciated the work done by AFRI.
- Shri Ram Bhuj, Scientist from UNESCO came and discussed about the international workshop on "Ensuring the Future of Drylands-Towards Implementing the MAB Agenda for sustainable Future of Dry lands." Jodhpur, Rajasthan, India, to be held on 12-15 November 2007.
- Sh. G.S. Kang, IAS, former chief Secretary, Bihar and Mrs. Kiran Soni Gupta, IAS, Divisional Commissioner Jodhpur division, visited AFRI on 14th Jan, 2008. They were briefed about the institute and related research activities by the Director, AFRI and other officers/scientists.

NAMES AND ADDRESSES OF PUBLIC INFORMATION OFFICERS AND APELLATE AUTHORITIES UNDER THE RIGHT OF INFORMATION ACT 2005 IN ICFRE AND ITS INSTITUTES

Head quarters/Institute	Appellate authorities	Public Information officer	Subject matters allocated
Arid Forest Research Institute ,P.O., Krishi mandi new Pali road, Jodhpur,342005	Dr. R. L. Srivastava, Director, AFRI 0291-2722764 Email: dir_afri@icfre.org	Dr. Pradeep Chaudhary, IFS, Head Silviculture Division, 0291-2722764	All matters related to AFRI, Jodhpur

Addresses and E-mail of AFRI.

Name of Officials	Designation	Phone (91-291)	Email Address
Dr. R. L. Srivastava, IFS	Director	2722549, 2729101	**dir_afri@icfre.org**
Sh. Ashok Kumar, IFS	Group Coordinator (Research)	2721594	**groupco_afri@icfre.org, ashokkumar@icfre.org**
Dr. Pradeep Chaudhary, IFS	Head, Silviculture Division	2720752	**pradeep@icfre.org**
Sh. Jabber Singh, IFS	DCF, Agro Forestry Division	2729206	**jabbersingh@icfre.org**
Sh. C. J. S. K. Emmanuel	Scientist "F" & Head Forest Genetics & Tree Breeding Division	2724212, 2729160	**cjske@icfre.org**

Dr. S .I. Ahmed	Scientist "F" & Head, Forest Protection Division	2722590,2729170	siahmed@icfre.org
Dr. G. Singh	Scientist "E" & Head, Forest Ecology Division	2722550,2729130	gsingh@icfre.org
Dr. V.P.Tewari	Scientist "E"	2722588, 2729214	vptewari@icfre.org
Dr. (Km.) Ranjana Arya	Scientist "E" & Head, Non Wood Forest Product Division	2725272,2729134	ranjana@icfre.org
Dr. K. K . Srivastava	Scientist "E"	2729204	kksrivastava@icfre.org
Dr. U.K.Tomar	Scientist "E"	2729140	uktomar@icfre.org
Dr. D.K.Mishra	Scientist "E"	2729199	dkmishra@icfre.org
Dr. P.H. Chawhan "	Scientist "E"	2729215	phchauhan@icfre.org
Dr. Sunil Kumar	**Scientist "E"**	2729148	sunilkumar@icfre.org
Sh. Nirmalya Bala	Scientist "D"	2729150	nbala@icfre.org
Dr. (Smt.) Mala Rathore	Scientist "D"	2729137	mala@icfre.org
Sh. A. K. Sinha	Scientist "D", Incharge IT Cell	2729117, 2729120, 2722548	aksinha@icfre.org
Dr. Tarun Kant	Scientist "D"	2729162	tarunkant@icfre.org
Dr. Abha Rani	Scientist "D"	2729131	abha@icfre.org
Smt. Seema Kumar	Scientist "C"	2729149	seemakumar@icfre.org
Ms. Bhawana Sharma	Scientist "B"	2729197	bhawana@icfre.org
Sh. Dhirendra Kumar	Controller	2400824	controller_afri@icfre.org
Sh. N. Ravi	Research Officer	2729138	nravi@icfre.org
Dr. Bilas Singh	Research Officer	2729212	bilassingh@icfre.org
Dr. Meeta Sharma	Research Officer	2729110	meeta@icfre.org
Smt. Sangeeta Tripathi	Research Officer	2729164	sangeeta@icfre.org
Dr. Neelam Verma	Research Officer	2729216	neelam@icfre.org
Smt. Anuradha Bhati	Librarian	2729121	anuradha@icfre.org
Sh. Mohendra Singh	Forest Range Officer	2722587,2729105	-
Sh. C. P. Rahangdale	Est.& Acct. Officer	2729126	ddo_afri@icfre.org
Sh. S. K. Rajput	Research Assistant	2729161	-
Dr. Sahadev Chouhan	Research Assistant	2729168	-
Sh. R. K. Gupta	Research Assistant	2729202	-

Sh. K. C. Jedia	Research Assistant	2729161	-
Sh. Shiv Lal Chouhan	Research Assistant	2729147	-
Sh. K. R. Choudhary	Research Assistant	2722360	-
Sh. V. K. Sahni	Research Assistant	-	**vksahni@icfre.org**
Sh. S. L. Meena	Research Assistant	2729109	-
Sh. B. V. Jayant	Research Assistant	2729129	-
Sh. R. K. Sarwata	Research Assistant	2729161	-
Sh .T. R. Rathore	Research Assistant	2729161	-
Dr. Hemant Kumar	Research Assistant	2729218	-
Sh. Manoj Chouhan	Research Assistant	2729112	-
Sh. R. R. Lohra	Research Assistant	2729158	-
Sh. Mahendra Singh	Research Assistant	2729209	-
Sh. Ganga Ram	Research Assistant	2729135	-
Sh. C. S. Vyas	Research Assistant	2729135	-
Sh. N. K. Limba	Research Assistant	2729155	-
Smt. Kusum Parihar	Research Assistant	2729117	**kusum@icfre.org**
Sh. P. R. Nagora	Research Assistant	2729155	-
Sh. J.P.Daduich	Research Assistant	2729210	-
Sh. Ameen Ullah Khan	Research Assistant	2729135	-
Sh. B.R.Bishnoi	Research Assistant	-	-
Sh. Sadhul Ram	Research Assistant	2729168	-
Sh. R. K. Meena	Research Assistant	2729143	-
Sh. Mahipal Bishnoi	Technical Assistant	-	-
Sh. Anil Singh Chouhan	Technical Assistant	2729161	-
Sh. Dhana Ram	Technical Assistant	2729112	-
Sh. Ranbeer Singh	Technical Assistant	2729161	-
Sh. Anil Sharma	Technical Assistant	2729169	-
Sh. Pratap Ram	Technical Assistant	2722548	**pratap@icfre.org**
Sh. H. K. Pandey	Technical Assistant	2722587	-
Sh. Lakhpat Singh	Technical Assistant	-	-
Sh. Sanjay Singh Komra	Technical Assistant	2722587	-

Sh. P. S. Sankhla	Data Entry Operator	2729117	pss@icfre.org
Smt. Saroj Sisodia	Assistant Librarian	2729121	-
Smt. Varsha Vasita	Assistant Librarian	2729121	-
Sh. K. S. Parmar	Steno	2729102	ksparmar@icfre.org
Sh. N .K. Sharda	Steno	2729106	-
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Sh. Ladhu Ram	Khalasi	-	-

Sh. P. S. Sankhla	Data Entry Operator	2729117	pss@icfre.org
Smt. Saroj Sisodia	Assistant Librarian	2729121	-
Smt. Varsha Vasita	Assistant Librarian	2729121	-
Sh. K. S. Parmar	Steno	2729102	ksparmar@icfre.org
Sh. N .K. Sharda	Steno	2729106	-
Smt. Rajashree James	Steno	2729207	-
Sh. H .K. Gagal	Head Clerk	2729114	-
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