FROM DIRECTOR'S DESK

The Annual Group meeting of AICRPAF held at UAS, Dharwad during 15 to 17th May, 2006 was the occasion to review the progress of the project and discuss the future programme. The deliberations clearly indicated the progress made by agroforestry initiatives in the country during last more than two decades. Agroforestry is a new sustainable, environmentally safe and economically attractive landuse option. Besides, promotion of agroforestry is the only viable option to achieve the National Forest Policy Target of 33 per cent tree cover in the country. Agroforestry now occupies about 25.72 million ha area in the country.

A large number of agroforestry models have been developed for different agroclimatic zones of the country integrating very diverse components. The components includes medicinal – aromatic plants, flowers-fruits, vegetables, crops, grasses, legumes, livestock, sericulture, apiculture, fishery and others. It is hasting that agroforestry technologies is now being vigorously promoted by NGO's, industries, state departments as well as a number of farmer's cooperatives. The AICRPAF has taken up initiatives from 2003 for biofuel research in the Country. As a result, we now have a large germplasm of Tree Borne Oil Seeds (TOBs) and few of the centers have already initiated work on hybridization and other areas to provide improved material of the biofuel plants. Biofuel based hybridization and other areas to provide improved material of the biofuel plants. Apart from its propagation in wastelands, As a project coordinator, I am happy that we have made a good progress and taken up demonstrations of agroforestry technologies in the farmer's field. I wish all the researchers good luck and request them to continue the good work being done by them for the course of agroforestry, I also congratulate NRCAF on its 18th Foundation day.

EMPIRICAL MODELS FOR EARLY SELECTION OF *Dalbergia sissoo* PROGENIES: SOME LIMITATIONS

Determining the age at which tree or families in genetic tests can be reliably selected for relative performance at a later age (often rotation age) is critical to the efficiency of tree improvement programs, because age of selection determines the length of the breeding cycle and the amount of genetic gain that can be achieved per unit time. Early selection in trees is actually indirect selection on the 'juvenile' trait and one must rely on a correlated response in the mature trait, performance at economic rotation age. A juvenile-mature (or simply age-age) correlation of a trait or trait index is a principal tool in forest genetics used in calculating gain arising from juvenile selections of future breeding population. An age-age correlation indicates how much gain is sacrificed to obtain the time advantage. A strong correlation implies that time advantage is met with a small reduction in absolute gain per cycle or vice-versa.

Dalbergia sissoo (Shisham), a multipurpose leguminous tree, produces nitrogen-rich fodder and green manures, high quality fuelwood and charcoal, strong durable poles and beautiful dark brown wood for furniture and panelling. It is also used in agroforestry system to protect soil, improve crop production (due to nitrogen fixation) and provide long-term financial security. These characteristics make *Dalbergia sissoo* a popular species for afforestation, industrial plantations and farm forestry planting.

Empirical models for predicting age-age correlations for *Dalbergia sissoo* progeny trial in semi arid region of Central India were developed using nine years data. The three traits viz. tree height (H), diameter at breast height (D) and an index for stem volume (D^2H) were examined. The age-age correlations for three traits viz. height, diameter at breast height and volume index were significantly high for two ages. For example value of $r_{6:9}$ for the three traits comes out to be 0.918, 0.920 and 0.940, respectively. This indicates that performance of tree at older age is related with the performance at younger age. Among three traits, the correlations were higher in case of trait index D^2H than other two traits. Moreover, correlations between younger age to older age decreased with the increase in older age in all the three traits.

Linear models were fitted for age-age correlations using LAR as an independent variable, where LAR is $\log_e$ of plantation age ratio of any two ages involved in an age-age correlation. The adjusted R^2 values for the fitted models were found to be 0.783, 0.856 and 0.931, respectively for the three traits. This indicates that model for trait index D^2H will give better predictions of age-age correlations than other two traits. The empirical model fitted for trait index D^2H i.e. $r_{age,age} = 1.011 + 0.183$ LAR is depicted in fig.1. Using this model, efficiency of early selection in terms of gain per unit time has been estimated for different rotation ages. It was found that for a particular rotation age, the efficiency of selection decreased with the increase of selection age. The efficiency for selection at age 9 and rotation age 30 comes out to be 1.864, which means that selection at 9 years would yield 1.864 times more gain than would selection at age 30. Similarly the efficiency for selection at age 10 and rotation age 35 comes out to be 1.98, which means that selection at 10 years would yield 1.98 times more gain than would selection at age 35.

Although juvenile-mature correlations may be predicted by this type of model and also efficiency of early selection may be estimated, but this model has some limitations. It predicts juvenile-mature correlations based on age alone. Further, it does not depend on growth rates and growing conditions. Lastly it does not determine the optimum age of selection. Hence such empirical model should be used with caution for early selection of *Dalbergia sissoo* progenies.

$$r_{age,age} = 1.011 + 0.183\ LAR$$
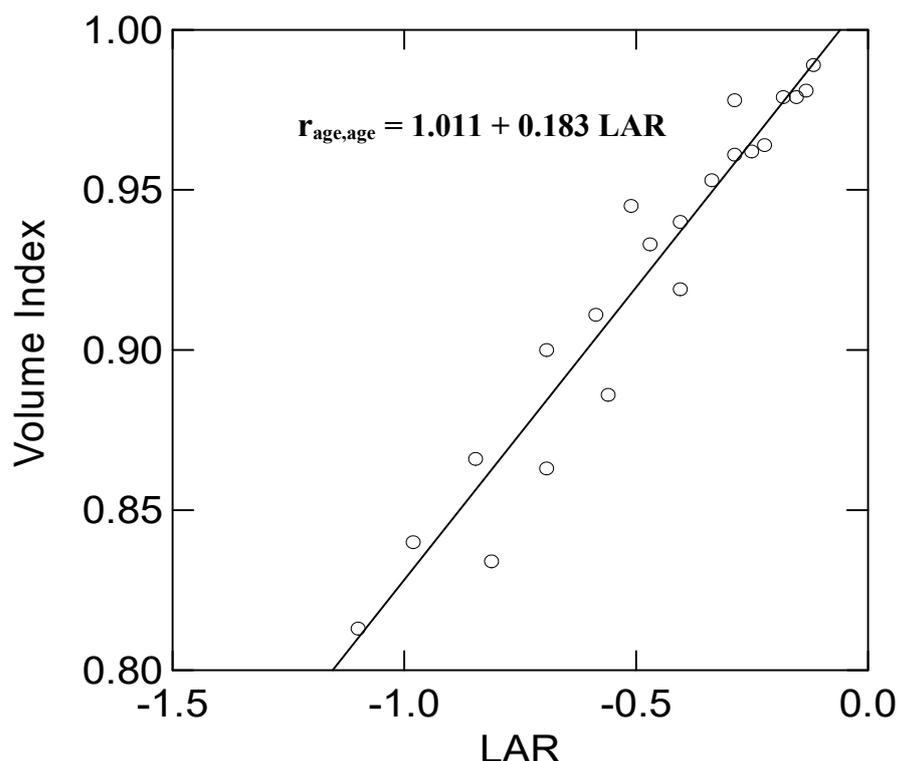
Age-age correlations model fitted for trait index D^2H

R.H. Rizvi, V.K. Gupta and S.P. Ahlawat
National Research Centre for Agroforestry, Jhansi

RESEARCH ADVISORY COMMITTEE

Thirteenth RAC meeting was held on 30th April, 2006 at IGFRI, Jhansi under the chairmanship of Dr, A.S. Patil, Vice Chancellor, University of Agricultural Sciences, Dharwad. Dr. S.K. Dhyani, Director, presented the Action Taken Report of 12th RAC recommendations and the significant achievements of the Centre for the period of one year. All the Programme Leaders also attended the meeting.

FOUNDATION DAY

National Research Centre for Agroforestry celebrated its foundation day on 8th May 2006. On this occasion various scientific, cultural and other activities were organized at the Centre. Dr. K.G. Tejwani, Director, Land Use Consultant (Int'I), New Delhi was the Chief Guest of the function.

Dr. R. Deb Roy, Dr. K.R. Solanki, Dr, A.S. Gill and Dr. P. Rai Ex. Directors of the Centre were the invited persons of the function. Dr. Chawla, Rtd. Nuclear Scientist, New Delhi was the special guest.

During the occasion, Best Worker Award was given among Scientific, Technical, Administrative and supporting staff for the outstanding work, as fallows:

Category	Name	Designation
Scientific	Dr. P. Rai.	Pr. Scientist
Library	Sh. S.G. Dhamdhere	Tech. Officer
Farm./Field .Technician	Sh. R.N. Singh	Tech. Officer
Administrative	Sh. A.K. Chaturvedi	Sr. Steno
Driver	Sh. Het Ram	Tech. (T-2)
Supporting	Sh. Tulsi Das	SSG- III

Best Worker Award comprises of one Certificate and Cash Rs. 251.00. One Award was also given to Sh. Attar Singh, supporting staff for best Sportsman.

The chief guest released a Centre's publication entitled "Consultancy Services in Agroforestry & Resource Conservation" on this occasion.

Message on Foundation Day
Dr. K.G. Tejwani, Chief Guest

Dr. Dhyani, Dr. Deb Roy, Dr. Solanki, Dr. Gill, Dr. P. Rai, Scientist, Staff & Trainees of the NRCAF, Distinguished Guest, Members of the Media, Ladies & Gentlemen.

Man and forests have always lived together. Man appeared first in the forest. Man grew up in the forest as a gatherer of food. He was always aware of the growth of trees and their benefits to him. Gradually he realized that he can grow some things; then he learnt cultivation which required clearing the ground to sow. This is how "Agroforestry" – was developed. In the early stages it was "AGROFORESTS" which term gradually got changed to agroforestry. Though "AGROFORESTS" and /or shifting cultivation still exist, man has never strayed away from trees. All our agriculture is associated with trees, and many excellent, sustainable, economic, socio-cultural systems / practices have been developed in all the agro-climatic conditions of India. I will not elaborate on these. It is our good fortune that we have realized the importance of agroforestry in our life/ civilization /economy.

Though we may not have used the term agroforestry (first coined in 1978), yet we have been working on agroforestry systems/practices in many of our Research Institutes (e.g. CAZRI, CSWCRTI, CPCRI, ICAR RES Complex, CARI, CSWRI), with the establishment of NRCAF a great emphasis and focus was laid on agroforestry.

NRCAF has a great opportunity to cover whole of India, in most, if not all, agroclimatic zones of India. It is a big institute that has 36 centres, a great pool of scientists and modern infrastructure. NRCAF itself has the infrastructure of the 21st century, which none of the Institutes of ICAR can claim. That also on its 18th birthday.

Great opportunities of infrastructure and investment, bring with it challenges. The first challenge is to be leadership to sell and build up agroforestry as a vibrant and active component of our production systems. A lot has been achieved, but much more needs to be done. It is claimed that agroforestry may provide employment/reduce poverty. It is good to be aware of the social benefits but the benefits need to be quantified otherwise employment generation / poverty reduction will remain slogans. It is claimed that agroforestry prevents "fuel wood famine". It is again a slogan. How many trees each system has needs to be quantified. With this quantification other benefits like "carbon sequestration ", soil / water conservation etc. can also be quantified.

NRCAF needs to emphasize on extension of whatever new techniques / technologies it has developed. It must record success stories of extension / development efforts.

NRCAF is a unique Institute of India, which has many international opportunities. It could be a Center of International training / collaboration with emphasis on "consultancy" .

Today on the 18th birthday of the NRCAF, the flag of agroforestry in India is in the hands of a young and dynamic Scientist (Dr. S.K. Dhyani), his team of scientists and staff all over India. We wish and pray that he along with his NRCAF & All India Team will hold the flag firm and raise if higher. I along with all of you congratulate them in this opportunity and occasion and wish the NRCAF many-many such joyous celebrations.

ANNUAL WORKSHOP OF AICRPAF

Annual Workshop of All India Coordinated Research Project on Agroforestry (AICRPAF) was held during May 15-17, 2006 at University of Agricultural Sciences, Dharwad. Dr. S.K. Dhyani, Director & Coordinator of the project, organized this workshop.

STAFF RESEARCH COUNCIL

Annual SRC meeting was held from 21-23 June, 2006 under the Chairmanship of Dr. S.K. Dhyani, Director. All the Principal Scientists, Sr. Scientists and Scientists of the Centre participated in the meeting and presented the progress and significant findings of their experiments.

INFRASTRUCTURE

- One Mist Chamber and one Glass House were fabricated at the Centre for research work.

MODEL WATERSHED DEVELOPMENT THROUGH AGROFORESTRY INTERVENTIONS AT GARH KUNDAR-DAWAR, DISTT. TIKAMGARH

PRA exercise was conducted in Garh Kundar –Dawar watershed to take stock of natural resources. Area development history, problems faced by farmers and their requirements were worked out. Prioritization of problems was done. Accordingly, it was decided to construct one check dam in watershed to harvest runoff water and improve ground water recharge. Vegetation survey was done in forest, agricultural lands and along nallah.

Land capability was estimated and accordingly landuse planning has been done. Farmers are motivated to plant trees under agroforestry system. Crop demonstrations are also planned. Construction of check dam is near completion. This check dam is likely to provide irrigation to 2 ha area directly and 4 ha indirectly i.e. through strengthening wells.

REVENUE GENERATION AT THE CENTRE

Revenue Generation activity is in progress at the Centre and Rs. 3000/- have been generated by letting the Conference Hall on hiring. It has been decided to extend this facility for most course of training. Other revenue genration activities like selling of quality planting material, consultancy, sale of farm produce etc. are going on in full swing.

SEMINARS DELIVERED

At the Centre Ph.D. students delivered Seminars on their research topics as given below:
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Name of the Student	Ph. D. Topics	Name of the Supervisor /Guide
Sh. K. V. Subba Rao IFS	Environmental Impact Assessment of Forest Biodiversity, due to Livelihood Dependence of Local Community in Forests of Lalitpur, Jhansi and Jalaun Districts of Bundelkhand Region	Dr. O P. Chaturvedi Principal Scientist
Mr. Imtiyaz Ali Khan	Litterfall, Litter Decomposition and Nutrient Dynamics in Four Clons of *Eucalyptus tereticornis*	Dr. O P. Chaturvedi Principal Scientist
Mr. Vishva Deepak Tripathi	Studies on Soil Formal Density and Diversity under Agroforestry Systems	Dr. R. V. Kumar Sr. Scientist
Sh. Binnami Singh	An Economic Analysis of Aonla Based Agroforestry System with Reference to Sustainability and Linkages	Dr. K. Kareemulla Sr. Scientist
Sh. Rajendra Singh	Arthopods and Soil Biotic Abundance, Biodiversity and Pest Management in *Eucalyptus* Based Agroforestry System	Dr. (Smt.) Chitra Shanker Scientist (Sr. Scale)
Mr. K. Dutt Kaushik	Assessment of genetic divergence, phenotypic stability and economic feasibility in Jatropha curcas L.	Dr. V. K Gupta, Principal Scientist
Ms. Nighat Jabeen	Documentation, analysis and modelling of Eucalyptus based system for development of consolidated models at Zonal / National level	Dr. Ajit, Sr. Scientist
Ms. Garima Gupta	Litterfall, decomposition, nutrient release and cumulative soil fertility changes in *Albizia procera* based agroforestry system.	Dr. R.S. Yadav Scientist (Sr. Scale)

PROGRAMME ON BER PRUNING

Training programme on ber pruning was organized on 25th May, 2006 at village Garh Kundar in Distt. Tikamgarh M.P. and twenty six farmers participated . Dr. R P Dewidi , Sr. Scientist (Extention) organized the training programme.

INSTITUTE JOINT STAFF COUNCIL

The Director constituted New Institute Joint Staff Council (IJSC) for the period 2006-09 at the Centre.

Staff Side	Designation	Office Side	
Sh. Birendra Singh, Member, CJSC	Jr. Clerk	Dr. P. Rai Member IJSC	Principal Scientist
Sh. Kashi Ram, Secretary, IJSC	Driver	Dr. V.K. Gupta Member IJSC	Principal Scientist
Sh. S.G. Dhamdhere, Member IJSC	Tech.Officer	Sh. Munna Ram Member IJSC	Principal Scientist
Sh. Hoob Lal, Member IJSC	Jr. Steno	Sh. B. Singh Member IJSC	Sr. F.M.
Sh. Attar Singh, Member IJSC	SSG-III	Sh. R.B. Sharma Member IJSC	AF & AO
Sh. Ram Singh, Member IJSC	SSG-III	Sh. D.K. Awashti Member IJSC	Supdt.
		Smt. Uma Member IJSC	Tech. Officer

DIRECTOR'S VISITS AS PROJECT COORDINATOR, AICRPAF
- AICRPAF Centre at OUTA, Bhuvneshwar, IGAU, Raipur from 16 to 22 April, 2006AND UAS, Dharward from 15 to 18 May, 2006.

HUMAN RESOURCE DEVELOPMENT

Dr. P Rai, Sh. Munna Ram, Pr. Scientists, Dr. Anil Kumar, Dr. K. Kareemulla, Dr. S P Ahlawat, Dr. R P Dewedi, Dr. A K Handa and Dr. R V Kumar Sr. Scientists of the Centre participated in the Annual Workshop of All India Coordinated Research Project on Agroforestry, Which was organised by Project Coordinator, AICRPAF at Dr. YS Parmar University of Horticulture and Forestry, Solan from 19th – 21st May, 2007

VISITORS
1) Dr. K.G. Tejwani, Ex. Director, CSWCR&TI, Dehradun.
2) Dr. R. Deb Roy, Ex. Director, NRCAF, Jhansi.

3) Dr. K.R. Solanki, Ex. Director, NRCAF, Jhansi & Rtd. ADG, (AF), ICAR, New Delhi.
4) Dr. A.S. Gill. Ex. Director (Acting), NRCAF, Jhansi.
5) Dr. Chawla, Nuclear Scientist (Rtd.), New Delhi.
6) Dr. Puneet Bisaria, Professor, Nehru Degree College, Lalitpur.

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dk;Z"kkyk ds vk;kstd Mk- vkj- oh- dqekj] ofj'B oSKkfud ,oa izHkkjh vf/kdkjh fgUnh us dk;Z"kkyk dh egRrk ,oa blls gksus okys ykHk ds ckjs esa yksxksa dks crk;kA mijksDr dk;Z"kyk esa bl dsUnz ds oSKkfud] rduhdh vf/kdkjh ,oa iz"kklfud oxZ ds yxHkx 50 yksxksa us Hkkx fy;kA

SERVICES AVALABLE AT THE CENTRE

NRCAF offers consultancy to Farmers, Government Departments, Cooperatives, Private Sectors and other interested organizations on

- Selection of tree species, tree crop combinations of Agroforestry
- Selection of trees for rehabilitation of degraded lands
- Establishment of nursery, propagation techniques of tree species
- Preparation of development project reports, on line search and access of information on tree species suitable for agroforestry
- Insect-pest management in agroforestry
- Biotechnologies (Tissue culture)
- Soil fertility evaluation
- Agroforestry based land use plan

Centre also conducts training programmes for officers of various Government departments and other organizations on different aspects of agroforestry.

Centre caters the need for improved seedlings of Aonla, Jatropha, Karanj, Neem, etc. to a limited scale.