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Training Programme on Agroforestry, a Source of Additional Livelihood in North-Eastern Region

A three-day training programme on ***Recent Advances in Agroforestry and its role in Natural Resource Management in North East*** was organized jointly by the Zonal Project Directorate, Zone-III, ICAR, Umiam (Meghalaya) and National Research Center for Agroforestry, Jhansi (23rd -25th August, 2011) at the premises of Central Inland Fisheries Research Institute (CIFRI), Regional Centre, Guwahati.

Dr. A. Chakraborty, Director of Research (Veterinary) of Assam Agricultural University was the Chief Guest of the inaugural session. He highlighted that scientific agroforestry has the potential of providing additional livelihood options for the small and marginal farmers of the region. Dr. A. K. Gogoi, Zonal Project Director, Zone-III, ICAR outlined the background and objectives of the training programme. Dr. S. K. Dhyani, Director and senior faculty members *viz.* Dr. R. K. Tewari, Dr. Ram Newaj, Dr. Rajendra Prasad and Dr. A. K. Handa from NRCAF, Jhansi delivered lectures and discussed the agroforestry systems for the region. Altogether 30 Subject Matter Specialists representing as many KVKs of the north eastern region have participated in the training programme.

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TRAINING PROGRAMME ON AGROFORESTRY MODELS

A training programme on "Agroforestry Models for different Edaphic conditions" was organized from 23rd-25th September, 2011 at the Centre. In this training 25 Forest officials and farmers from Social Forestry, Gwalior (M.P.) participated. Dr. R. K. Tewari, Programme Leader (HRD); Dr. R. P. Dwivedi, Sr. Scientist and Dr. K. B. Sridhar, Scientist coordinated the programme.

AGE-AGE CORRELATION MODELS FOR EARLY SELECTION OF *AZADIRACHTA INDICA* (NEEM) PROVENANCES

Early selection in trees is actually indirect selection on the juvenile trait and one must rely on a correlated response in the mature trait i.e. 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 the time advantage is met with a small reduction in absolute gain per cycle or vice-versa.

Azadirachta indica (neem) is a tropical evergreen tree with a wide adaptability. Native to India and Burma, it has been transplanted to Africa, the Middle East, South America and Australia. It is especially suited to semi-arid conditions and thrives even in the poorest soil with rainfalls as little as 18 inches (450 mm) per year and temperature up to 50^0C (120^0F). It may grow up to 15m tall and live for 200 years. The lifespan of the neem tree is described to be anywhere between 150 to 300 years. Studies on age-age correlation for tree species in India are very few and no such study was found on *A. indica*, so this has been attempted.

A provenance trial consisting of 40 provenances was established in July 2000 for their evaluation. These provenances were collected from Uttar Pradesh, Madhya Pradesh, Rajasthan, Gujarat, Maharashtra, Andhra Pradesh and West Bengal. Growth data on height and diameter at breast height (dbh) was compiled and analyzed for correlations and regression equations. Age-age correlations for tree traits height and dbh were computed for ages 5 to 10 years. These correlations were used in fitting the following models found in the literature:

Lambeth Model: $r = a + b\ LAR$

DA^2 Model: $r = a + b\ (DA)^2$

DON Model: $1-r^2 = a + b\ (DA)$

where, r – correlation between younger age & older age; LAR - Log_e (younger age/older age); D = X-Y (difference of two ages).

Age-age correlations between two ages were very high in case of 'dbh' than in case of height, for example $\mathbf{r}_{8:9}$ and $\mathbf{r}_{8:10}$ were 0.885 and 0.849, respectively. This indicated that performance at later age was highly correlated with performance at younger age. Age-age correlation models were developed for tree trait 'dbh' and then compared on the basis of adjusted R^2 and mean square error MSE (Table-1).

Table 1: Age-age correlation models for dbh of *A.indica* provenances

S. No	Equation	Adj.R^2	MSE
1.	$r_{age,age} = 0.993 + 0.531\ LAR$	0.91	0.004
2.	$r_{age:age} = 0.7910 - 0.010\ (DA)^2$	0.60	0.020
3.	$1 - (r_{age:age})^2 = 0.2187 + 0.096\ (DA)$	0.58	0.026

DA-Difference in age

It is evident from the table that model no. 1 was found good fit as compared to other two models. On the basis of this model age-age correlations were predicted and efficiency of early selection was estimated in terms of gain per unit time. For plantation age of 8-years and rotation period of 25-years, selection efficiency comes out to be 1.21, which means selection at age of 8-years will yield 1.21 times more gain than would selection at 25-years. Similarly, for plantation age of 9-years and rotation period of 30-years, selection efficiency comes out to be 1.18, which means selection at age of 9-years will yield 1.18 times more gain than would selection at 30-years. Thus younger age of 8-years seems favorable for early selection of *A. indica* provenances, because high correlations exist between ages 8 & 9 years and also between 8 & 10 years. This needs to be further verified for other traits like height, D^2H, etc. Hence, age-age correlation model may be used for estimating selection efficiency and thereby determining age of early selection.

R H Rizvi, V K Gupta, Ajit, A Datta and A K Bharti
National Research Centre for Agroforestry, Jhansi

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HUMAN RESOURCE DEVELOPMENT

- Dr. S K Dhyani, Director; Sh. B Singh, Sr. Farm Manager and Sh. Dalbir Singh Rawat, AAO of the Centre participated in the training on "Labour Law" at NAARM , Hyderabad from 4th to 6th August,2011 organized by ICAR, New Delhi.

- Dr. Badre Alam, Sr. Scientist participated in the Brain Storming Session on "Prioritization of Plant Physiology and Biochemistry Research for 12th Five Year Plan" from 5th to 6th August, 2011 at IARI, New Delhi.

- Dr. Badre Alam, Sr. Scientist participated in the Short Course on " Bioinformatics in Agriculture" from 29th August to 7th September,2011 at IASRI, New Delhi.

- Dr. Ajit and Dr. Badre Alam, Sr. Scientists participated in the QRT meeting of NPCC Project and presented progress report of the project "Studies on Mitigation Potential of Agroforestry System on Climate Change" on 29th August, 2011 at Agriculture College, AICRPDA Centre, Indore (M.P.).

- Dr. R P Dwivedi and Dr. Badre Alam, Sr. Scientists participated in the National Symposium on "Forage Resource and Livestock for Livelihood, Environment and Nutritional Security" from 10th to 11th September, 2011 at IGFRI, Jhansi organized by RMSI, Jhansi.

- Dr. S K Dhyani, Director; Dr. Ajit, Sr. Scientist and Dr. D R Palsaniya, Scientist of the Centre participated in the Launching Workshop of NICRA project entitled "Identification of Efficient Integrated Modules for Sustainable Management of Ravines (Chambal) and Carbon Sequestration for Climate Change Resilience in M. P." held at College of Agriculture, RVSKVV, Gwalior, M. P. on 6th September, 2011. NRCAF, Jhansi is a collaborating partner in this project and Dr. D R Palsaniya is associated to it from this Centre.

- Sh. N Gurunathan, Scientist participated in the Winter School on "Advances in GIS & Remote Sensing Based Digital Terrain Analysis and Hydro-geomorphic Applications in Soil-Landscape Modeling" from 6th to 26st September, 2011 held at NBSS& LUP, Nagpur.

- Dr. R K Tewari, Pr. Scientist attended RFD Nodal Officers Meet of NRM Division from 21st to 22nd September, 2011 at ICAR, KAB-II, New Delhi.

DEMONSTRATION ON FARMERS FIELD

Distributed seeds & fertilizers for *kharif* crops to 85 farmers under Farmer Participatory Action Research Programme (FPARP) and planted 2800 saplings under agroforestry system on 76 farmers' field during this rainy season.

PROMOTION

- Sh. Rajendra Singh, Tech. Officer (T-6) promoted to the post of Sr. Technical Officer (T –7/8) w. e. f. 1st January, 2010.
- Smt. Uma, Tech. Officer (T-6) promoted to the post of Sr. Technical Officer (T –7/8) w. e. f. 1st January, 2010.
- Sh. Ram Bahadur, Sr. Tech. Assistant (T-4) promoted to the post of Technical Officer (T –5) w. e. f. 10th December, 2011.

RETIREMENT

Sh. Munna Ram, Pr. Scientist of the Centre retired on 31st July, 2011. Dr. V. K. Gupta, Pr. Scientist of the Centre retired on 31st August, 2011. The staff members bid a grand farewell to both the Scientists.

SELECTION

- Dr. A Venkatesh, Sr. Scientist (Forestry) of the Centre has been selected as Pr. Scientist (Forestry) at ICAR Research Complex for NEH Region, Barapani. He was relived from his present assignment on 2nd July, 2011.

- Dr. R. S. Yadav, Sr. Scientist (Soil Science) has been selected as Pr. Scientist (Soil Science) at PDFSR, Modipuram, Meerut. He was relived from his present assignment on 26th August, 2011.

FELLOW AWARD

(1) Dr. S. K. Dhyani, Director and Dr. Anil Kumar, Pr. Scientist were Awarded the Fellow of the Society of Range Management of India, IGFRI, Jhansi.
(2) Dr. R. P. Dwivedi, Sr. Scientist was awarded Fellow of the Society of Indian Society of Extension Education, New Delhi.

PROJECT COORDINATOR, AICRP ON AGROFORESTRY VISIT TO CENTRES

In order to monitor the research programme and interact with the officers of the Coordinating centres, Dr. S. K. Dhyani, Project Coordinator, AICRP on Agroforestry visited the following centres:

1. AICRP on Agroforestry centre at ANGRAU, Hyderabad on August 7th -8th, 2011.
2. AICRP on Agroforestry centre at AAU Campus, Kahikuchi, Guwahati on August 24th , 2011.
3. AICRP on Agroforestry centre at SDAU, Sardarkrushinagar, Gujarat on September 8th - 10th, 2011.

DIRECTOR, NRCAF's VISITS

1. Dr. S.K. Dhyani, Director, NRCAF, Jhansi nominated as member on behalf of ICAR in Planning Commission Working Group on **Ecosystem Resilience, Biodiversity and Sustainable Livelihood and Forestry and Sustainable Natural Resource Management** for the XIIth Five Year Plan (2012- 2017) and participated in the meetings on July 25th & 29th and August 23rd , 2011during this quarter.

Dr. S.K. Dhyani, Director, participated in the following meetings:

a) ICAR Foundation Day, Award Ceremony and NRM Directors meet at NASC, New Delhi during 14th -16th July,2011.

b) Dr. S. K. Dhyani as President, ISAF along with Dr. A.K. Handa, Secretary ISAF participated in One Day Meet of the Presidents/Secretaries/Key Functionaries of Professional Societies at NASC, New Delhi on July 22nd, 2011.

c) NBPGR- NAGS meeting at NBPGR, New Delhi during July 29th – 30th, 2011.

d) National Consultation on Tree Fodder & Quality Improvement organized by the NRM Division at NASC, New Delhi on August 19th, 2011.

e) In Cabinet Secretariat, Rashtrapati Bhavan, New Delhi on August 19th and September 19th, 2011 to discuss report of the Expert Committee on Ethanol Pricing and Policy for Pricing of Bio-diesel.

f) ICAR Platform on Conservation Agriculture and Director's meeting of NRM Institutes at KAB-II, Pusa, New Delhi on September 22nd, 2011.

g) IInd Special Meeting of the VCs/Project Coordinators of AICRPs at NASC, New Delhi on September 26th – 27th, 2011.

H) TRAININGS ON ACCOUNTING

i)

j) Two training programmes (21st to 23rd and 26th to 28th December, 2011) for Watershed Committee President, Secretary & Members and SHG Secretary & Members of Charkhari-II and Mahoba-II of district Mahoba were organized. A total of 110 participants including 13 women participants attended the programmes. Common guide lines for watershed development, accounting procedures and record upkeep in watershed was thoroughly discussed.

k)