Agroforestry
Newsletter

National Research Centre For Agroforestry, Jhansi-284 003

Vol.20 No. (1) **JANUARY-MARCH, 2008**

National Workshop on Jatropha

A National Workshop on Jatropha sponsored by the Planning Commission, GOI was organized by the ICAR on 1st February, 2008 at NASC Complex, New Delhi. Sixty four participants from SAUs, ICAR Institutes, Govt. Departments, NGOs, Industries and Ministries deliberated on this issue during the workshop. Prof. V.L. Chopra, Member, Planning Commission, New Delhi while inaugurating the Workshop mentioned that more concentrated efforts related to the management and quality parameters of Jatropha cultivation are needed to give a flip to its cultivation in the country while keeping in view the related environmental issues. Dr. A. K. Singh, DDG (NRM), ICAR in his welcome address highlighted the significance of Jatropha as a biofuel and stressed upon different environmental issues related to GHG emissions and advised to grow Jatropha in the wastelands without compromising the overall Food Security. Prof. D.P.S. Verma, Chairman, TAC, expressed his concern about the environment and toxic components related with Jatropha cultivation. There were three Technical Sessions *viz.*, R&D Scenarios in Biofuel; Environment and Toxicity Impacts; and Production Strategies and Quality Improvement and Processing, Economics and Marketing. Dr. S.K. Dhyani, Director, NRCAF, Jhansi and Dr. Parmatma, Head, TNAU, Coimbatore highlighted the findings related to germplasm evaluation, genetic improvement, quality planting material and package and practices for Jatropha cultivation.

Close view of fruits of Jatropha hybrid- NRCAF, Jhansi

The experts also discussed about the impact of different toxicity parameters of Jatropha on soil health and environment, production strategies and quality improvement programmes and processing, economics & marketing aspects. The Plenary and concluding session was Chaired by Dr. J. S. Samra, CEO, NRAA and Co-Chaired by Dr.V.V. Sadamate, Advisor (Agri.), Planning Commission. The following action points emerged from discussion;

- More concerted efforts are needed to promote the Jatropha cultivation on a large scale, hence, the research activities related to genetic improvement and crop management along with development of high-yielding varieties for specific locations may be prioritised.

- The impact of Jatropha cultivation on environment and toxic parameters including the soil health may also be studied. Cost of cultivation needs to be worked out and accordingly minimum support price may be considered for the overall benefit to the farming community
- The Jatropha cultivation may be promoted only for wastelands areas of the country.

GROUP MEETING ON "PUBLIC PRIVATE PARTNERSHIP IN AGROFORESTRY"

The Bundelkhand region has been experiencing acute drought consecutively for past four years. It is directly reflected on farmers in terms of low crop productivity, non availability of fodder and drinking water leading of migration to cities for their livelihood. To tackle the situation in the region, Agroforestry is viewed as the only viable option. Therefore, with, a view to encourage agroforestry landuse, one day group meeting of all possible stakeholders was organized at NRCAF, Jhansi. The main theme of the group meeting was to bring all stakeholders, development agencies on one platform, establish linkages between farmers, processors, marketers , industrialists, development agencies and researchers, resolve differences of perceptions of stakeholders and ultimately promote diversification of agriculture through agroforestry for improvement of livelihood of people in the region.

A one day workshop on Public Private Partnership in Agroforestry was organized at the Centre on 8th February 2008. Shri Rajeev Agarwal (IAS), District Magistrate, Jhansi inaugurated the function. A total of 70 participants representing officials from Agricultural Department, Jhansi (2), KVK, Bharari (2), Scientists (IGFRI - 4 & NRC AF-20), Industries (D1-BP Fuel Crops Pvt. Ltd, Rhus Khan Food Processing Unit), NABARD, Nursery (Indish & Kush), NGOs (DA, Pragathi Path, Jeevan Rekha, Anshuman Mahila Avam & Haritika) and 19 progressive farmers from Bundelkhand region from Naya Khera, Mauranipur, Karari, Jhansi, Dagarwah, Sinaura, Garhkundar and Bharari villages participated in the group meeting.

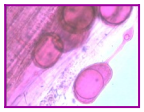
The out come from the deliberations and group discussions are; agroforestry is one of the option for sustainability and might be adopted in Bundelkhand region on large scale to safeguard the fragility of the ecosystem; wood based industries should be established for better remuneration to the farmers; micro irrigation systems can be adopted for efficient utilization of available water; timely supply of agricultural inputs should be ensured at block level; co-operative farming may be initiated for efficient resource sharing (technological, intellectual and financial); proper value chain for agro-products can be strengthened; need to establish the fodder banks to cope with adverse climatic conditions. The points emerged from the deliberations have for reaching the consequences for dissemination of agroforestry technology for the stakeholders. It emphasized to give incentives to the farmers for adoption of agroforestry, relaxation of rules and regulations for felling and transport of timbers from farm land and minimum support price for different agroforestry products may be considered to encourage the farmers for tree farming in micro level and increase the tree cover for environmental services. After the meeting a field visit to the NRC AF research farm was also arranged for the participants.

Dr. S. K. Dhyani, Chairman, Dr. O.P. Chaturvedi, Co-Chairman, Dr. A. Venketesh or Dr. S. P. Ahlawat, Organizing Secretary and Dr. R. H. Rizvi, Joint Organizing Secretary conducted the group meeting.

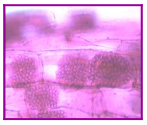
STUDIES ON ARBUSCULAR MYCORRHIZAL FUNGI IN AGROFORESTRY

Arbuscular mycorrhizal (AM) fungi form symbiotic association with many economically important plants. These improve plant growth under low fertility conditions, confer tolerance against certain plant pathogens, improve water balance of the plants, contribute to the formation of soil structure and also help plants to establish in new areas

DIAGNOSTIC FEATURES



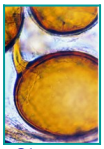
Vesicles



Arbuscules

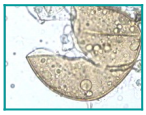
ISOLATED AM SPECIES

Aacaulospora scrobiculata

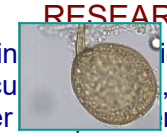


Glomus intraradices

Glomus 2



Glomus 3



Glomus 4

Glomus 5

Glomus 6

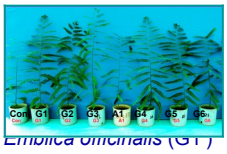
RESEARCH FINDINGS

- Nin ies of fo s, seven of horticu , ten f and eight fodder re pos ed for the presence of AM fungi in their rhizosphere
- Local soils were found to be rich in AM spore populations. *Glomus* was predominant genus, apart from this *Acaulospora*, *Gigaspora* and *Sclerocystis* were also present
- In agroforestry systems, trees acted as AM inoculum reservoir for intercrops
- Cross inoculation test performed by using AM fungi isolated from trees showed that these could colonize the roots of important kharif (black gram, green gram and maize) and rabi (gram, pea and wheat) intercrops
- Data on AM species composition in rhizosphere of component crops of agroforestry systems suggest that AM fungi cross infect the plant species under field conditions also
- Intercropping increases AM activity in rhizosphere of trees
- Tree shade reduces the rate of mycorrhization of intercrops, specially during winter months
- AM activity in terms of spore population and mycorrhizal diversity was more in light soils as compared to heavy soils
- Excessive stagnation of water during rainy season in aonla orchard was found to be harmful for colonization of plants with arbuscular mycorrhizal fungi. *Glomus* was more adapted to such conditions

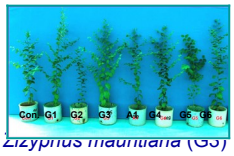
OBJECTIVES

- Identification of sites with good mycorrhizal plants in local plantations and nurseries
- Identification of AM species, which occur in abundance at identified sites
- Culturing of common AM species
- Screening of AM species for vigorous plant growth under nursery conditions

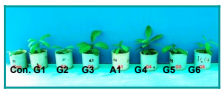
EFFECT OF INOCULATION OF AM SPECIES ON GROWTH OF TREE SPECIES



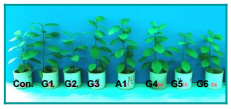
Emblica officinalis (G1)



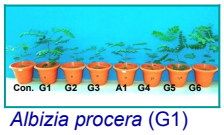
Zizyphus mauritiana (G3)



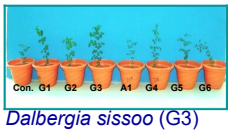
Buchanania lanzan (G6)



Cordia myxa (G1)

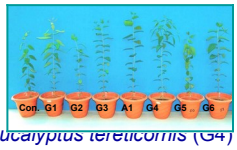


Albizia procera (G1)



Dalbergia sissoo (G3)

Pongamia pinnata (G1)



Eucalyptus tereticornis (G4)

* Best AM species

A. Kumar, A. Shukala, H. Hashmi, A. Jha and M. Kamalvanshi

National Research Centre For Agroforestry, Jhansi

TRAINING PROGRAMME ON TREE IMPROVEMENT

The All India Coordinated Research Project on Agroforestry since 1983, it has contributed significantly towards popularizing location specific agroforestry practices and increasing the tree cover outside the forest area. The 3rd QRT of the Project, during its visit to different centres and at NRC for Agroforestry suggested having a training programme on Tree Improvement for the benefit of the project staff. Further, during last workshop of the project held at YSPUH&F, Solan during May 19-21, 2007, it was recommended that the PC Unit should conduct short training programmes every year on different aspects on Agroforestry.

In this context, a three day training programme on "Tree Improvement" for the scientists and technical staff working in the AICRP on Agroforestry was organized from 26th – 28th February, 2008 at NRCAF, Jhansi by the Project Coordinating Unit. Total 31 participants from twenty three SAUs attended the programme which focused on importance of tree improvement; exotics in agroforestry; exploration, collection, evaluation of germplasm; progeny and provenance trials; seed orchard establishment and design; seed collection, testing and storage; hybrids in tree improvement; biotechnological approaches in tree improvement; experimental designs and statistical methods. The training schedule was based on lectures and practical.

The resource persons Dr. K.R. Solanki, EX ADG (Agroforestry), ICAR, Dr. A.K. Mandal, Director, Tropical Forestry Research Institute, Jabalpur and Dr. D.K. Khurana, Professor, YSPUH&F, Solan were instrumental in conducting the programme in addition to the scientists of the NRC for Agroforestry and IGFRI, Jhansi.

The training programme was conducted under the guidance of Dr. S.K. Dhyani, Director & Project Coordinator and Dr. V.K. Gupta, Principal Scientist (Tree Improvement), NRCAF, Jhansi. Dr. A. K. Handa, organizing secretary and Dr. Ajit, Dr. R.V. Kumar and Dr. A. Venkatesh were the Co organizing secretaries of the training.

fo'o okfudh fnol ,oa fo'o ty fnol

dsUnz esa **fo'o okfudh ,oa ty fnol** euk;s x;sA bl volj ij ,d laxks"Bh dk Hkh v;kstu fd;k x;kA laxks"Bh dk fo"k; **^^ ty o ou laj{k.k ,oa lao/kZu**** FkkA dk;Zdze ds eq[; vfrfFk Mk- ,l- ds- /;kuh] funs'kd] d`f"kokfudh FksA bl ekSds ij dsUnz funs'kd Mk- /;kuh us vius **m**ncks**/ku** esa dgk fd ty ds fcuk gekjk thou nqyZHk gS] blfy, gesa mldk lgh rjhds ls mi;ksx djuk pkfg, vkSj cjlkr dss ikuh dk vPNh rjg ls laj{k.k djuk pkfg,A mUgksus vius oDrC; esa ;g Hkh dgk fd 2050 rd gekjs ns'k dh vkoknh yxHkx ,d vjc vV~Bkou djksM+ gks tk;sxh ftlds fy, djhc 494 fefy;u Vu [kk| inkFkZ dh vko';drk gksxh ,oa bl [kk| inkFkZ dks iSnk djus esa

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PROMOTION

Dr. Ram Newaj, Sr. Scientist (Agronomy) promoted to Pr. Scientist w.e.f.2nd February, 2007 under the provision of Revised Career Advancement Scheme.

RETIREMENT

Dr. P. Rai, Pr. Scientist of the Centre retired on 31st March 2008. The staff members bid a grand farewell to the Scientist.

NEW AF&AO

Sh. S. B. Sharma, AF& AO joined the Centre on promotion from CIRG, Makdoom, Mathura (U.P.)

PME MEETING

PME meeting was held on 29th February, 2008. All the Scientists participated in the PME meeting.

HUMAN RESOURCE DEVELOPMENT

- Dr. S. K. Dhyani, Director participated in the Inter-Ministerial Central Team Meeting organized by National Rainfed Area Authority, Ministry of Agriculture, GOI, New Delhi on 4th January, 2008 at Krishi Bhavan, New Delhi.

- Dr. S. K. Dhyani, Director, Dr. A. K. Handa, Sr. Scientist and Dr. R. V. Kumar, Sr. Scientist participated in one day workshop on Jatropha sponsored by the Planning Commission, GOI and organized by the ICAR on 1st Feb., 2008 at NASC Complex, New Delhi.

- Dr. S. K. Dhyani, Director participated and presented Key Note Address and Dr. O. P. Chaturvedi, Pr. Scientist and Dr. A. K. Handa, Sr. Scientist participated in National Symposium on "Intensive Forest Farming: The State of Art" from 12th to 14th February, 2008 at PAU, Ludhiana (Paj.).

- Dr. P. Rai, Pr. Scientist and Dr. P. Ratha Krishnan, Scientist (Forestry) participated and presented paper in the National Seminar on "Forest and Environment in India: Contemporary Issues and Challenges" from 18th to 19th February, 2008 at Dept. of Forestry, Envi. & For. Mgt., GGU, Bilaspur (Chattisgarh).

- Dr. R. K. Tewari, Pr. Scientist participated in the short training programme on "Project Formulation, Budgeting and Implementation of Forestry and Forest Based Projects" from 26th to 29th February, 2008 at IIFM, Bhopal (M.P.).

- Dr. R. H. Rizvi, Scientist (Sr. Scale) participated and presented the paper in the three days training on "IT –Enabled Knowledge Management" from 5th to7th March, 2008 organized by Administrative Staff College of India, Hyderabad (A.P.).

- Dr. S.P. Ahlawat, Sr. Scientist participated in the National Conference on" Bamboos: Management Conservation, Value Addition and Promotion" from 12th to 14th March 2008 at TFRI, Jabalpur (M.P.).

- Dr. Anil Kumar, Pr. Scientist, Dr. R. V. Kumar, Sr. Scientist and Dr. D.R. Palsaniya, Scientist, participated and presented the paper in the National Workshop on "The Problems and Prospects of Agroforestry in Uttar Pradesh" from 16th to 18th March, 2008 at Allahabad (U.P.).

- Dr. Anil Kumar, Pr. Scientist attended the training on PME from 24th to 28th March, 2008 organized by IIM, Lucknow (U.P.).

AWARD

NRCAF received First Prize for Best Office Garden in the Regional Phal, Shak Bhaji Avam Phool Pratiyogita organized by the State Government Horticulture Department, Jhansi from 16th to17th February, 2008.

ICAR ZONAL SPORTS MEET

A contingent of 25 participants from the Centre participated in ICAR Zonal Sports Meet at CAZRI, Jodhpur from 4th to 8th March, 2008 and got 1st prize Trophy in March Past and 2nd prize in cycle race.

VISITORS

- Dr. Kirti Singh, Former Chairman ASRB(ICAR), New Delhi.
- Dr. Arun Verma, Chairman, RAC& Ex. DDG(AS), ICAR, New Delhi.
- Dr.S. M. Ilyas, Director, NAARM, Hydrabad (A.P.).
- Sh. Suresh Kumar, Chief AO, NAARM, Hydrabad (A.P.).
- Dr. R. N. Prasad, Ex.ADG(Soils), ICAR, New Delhi.
- Dr. A. Singh, Ex. PS(SWE), WTC, New Delhi.
- Er. Subodh Kumar, Chairman, Global Signal Group (India & USA),Ghaziabad(U.P.).

EXHIBITION

Centre participated in the Kisan melas on the following dates:

Date	Organizer & Place	Function
21st to 23 February, 2008	IARI, New Delhi at Pusa Campus	Pusa Krishi Vigyan Mela
26th February,2008	Uttar Pradesh Agriculture Department at Badhwar, Gursarai, Jhansi	Kisan Mela
01st March, 2008	Uttar Pradesh Agriculture Department at Bhadokhar, Gursarai Block, Jhansi	Kisan Mela

PARTICIPATION IN KISAN GOSTHI

During rabi season Uttar Pradesh Agriculture Department organized Kisan melas and Kisan gosthis in different villages of Jhansi district. Scientists and Technical Officer of the Centre participated in the Kisan melas and Kisan gosthis as follows:

Date	Name of the Person	Name of the Village
15th February,2008	Dr. R. K. Tewari, Dr. R. S. Yadav, Dr. D.R. Palsaniya	Raksha, Jhansi
23rd February,2008	Dr. Ram Newaj, Dr. A. Venkatesh, Dr. R. S. Yadav , Sh. Ram Bhadur	Khailar, Jhansi
26thFebruary, 2008	Dr. R. P. Dewedi, Dr. R. S. Yadav, Dr. D.R. Palsaniya, Dr. C. K. Bajpai	Badhwar, Jhansi
01st March, 2008	Dr. R. P. Dewedi, Dr. R. S. Yadav, Dr. C. K. Bajpai	Bhadokhar, Jhansi

Agroforestry at AICRP centre Orissa University of Agriculture and Technology, Bhubaneshwar

The centre started functioning from November, 1983 at Regional Research Station, Semiliguda in the undivided district of Koraput, Orissa and later on transferred to Central

Research Station, OUAT, Bhubaneswar on May 1992. The new location is situated under East and South Eastern Coastal Plain agro-climatic zone of the state at $20^0$15'N latitude and $85^0$52'E longitude at an altitude of 25.9 m above mean sea level. The soil is predominantly red lateritic, having loamy sand to sandy loam texture. It is rich in oxides of iron and aluminum but poor in dibasic cations and soluble salts. The normal rainfall of the station is 1493.7 mm with 113 rainy days in a year. The thrust areas of research on Agroforestry at Bhubaneswar are identification of suitable trees (including fruit trees and shrubs) and crops, and their management in agroforestry systems under different farming situations for higher and sustainable production and conservation of resources. The MPTS allotted to the centre are *Acacia mangium* and *Dalbergia sissoo*. The salient research achievements of the centre are :

In agrisilvicultural system *Acacia mangium* and *Gmelina arborea* at 625 trees/ha are being evaluated with four shade loving crops (arrow root, colocassia, sweet potato and turmeric). The mean reduction in intercrop yield was only 17.8% as compared to sole crop at 5 ½ years age. The reduction was maximum for sweet potato (23 %) and least for colocassia (13.1%). Among the two tree species, *A. mangium* caused maximum reduction (19 %) in intercrop's yield followed by *G. arborea* (17 %). Turmeric crop in association with *G. arborea* and *A. mangium* gave the highest net return of Rs. 33, 000 and Rs.31, 800 per ha, respectively, followed by arrowroot (Rs.27,500/-ha). However, turmeric had the highest B:C ratio of 2.1 with G. *arborea* and 2.06 with *A .mangium*.

- In Silvipasture system, three fodder grasses (hybrid napier, guinea grass and thin napier) were grown in association with three fast growing timber species (*Acacia mangium, Gmelina arborea and Tectona grandis*). Trees were spaced at 6.0 m x 2m and their effect on inter planted grasses was assessed. The green forage yield of hybrid napier was maximum (14.17 t/ha) followed by guinea (13.40 t/ha). The net return from these grasses varied between Rs.3656 for Thin napier under *T. grandis* to Rs.6072 from hybrid napier under *T. grandis*. The growth of tree was highest in *A. mangium* (ht.-12.57m, DBH-13.80cm).

- In a Guava based Agrihortisilvipasture system, the inter crop colocassia produced a tuber yield of 5.89t/ha and 5.23t/ha in association with 9 years and 15 years old Guava plantation respectively. The growth was highest in *Acacia mangium* (ht-4m, dbh- 20.0cm). The highest mean fruit yield of guava was obtained in association with *A. mangium* (3.06 t/ha). The highest net return as well as B:C ratio were obtained from Amorphophallus in association with *Gmelina arborea* (Rs.42,940/ha, 2.07) followed by Amorphophallus and *Dalbergia sissoo* (Rs.40190/ha, 2.00).

For further information please contact

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0674-2391188 (O), 09437189539 (M), 0674-2391424 (Fax),
Email: ashok_forestry@yahoo.com

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izR;sd frekgh dh Hkkafr vkxkeh vizSy esa ,d fgUnh dk;Z’kkyk dk vk;kstu fd;k tk jgk gS ftlesa dsUnz ds leLr oSKkfud@vf/kdkjh ,oa deZpkjh Hkkx ysaxsA _____

AN ANNOUNCEMENT

Dr K.G. Tejwani Award
for
Excellence in Agroforestry
Research and Development
(2007-08)

The last date for inviting application has been extended upto 31st May, 2008.The nomination forms can be downloaded from the website of NRCAF, Jhansi (http://www.nrcaf.ernet.in)