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Newsletter
National Research Centre For Agroforestry, Jhansi-284 003

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Hon'ble Dr. A. K. Singh, DDG (NRM), ICAR, NEW DELHI VISITS NRCAF

Hon'ble Dr. A. K. Singh, DDG (NRM), ICAR, New Delhi visited the Centre on 8th May, 2010 on the eve of Centre's Foundation Day. Dr. Singh inaugurated construction of runoff and silt gauging station in Model Watershed at Domagor Pahuj, Jhansi district, Uttar Pradesh. This watershed is part of the sub watershed draining into Pahuj river and truly represents Bundelkhand region. It is being implemented in consortium mode with ICRISAT, NRCAF, and an NGO-Development Alternative (DA) as partners. Dr. Singh while addressing farmers in watershed emphasized the need for rain water harvesting and efficient utilization of rainwater and adopting agroforestry technologies. He also planted drum-stick (*Moringa*) near open well at farmer's field as a part of household nutritional security.

NRCAF IN MEDIA

A documentary film on R&D activities of NRCAF was telecast by Delhi Doordarshan (National) on 26th April,2010. It also prepared a documentary film on mitigating ill effects of drought on the basis of successful implementing the model watershed by the Centre and telecasted under Krishi Darshan programme on 3rd May, 2010. The research and extention activities of the NRCAF were broadcasted by All India Radio, Jhansi on 20th June under Krishivaniki Warta and telecasted by DD News on the same day.

Issue Highlights

- **22 okW LFkkiuk fnol ;** IRC meeting; Telecasting of documentary film; Meeting for implementation of Bundelkhand package

Forthcoming Events

- Annual Group Meeting of AICRPAF; IJSC/ Women Cell /PME Cell meetings; Hindi Saptah

REVIEW MEETING ON SPECIAL PACKAGE FOR BUNDELKHAND

A meeting was organized by the National Rainfed Area Authority (NRAA) to discuss speedy implementation of Bundelkhand package under the Chairmanship of Ms. S. Pillai, Member Planning Commission. It was held at Jhansi on 14th May, 2010. Dr. J. S. Samra, CEO, NRAA presented the highlights of the package. Chief Secretary U.P. along with Principal Secretary of various departments, Commissioner other District authorities from seven districts of Bundelkhand region of Uttar Pradesh participated in the meeting. Director, NRCAF, Jhansi presented his views on mitigation of ill effects of drought in Bundelkhand region and showed

documentary film on the successful watershed programme implemented by NRCAF at Garhkundar Dabar, M.P. .

PERFORMANCE OF RHIZOME CROPS IN AGROFORESTRY UNDER RAINFED CONDITION IN SEMI ARID BUNDELKHAND

An observational trial was conducted at NRCAF research farm during 2009-10 to evaluate ginger, turmeric and colocasia in *Eucalyptus* based agroforestry under rainfed condition in semi arid Bundelkhand. The above three rhizome crops were sown with and without agroforestry and replicated thrice. In agroforestry, the three crops were raised in second year ratoon crop of *Eucalyptus* planted at 3 x 2m spacing. The average height, diameter at breast height and canopy diameter of *Eucalyptus* at sowing time were 10.4 m, 12.7 cm and 1.91 m, respectively. The plot size was kept at 9 x 6 m, thus accommodating 9 trees in each plot. Turmeric and ginger were sown at 50 x 20 cm spacing each while colocasia was sown at 50 x 30 cm. The crops were sown on 11th July, 2009 with recommended package of practices. Thin mulch was provided immediately after sowing using locally available *Butea monosperma* leaves. Two weeding cum earthing up was done. The crops were taken as rainfed and one life saving irrigation was provided on 2.12.2009. The colocasia was harvested 130 days after sowing while other two were harvested 200 days after sowing.

It was observed that in general, the crops under *Eucalyptus* plantation germinated two-three days earlier than the sole crops. Further, ginger took the maximum time to germinate followed by turmeric and colocasia. The performance of the crops was poor under rainfed condition. Under given rainfall conditions and management, ginger proved to the most suitable and shade loving crop amongst the three and it recorded 86 % higher fresh rhizome yield when grown with *Eucalyptus* as compared to sole ginger. On the other hand, colocasia proved to be the least suitable intercrop for *Eucalyptus* and recorded maximum reduction in fresh yield as compared to sole crop. Similarly, yield of turmeric also reduced when grown in association with *Eucalyptus* as compared to sole crop. Therefore, under given conditions, ginger is the best suited rhizome crop in *Eucalyptus* followed by turmeric and colocasia.

D R Palsaniya and R K Singh
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dk;ZØe esa dsUnz ds funs’kd MkW0 ,l-ds- /;kuh us vfrfFk;ksa dk Lokxr djrs gq, foxr 22 o”kksZa esa dsUnz }kjk vftZr miyfC/k;ksa dks foLr`r :Ik esa ÁLrqr fd;kA MkW0 /;kuh us eq[;vfrfFk dks tkudkjh nsrs gq, crk;k fd bl dsUnz ds MkW0 oh-ds- xqIrk] Á/kku oSKkfud ¼ikni Átuu½ us ‘kh’ke dh 2 ubZ mUur fdLeksa ij lQyrkiwoZd ‘kks/k dk;Z iw.kZ fd;k gS] tks fd vkus okys le; esa iwjs ns’k ds fy;s ykHknk;d fl) gksxk A funs’kd MkW0 /;kuh us d`f”kokfudh dsUnz }kjk lapkfyr vuqla/kku dk;ksZa dh tkudkjh nh rFkk dk;ZØe esa mifLFkr tulewg dks lEcksf/kr djrs gq, dgk fd ;gkWa ds fdlku HkkbZ d`f”kokfudh dh egRrk dks le>dj  T;knk ls T;knk o`{k vius [ksrksa esa yxk;sa A dsUnz ds Á/kku oSKkfud MkW0 oh-ds- xqIrk] Áksxzke yhMj ¼ikni Átuu½ us vius Áksxzke dh 22 o”kksZa dh vuqla/kku miyfC/k;ksa dh la{ksi esa tkudkjh nhA

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bl volj ij dsUnz ds rduhdh vf/kdkjh Jh ‘kke x.kifr <e<sjs ds vFkd Á;klksa }kjk fufeZr ^^d`f”k okfudh ‘kCndks”k ¼vaxzsth&fgUnh½** dk foekspu eq[;vfrfFk ,oa miegkfuns’kd Mk- ,-ds- flag }kjk fd;k x;k A blds vfrfjDr eq[;vfrfFk us dsUnz }kjk Ádkf’kr =Sekfld ^^d`f”k okfudh lekpkj&i=** ds 22osa o”kZ ds ÁFke laLdj.k rFkk d`f”kokfudh vuqla/kku dsUnz }kjk Hkkjr ds Ákd`frd jkWy ,oa xksan mRiknd o`{k ij fufeZr ohfM;ks fQYe ds fgUnh :ikUrj.k dk Hkh foekspu fd;k A

dk;ZØe ds nkSjku loksZaRre vuqla/kku ys[k fy[kus ds fy, MkW- vkj- ,l- ;kno] MkW- ch- ,y- ;kno] MkW- ch- vkj- Nhik ,oa Jh eqUuk jke dks eq[;vfrfFk }kjk lEekfur fd;k x;kA d`”kdksa ds [ksr ij mRd`”V dk;ksZa ds fy;s Vhe vokMZ dsUnz ds MkW- vkj- ds- frokjh] bath- jes’k flag] MkW- vkj-oh- dqekj] MkW- vkj- ,l- ;kno] MkW- vkj- ih- f}osnh] MkW- ,- osadVs’k] Mk- Mh- vkj- iylkfu;k] MkW- lh- ds- cktisbZ] Jh jktsUnz flag] Jh ,l- ih- ,l- ;kno ,oa Jh vkj- ds- flag dks iz’kfLr i= Ánku fd;k x;k A dk;kZy; esa loksZRre dk;Z djus ds fy, rduhdh Js.kh ls Jh f’k’kqiky flag ;kno ,oa Jh dk’khjke] Á’kklfud Js.kh ls Jh nhid fot+ ,oa Jh ohj flag iky] fLdYM liksVZ

LVkQ ls Jh rqylh nkl] leku osru deZpkjh ls Jherh ‘;keorh ,oa loksZRre [ksy iqjLdkj Jh vrj flag dks Ánku fd;k x;k A dk;ZØe ds nkSjku [ksydwn dk Hkh vk;kstu fd;k x;k] ftlesa VsfcyVsful Áfr;ksfxrk esa MkW- ,- ds- gk.Mk fotsrk rFkk MkW0 vkj-ih- f}osnh mifotsrk jgs] dSje ¼efgyk oxZ½ esa lqJh xfjek xqIrk fotsrk rFkk lqJh usgk pØorhZ mifotsrk jgha] dSje ¼iq:”k oxZ½ esa Jh ,u- xq:ukFku fotsrk ,oa Jh vkj- ds- flag mifotsrk jgs] ‘krjat Áfr;ksfxrk esa Jh jkts’k JhokLro fotsrk rFkk Jh nhid fot+ mifotsrk jgs A 22 vizsy] 2010 dks i`Foh fnol ds volj ij vk;ksftr rkRdkyhu iz’uksRrjh izfr;ksfxrk dk izFke iqjLdkj MkW0 jktho frokjh ,oa dq- xfjek xqIrk dks] f}rh; iqjLdkj MkW- cnzs vkye rFkk r`rh; Jh jke flag dks fn;k x;k A Jh ‘kke x.kifr <e<sjs dks nh?kZdkyhu lsok iqjLdkj ls lEekfur fd;k x;k A dSEil MsoyiesUV Vhe vokMZ eq[;vfrfFk ,oa miegkfuns’kd MkW- ,- ds- flag }kjk Jh ch- flag ,oa Jh f’k’kqiky flag dks fn;k x;k A LVkQ ds es/kkoh cPps Jh fuHkZ; ukjk;.k flag] Jh vftrkHk xqIrk ,oa Jh Hkjr dqekj xqIrk dks bUVjehfM,V ,oa gkbZLdwy esa loksZaRre ifj.kke vkus ij iqjLd`r fd;k x;k A

dk;ZØe esa xzklyS.M ds foHkkxk/;{kx.k dsUnzh; e`nk ,oa ty laj{k.k vuqla/kku dsUnz nfr;k ds oSKkfud lfgr rkjkxzke] d`f”k foKku dsUnz vkfn fofHkUu foHkkxksa ls i/kkjs foHkkxÁeq[k rFkk x.kekU;tu ds lkFk&lkFk d`f”k okfudh dsUnz ds Á/kku oSKkfud] ofj”B oSKkfud] oSKkfud] rduhdh vf/kdkjh] Á’kklfud vf/kdkjh ,oa deZpkjhx.k rFkk vuqla/kku v/;srk] ‘kks/k Nk= ,oa Nk=kvksa vkfn dh mifLFkr fo’ks”k mYys[kuh; jgh A

mDr LFkkiuk fnol dk;ZØe ds nkSjku dsUnz dh 22 o"kksZa dh miyfC/k;ksa dh ohfM;ks fQYe dks n'kkZ;k x;k A dk;ZØe ds vafre pj.k esa lk;adky lkaLd`frd dk;ZØe dk vk;kstu fd;k x;k] ftleasa dsUnz ds dk;kZy; tuksa us ,oa muds cPpksa us Hkh viuh dykdkS'ky dk Án'kZu dj mifLFkr tulewg dks ea=eqX/k dj fn;k A LVkQ ds cPpksa ds fy;s vk;ksftr fp=dyk Áfr;ksfxrk esa ÁFke lewg ¼5 ls 10 o"kZ½ esa dq0 v:"kferk nRrk] dq0 nsoka'kh deyoa'kh ,oa dq0 fcik'kk deyoa'kh dks rFkk f}rh; lewg ¼11 ls 15 o"kZ½ esa dq0 vk;q"kh ;kno] Jh v{kj frokjh ,oa dq0 Árh{kk ;kno dks ,oa dq0 v:"kferk nRrk dks lokZaxh.k mRd`"V Án'kZu iq:Ldkj ls lkaLd`frd dk;ZØe ds volj ij iq:Ld`r fd;k x;k A

INSTITUTE RESEARCH COUNCIL (IRC)

Institute Research Council (IRC) meeting was held from 24th to 26th June, 2010 under the Chairmanship of Dr. S. K. Dhyani, Director of the Centre. All the Scientists of the Centre participated in the meeting and presented the progress and significant findings of their projects. New projects were approved by the IRC.

VISITORS

- Hon'ble Dr. A K. Singh, DDG (NRM), ICAR, New Delhi visited the Centre on 8th May, 2010.
- Sh. Kameshwar Ojha, DDG (NBM), Department of Horticulture, Ministry of Agriculture, GOI, New Delhi visited the Centre on 12th -13th May, 2010.

NEW SCIENTISTS

Sh. Tulsi Das and Sh. N. Gurunathan Scientists (Forestry) joined the Centre.

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eaMy jsy izcU/kd dk;kZy;] >Wklh }kjk vk;ksftr uxj jktHkk"kk dk;kZUo;u lfefr dh cSBd fnukad 16-04-2010 dks Hkkjrh; pjkxkg ,oa pkjk vuqla/kku laLFkku] >Wklh esa vk;ksftr gqbZA cSBd esa dsUnz funs'kd Mk- ,l- ds-/;kuh ,oa

izHkkjh vf/kdkjh¼jktHkk”kk½ Mk- vkj- ih- f}osnh us Hkkx fy;kA cSBd esa ljdkjh dkedkt esa jktHkk”kk dks c<+kok nsus gsrq **fofHkUu foUnqvksa ij ppkZ dh xbZ ,oa mlij fu.kZ; fy;s x;sA cSBd esa ;g Hkh fu.kZ; fy;k x;k fd vxyh uxj jktHkk”kk dk;kZUo;u lfefr dh cSBd jk”Vªh; d`f”kokfudh vuqla/kku dsUnz esa vk;ksftr dh tk;sxhA**

jktHkk"kk dk;kZUo;u lfefr dh frekgh cSBd

Mk- ,l- ds- /;kuh] funs”kd dh v/;{krk esa jktHkk"kk dk;kZUo;u lfefr dh frekgh cSBd fnukad 17 twu] 2010 dks lEiUu gqbZ] ftlesa jktHkk"kk dk;kZUo;u lfefr ds lHkh lnL; mifLFkr FksA cSBd esa dsUnz funs”kd }kjk fiNyh frekgh dh cSBd dh foUnqokj leh{kk dh x;h rFkk fy;s x;s fu.kZ; ij dkjZokbZ lqfuf”pr djus dk funsZ”k fn;k x;kA cSBd esa dk;kZy;hu jktHkk’kk dks c<+kok nsus ds fy;s fofHkUu igyqvksa ij fopkj&foe”kZ fd;k x;k rFkk mlij fu.kZ; fy;s x;sA d`f’kokfudh vkyksd prqFkZ vad ds izdk”ku gsrq ppkZ dh xbZ vkSj mlds lq/kkj gsrq funs”kd egksn; }kjk funsZf”kr fd;k x;kA

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djus okys dks izksRlkfgr fd;k tk;sxkA

dk;Zdze dh tkudkjh nsrs gq, izHkkjh vf/kdkjh ¼jktHkk'kk½ us crk;k fd jktHkk'kk foHkkx] x`g ea=ky; }kjk tkjh fd;s x;s funsZ"k ds vuqlkj izR;sd rhu eghus esa fgUnh dk;Z"kkyk dk vk;kstu fd;k tkuk vR;Ur vko";d gSA dk;Z"kkyk dk mn~ns"; ljdkjh dkedkt esa fgUnh esa gksus okyh dfBukbZ dks nwj djuk gSA blh ifjis{; esa ;g dk;Z"kkyk dk vk;kstu fd;k tk jgk gS A Mk- f}osnh us **^^d`f'kokfudh** ds **izpkj&izlkj**** esa fgUnhHkk'kk ds ;ksxnku fo'k; ij viuk foLr`r O;k[;ku fn;kA

REGISTRATION OF SHISHAM (*Dalbergia sissoo* Roxb.) GERMPLASM

PT-2 (INGR 10063; IC 0584318)

Shisham is known internationally as a premier timber species of rose wood genus. Early perceptions of natural distribution of shisham perhaps points to its long term use as a cultivated tree which considerably expanded its habitat (White, 1990). Shisham is native to the foothills of the Himalayas of India, Pakistan, Nepal and Indo-Gangetic basin. Friends of farmers no less than that foresters, shisham is a tree that pays rich dividends. It is a very important raw material for a variety of wood based industries, especially furniture and building construction. Its pruned branches are the cheap source of firewood with high calorific value (4900-5200 K cal kg^{-1}). Leaves of shisham can serve as a suitable alternative of cattle fodder during scarcity period. Generally, shisham has spreading type canopy which suppress yield of lower storey crops in agroforestry system as well as reduce the price of wood. At National Research Centre for Agroforestry, Jhansi, for last more than 12 years efforts were made to select germplasm which have straight bole with high wood volume for better return in agroforestry system as well as in pure plantation.

Survey was made in January 1998 for selection of plus trees and to collect their seeds. Selection was made on the basis of straightness, fast growth and clear bole height. Exploration Team visited Bundelkhand districts viz., Jhansi, Jalaun, Hamirpur, Banda, Panna, Chattarpur, Tikamgarh, Lalitpur, Sagar and Damoh. Exploration team found very old and good stands (more than 50 years old) of shisham in Mahuranipur range, district Jhansi and Kalpi range district Jalaun. Thirty three candidate trees were identified. Data recorded on tree height, diameter at breast height, clear bole height and also noted permanent marker. Besides single tree collections, four composite collections of phenotypically good trees were made at three places. Out of collected germplasm, twelve month old seedlings of 14 plus trees, two composites and Haryana Agricultural University, Haryana material were planted along with control in two sites (cultivated land and degraded land).

Data on straightness was recorded on 5 point scaling (1= highly crooked, 5 = maximum straight) at the age of 2.5 years and visually observed upto 9.5 years. Data on tree height and diameter at breast height were recorded at the age of 9.5 years. Bole volume was calculated as

per volume equation.

PT-2 is highly straight. This progeny obtained 3.59 and 4.42 score out of 5 at site 1 (cultivated land) and site II (degraded land), respectively (Table 1). While local race obtained 2.12 and 2.00 score in two sites, respectively. Superiority in terms of straightness was 69 and 121per cent at two sites, respectively. Wood volume estimated at the age of 9.5 year. PT-2 is 69% and 67% superior over local at site I and site II (Table 2). Besides this, branches are short and less compared to local race. Tree height, diameter, leaf characters and pod characters are given in Table 3. The material of PT-2 has been registered at NBPGR, New Delhi.

PT-2 is promising germplasm in Agroforestry system to obtain more return from the system as a whole.

Table 1. Straightness scoring of clean bole of PT-2 at 2.5 years age

Year	**PT-2**	**Check variety**	**% increase over check**
1998 at site I	3.59	2.12	69.34
1998 at site II	4.42	2.00	121.00

Table 2. Bole volume (m^3ha^{-1}) of PT-2 at 9.5 years age

Year	**PT-2**	**Check variety**	**% increase over check**
1998 at site I	3.59	2.12	69.34
1998 at site II	4.42	2.00	121.00

Table 3. Growth, leaf and fruit characters of PT-2 at 9.5 years age

Character	**Range**	**Mean**	**Age (yr.)**
Tree height (m)	8.15 – 11.4	9.64	9.5
Diameter at breast height (m)	10.2 – 16.6	13.14	9.5
Length of leaf (cm)	6.10 – 13.20	10.34	9.5
No. of leaflets/leaf	3 - 6	3.73	9.5
Leaflet length (cm)	2.20 – 6.60	4.74	9.5
Leaflet width (cm)	1.60 – 5.60	4.03	9.5
Pod length (cm)	3.5 – 6.5	4.75	9.5
Pod width (cm)	0.70 – 1.00	0.78	9.5
No. of seeds / pod	1 - 4	2.00	9.5

PT-2 Progeny of Shisham (*Dalbergia sissoo*) Possessing distinct character of straight bole with close canopy

(V. K. Gupta, S.P. Ahlawat, R. V. Kumar and A. Datta)
National Research Centre for Agroforestry, Jhansi

Ñf”kokfudh
‘kCndks’k¼vaxzsth&ÇgUnh½ dk çdk‘ku

dsUn }kjk Ñf”kokfudh ‘kCndks’k¼vaxzsth&ÇgUnh½ dk çdk‘ku fd;k x;k gSA blesa o`{k vkSj ikS/kksa lEcU/kh lHkh okuLifrd ‘kkL=ksa ds 8]500 Ik;kZ;h ,oa vUo;kFkhZ ‘kCnksa dk laxzg fd;k x;k gSA ;Fkk;ksX; okuLifrd ukefunsZ’k rFkk ‘kkL= fo’ks”k dk lanHkZ LFkku LFkku ij vafdr fd;k x;k gSA;g laxzg rduhdh ‘kCnkoyh vk;ksx ls ifj”Ñr dj fy;k x;k gSA ;g dks’k lHkh fo|kfFkZ;ksa] oSKkfudksa] f’k{kk ds {ks= ls tqM+s vH;kldksa dks lgt miyC/k gks blfy;s çrhdkRed ewY; #-300@¾ $ MkdO;; vfxze tek fu/kkZfjr fd;k x;k gSA tks fd fuEuor NwV ds çko/kku ij funs’kd] jk”Vªh; Ñf”kokfudh vuqla/kku dsUnz] >kalh ¼m-ç-½ ls fMek.M Mªk¶V^^Hkk-Ñ-vuq-i- bdkbZ jk”Vªh; Ñf”kokfudh vuqla/kku dsUnz]>kalh ns; Hkkjrh; LVsV c¡d ‘kk[kk djkjh ¼7477½**vFkok bySDVªWfud VªkUlQj ls Hkkjrh; LVsV c¡d