Agroforestry
Newsletter
National Research Centre for Agroforestry, Jhansi-284 003

Vol.21,No. (2) **April- June, 2009**

21 okW LFkkiuk fnol

dsUnz ds 21 osa LFkkiuk fnol ds volj ij 08 ebZ] 2009 dks izkr % 6-30 cts ls 8-30 cts rd dsUnz ds oSKkfud] vf/kdkjh rFkk deZpkfj;ksa us izHkkr Qsjh rFkk Jenku fd;kA dk;Zdze dh v/;{krk izksxzke yhMj¼ekuo lalk/ku fodkl½ Mk- vkj- ds- frokjh uss dhA mUgksaus vkt vk/kqfudrk dh nkSj esa izHkkr Qsjh ,oa Jenku ds foyqIr gksrs tkus ij fpUrk trkbZ rFkk oSKkfud] vf/kdkjh ,oa deZpkfj;ksa dk vkgOkkgu djrs gq, dgk fd izHkkr Qsjh ,oa Jenku ls ru ,oa eu nksuksa LoLF; jgrs gSa rFkk blls euq"; dh dk;Z{kerk c<+rh gS ftlls dk;kZy; ,oa ikfjokfjd nksuksa {ks=ksa dk fodkl gksrk gSA xhr ^^dne&dne feyk;s tk] [kq"kh ds xhr xk;s tk^^ dks lHkh yksx izHkkr Qsjh esa xkrs tk jgs FksA chp&chp esa :d dj ukjs tSls ^^ydM+h pkjk Qy vkSj vUu] d`f"kokfudh gS thou^^ dks cqyUnh ls nksgjk;k x;kA izHkkr Qsjh ds mijkUr Jenku dk dk;Zdze gqvk ftlesa oSKkfud] vf/kdkjh rFkk deZpkfj;ksa us ikS/kjksi.k gsrq xM~<+s [kksns rFkk vkxkeh cjlkr esa bu xM<+ksa esa mDr oSKkfud] vf/kdkjh RkFkk deZpkjh vius [kksns gq, xM<+ksa esa ikS/kk yxk;saxs rFkk mudh ns[kHkky djsaxsA Mk- vkj- ds- frokjh us dgk fd Ik;kZoj.k larqyu] dks cuk;s j[kus gsrq cqUnsy[k.M esa o`{kkjksi.k dh cgqr gh vko';drk gSA bl mn~ns"; dh iwfrZ ds fy, o`gn Lrj ij o`{kkjksi.k ds ckjs esa tkx:drk ykuk t:jh gS ftlls i;kZoj.k dks gjk Hkjk fd;k tk ldsA

Forthcoming Events

- Annual Workshop of AICRPAF
- NAIP Training
- Institute Joint Staff Council meeting
- Women Cell's meeting
- Meeting of PME Cell
- Hindi Saptah

Issue Highlights

21okW LFkkiuk fnol dk;Zdze ds eq[; vfrfFk Mk- ds- ,- flag] funs“kd] xzklyS.M jgs rFkk fof“k’B vfrfFk Mk- izflf) jk;] iwoZ funs“kd] d`f’kokfudh jgsA bl ekSds ij vfrfFk;ksa }kjk nhi izToyu dj dk;Zdze dk “kqHkkjEHk fd;k x;kA blds mijkUr ljLorh oUnuk izLrqr dh xbZA vius eq[; vfrfFk mn~cks/ku esa Mk- flag us vkg~oku fd;k fd fdlku HkkbZ T;knk ls T;knk vius [ksrksa esa o`{k yxk;s ftlls mudh t:jrksa dh iwfrZ gks ldsA mUgksus dgk fd d`f’kokfudh }kjk fdlku dks mldh t:jr dh lHkh oLrq;sa tSls ydM+h] bZ/ku] pkjk rFkk Qy bR;kfn ,d gh LFkku ls izkIr gksrs gS tks fd fdlkuksa dks thfodksiktZu ,oa jkstxkj fnykus eas l{ke gSA mUgksus dsUnz ds 21os LFkkiuk fnol ij viuh gkfnZd c/kkbZ nh rFkk dgk fd d`f’kokfudh dsUnz esa tks dk;Z gks jgs gS og izla“kuh; gSA d`f’kokfudh }kjk gh ,d frgkbZ Hkwfe dks o`{kksa ls vkPNkfnr fd;k tk ldrk gSA

LFkkiuk fnol dk;Zdze ds fof“k’B vfrfFk Mk0 izflf) jk; us dgk fd fdlku HkkbZ vius flafpr tehu esa esM+ksa ij o`{k yxkdj ou vkPNknu c<kus esa viuk ;ksxnku nsaA mUgksus ;g Hkh dgk fd vflafpr {ks= esa d`f’kokfudh dh fofHkUu i)fr;ksa dks tehu ds vuqlkj yxk;k tk, ftlls vUUk] Qy] pkjk] ydM+h izkIr gks lds vkSj i;kZoj.k esa lq/kkj gks ldsA mUgksus vius mn~~cks/ku esa vuqla/kku ,oa fodkl foHkkxksa ds chp leUo;u ij tksj nsrs gq, dgk fd d`f’kokfudh dh mi;ksfxrk fdlkuksa dks izfr bZdkbZ {ks= esa vkfFkZd vkenuh c<+kus ij gSA mUgksus taxy rFkk tehu ij tula[;k ncko ds c<+rs :Ik dks xaHkhjrk ls ysus dh ckr dghA

dk;Zde esas d`f’kokfudh ds dk;Zokgd funs”kd Mk- oh- ds- xqIrk us vfrfFk;ksa dk Lokxr djrs gq, fiNys 21 o’kksZ esa dsUnz }kjk vftZr miyfC/k;ksa dks foLr`r :Ik esa izLrqr fd;kA Mk- xqIrk us tksj nsrs gq, dgk fd cqUnsy[k.M esa o’kkZ ty dk 11 izfr”kr ty gh tehu ds vUnj tkrk gS] ckdh cg tkrk gSA mUgksus o’kkZ ty dks psdMse ,oa tykxe }kjk nksgu djus ij tksj fn;kA dk;Zdze dsa nkSjku Mk- jkeusokt] dk;Zokgd izkzsxzke yhMj ¼d`f’kou½] Mk- vfuy dqekj] izkzsxzke yhMj ¼d`f’k m|kfudh ,oa ou pjkxkg½] Mk-

oh- ds- xqIrk] izksxzke yhMj ¼ikni iztuu½ ,oa Mk- vkj- ds- frokjh izkzsxzke yhMj ¼ekuo lalk/ku fodkl½ us vius&vius izkzsxzke dh 21 o'kZ dh vuqla/kku miyfC/kksa dks laa{ksi esa yksxksa dks tkudkjh nhA

dk;Zdze ds nkSjku loksZRre vuqla/kku ys[k fy[kus ds fy, Jh v"kksd „kqDyk] Mk- vfuy dqekj] Mk- jktsUnz izlkn] Mk- vthr ,oa vuqjk/kk >k dks eq[; vfrfFk }kjk mUgss lEekfur fd;k x;kA dk;kZy; esa loksZRRke dk;Z djus ds fy, rduhdh Js.kh ls Mk- jktho frokjh ,oa Jh jkts"k dqekj JhokLro] iz"kklfud Js.kh ls Jh ,- ds- prqosZnh ,oa Jh chjsUnz flag] prqFkZ Js.kh ls Jh jke flag] leku osru Jfed ls Jh eqUuk yky ,oa loksZRre [ksy iqjLdkj Jh vrj flag dks fn;k x;kA LVkQ ds es/kkoh cPps Jh lR;e prqosZnh] Jh fou; dqekj ;kno ,oa dq- nh{kk ;kno dks bUVjehfM,V ,oa gkbZLdwy esa loksZRre ifj.kke vkus ij mudks iqjLd`r fd;k x;kA dk;Zdze ds nkSjku [ksydwn dk Hkh vk;kstu fd;k x;k ftlesa dSje mesUl esa dq0 xfjek izFke rFkk dq0 riL;k f}rh; jgha] dSje iq:'k esa Jh v"kksd „kqDyk izFke rFkk f}rh; Mk- nRrk jgs] psl esa Mk- ,l- ds- jk; izFke rFkk Jh jkts"k JhokLro f}rh; jgs] Vsfcy Vsful esa Mk- gk.Mk ,oa Mk- vkj oh- dqekj izFke rFkk Mk- iznhi fcgkjh f}rh; jgsA

dk;Zdze esa x< dq.Mkj Mkcj tykxe dh fofM;ks fQYe rFkk Hkkjrh; d`f'k vuqla/kku ifj'kn~] ubZ fnYyh dh fofM;ksa fQYe dks n"kkZ;k x;kA vfUre l= esa dsUnz ds LVkQ] cPps ,oa ifjokj ds lnL;ksa dks iz{ks= rFkk iz;ksx"kkyk dk Hkze.k djk;k x;kA ftls lHkh yksxksa us cM+h :ph ls ns[kk ,oa le>kA

cqUnsy[k.M esaa izkd`frd lalk/kuksa ds izcU/ku }kjk ty lesV esas ukyk iquthZfor gqvk

jk’Vªh; d`fkokfudh vuqla/kku dsUnz] >Wklh us ty lesV {ks= dks vk/kkj bdkbZ ekudj d`f’kokfudh ds fodkl dh ,d egRokdka{kh ifj;kstuk pkj o’kZ iwoZ Vhdex<+ ftys ds fuokM+h rglhy ds ,sfrgkfld xzke x<+dq.Mkj&Mkcj esa “kq: dhA bl ty lesV dk dqy {ks=Qy 850 gs- gS ftless yxHkx 296 gs- {ks=Qy d`f’k ds v/khu gSA ty lesV esa jksfr;kuk ds vuqlwfpr tutkfr (lgfj;k) dks iV~Vs ij fn;s x;s [ksrksa ds vfrfjDr f”kojkeiqj ds vuqlwfpr tkfr ,oa Mkcj ds fiN+M+h tkfr;ksa ds d`’kdksa] ldwyh] L;kelh] mCkkSjk ,oa dq.Mkj xzke ds NksVs o e>ksys d`’kdksa dh tehusa lfEefyr gSA iwjs {ks= ij yxHkx 895 euq’; ,oa 2648 Ik”kq vkoknh fuHkZj gSA cqUnsy[k.M esa flapkbZ lqfo/kk dh deh ds dkj.k d`f’k {ks= dk vf/kdrj Hkkx fcuk cqvkbZ ds jg tkrk gSA pkj o’kZ 2004&07 ds lw[ks us fLFkfr dks cn ls cnrj cuk fn;k FkkA ifj.kkeLo:Ik o’kZ 2007 esa {ks= ds xzkeh.kksa dk iyk;u ns”k esa ppkZ dk fo’k; cu x;k FkkA ty lesV {ks= esa miyC/k 107 dqvksa esa ls yxHkx 100 dq;sa iw.kZr;k lw[k x;s FksA dqy nks gS.MiEi] f”kojkeiqj rFkk jkSfr;kuk esa ihu dk ikuh miyC/k djkus esa l{ke FksA “ks’k xkWo VSadj ls eWxk;sa ikuh ;k “ks’k cps dqvksa ds ikuh ij vkfJr FksA tkuojksa ds fy, ikuh dh leL;k vfr fodV Fkh D;ksafd lHkh fdlkuksa us tkuoj fo”ks’kdj xk;ksa dks NqV~Vk NksM+ fn;k FkkA

bl ty lesV {ks= esasa Hkwty laj{k.k ,oa fodkl lEcfU/kr dksbZ Hkh dk;Z o’kZ 2006 rd ugha fd;k x;k Fkk flok; nks psdMSe cukus ds] ftlesa ls ,d VwV x;k Fkk vkSj nwljs esa ikuh jksdusa dh O;oLFkk ugh cuk;h x;h FkhA ty lesV dk p;u dsUnz us fnlEcj] 2005 esa fd;k vkSj fdlkuksa dh Hkkxhnkjh }kjk d`f’kokfudh dks c<+kok nsus dh ;kstuk cuk;hA bl ;kstuk esa ty laj{k.k ,d egROkiw.kZ dk;Z FkkA izkjEHk esa {ks= ls fudyus okys lHkh ukys ,oa muds lgk;d ukyksa dk losZ{k.k fd;k x;k rFkk mu ij NksVs&NksVs 8 psdMSe cukus dk fu.kZ; fy;k x;kA o’kZ 2006 esa ,d pSdMSe dk fuekZ.k iw.kZ dj fy;k x;k ftlls yxHkx 74 gtkj ?kuehVj lrgh ty Hk.Mkj.k fd;k tk ldrk gSA NksVs ukyksa esa o’kZ 2007 esa 150 xSfc;u <akps yxk;s x;s ftlls o’kkZ ty cgko dh xfr dks de djus ds vykok cM+s ukysa eas ikuh ds lkFk vius okyh xkn dks Hkh de djus esa lQyrk izkIr gqbZA o’kZ 2006 rFkk 2007 esa de o’kkZ gksus ds dkj.k dze”k% 1 vkSj 3 psd MSeksa esa ikuh Hkj ldkA buesa ikuh dk Bgjko vYi le; (flrEcj) ds fy, gqvk rFkk pSdMse ds vkl&ikl ds fdlkuksa us jch esa Qly dh cqvkbZ dhA ifj;kstuk ds nkSjku ty lesV esa yxHkx 4 ,dM+ {ks= esa

vkWoyk] ve:n rFkk uhacw vk/kkfjr d`f'kokfudh rU= Hkh fdlkuksa ds [ksrksa eas LFkkfir fd;s x;sA gtkjksa dh la[;k esa fofHkUu iztkfr;kW tSls fd Vhd] ccwy] uhe] tSVksQk vkfn ds o`{k Hkh yxk;s x;sA fdlkuksa ds [ksrksa rFkk ukyksa ds fdukjksa ij esM+cUnh Hkh djkbZ x;hA o'kZ 2008 esa o'kkZ lkekU; ls 32 izfr"kr vf/kd (lkekU; o'kkZ 902 fe-eh-) gqbZA /kjrh 4 o'kksZa ls lw[kh FkhA dq;sa ,oa gS.MiEi vkfn lw[k pqds FksA o'kkZ us lHkh eas tku Mky nhA NksVs rkykc Hkj x;s ijUrq cM+s rkykc fQj Hkh [kkyh jg x;sA lHkh ukys cgus "kq: gks x;sA dqvksa esa flrEcj ekg rd ikuh vk x;kA ijUrq o'kkZ lekIr gksrs gh ukys esa cgko Fke x;kA loZ= d`'kdkas us jch dh tqrkbZ&cqvkbZ "kq: dj nhA fQj Hkh eu eas "kadk cuh jghA blfy, jch eas nygu&frygu dk jdck dkQh c<+ x;kA xsgwW ds jdcs esa Hkh vk"kkrhr c<+ksRrjh gqbZ ijUrq nygu&frygu ds eqdkcys ;g de FkhA

x<+dq.Mkj&Mkcj ty lesV esa fLFkfr vU; {ks=ksa ls fHkUu Fkh D;kasafd ;gkW fnlEcj rd ukys esa ikuh Hkjk Fkk vkSj pSdMse mij ls cg jgs FksA fdlkuksa ds yxHkx lkS ifEiaxlsV yxkrkj [ksrksa dks ikuh ns jgs FksA ftu [ksrksa esa xsgwW dHkh ugh cks;k x;k Fkk muesa Hkh xsgwW dh Qly [kM+h FkhA tuojh vUr rd ukyksa dk ikuh bruk de gks x;k fd fdlkuksa dks iEi cUn djus iM+sA Qjojh ekg esa xsgwW dh flapkbZ dqvksa ls dh x;hA dqvksa eas ikuh dh vkod cgqr vPNh FkhA lHkh dq;sa lqcg 5&6 ?k.Vs ,oa "kke 2&3 ?k.Vs 5 gklZ ikoj dh eksVj dks pykus eaas l{ke FksA tcfd ty lesV {ks= ds ckgj Qjojh esa dqvksa dh {kerk ,d pkSFkkbZ gh jg x;h FkhA ty lesV esa puk dh dVkbZ ekpZ ds izFke lIrkg esa iwjh gks x;h rFkk xsgwW dh vfUre dVkbZ 14 ekpZ dks iwjh gks x;hA ekpZ ekg esa ukys esa lrgh ty ,d ;k nks xM~<ksa dks NksM+dj "ks'k dgha ugh FkkA ijUrq 20 ekpZ ls ukys esa iqu% ty /kkj cguh "kq: gks x;hA ftlds ifj.kkeLo:Ik psdMSe esa iqu% ikuh Hkj x;kA ,slk blfy, gqvk D;ksafd fdlkuksa us dqvksa ls ikuh [khapuk cUn dj fn;k FkkA Kkr gks fd jkdM+ Hkwfe;ksa esa flapkbZ ds izeq[k lzksr dq;s gSa ftuesa e`nk izksQkby esa tek ikuh fjldj vkrk gS blfy, dqvksa dk fjpktZ /khek o de gksrk gSA

;gkW vf/kd o'kkZ o cgko ds mfpr :dko ds QyLo:Ik e`nk izksQkbZy esa tek vfrfjDr ty ukys esa iqu% vkuk "kq: gks x;k ftlls ukyk iquthZfor gks x;kA bls ns[kdj lHkh d`'kd mRlkfgr gq;s vkSj

tk;n esa lCth fo”ks’kdj cSaxu] fHk.Mh] vjch dh [ksrh dh rS;kjh “kq: dj nhA ukys ds vkl&ikl ds fdlkuksa ds vfrfjDr dqvksa ds vkl&ikl ds fdlkuksa us Hkh tk;n lfCt;ksa dh cqvkbZ dhA

ty lesV dh bl miyfC/k us fdlkuksa esa vk”kk dh fdj.k txk nhA ihus ds ikuh dh miyC/krk ds izfr lHkh xzkeoklh fuf”pUr gS vkSj vk”oLr gSa fd ;fn vxys o’kZ lkekU; ;k lkekU; ls 20&25 izfr”kr rd o’kkZ Hkh gqbZ rks Hkh mUgsa Qly o ihus ds ikuh dh fpark djus dh vko”;drk ugha gSA tylesV ds uhps ds {ks= esa Hkh ;|fi fdlku ykHkkfUor gq;s gS vkSj muds Hkh dwqvksa dk ty Lrj c<+k gS rFkkfi ukys esa uhps dh rjQ ty/kkj ugha gSA blfy, og lHkh pkgrs gS fd ,slh ifj;kstuk dk dk;Z{ks= ;fn c<+ tk;s rks iwjs ukys esa o’kZ Hkj ikuh miyC/k gksxk vkSj ukyk iwjs lky pysxkA bl ckor] fdlkuksa us lkewfgd :Ik ls ckj&ckj vkxzg Hkh izLrqr fd;k gSA

x<+dq.Mkj&Mkcj tylesV dh bl lQyrk ls bl ckr dh iqf’V gks x;h gS fd cqUnsy[k.M {ks= dh lq[kk lEcU/kh leL;k dk fujkdj.k ty ,oa e`nk laj{k.k vkSj d`f’kokfudh esa gh fufgr gS rFkk jk’Vªh; d`fkokfudh vuqla/kku dsUnz }kjk fodflr bl ekWMy dks fofHkUu ;kstukvksa tSls fd ujsxk vkfn ds ek/;e ls iwjs cqUnsy[k.M {ks= esa ykxw djus dh vko”;drk gSA

vkj- ds- frokjh] Mh- vkj- iYlkfu;k] jes”k flag] vkj-,l- ;kno] vkj-oh- dqekj] vkj-ih- f}osnh] ,- osadVs”k] ds- djhewYyk] lh- ds-cktis;h] jktsUnz flag] ,l-ih-,l- ;kno] vks-ih- pqosZnh ,oa ,l-ds- /;kuh

jk’Vªh; d`fkokfudh vuqla/kku dsUnz] >Wklh

fo”o Ik;kZoj.k fnol

dsUnz ij 05 twu] 2009 dks fo”o Ik;kZoj.k fnol dk vk;kstu fd;k x;kA dk;Zdze dh v/;{krk dsUnz funs”kd Mk- ,l- ds- /;kuh us dhA dk;Zdze dh v/;{krk djrs gq, dsUnz funs”kd Mk- /;kuh us dgk fd bZa/ku dh [kir gesa de djuk gksxk rFkk cqUnsy[k.M esa o`{kkjksi.k ds fy, ;q) Lrj ij iz;kl djus gksxsaA mUgksus crk;k fd lu~

1850 ls igys cqUnsy[k.M ouksa ls vkPNkfnr FkkA mUgksusa dgk fd gedksa vius ?kj ls gh “kq:vkr djuh gksxhA gesa vius vkl&ikl ds okrkoj.k dks LoPN cukus ds fy, ?kj ls gh iz;kl djus gksxsaA

fo”o Ik;kZoj.k fnol dk;Zdze esa Mk- jktsUnz izlkn Mk- lqfuy dqekj] Mk- vkj- oh- dqekj] Mk- ,- osUdsVs”k] Mk- cnjsvkye] Mk- lh- ds- cktis;h ,aaoe Jh beafr;kt vyh [kku us Ik;kZoj.k ls lEcfU/k fofHkUu fo’k;ksa ij foLr`r tkudkjh izLrqr dhA Mk- vkj- oh- dqekj] ofj’B oSKkfud us viuk O;k[;ku tSo bZa/ku dk tyok;q ifjorZu ds nq’ikzHkko ls cpkus esa ;ksxnku ij foLr`r tkudkjh nhA mUgksus dkcZu Vªsf Max] Dyhu MoyieaasaV esdsfute bR;kfn ij foLr`r tkudkjh nhA dk;Zde esa Mk- lh- ds- cktis;h us tyok;q ifjorZu ds dkj.kksa ,oa mlls mRiUu leL;kvksa ij foLr`r izdk”k MkykA dk;Zdze dh “kq:vkr esa la;kstd Mk- vkj- ih- f}osnh us lcdk Lokxr fd;k rFkk fo”o Ik;kZoj.k fnol dss bfrgkl ds ckjs esa tkudkjh nhA dk;Zdze esa dsUnz ds leLr oSKkfud] vf/kdkjh ,oa deZpkjh mifLFkr jgsasA dk;ZØe dk lapkyu Mk- vkj- ih- f}osnh ,oa /kU;okn Kkiu Mk- vkj- ,p- fjtoh us izLrqr fd;kA

NEW SCIENTIST

Dr. Sunil Kumar joined the Centre as Pr. Scientist (Agronomy) from IGFRI, Jhansi.

PROMOTION

Dr. Ramesh Singh, Scientist (Sr. Scale) promoted to Sr. Scientist w.e.f. under the provision of Revised Career Advancement Scheme.

HUMAN RESOURCE DEVELOPMENT

Dr. Rajendra Prasad, Pr. Scientist of the Centre participated in National Conference on “Challenges and opportunities of bio-industrial watershed development for the prosperity of the farming community” from 25th – 27th June, 2009, organised by Soil Conservation Society of India at University of Agricultural Science, Bengaluru, Karnataka.

Dr. R. H. Rizvi, Scientist, Sr. Scale (Computer Application) attended a Workshop on" GIS & Remote Sensing for Decision Supports in Agriculture" at IASRI, New Delhi on 18th June,2009.

AWARD

Dr. Rajendra Prasad, Pr. Scientist of the Centre has been honoured with **SCSI Leadership Award-2009** by Soil Conservation Society of India for his outstanding contributions for development of agroforestry models in arid region of Rajasthan. The award consisting of a citation and silver medal was given away on 25th June, 2009 in Bengaluru, Karnataka.

.

DIRECTOR'S VISITS AS PROJECT COORDINATOR, AICRPAF

- AICRPAF Centre at G. B, Pant University of Agriculture & Technology (GBPUA&T), Pantnagar from 26th to 28th May, 2009.
- AICRPAF Centre at Mahatama Phule Krishi Vidyapeeth (MPKV), Rahuri from 3rd to 4th June, 2009.
- AICRPAF Centre at Chaudhary Charan Singh Haryana Agricultural University (CCSHAU), Hissar from 18th to 20th June, 2009.

Institute Research Council (IRC) meeting

Institute Research Council (IRC) meeting was held on 25th to 27th June, 2009. 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.

OCCURRENCE OF ARBUSCULAR MYCORRHIZAL FUNGI IN SELECTED AGROFORESTRY TREE SPECIES OF BUNDELKHAND REGION

Arbuscular mycorrhizal (AM) fungi form symbiotic association with most economically important plants. These fungi improve plant growth under low fertility conditions, confer tolerance against plant pathogens, improve water balance of the plants, contribute to the formation of soil structure and also help plants to become established in new areas. Looking to the potential of agroforestry in modern agriculture and advantages associated with AM inoculations, a study was conducted to evaluate the status of these fungi in rhizosphere of selected agroforestry tree species of Bundelkhand region.

The study was conducted at NRCAF, Jhansi to identify common AM fungi in selected tree species of Bundelkhand region namely, babool (*Acacia nilotica* L.), safed siris (*Albizia procera* Roxb.), neem (*Azadirachta indica* A. Juss.), bamboo (*Dendrocalamus* species), shisham (*Dalbergia sissoo* Roxb.), subabool (*Leucaena leucocephala* (Lam.) de wit), mahua (*Madhuca latifolia* Roxb.), jatropha (*Jatropha curcas* L.) and karanj (*Pongamia pinnata* Pierre). A total of 45 plants were selected

from NRCAF campus and nearby areas. Rhizosphere soil was collected from selected plants to set up trap cultures, which were maintained in greenhouse for 4 to 5 months. Sporocarps and spores of the AM fungi were isolated from these pots and were identified. Two species of *Acaulospora* (*A. mellea* and *A. scrobiculata*) and twelve species of *Glomus* (*G. aggregatum, G. arborense G. cerebriforme, G. diaphanum, G. etunicatum, G. fasciculatum, G. hoi, G. intraradix, G. invrermayanum, G. occultum, Glomus 1 and Glomus 2*) were recorded in studied tree species, isolated and purified.

Glomus was the predominant genus, followed by *Acaulospora*. Among all the identified AM species *A. scrobiculata* was the most dominant species. *G. arborense* was also recorded from the rhizosphere of all tree species. A. mellea was recorded from subabool. *G. intraradix* was recorded from the rhizosphere of all tree species, except mahua and subabool.

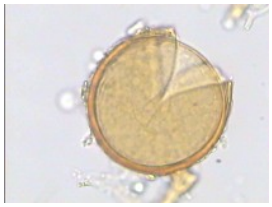
Table 1 Occurrence of AM species in rhizosphere of important agroforestry tree species of Bundelkhand region

AM species	AM spores recorded in rhizosphere of						
	Ba	J	K	M	N	Sh	Su
A. mellea	-	-	-	-	-	-	+
A. scrobiculata	+	+	+	+	+	+	+
G. aggregatum	+	+	+	-	-	-	-
G. arborense	+	+	+	+	+	+	+
G. cerebriforme	-	-	-	-	-	+	-
G. diaphanum	+	-	-	-	+	-	-
G. etunicatum	-	+	-	-	-	-	-
G. fasciculatum	-	+	-	-	-	-	-
G. hoi	-	-	-	+	-	-	-
G. intraradix	+	+	+	-	+	+	-
G. invrermayanum	+	-	-	-	-	-	-
G. occultum	-	-	-	-	-	+	-
Glomus 1	-	-	-	-	-	+	-
Glomus 2	-	-	+	-	-	-	-

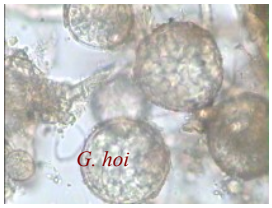
Ba- bamboo J- Jatropha K- Karanj M- Mahua N- Neem Sh- Shisham Su- Subabool

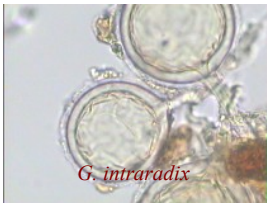
Common AM fungal species recorded in rhizosphere of important agroforestry tree species of Bundelkhand region

G. cerebriforme



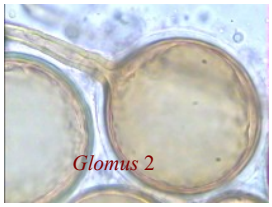
G. fasciculatum





G. invermayanum

G. occulatum



Anuradha Jha, Anil Kumar, Rishi Kumar Saxena, Madhavi Kamalvanshi and Ashok Shukla

National Research Centre for Agroforestry, Jhansi

Is *Simarouba glauca* is adaptable to Bundelkhand region?

Simarouba oil tree / paradise tree (*Simarouba glauca*, L., Family: Simaroubaceae) is an evergreen medium sized (7 – 15 m height) tree having the rotation about 60 years. It is an exotic, introduced to India by NBPGR station at Amaravathi, Maharastra in 1966 from El Salvador, Brazil mainly for its edible oil seed. It is potential to produce 2 to 2.5 t oil / ha/yr. The kernel which forms of 92% of seeds yields 55 – 60 % oil on decortication. The oil contains about 63% unsaturated fatty acids and is fit for human consumption. The oil is suitable for the manufacturing of soaps, lubricants, paints, cosmetics, etc and the soft wood is useful for toys making and as match wood. The evaluation of growth and adaptability of this species in Tamil Nadu revealed the successful introduction of that species by its better growth and seed yield in all the agro-climatic zones, positive inoculation of roots with the native VAM species and the ecological adaptability by its natural regeneration potential.

In view of testing its adaptability in Bundelkhand region, this species was planted at NRCAF farm, Jhansi during 2000 with 10 x 10 m spacing. The trees attain the height up to 6.20 m and DBH of 13.9 cm in its eight year of growth and bears fruits during March - June, 09, yielding 0.4 to 13.2 kg. fruits / tree. Among the sixteen trees available in the farm, eight were female, one each male and hermaphrodite and the rest are yet to initiate flowering. There was a difference in the fruit yield based on the orientation of branches in the tree. Even though the West oriented branches showed early and higher flowering the East orientated branches have recorded the highest mean fruit yields (1.2 kg). The phenology and fruit, seed, kernel morphology of Simarouba is given in table 1.

Table 1: *Simarouba glauca* phenology, fruit, seed and kernel morphology at NRCAF

Phenology		**Fruit, seed and kernel morphology**	
1. Nature of tree	Evergreen	10. 100 fruit weight	246 – 258 g
2. Initiation of flowering	Feb 1-2 week	11. 100 fruit volume	240 – 360 ml
3. Initiation of fruiting	March1-2 week	12. 100 seed weight	78 – 84 g
4. Completion of flowering	April 2 week	13. 100 seed volume	100 – 120 ml
5. Initiation of fruit maturity	April 3 week	14. 100 kernel weight	26 – 30 g
6. 50 – 75 % of fruit maturity	May 2 week	15. 100 kernel volume	27 – 29 ml
7. Initiation of shedding of fruit	May end	16. Kernel oil content	43 – 45%
8. Complete shedding of fruits	June 1 week		

9. Pollination observed	By bees		

The evergreen nature and availability of matured fruits during the dry, hot summer have hosted the fauna like red vented bulbul, myna, koel, parakeet, babbler, crow and squirrels due to shelter and edible pulpy fruits for their consumption. Considering the above facts and figures, it seems that, this species is adaptable to Bundelkhand region.

Hence, it possess long gestation period, dioecious nature and chance of 3:2 segregation of male to female plants of seedling progeny, the true to type plantlets have to be raised by cuttings, grafting or by air layering and the planting with 8 : 1 ratio of female : male has to be followed for better yield.

Fruiting tree

Female flowers

Fruits

P Ratha Krishnan and A K Handa

National Research Centre for Agroforestry, Jhansi