

GXm- v6p7 amk w sl m- va^a Ä aqs₃- p¶ p. Cel Ä DWS ni gnbp¶ tXmsS I nf³ p] dms³ - Spj mw

Xn₃ en (*Piper longum*)

NncØ mbnmb Hcp hÄ ns³ SmbmWv Xn₃ en. \ne⁻ p] SÄ¶ p hfc¶¶ Xn₃ enbnÄ B -] qj fpw s] -] qj fpw shtÆsd k kyS fmemWv I - p- hcp¶¶ Xv aqs₃- nb s] - XncH fmWv Huj - [tbnKyamb `mKw. XncH Ä - ää⁻ iäa- - i; fñ³ ä©i^aä¹2. 1 ni - ää^aä¹ä¹ ... x¹©ä¹ä¹ çÓç. x¹Ö«ä¹ä¹bi, x¹Ö«ä¹ä¹ - i, x¹ä¹ä¹«i apXemb B bqÄtÆZ tNcpHl fñÄ CXSS nbncij p¶ p. „ üäsä i - ä¹ç¹ - ä¹ä¹ä¹ ä¹ - © - ää⁻ iäa- i^aä¹2. 1 i... x¹©ä¹ä¹ çÓç.

A XypÄ₃ mZ\ :ti j nbpÄ hni zw F ¶¶ Xn₃ enbn\w tl cf I mÄj ni k ÄÆl emi me] pd⁻ ndj nbncp- v Cubn\w sXS n³ tXm₃ pl fñÄ CShnfmbbn I rj n sN₂ m³ A \ptbmPy- amWv sk sâ m¶¶ n\ v 3p4 I ntem(Kmw DWS nb XncH Ä Xcm³ sl eij pÄ C\amWvXv thcp-] nS₃ n³ hÄ n⁻ - pl fmWv \SoÄ hk Xpj fmbn D] tbnKnj p¶¶ Xv Ch agj me⁻ nsâ B cw⁻ t⁻ mSpI qSn I rj nbncS fñÄ \Smh¶¶ XmWv hcnÄ Ä X¹2nepw sN₂Ä Ä X¹2nepw 60 sk. ao. hoXw A I e⁻ nÄ thcp] nS₃ n³ X- pl Ä \Smh¶¶ XmWv

amS mbn© n (*Curcuma amada*)

k n© n₂ tdk ntb k ky l pSpw₂- nse AwKamb amS mbn© n A [nl w {} Nmcw e⁻ n³ nÄm⁻ Hcp k pKÖ hyR P\amWv A³ mÄ, N¹2⁻ n, k meUpI Ä, I m³ Un, anTmbn, k nd₃ v F ¶¶ nh]³ amS mbn© nbnÄ \n¶ pap- mj p¶ p. A³ mdpI Ä X₂ mdmj pt¹4mÄ amS mbn© n- j p-] pdsä \ncS m\ocv apfl v D₃ v F ¶¶ nh I qsS tNÄj p¶¶ Xv cpNn I q«m³ I mcWamI p¶ p.]³ amS bpsS aWhpw C© nbptSbpw a^a fntâbpw CSI eÄ¶ cpNnbpw \mj n\ v a[pchpw NhÄ₃ pw \ÄI p¶¶ Cu k kyw Huj - [] m[m\y⁻ nepw H«pw] n¶ neÄ. ChbpsS thcnhmbp- tE m⁻ n\pw, hbdpI S₃ pw Huj - [amWv thcpI Ä aq(Xw hÄ² n₃ n₃ m\pw I ^s⁻ Cf- j nhnSpI bpw] \n I pdbvj pl bpw hni₃ v I q«pl bpw sN₂ p¶ p. amS mbn© nbpsS `ql mWUw] n⁻ tcmKw, sNmchn, NncS v B k Xä XpSS nbhbnj v \Ä Huj - [amWv NXhv apdhv F ¶¶ nhbnj v i a\w I n«pw. ho«phf₃ nÄ I pd³ v amS mbn© n \Sp¶¶ Xphgn \apj v Hcp I dnmbbpw I q«⁻ nÄ ZI \Xl cmdn\pw, hni₃ nÄmbabvj pw Hcp Huj - [amhpl bpw sN₂ pw.

tl cf⁻ nÄ s] mXpsh I rj n sN₂ p¶¶ Xv {} mtZi ni C\S fmWv F ¶¶ mÄ HdoÉ k wØ m\⁻ nse s] m«mwKn Kthj W Ø] \⁻ nÄ \n¶ pw Aw₂ F ¶¶ amS mbn© nbn\w A Sp⁻ l me⁻ v] pd⁻ ndj nbncp- v C© n, a^a Ä, I t³ mew F ¶¶ nh \Sp¶¶ Xp t] mse- bmWv ChbptSbpw \SoÄ. amS mbn© nbpsS hnfshSp₃ v B dmwamk w apXÄ B cw⁻ n₃ mw. ho«phf₃ nepÄ I rj nbnÄ B hi ym\pk cWamWv hnfshSp₃ v \S⁻ p¶¶ Xv Cel Ä I cna³ v XpSS p¶¶ XmWv hnfshSp₃ v k ab⁻ nsâ eE \Ww. Hcp sl I fdnÄ \n¶¶ v i cmi cñ 25 apXÄ 30 S- hsc hnfhve⁻ yamWv

I k Xqcia^a Ä (*Curcuma aromatica*)

I k Xqcia^a Ä tcmKwPj fñÄ \n¶ v NÄ¹2s⁻ cE n₃ m\pw NÄ¹2⁻ n\ v Xnfj ap- - ml m\pw hym] l ambn D] tbnKnj p¶ p. I k Xqcia^a ±äeµ³ {} I µÈ äE v i ää¹ä¹ v

äëäi®imEVC-ç'çAEv ‡ Óä¶ I k iXqcia^a Ä ‡ Ó i« | «ä¶ -ðäæä'ä©ä «Šá' çÓ
"Ä 1 è-©çé™ ää²½äE v "Ä Éä³"ä • ñüä"äÜ"ä"äE -«ä© „ «ä±ä¶ • ç-Ó -ä©ç'i ää • äi.

C© nbpw a^a fpw I rj nsNçp¶ Xp t]mse I k iXqcia^a Ä I rj n sNçmw. apf"
[I µS fmWw \SoÄhk iXp. sl I šsdm¶ I nV GXm- v 1500 I ntem{Kmw hn⁻ pthWw. hmc-
- nÄ 60 x 40 sk. ao. A I e⁻ nÄ ssl j pgnl sfSp⁻ v hn⁻ n«v NmWl s₃ mSn sl m- v aqSp-
¶ p. A Xn\pti j w N₃ pNhdpl tfm I "ntbmsl m- v] pXbnSp¶ p. H¶ p- c- p- XhW I f
\oj pl bpw hfai«v a®Wbvi pl bpw thWw. GXm- v 6p7 amk w sl m- v I k iXqcia^a Ä
aqS₃- p¶ p. Cel Ä DWS nl gnbp¶ tXmsS I nf" p] dñs" Sp_i mw. Hcp sl I šdnÄ \n¶ pw
25p30 S- hñfhp e`ñj pw.] " I k iXqcia^a Ä DW_i nsbSp⁻ mÄ 27% DW_i e`ñj pw.

Nnác⁻ (*Alpinia calcarata*)

H¶ caoäÄhsc Dbc⁻ nÄ hfcp¶ Hcp Huj [k k yamWv Nnác⁻ . B bqÄtÆZ Huj .
[Š frÄ {] k n² Š fmb cmk \mZnNqÄ®w, cmk \mZn I j mbw, cmk \mk h w, cmk \ k] iX-
I w XpSS nbhbnÄ CXv Hcp {] [m\ tNcphbmWv Zl \i à n hÄ² n₃ n₃ m\pw, I ^ pñmX
tcmKŠ Ä i an₃ n₃ m\pw cà k ½Ä±w k m[mcWKXnbnem_i p¶ Xn\pw H" bS₃ p- amäp¶ .
Xn\pw {] tal tcmK⁻ n\pw Nnác⁻ tNÄ¶ Huj [Š Ä \Äl mdp- v

C© nI rj n- t] msebmWv Nnác⁻ bpw I rj n- sNçp¶ Xv hmc⁻ nÄ 30 sk. ao. A I e⁻
- nÄ ssl j pgnl Ä F Sp⁻ v 5 sk. ao. \of⁻ nÄ I j WŠ fm_i nb Nnác⁻ bpsS
I mWUw \SWw. NmWl s₃ mSn sl m- v I pgn aqSn N₃ nel tfm I "ntbm- sl m- v] pXbnSWw.
sXŠ n³ tXm₃ nepw d° ÄtXm«Š fñepw Nnác⁻ CŠñfñbmbn I rj n sNçmw. Nnác⁻ H¶ c-
hÄj w apXÄ hñfshSp_i msa-_i nepw aq¶ mw hÄj amWv Gähpw DbÄ¶ hñfhv e`ñj p¶ Xv
`ql mWUw thcpw X- pw \oj w sNbiXp I gpl n 5 sk. ao. \ofapÄ I j WŠ fmbn apdn" v
\me© p Znhk w shbñe⁻ p h" pW_i n hnÄ₃ \ \S⁻ mw. \Ä coXnbñÄ] cñNcñ" mÄ Hcp
sl I šdnÄ \n¶ pw 20p25 S- Nnác⁻ e`ñj pw.

PmXn (*Myristica fragrans*)

PmXn_i mbñ Ä_i pw PmXn_i {Xn_i pw th- n tl c f⁻ nepS\ofw I rj n- sNçp¶ Hcp
k pKÖ {ZhyñfñbmWv PmXn.] eXcw A " mdp- m_i p¶ Xn\pw I dnÄ Ä_i pw aäpw cpNnbpw
aWhpw \Äl p¶ Xn\pw PmXn_i mbñ D] tbnKñ_i mdp- v PmXn_i mbñnÄ \n¶ pw thÄXñcis"
Sp_i p¶ ssXew k pKÖ {ZhyŠ fñepw hnñn[acp¶ pl fñepw tNÄ_i p¶ p- v

hn⁻ papf₃ n" mWv ssXI Ä D- m_i p¶ Xv ssXI frÄ 50% B Wpw 50% s] ®pw D- m-
I pw. 10 s] - sNSñÄ Ä_i v HcpB - sNSñ { I a⁻ nÄ \nÄ⁻ nb ti j w A [nl w hcp¶ B -
sNSñÄ apdn" pl fñWw. ssXI Ä _Uv sNçp¶ tbn] Xñhbvi pl tbn sNbiXmÄ Cu
\j šw Hgnñm_i m³ k m[n_i pw. 15p20 hÄj w {] mbamb PmXnacw \ndsb I mbp-
- ml pw. GXm- v 40 hÄj w hsc \¶ mbñ hñfhv e`ñj pw.] dñs" Sp⁻ I mbñ Ä sXm- pl f-
^a Xn\pti j w] {Xnbpw I pcphpw thÄXñcis" Sp_i Ww.] {Xn 10p15 Znhk whsc shbññÄ
DW_i nsbSp_i Ww. I pcp 4p6 B gn- hsc DW_i nsbSp_i Ww. Hcp sl I šÄ Ø e⁻ p-
\n¶ pw 1000p1500 I ntem{Kmw PmXn I pcphpw 20p25 I ntem{Kmw } {Xnbpw hÄj - nÄ e`ñj pw.

{Km¼p (*Syzygium aromaticum*)

GXm- v 12 aoäÀhsc Dbc- nÄ hfcq¶ Hcp \nXyl cñX hrÉ amWv {Km¼p. DWS n sbSp-] qsam«p fñWv k pKÔ hyÚ \S fmbn D] tñmKñ; p¶ Xv `É W] ZmÄ° S Ä; v cpNñbpw aWhpw \ÄI m\mWv CXv {} [m\ambpw D] tñmKñ; p¶ Xv I qSmsX tk m, v k pKÔ {ZhyS Ä apXembhbp- m; p¶ Xñ\pw {Km¼p D] tñmKñ; mdp- v PetZmj w, i zmk tñ mi tcmKS Ä,] \n, hbdpthZ\, Xz; v tcmK- S Ä, OÄ±n XpSS nb tcmKS Ä; v {} Xñhñ[nñmbpw {Km¼p D] tñmKñ; mdp- v

hñ papf, nñ m] Xñhñ; Ä {} [I nb hgntbm ssXI fp- m; mw. 1p1.5- hÄj w] ml amb ssXI Ä I rj nØ e- v Xz mñ; nb 60p75 sk. ao. k aN\Xpc; pgnñnÄ 6p7 aoäÄ A I e- nÄ \Smw. B dphÄj w {} mbamb ssXI Ä] qñ«p XpSS pw. F ¶ mÄ apgph\mbn] q; Wsa; nÄ GI tzi w 20 hÄj saSp; pw. GXm- v 80 hÄj w hsc hñfhv Xcpw.] qsam«p I Ä] qÄ@hfÄ- sb- pt¼mÄ] n; v \ndamI pw. A t, mgmWv hñfshSp; - Xv] dñs- Sp-] qsam«p Ä t\ñb- I \- nÄ] mbbñsem] \¼ntem hñXdnñ«v \¶ mñ DWS nsbSp; p ¶ p. \¶ mñ DWS nb sam«n\] - sam«nsâ aq¶ nÄ H¶ v Xq; w am{Xta D- ml q. Hcp ac- nÄ \n¶ pw hÄj - nÄ 3.5p7 I ntem{Kmw sam«v hÄj w e`ñ; pw.

I dph (*Cinnamomum verum*)

‘k ntem- k n¶ a-’ F ¶ v {} k n² nñmÄÖ n- bYmÄ° I dph Hcp \nXyl cñXhrÉ . amWv CXñsâ sXmenbpw Cel fñsaÄmw hfsc k pKÔ tadñbXmWv sXmen (] «) ‘I yqÄk v’ B bn I bñpaxñ sNz s, Sp¶ p. I dnak meI fñepw t_ ; dn k m[\S fñepw CXv cpNñbpw aWhpw] I cphm³ D] tñmKñ; p¶ p. I qSmsX hñhñ[bn\w k pKÔ hk ðp; fñepw] ÄS- bñ; p¶] ZmÄ° S fñepw _ enhk ðp; fñepw CXp] tñmKñ; p¶ p- v sXmen ssXew hñe- tbdñb k pKÔ hk ðp; fñepw, t_ ; dnk m[\S Ä, aZyw, Huj [; q«pI Ä apXembh- bñepw D] tñmKñ; p¶ p. {Km¼p ssXe- n\] I cambn XmWXCw DÄ, ¶ S fñÄ cpNñbpw aWhpw \ÄI m³ Ce ssXew [mcmfW D] tñmKñ; p¶ p- v I dph ssXe- n\ tcmKñWp; j Ä, \namhñcI Ä apXembhsb \i n, n; phm\pw É p{ZPohñ sf A I äm\papÄ I gnñp- v

tI mgñt; mSv C³ Uy³ C³ } näyq«v Hm^ v k ss] k k v dnk Ä- v (IISR) hñl k n, ns- Sp- ‘\h{i o’ (SL-63), ‘\nXy{i o’ (IN489) F ¶ ñh sXmen; pth- nñpÄ A XyÄ, mZ\ ti j n- bpÄ C\ S fñWv ODC130 AYhm ‘k pKÔ n\ñ’ F ¶ CessXe- n\p th- nñpÄ A XypÄ, mZ\ ti j nñpÄ C\w HmS; men k pKÔ ssXepac¶ psNSñ Kthj W tI {µ- nÄ \n¶ v hñl k n, ns- Sp- XmWv hñ papf- p- ml p¶ ssXI fñWv {} [m\ambpw \SoÄhk ðp. GXm- v 10p12 amk w {} mbsa- nb ssXI Ä 2p3 aoäÄ A I e- nÄ I rj n sNz mw. c- paq¶ p hÄj w {} mbamb I dphbps I ¼pI Ä] « Dñs- Sp; m³] ml amWv 2p2.5 sk. ao. hymk hpw 1.5p2 aoäÄ \ofhpapÄ sl m¼pI fñWv] «sbSp; m³ D- aw. ag I gnª v Xñcpl Ä aq- k abamWv hñfshSp; m³] äñbXv I ¼pI Ä apñs- Sp- v I cñ- s- men Npñamñbñti j w] « Dñ- v {} tXyl coXñbnÄ Npçfpl fñ; n DW; nsbSp; p¶ XñWv dph, «. CessXew F Sp; phm\mbn hÄj w c- pXhW; tabv HI vtSm_ Ä amk S- fñÄ I ¼pI Ä apñs- Sp; mw.

I t' mēw (*Kaempferia galanga*)

ChbpsS I μS Äj v cqE KÔ ap- v „ Üä¶¶ EäÓç i - ' Üä² ä³⁄⁴ᵐç¹ çÓ ëëÜ«i I dnക±¶¶ cpNnbpw aWhpw J I cphm³ D] t̄b̄mKñj p¶¶ p. I qSmsX hññ[bñ\w k pKÔ h- k iXp; fñepw k uμcyhÄ² I hk iXp; fpw 'i È ñ - ä©çക±ä«ç'i D] t̄b̄mKñj mdp- v കി³⁄⁴ä«È äEç ä« Huj - [KpWhpap- ñ j° EëÈ - ° ä©ä¹ çÓÜäEç äç³i " NÄ½- tcmKS Äj pw i zmk tl mi tcmKS Äj pw i äÜä-äÇä©ä©ä ... äi ©äöä¹ çÓç. Üç• കേ± i ää• ä- «ðÈ ä¶¶ EäÓç ° ക്ക®ä¹ ç-äEç'i കി³⁄⁴ä«i EÜÜä• ñ

\Ä \oÄhmÄ'' bpw hf; qdpapÄ a®mWv CXñsâ I rj ñj v A`ñ mayw. I μS fmWv \Sm³ D] t̄b̄mKñj p¶¶ Xv Hcp sl I ßÄ Ø et⁻ j v 750p1000 I ntem{Kmw I μS Ä th- ñ h- cpw. Cel Ä DWS ñ XpSS pt¼mtg; pw hñfshSp, v B cw`ñj mw. thcpl fpw aäpw amänb- tij w I ngS pl Ä (I μS Ä) I gpl ñ hr⁻ ñbm; ñsbSp; mw. I ngS pl Ä h«⁻ ñÄ A çñ² vDW; ñ k qE ñj mw.

hb¼v(*Acorus calamus*)

s\Äv hfcpp¶¶ Xp- t] mepÄ \neS fmWv hb¼v I rj ñ sNçm³ Gähpw t̄b̄mPñ' Xv __p² ñi ä ñ, HmÄ½i ä ñ Ch hÄ² ñ, ñj p¶¶ Xñ\pw, A] k çmçw, D³ amZw XpSS ñb am\k ñ I tcmKS fpsS Nñl ñÄk; pw I ^ w I pdç; p¶¶ Xñ\pw aäpamWv hb¼v {} [m\ambpw D] - t̄b̄mKñj p¶¶ Xv i oXf:] m\obS Äj vaWhpw cpNnbpw \Äl m³ hb¼p:] t̄b̄mKñj mdp- v

apdnS'' Sp⁻ hb¼ñsâ XS GI tZi w 5 sk.ao. B g⁻ ñÄ 30 x 30 sk. ao. A l e⁻ ñÄ DgpX] mS⁻ v \Smw. I rj ñØ e⁻ v 5 sk. ao. I \⁻ ñÄ shÄ w sl «ñ\ñÄ⁻ p¶¶ XñWv Gähpw DNñXw. hb¼ñsâ Cel Ä a² \ñdambñ DWS ñ⁻ pSS pt¼mÄ hñfshSp; phm³] ml aml pw. sNl Ä \« hÄj w Xs¶¶ hñfshSp, ñ\] ml aml pw.] dnS'' Sp⁻ I ngS pl Ä thcpl Ä amän 5p7.5 sk. ao. hsc heñ, apÄ I j \WS fm; ñ shbññÄ DWS ñ hñ] \W\ \S⁻ mw. Hcp sl I ßÄ Ø e⁻ p\ñ¶¶ pw 7p10 S⁻ hsc hb¼v e`ñ; pw.

ക³äi - Öñ(*Murraya koenigii*)

ക³äi - Öñ • ä²ä ä©ä©ä© %äç - - ð'ä• ñ - äÄç'çYÈ ñ - ±'È ëÖÄäçÓ ക³äi - Öñ „ Öñ ää• ക³- - ðÈ äEç 'äiü'Ü %i ®ç⁻ - ð'ä©ç'i - ä• ä-ðäᵐä äEÈ ä¶¶ കേ®ä ë• ÜëÖᵐçÓç „ üäëP „ «ക. §º ð - ñ iüç¹ • p «¼ä¹ çÓÜäEç'i äç• ä çക³çÓÜäEç'i - ðäçക³ä©ä ... äi ©äöä³⁄⁴ç - äçÓç. ക³äi - Öñ« - ä±Ä iü½çç'i - çഗÖ - ðññ- E½±çç'i i • 'È ñ ëçäᵐ³⁄⁴ñ - ±i¹¹ ä«i i കᵐç കᵐäëÜ - èº ä¹ äi. Eäi üðäçi ©äç'i - eä'äççäði - ñ¹ äÖä¹ çÓÜä©ä ç³çëÖᵐçÓç „ üäëP „ «ക - ä- Öç'i j° E- ക്കçç'i - ñ¹ äÖä¹ çÓÜäEç'i i¹äçä• ç¹ ë± E- äÖä¹ çÓÜäEç'i ...È 'ä• ñ üëക³ ääç¹² • , - ä² - «ð'i, Eä» æÜക³ä³çക • , രക്- Eð'i¹äç¹². Üçᵐ½ä©-¹ ñ... äi ©äöä¹ ëÖᵐçÓç „ üäEñ-ä®º a - ക്കççEñ

- äÈ ç 'ç±Öä²ä• ñ ëëÜക ... Ää¹ çÓÜñ ëëÜക 90- 120 e⁻ . 'æ p ക«È ä¶¶ കേ®ä²ä «iÈ ¹ ç'äYä Eᵐäi. ë• ᵐäക 1 'æ ... ©Ä È ä¶¶ 'ç³ä³⁄⁴ñ കçYä è³⁄⁴ᵐä©ä©ä - ±'È äi. %Öäi - ñ¹©ä-¹ äEiÈ äëᵐ - ä±ë-ᵐçÖñ Üçᵐ½äi. ത്വð-ä±ë-ᵐçÖä¶¶ èº ക്കäEñ 400 ക. i çäi. ക³äi - Öñ« «§ä¹ ç'i. Eä«ç 'ä' i „ ᵐ-äÄñ - ä±ë-ᵐç¹ äi. äEç'i 'ëÖç'i - ñ¹® ½±ä¶¶ EᵐÈ ëÖᵐçÓç - ä±ë-ᵐçÖçക±ä¶¶ %äç èº ക³ ä «È ç EäÓç'i ഏക; j - i 2000- 2200 ക. i çäi .

Xifbq pñ shÅ - ñÅ XpWn apj n B hn] nStj pñ Xv t] i nzhZ\biq v \ÅXmWs(X.
] pñbpsS] qj Å CSñ p-] ngn^a \ocvAc Hu- kvhoXw c- p-t\cw l gñbiq pñ Xv A Åi -
Ê n\vrssl l - Huj [amWv

C` ybnÅ A tS mfanTS mfw Cu hrE w h\yambn hfcpp.] qÅ® hfÅ` sb- nb
ac- n\vr 25p35 aoäÅ hsc Dbcw hbiq pw. Xangi\m«nise s] cñbi pfw Kthj WtI {µ- ñÅ
\ññ pw tCmWÅ \ñÅ² mcWwhgn] n. sl . F w.pl F ññ DÅ, mZ\ti j n l qSnbXpw NpcpS nb
l mebfññ\pÅ ñÅ ^ ew Xcpññ Xpamb Hcñ\w] pd- ndj nbn«p- v

MEDICINAL SPICES OF KERALA

Kerala, the land of spices, has been a centre of attraction of many foreigners from time immemorial. They reached the 'Gods' own country' in search of the invaluable wealth of spices. Ginger, pepper, turmeric and many other crops commonly used as spice have got excellent medicinal properties also. The spice crops which possess medicinal properties are designated as 'medicinal spices'. Aromatic and Medicinal Plants Research Station, Odakkali, a constituent research centre of Kerala Agricultural University (KAU) has been doing pioneering research and development work on aromatic and medicinal plants of Kerala. It was established in 1951 as "Lemongrass Breeding Station". Diversifying the research emphasis of the centre to cover all other tropical aromatic and medicinal plants, the station was renamed as Aromatic and Medicinal Plants Research Station (A.M.P.R.S.) in 1982. KAU is perhaps the first among the Universities in India to have established an exclusive research centre for aromatic and medicinal plants. The station is involved in the development of agrotechnology for various medicinal and aromatic plants, which were hitherto grown wild. The distillation and oil extraction technology of various aromatic plants have been studied in detail and procedures standardised. The phytochemical laboratory of the station is recognized as one of the Regional Analytical Laboratories for medicinal and aromatic plants. Quality evaluation procedures for essential oil crops as well as identification of active principles in selected medicinal plants and standardisation of quality testing procedures are being undertaken in the laboratory. Besides, an intensive programme on seed production and distribution of the plants is taken up.

The medicinal properties and agro technology of medicinal spices of Kerala are briefly described here.

1. Ginger (*Zingiber officinale*) Family-Zingiberaceae

Ginger is a slender perennial herb whose dried rhizomes are esteemed for its flavour, pungency and aroma. The essential oil and oleoresin extracted from the rhizome is used in the manufacture of flavouring essences and in perfumery. Its medicinal value is increasingly being recognized. Taken internally, it is a carminative and stimulant to the gastro intestinal tract and externally it is used as a counter irritant. Ginger is extremely valuable in dyspepsia, flatulence, colic, vomiting spasms and other painful affections of the stomachs and the bowels.

Rhizome seeds at the rate of 1000-1500 kg/ha are planted on raised beds at 20-30 cm spacing and 5-10 cm deep. For vegetable and preserved ginger, the crop can be harvested from 6 months and for dry ginger, harvesting is done during 8-9 months after planting. The yields vary from 20-30 t/ha fresh ginger, which produces 20-30% of dried ginger. For the production of dried ginger, the

rhizomes are cleaned of dirt and roots and washed in water, carefully scraped and dried in the sun for 5-6 days.

2. PEPPER (*Piper nigrum*) Family-Piperaceae

Among the spices, black pepper is the king it is the most important, most popular and most widely used spice in the world. It has extensive culinary uses for flavouring and preserving processed foods and is important medicinally. Pepper is used in medicine as carminative and febrifuge for adding in digestion and in curing the common cold.

Pepper prefers a light porous soil and well-drained soil rich in organic matter. Water stagnation in the soil, even for a very short period is injurious for the plant. It is propagated vegetatively from cuttings. The middle one-third portion of runner shoots produced at the base of mother plants are preferred for planting. For planting pepper, prepare pits on the northern side of the standards, 15 cm away from it. The growing portion of the cuttings are to be trailed and tied to the standards. Black pepper is produced by sun drying the mature pepper berries for 3-5 days after their separation from spikes by threshing. Panniyoor-1, Panniyur-2 (Krishna), Panniyur -3 (Syama), Panniyur-4 (Anjana), Subhakara (KS27), Karimunda, Kottanadan, Kuthiravally, Arakulam Munda, Balankotta and Kalluvally are common cultivated varieties.

3. TURMERIC (*Curcuma longa*) Family: Zingiberaceae

Turmeric forms an integral part of the rituals, ceremonies and cuisine. Due to the strong antiseptic properties, turmeric has been used as a remedy for all kinds of poisonous affections, ulcers and wounds. It gives good complexion to the skin and so it is applied to face as a depilatory and facial tonic. It purifies blood by destroying the pathogenic organisms. The drug is also useful in cold, cough, bronchitis, conjunctivitis and liver affections.

It is vegetatively propagated from the rhizomes. Harvesting is generally done at about 7-10 months.

4. LONG PEPPER (*Piper longum*) Family: Piperaceae

Long pepper is a slender aromatic climber whose spike is widely used in ayurvedic and unani systems of medicine particularly for diseases of respiratory tract. *Pipalarishta*, *Pippalyasava*, *Panchakola*, *Pippalayadilauha*, and *Lavana bhaskar churan* are common ayurvedic preparations made out of the dry spikes of female types. Its roots also have several medicinal uses. The root is useful in bronchitis, stomach ache, diseases of spleen and tumours. Fruit is useful in *vata* and *kapha*, asthma, bronchitis, abdominal complaints, fever, leucoderma, urinary discharges, tumours, piles, insomnia and tuberculosis. The infusion of root is prescribed after parturition to induce the expulsion of placenta. The root and fruit decoction are used in acute and chronic bronchitis and cough.

The plant is a glabrous perennial under-shrub with creeping branches. Long pepper is propagated by suckers or rooted vine cuttings. The vines start flowering six months after planting and the spikes mature in 2 months time. The optimum stage of harvest is when the spikes are blackish green. The yield of dry spike is 400 kg/ha during first year, increases to 1000kg during third year and thereafter it decreases. Therefore, after 3 years the whole plant is harvested. The stem is cut close to the ground and roots are dug up. Average yield is 500 kg dry roots/ha.

5. MANGO GINGER (*Curcuma amada*) Family : Zingiberaceae

The rhizomes are useful in vitiated conditions of *pitta*, anorexia, dyspepsia, flatulence, colic, bruises, wounds, chronic ulcers, skin diseases, pruritus, fever, constipations, strangury, hiccough, cough, bronchitis, sprains, gout, halitosis, otalgia and inflammations. The fresh rhizome possesses the smell of green mango and hence the name *mango ginger*. The rhizomes are used externally in the form of paste as an application for bruises and skin diseases generally combined with other medicines. The rhizomes are bitter, sweet sour, aromatic, cooling, appetiser, carminative, digestive, stomachic, demulcent, vulnerary, febrifuge, alexertic, aphrodisiac, laxative, diurectic, expectorant, antiinflammatory and antipyretic.

Its cultivation practices are similar to turmeric.

6. KASTHOORIMANJAL (*Curcunma aromatica*) Family : Zingiberaceae

C. aromatica is a perennial tuberous herb with aromatic yellow rhizome which is internally creamy in colour and the fresh root has a camphoraceous odour. Rhizomes are used in combination with astringents and aromatics for bruises, sprains, hiccough, bronchitis, cough, leucoderma and skin eruptions. The dried rhizome is used as a carminative and aromatic adjunctant to other medicines. Rhizome is an anti-dote for snakebite and carminative. Essential oil from rhizomes showed anthelmintic, antifungal and antimicrobial activity

It is vegetatively propagated from the rhizomes. On receipt of pre-monsoon showers in April, small pits are taken in the beds and finger rhizomes are planted flat with buds facing upwards and covered with soil or dry powdered cattle manure. The crop is mulched immediately after planting and 50 days after first mulching. Harvesting is generally done at about 7-10 months.

7. GREATER GALANGAL (*Alpinia galanga*) Family : Zingiberaceae

It is a perennial aromatic rhizomatous herb. Because of the presence of essential oil, the rhizomes are used in bronchial troubles and as a carminative. They are also useful in vitiated conditions of *vata* and *kapha*, rheumatoid arthritis, inflammations, stomatopathy, pharyngopathy, cough, asthma, hiccough, dyspepsia, stomachalgia, obesity, diabetes, cephalgia, tubercular glands and intermittent fevers.

Alpinia calcarata (Linn.) Willd is another species of the genus with much medicinal importance. It is shorter in stature but stronger in aroma than *Alpinia galanga*.

Alpinia is commercially propagated vegetatively by rhizomes. This is cultivated also as an intercrop in coconut or rubber plantations. Cultivation practices are similar to that of ginger. Rhizomes are dug out after cutting the top portions when the crop reaches 1.5-2 years of maturity. The average yield is 10-15 tonnes of fresh rhizomes/ha and the driage is 25-30%. The collected rhizomes are washed and cut into pieces of 5cm long and dried in sun for 4 days before sale.

8. NUTMEG (*Myristica fragrans*) Family - Myristicaceae

Nutmeg plant is a spreading dioecious evergreen tree which yields two spices, the dried seed called *nutmeg* and the dried aril called *mace*. Oleoresins, nutmeg butter and essential oils also derived from nutmeg and they find varied uses in the foods, medicine and perfume industries. They are useful in vitiated conditions of *kafa & vata*, inflammations, cephalalgia, helminthiasis, dyspepsia, flatulence, cough, asthma, diarrhoea, vomiting, ulcer, hepatopathy, skin diseases, cardiac disorders, fever and generally debility. The burnt seed kernel powdered and mixed with butter milk form a very specific remedy for diarrhoea and vomiting in children.

Nutmeg is normally propagated by seeds. Seedling progeny will give about 50% of each sex, which is very difficult to distinguish until the trees flower 4-6 years after planting. Budding and grafting is followed to ensure female progeny. Trees come to full bearing between 15 and 20 years and continue for more than 40 years or more. The aril is removed, flattened out and dried slowly in sun. Yields per hectare may vary from 1000-1500 kg of nutmegs and 200-250 kg of mace per annum.

9. CLOVE (*Eugenia caryophyllus*) Family - Myrtaceae

Clove is a small evergreen tree valued for spice and essential oils. They are used as a table spice, in the preparation of curry powders, to flavour the betel quid in *panmasalas* and to season sausages and puddings. Clove buds, stems and leaves on steam distillation yield essential oils which are used in the manufacture of perfumes, soaps, in flavouring, medicine, dentistry and as a clearing agent in microscopy. In medicine, cloves are stimulative, antispasmodic and carminative. In dentistry, eugenol in combination with zinc oxide is used for temporary filling of cavities.

Cloves are propagated by seeds. 1-1.5 years old seedlings can be transplanted to the main-field at 6-7 m spacing. The trees begin to flower in 6 years. Clove clusters are hand-picked when the buds reach full size and turn pink but before they open. On an average, a clove tree yields 3.5-7.0 kg dry flowers.

10. CINNAMON (*Cinnamomum verum*) Family: Lauraceae

Cinnamon is an evergreen tree whose bark and leaves are strongly aromatic. The bark, exported as *quills*, is used as a spice or condiment, for flavouring cakes and sweets and in curry powders, incense, dentrifices and perfumes. The bark oil and leaf oil are used in flavouring confectionery, liquors and in pharmaceutical preparations, especially to mask the unpleasant taste. It is useful in bronchitis, asthma, siphhalalgia, odontalgia, cardiac diseases, diarrhoea, uropathy, nausea and vomiting, flatulence, fever, halitosis and restoring normal skin colour on the spice.

It is propagated mainly by seed. Plants are pruned when they are 2-3 years old at a height of 15 cm above ground level. For the preparation of *quills*, the plants are harvested 3 years after planting. Harvesting is done in May or November. Leaves are removed, the brown skin is scraped off and the bark is peeled off. The cylindrical pieces of bark (*quills*) are dried in sun for 2-5 days and packed in bundles for trade. 170-200 kg of dried *quills*/ha/year are obtained from a grown up plantation.

11. KACHOLAM (*Kaempferia galanga*) Family: Zingiberaceae

Kacholam is a perennial plant, the rhizomes of which yield an essential oil. The oil is utilized in the manufacture of perfumes and in curry flavouring. It is also employed in cosmetics, mouth washes, hair tonics and toiletries. The pungent, hot, sharp, bitter and aromatic rhizomes find an important place in indigenous medicine as stimulant, expectorant, diuretic and carminative. It promotes digestion and cures skin diseases, piles, phantom tumors, coughs, oedema, fever, epilepsy, splenic disorders, wounds, asthma and rheumatism. The rhizomes are used for protecting clothes against insects and are eaten along with betel and arecanuts as a masticatory. The rhizomes and leaves are attached to neck laces and added to bath water for perfume.

The plant is propagated by division of rhizomes. Seed rate is 500-750 kg/ha. It is a shade loving plant. The crop is harvested 6-7 months after planting when the leaves start drying up. The yield, on an average, is 5-8 tonnes/ha of fresh rhizomes which on drying yields 1.5-2 tonnes/ha of dry rhizomes.

12. SWEET FLAG (*Acorus calamus*) Family :Araceae

Acorus calamus is a semi-aquatic rhizomatous perennial herb. It is an important *medhya* drug, capable of improving memory power and intellect. It is used for the treatment of cough, bronchitis, odontalgia, inflammations, gout, epilepsy, convulsions, depression and other mental disorders, tumours, dysentery, skin diseases, numbness and general debility.

It is usually grown in areas where paddy can be grown. Sprouted rhizome pieces are pressed into the mud at a depth of about 5cm at a spacing of 30x30cm. The crop is ready for harvest at the end of first year. Yield of rhizome is about 7-10t/ha

13. CURRY LEAF (*Murraya Koenigii*) Family: Rutaceae

Curry leaf, a plant of homestead gardens is a perennial leaf vegetable. The leaves of the plant are used extensively for seasoning and flavouring dishes. Ground curry leaf with mature coconut kernel and spices forms an excellent preserve. The plant is highly esteemed for its leaves which promote appetite and digestion and destroy pathogenic organisms. It is reported to be useful in emaciation, skin diseases, hemopathy, worm troubles, neurosis and poisons. It is useful in improving voice, stimulates digestion and destroys concocted poisons in the system.

Curry leaf is propagated by seed. A spacing of 90-120cm is followed on either side. Plants may be trained and pruned to maintain a bush of 1m in height. The crop comes to first harvest at the end of first year. It is harvested at 2.5-3 months interval giving an yield of 1000-3000kg/ha depending on age.

14. SWEET BASIL (*Ocimum basilicum*) Family: Lamiaceae

Ocimums are an important group of aromatic and medicinal plants which yield many essential oils and aroma chemicals. Its oil is employed for flavouring of food stuffs, confectionery, condiments and in toiletry. It has diverse uses in the perfumery and cosmetic industries as well as in indigenous systems of medicine.

The plant is propagated through seeds. Seedlings are first raised in the nursery and then transplanted in the field at 40-60 cm spacing. Basil is harvested when the plant is in full bloom (9-12 weeks after planting) and lower leaves start turning yellowish and the subsequent harvests done after every 15-20 days. Floral harvests yield 3-4 tonnes of flowers and the final harvest of the whole plant yields 10-15 tonnes of herb per hectare.

15. GARCINIA (*Garcinia gummi-gutta*) Family: Guttiferae

Garcinia, the comboge tree, is a big sized glabrous and evergreen forest tree commonly seen in the Western Ghats of Kerala, Karnataka, and also in Sri Lanka. Its performance is best in river banks and valleys. The economic part of the plant is its mature fruit, which is highly acidic. The extract obtained from the mature fruit rind, hydroxyl citric acid, attracts foreign markets, for its use in medicines controlling obesity. The leaves and fruits are sour, astringent, thermogenic, constipating and digestive. They are useful in vitiated conditions of vata and kafa, ulcers, inflammations, haemorrhoids, diarrhea, dysentery, flatulent colic, dyspepsia and hyperdipsia

Grafts prepared through soft wood grafting or side grafting and healthy seedlings raised in the nursery are used for cultivation. If seedlings are planted, 50-60% will be male; and female takes 10-

12 years for bearing. Seedlings start bearing generally at the age of 10-12 years. Grafts start bearing from the third year onwards and will attain full bearing at the age of 10-15 years. Immediately after harvest, wash the fruits in running water and separate the fruit rind for processing.

16. TAMARIND (*Tamarindus indica*) Family: Fabaceae

Tamarind is a large to very large evergreen tree up to 30 m in height. The tamarind fruit pulp has been an important culinary ingredient in India for a very long time. Almost all parts of the tree find some use or other in food, chemical, pharmaceutical and textile industries, and as fodder, timber and fuel. The fruit pulp is the chief agent for souring curries, sauces, chutneys and certain beverages throughout the greater part of India. Pulp of ripe fruit, which is sweet or acid, is cooling (refrigerant), carminative, digestive and laxative; a valuable antiscorbutic and antibilious. Leaves and seeds are astringent. Tender leaves and flowers are cooling and antibilious. Red outer covering of seeds is a mild astringent. Bark is astringent and tonic.

Propagated by seeds and grafts and budded seedlings. Seedlings start to yield 8- 10 years after planting whereas grafts and budded seedlings give yield after 4-5 years. Stabilized yield of 250 kg/tree is obtained from 9- 10 years onwards.



AMPRS, Odakkali



Information-Sales Centre



Ginger



Black pepper



Long pepper



Sweet basil



Nutmeg



Turmeric



Curry leaf



Sweet flag



Lesser galangal



Cinnamon



Garcinia



Tamarind



Kasthoori manjal



Mango ginger



Greater galangal



Kacholam

Aromatic and Medicinal Plants Research Station, Odakkali and medicinal spices of Kerala