Agrifiesta 2014

Souvenir

South Indian Agricultural Fair 2014

Directorate of Extension
Kerala Agricultural University

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South Indian Agricultural Fair 2014

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സന്ദേശം

കേരള കാർഷിക സർവകലാശാലയുടെ ആഭിമുഖ്യത്തിൽ നടന്ന കാർഷിക മേളയോടനുബന്ധിച്ച് സ്മരണിക പ്രസിദ്ധീകരിക്കുന്നു എന്നറിഞ്ഞതിൽ വളരെ സന്തോഷം.

ദക്ഷിണേന്ത്യൻ കാർഷിക രംഗത്തെ ഗവേഷണ വിജ്ഞാപന വിദ്യാഭ്യാസ മേഖലയിലെ നേട്ടങ്ങൾ പ്രദർശിപ്പിച്ച മേളയിൽ നിന്ന് ഉൾക്കൊണ്ട പാഠങ്ങൾ കാർഷിക കേരളത്തിന് പകർന്നുനൽകാനും അതിലൂടെ സംസ്ഥാനത്തെ കാർഷികോന്നതിയിലെത്തിക്കുവാനും സ്മരണിക പ്രസാധനം സഹായകമാകട്ടെ.

കർഷക സമൂഹത്തിനായി ഇതുപോലുള്ള സംരംഭങ്ങൾക്ക് ഭാവിയിലും സർവകലാശാല നേതൃത്വം നൽകുമെന്ന് പ്രതീക്ഷിക്കുന്നു.

എല്ലാ ആശംസകളും.

ഉമ്മൻ ചാണ്ടി

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കെ. പി. മോഹനൻ
കൃഷി മൃഗസംരക്ഷണം ക്ഷീരവികസനം വകുപ്പുമന്ത്രി

തീയതി
01/12/14

സന്ദേശം

കാർഷിക മേഖലയിലെ ഗവേഷണ നേട്ടങ്ങളും. സാങ്കേതിക മുന്നേറ്റങ്ങളും കർഷകരിലേക്കും. പൊതുജനങ്ങളിലേക്കും പകർന്ന കൊടുക്കുകയെന്ന ലക്ഷ്യത്തോടെ കേരള കാർഷിക സർവ്വകലാശാലയുടെയും. കേന്ദ്ര കൃഷി സഹകരണ വകുപ്പിന്റേയും ആഭിമുഖ്യത്തിൽ ദക്ഷിണേന്ത്യൻ കാർഷിക വിജ്ഞാനമേള വെള്ളാനിക്കരയിലുള്ള കേരള കാർഷിക സർവ്വകലാശാല ആസ്ഥാനത്ത് വെച്ച് നടത്തുകയുണ്ടായി. 2014 ഫെബ്രുവരി 28 മുതൽ മാർച്ച് 6 വരെ സംഘടിപ്പിച്ച മേളയുടെ ഭാഗമായി നടന്ന കാർഷിക പ്രദർശനം. തെക്കെ ഇന്ത്യയിലെ കാർഷിക സർവ്വകലാശാലകൾ. ഐ.സി.എ.ആർ ഗവേഷണ സ്ഥാപനങ്ങൾ. കൃഷി വിജ്ഞാന കേന്ദ്രങ്ങൾ. കൃഷി - കൃഷിയനുബന്ധ മേഖലയിലെ സർക്കാർ - അർദ്ധ സർക്കാർ സ്ഥാപനങ്ങൾ. സ്വകാര്യ ഏജൻസികൾ ഇടങ്ങിയവരുടെ പങ്കാളിത്തം കൊണ്ട് ശ്രദ്ധേയമായി. കാർഷിക മേഖലയിലെ കാലിക പ്രാധാന്യമുള്ള വിഷയങ്ങളെക്കുറിച്ച് ഓരോ ദിവസവും നടത്തിയ സെമിനാറുകളിൽ സംസ്ഥാനം ഒട്ടാകെയുള്ള കർഷകരെ പങ്കെടുപ്പിച്ചു കൊണ്ട് മേള ഒരു വൻ വിജയമാക്കിത്തീർക്കുവാൻ കഴിഞ്ഞു. കാർഷിക വിജ്ഞാന പ്രദർശനത്തിനു പുറമെ ദിവസേനയുള്ള കലാപരിപാടികളും മറ്റ് വിനോദോപാധികളും ഉൾപ്പെടുത്തിക്കൊണ്ടുള്ള ഒരു കാർഷികോത്സവമാണ് സർവ്വകലാശാലയുടെ അങ്കണത്തിൽ അരങ്ങേറിയത്. കാർഷിക മേഖലയിലെ ശാസ്ത്രജ്ഞരേയും. ജനനേതാക്കളെയും. കലാ സാംസ്കാരിക നായകരെയും പങ്കെടുപ്പിച്ചു കൊണ്ട് ഏറ്റവും ജനകീയമായി ഒരു കാർഷിക മേള സംഘടിപ്പിക്കുന്നതിൽ വിജയിച്ച കേരള കാർഷിക സർവ്വകലാശാലയ്ക്ക് അഭിനന്ദനങ്ങൾ.

ക്രിസ്തുമസ് പുതുവത്സരാശംസകളോടെ,

കെ. പി. മോഹനൻ

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സന്ദേശം

കേരള കാർഷിക സർവ്വകലാശാല 2014 ഫെബ്രുവരി 28 മുതൽ മാർച്ച് 6 വരെ ദക്ഷിണേന്ത്യൻ കാർഷിക മേളക്ക് അരങ്ങൊരുക്കി. കാർഷിക ഗവേഷണ രംഗത്തെ നേട്ടങ്ങൾ, വിജ്ഞാനവ്യാപന രംഗത്തെ നൂതനപ്രവണതകൾ, കാർഷിക വിദ്യാഭ്യാസ രംഗത്തെ പുതിയ കാൽവെയ്പുകൾ എന്നിവയെല്ലാം പ്രദർശിപ്പിച്ച ഈ കാർഷിക മേള കാർഷിക രംഗത്ത് പ്രവർത്തിക്കുന്ന ഏവർക്കും വിജ്ഞാനപ്രദമായിരുന്നു. കൂടാതെ, കൃഷി അനുബന്ധ വ്യവസായങ്ങൾ, കാർഷികരംഗത്തെ പൊതുമേഖലാസ്ഥാപനങ്ങൾ, സ്വകാര്യസ്ഥാപനങ്ങൾ എന്നിവരും പങ്കെടുത്ത ഈ മേള കേരളത്തിലെ കാർഷികരംഗത്തിന് പുതുജീവൻ നൽകി എന്ന കാര്യത്തിൽ സംശയമില്ല. വിത്തുകൾ, നടീൽ വസ്തുക്കൾ, ജൈവകീടരോഗനിയന്ത്രണോപാധികൾ, കാർഷിക പ്രസിദ്ധീകരണങ്ങൾ എന്നിവയുടെ വില്പന കേന്ദ്രങ്ങൾ പൊതുജനങ്ങൾക്ക് ഏറെ പ്രയോജനപ്പെട്ടു. കാർഷിക മേളയോടനുബന്ധിച്ച് നടത്തിയ കാർഷികവിദഗ്ധർ പങ്കെടുത്ത സെമിനാറുകൾ ഏറെ വിജ്ഞാനപ്രദമായിരുന്നു. കലാസന്ധ്യകൾ, കർഷകസംഗമങ്ങൾ, ഭക്ഷ്യമേളകൾ എന്നിവയ്ക്കും വേദിയായ ഈ അഗ്രിഫിയസ്റ്റയുടെ സംഘാടകർക്ക് അനുമോദനത്തിന്റെ പൂച്ചെണ്ടുകൾ അർപ്പിക്കുന്നു.

എം. പി. വിൻസന്റ്

അഡ്വ. തോമസ് ഉണ്ണിയാടൻ
എം. എൽ. എ
കെ. എ. യു. ഭരണ സമിതി അംഗം

സന്ദേശം

അഗ്രി ഫിയസ്റ്റ 2014 എന്ന നാമധേയത്തിൽ കേരള കാർഷിക സർവ്വകലാശാലയുടെ ആഭിമുഖ്യത്തിൽ 28.02.2014 മുതൽ 06.03.2014 വരെ വെള്ളാനിക്കര കാർഷിക സർവ്വകലാശാല ആസ്ഥാനത്ത് നടത്തിയ ദക്ഷിണേന്ത്യൻ കാർഷിക മേള കേരളത്തിലെ കർഷക സമൂഹത്തിന് ഒരു വരപ്രസാദമായി.

പ്രമുഖ കാർഷിക വിദഗ്ധരും ജനപ്രതിനിധികളും പങ്കെടുത്ത ഈ മേളയിൽ ദക്ഷിണേന്ത്യൻ കാർഷിക സർവ്വകലാശാലകളുടെ ഗവേഷണ നേട്ടങ്ങൾ പ്രദർശിപ്പിച്ച പവലിയനുകൾ ശ്രദ്ധേയമായി. കേന്ദ്ര കാർഷിക ഗവേഷണ സ്ഥാപനങ്ങൾ, കമ്മോഡിറ്റി ബോർഡുകൾ, വിവിധ സർക്കാർ വകുപ്പുകൾ എന്നിവയുടെ സ്റ്റാളുകളും വിജ്ഞാനപ്രദമായിരുന്നു. കാർഷികവൃത്തിക്കാവശ്യമായതെല്ലാം തന്നെ ഒരു കുടക്കീഴിൽ കർഷകർക്ക് ലഭ്യമാക്കിയത് മേളയെ ജനപ്രിയമാക്കി. കാർഷിക സെമിനാറുകൾ, കാർഷിക സാങ്കേതിക വിദ്യകളുടെ പ്രദർശനം, കലാസന്ധ്യകൾ എന്നിവ ദക്ഷിണേന്ത്യൻ കാർഷിക മേളക്ക് നിറപ്പകിട്ടേകി.

കാർഷിക കേരളത്തിന് ഉണർവ്വ് നൽകാൻ പര്യാപ്തമായ അഗ്രിഫിയസ്റ്റയുടെ സംഘാടകർക്ക് അഭിനന്ദനങ്ങൾ.

തോമസ് ഉണ്ണിയാടൻ

Prof. Dr. P. RAJENDRAN
Vice- Chancellor
Kerala Agricultural University

MESSAGE

Agriculture is undoubtedly the largest livelihood provider for rural India. It also substantially contributes to the economic growth of the country. In a fast changing market scenario with increasing competition of a globalised economy, there is a continuous need for exploring the available resources to the maximum potential and use of the best technologies developed world over, to cope up with domestic demand for food and also to target the export market. In India, farmers face technical constraints to enhance production because of inadequate exposure to latest technologies and inputs. They need to be equipped with advanced production practices, logistics and marketing for sustenance.

New technological advances in agricultural practices have become more important in the light of a series of programmes launched by the Government of India to attain a target of four percent annual growth in agriculture during the on-going twelfth five-year plan. The main thrust of all these programmes is leading Indian agriculture to greater heights of excellence through transfer of latest technologies and modern practices that would cover pre and post harvest activities, marketing and exports. The identified theme of the South Indian Agri Expo 'Natural Resource Management for Livelihood Security' is highly relevant in the present day context. South Indian Agri Expo 2014 has been a proven ideal platform for disseminating the research output, products and services of various research organizations and extension agencies among thousands of farmers and agri-entrepreneurs who thronged this expo for a week.

I am extremely pleased that Kerala Agricultural University has hosted the grand event in collaboration with Department of Agriculture and Co-operation, Government of India, NABARD and ATMA, Kerala. I congratulate the Directorate of Extension, KAU and all those who sincerely worked for organizing this mega event in the main campus of the university for the benefit of all the stakeholders in the agriculture sector.

P. RAJENDRAN

Dr. P. V. BALACHANDRAN
Director of Extension
Kerala Agricultural University

MESSAGE

Sustainable management of natural resources is vital for agricultural development and livelihood security of all the stakeholders. At present, we are confronting widespread land degradation, ground water exploitation, deterioration of soil health, contamination of food, environmental pollution etc. The situation becomes complex with the recent climate change impacts on agriculture. Considering the present situation, research programmes are being carried out by the various research stations. The South Indian Agri Expo 2014 organised by Kerala Agricultural University in collaboration with the Department of Agriculture and Co-operation, Government of India provided a common ground wherein all the stakeholders could exhibit and share their technologies promoting learning and sharing of experience among them.

I am proud that Kerala Agricultural University organized the South Indian Agri Expo 2014 at the Main Campus of the university in collaboration with Department of Agriculture and Co-operation, Government of India, NABARD and ATMA, Kerala. South Indian Agri Expo 2014 was hosted by Kerala Agricultural University to create an opportunity for exchanging ideas, knowledge and experience of Research Institutions, Extension Agencies, private firms, farmer organizations, Self Help Groups from South India to promote better Transfer of Technology. The expo was an eye opener to the farmers, agri-preuners, importers, exporters and the stakeholders of each and every segment of Agriculture and allied sectors who want to expand and diversify their activities. The highlighted technologies were focused on the theme 'Natural Resource Management for Livelihood Security'.

All the participating institutions expressed their full potential and showcased their technologies and services. I am extremely thankful to all the sponsoring and participating agencies, people's representatives, scientists, experts, extension personnel, farmers and students for sincerely co-operating with us in organizing this mega event. The one week long mela left everybody enthralled with its magnificence. The public response to the event motivates us to plan such kind of fair as an annual event in the university. This souvenir chooses major accomplishments and highlights the important happenings of the Fair in the form of write-ups, reports, images and clippings. In future, recalling the events such as exhibition, series of seminars, KAU Technology Meet, agro-clinic and cultural programmes is possible through this document. The documentation team deserves appreciation for bringing out the green memories in the form of souvenir with limited resources.

P. V. BALACHANDRAN

ആർ. അജിത്കുമാർ
കൃഷി ഡയറക്ടർ

സന്ദേശം

കേരള കാർഷിക സർവ്വകലാശാലയുടെ ആഭിമുഖ്യത്തിൽ 2014 ഫെബ്രുവരി 28 മുതൽ മാർച്ച് 6 വരെ വെള്ളാനിക്കരയിലെ ക്യാമ്പസിൽ വച്ച് നടത്തിയ ദക്ഷിണേന്ത്യൻ കാർഷിക മേള കർഷകർക്കും, പൊതു ജനങ്ങൾക്കും വിജ്ഞാനപ്രദമായിരുന്നു. ദക്ഷിണേന്ത്യയിലെ വിവിധ കാർഷിക സർവ്വകലാശാലകളെയും സർക്കാർ വകുപ്പുകളെയും സ്വകാര്യ ഏജൻസികളെയും അണിചേർത്ത് കൊണ്ട് കാർഷിക രംഗത്തെ സാങ്കേതിക മുന്നേറ്റങ്ങളെ ജനങ്ങളുടെ മുന്നിലെത്തിക്കുന്നതിൽ ഈ മേളയിലൂടെ സർവ്വകലാശാലക്ക് സാധിച്ചു. കൃഷി-കൃഷിയനുബന്ധ മേഖലയിലെ ഗവേഷണ നേട്ടങ്ങൾ വിദഗ്ധമായും ചിട്ടയായും ക്രമീകരിച്ചുകൊണ്ടുള്ള പ്രദർശന സ്റ്റാളുകളും, കാലിക പ്രധാന്യമുള്ള സെമിനാറുകളും മേളക്ക് പുതുമ നൽകി. അതോടൊപ്പം ഗുണനിലവാരമുള്ള വിത്തുകളും, തൈകളും കൂടി ലഭ്യമാക്കിയതു വഴി ഈ മേള ഏവർക്കും പ്രയോജനപ്രദമായി. കാർഷിക കേരളത്തിന് ഒരു മുതൽക്കൂട്ടായി മാറിയ ദക്ഷിണേന്ത്യൻ കാർഷിക വിജ്ഞാനമേള സംഘടിപ്പിച്ച കേരള കാർഷിക സർവ്വകലാശാലയ്ക്ക് അനുമോദനങ്ങളർപ്പിക്കുന്നു.

ആർ. അജിത്കുമാർ

R. AMALORPAVANATHAN
Chief General Manager
NABARD, Kerala

MESSAGE

I am extremely delighted to co-sponsor the South Indian Agri Fair 2014 by NABARD. I appreciate KAU for organizing this great event in the main campus at Vellanikkara from 28th Feb to 6th March'14. I am also thankful to the authorities of KAU for inviting me to inaugurate the KAU Technology Meet held on 01.03.2014. It was a wonderful experience for me to witness the presentation of KAU technologies by the concerned scientists of KAU to the visitors/entrepreneurs. I congratulate KAU authorities for organizing such a mega mela and wish all the very best for such kind of extension activities for the betterment of the farming community.

R. AMALORPAVANATHAN

ഡോ. എ. എം. രൺജിത്ത്
ജനറൽ കൺവീനർ

ഓർമ്മക്കുറിപ്പ്

ഏഴു ദിവസം നീണ്ടുനിന്ന ദക്ഷിണേന്ത്യൻ കാർഷികമേള സമാപിച്ചപ്പോൾ ഉണ്ടായ ചില ചിന്തകളാണ് ഇവിടെ കുറിക്കുന്നത്. സർവ്വകലാശാല വെള്ളാനിക്കരയിൽ സ്ഥാപിച്ചതിനുശേഷം ആദ്യമായി നടത്തിയ വിപുലമായ ഒരു കാർഷികമേളയായിരുന്നല്ലോ ഇത്. പടന്നക്കാട് മുതൽ ബാലരാമപുരം വരെ വ്യാപിച്ച് കിടക്കുന്ന നമ്മുടെ വിവിധ സ്ഥാപനങ്ങളിൽ വികസിപ്പിച്ചെടുത്ത സാങ്കേതിക വിദ്യകൾ ഒരു പരിധി വരെ സാമ്പത്തിക പരിമിതികൾക്കകത്ത് നിന്ന്കൊണ്ട് കൃഷിക്കാർക്ക് പരിചയപ്പെടുത്തുവാൻ ഈ മേള സഹായിച്ചു. ഇതിന് പുറമെ ഓരോ കൃഷിക്കാരനും ആവശ്യമായ അറിവുകൾ പകർന്ന് നൽകാനും, അവരവരുടെ സംശയങ്ങൾക്ക് ഉത്തരം കൊടുക്കുവാനും സാധിച്ചു. തൃശൂരിന് സമീപമുള്ളവർക്ക് മാത്രമാണ് കൂടുതൽ പ്രയോജനം കിട്ടിയത് എന്നുണ്ടെങ്കിൽ കൂടി മലപ്പുറം, കോഴിക്കോട്, പാലക്കാട്, എറണാകുളം തുടങ്ങിയ സമീപ ജില്ലകളിലെ കുറെയധികം കൃഷിക്കാർക്കും കൂടി ഈ മേള പ്രയോജനപ്പെട്ടു എന്നത് ഞങ്ങൾക്ക് ഇനി ഇത്തരം മേളകൾ നടത്തുവാനുള്ള ആവേശവും നിശ്ചയദാർഢ്യവും നൽകുന്നു എന്ന് തുറന്ന് സമ്മതിക്കട്ടെ. തൃശൂരിൽ നിന്നും ഏതാണ്ട് പത്ത് കിലോമീറ്റർ ദൂരമുള്ള സ്ഥലമായിട്ട് പോലും ഏകദേശം രണ്ടു ലക്ഷത്തോളം പേർ ഈ മേളയിലേക്ക് വന്നു എന്നതു തന്നെയാണ് മേളയുടെ ഏറ്റവും വലിയ വിജയവും.

ഈ ദിനങ്ങളിലെ അനുഭവ സമ്പത്ത് ഞങ്ങളെ കൂടുതൽ വിനീതരും, ശക്തരും ആക്കുമ്പോൾ തന്നെ ഇനിയും ഇത്തരം മേളകൾ സംഘടിപ്പിക്കേണ്ടതിന്റെ ഉത്തരവാദിത്വവും കൂടെ ഞങ്ങളിൽ അർപ്പിതമാകുന്നു. ഏതാണ്ട് 60 ലക്ഷം രൂപയോളം ചിലവിട്ട് ഇത്തരം ഒരു മഹാമേള സംഘടിപ്പിച്ചപ്പോൾ സർവ്വകലാശാല സാധാരണക്കാരന്റെയും, സമ്പന്നരുടെയും മനസ്സുകളിൽ ചേക്കേറിയതാണ് ഞങ്ങളുടെ ഏറ്റവും വലിയ വിജയം.

ഈ മേള ഒരു വൻ വിജയമാക്കുന്നതിന് സർവ്വകലാശാലയിലെ എല്ലാ ജീവനക്കാരും അകമഴിഞ്ഞ് പ്രവർത്തിച്ചിട്ടുണ്ട്.

അവരോടുള്ള നിസ്സീമമായ കടപ്പാട് രേഖപ്പെടുത്തുവാൻ കൂടി ഞാൻ ഈ വരികൾ പ്രയോജനപ്പെടുത്തട്ടെ.

സ്നേഹാദരങ്ങളോടെ,

ഡോ. എ. എം. രൺജിത്ത്

Glimpses of

South Indian Agri Fair

2014

Sri. M. P. Vincent, MLA and Executive member, KAU, inaugurating the office of Agrifiesta 2014

Sri. Rajan Pallan, Mayor Thrissur Corporation inaugurating the Website for Agrifiesta 2014

Proclamation procession led by Profi (Dr.) P. Rajendren, Honorable Vice Chancellor, KAU

Sri. Oommen Chandy, Honorable Chief Minister of Kerala, inaugurating the fair

Dignitaries on the dais during the inaugural function of Agrifiesta 2014

Sri. M. P. Vincent MLA, Ollur inaugurating the exhibition stall of Agrifiesta 2014

Dr. Madhusoodhana Kurup, Honorable Vice Chancellor, KUFOS along with Dr. P. Rajendren, Honorable Vice Chancellor KAU tasting Neera in the exhibition stall

Prof. (Dr.) P. Rajendren, Honorable Vice Chancellor visiting the stall of KVK, Kannur

Regional Agricultural Research Station, Pattambi

Regional Agricultural Research Station, Pilicode

Agricultural Research Station, Balaramapuram

Cardamon Research Station, Pampadumpara

Cashew Research Station, Madakkathara

College of Forestry, Vellanikkara

Regional Agricultural Research Station, Kumarakom

Agricultural Research Station, Mancompu

Department of Olericulture, COH, Vellanikkara

Apiculture Unit COH, Vellanikkara

Front view of the stall of Central Nursery, Vellanikkara

A vew of the stall of KVK, Kannur

A view of the stall of KVK, Kollam

Visitiors gaining knowledge from the stall maintained by KVK, Palakkad

Display of traditional implements in the stall of ORARS, Kayamkulam

Department of Medicinal and Aromatic Plants COH, Vellanikkara

Major Arch Bishop Mar Andrews Thazhathu, Thrissur, visits Agrifiesta 2014

Exhibition stall of KVASU, Pookode

Exhibition stall of UAS, Dharward

Exhibition stall of TNAU, Coimbatore

Exhibition stall of CPCRI, Kasargode

Foreigners visiting Exhibition Stalls

Prof. (Dr.) P. Rajendren, Honorable Vice Chancellor, KAU inaugurating the valedictory function along with the dignitaries

Dignitaries on the dais during the valedictory function

About
South Indian Agri Fair (SIAF)
2014

About S I A F - 2014

Creating a magnificent imprint in the history of Kerala Agricultural University, the South Indian Agricultural Fair (SIAF) 2014 (Agrifiesta 2014), organized by Kerala Agricultural University in association with the Union Ministry of Agriculture, Department of Agriculture and Co-operation, New Delhi and co-sponsored by NABARD and ATMA, from 28th February to 6th March, 2014, was proved to be a great success and created positive impact among all the stakeholders.

Objective of the Fair was to create an opportunity for the exchange of ideas, knowledge and experiences among the various States and the Union Territories in South India and pave the way for a better transfer of technology. The major theme of the fair was "Natural Resource Management for Livelihood Security". Based on the theme, series of seminars, KAU Technology Meet, exhibition, agro clinic and cultural programmes were organised.

Sri. Oommen Chandy, Honourable Chief Minister of Kerala, inaugurated the fair on 28th February, 2014. He said that efficient use of advanced technology alone could not enhance productivity and profitability of farming, and called for effective dissemination of technology to revive Kerala's farming sector. "Turning your back to technological advancements can prove costly. The Government has decided to back hi-tech agriculture, because it will help to increase agricultural production, especially that of vegetables, from small holdings. KAU has developed umpteen number of technologies and varieties for the farming sector of Kerala. Such a kind of agricultural expos are relevant in today's context, since they will help quickly to spread awareness on modern technologies", he said.

The Honourable Minister for Agriculture, Sri.K P Mohanan, in his presidential address, highlighted the contributions of Kerala Agricultural University and academic excellence it has achieved. "KAU has done a lot, but the challenge is to derive energy from the achievements and strive to make them better. The talent and expertise at the disposal of KAU is so vast and diverse that much more can be achieved" he said.

The Organising Committee Chairman, Sri. M P Vincent MLA, welcomed the gathering. Sri. Rajan J Pallan, worshipful Mayor, Thrissur Corporation, Adv. Thomas Unniyadan MLA, Dr. P. Rajendran, Honourable Vice-Chancellor, KAU Dr. B. Madhusoodanakurup, Honourable Vice-Chancellor, Kerala University of Fisheries & Ocean Studies, Sri. C. C. Sreekumar, Thrissur District Panchayat President, Dr. K. R. Viswambharan, Former Vice-Chancellor, KAU, Dr. P. V. Balachandran, Director of Extension, Dr. T. R. Gopalakrishnan, Director of Research, Dr. Sverup John, Dr. Sivaswamy and Dr. K. Sudhakara, Faculty Deans,

Dr. P. K. Valsalakumari, Dr. R. Sukumaran, Associate Deans, Smt. K. G. Omana, Principal Agricultural Officer, Thrissur, members of General Council and General Convener, Dr. A. M. Ranjith, spoke on the occasion.

The fair housed more than 200 stalls exhibiting technologies, machineries, implements and value added products, and was visited by thousands of farmers, students and general public. Competitions, amusement park and food court were organized as part of the fair. Eight Agricultural seminars on various topics of current relevance, agro clinic and seven cultural programmes including KAU Family meet were organized on various days as part of the fair.

The valedictory function held under the chairmanship of the Organising Committee Chairman Sri. M. P. Vincent MLA, was inaugurated by the Hon. Vice-Chancellor of KAU, Dr. P. Rajendran. Sri. M. P. Vincent MLA, in his presidential address, highlighted the success of the exhibition and the impact it created among the farming community, agricultural entrepreneurs and rural youth. "KAU is planning to hold exhibitions of such magnitude every year and also organize an international agricultural fair at Thrissur. Agrifiesta owes its success to whole hearted support of all stakeholders, members of KAU community especially students and the media", he said.

Dr. P. Rajendran, Honourable Vice- Chancellor, KAU in his address thanked one and all who contributed to the successful conduct of the expo. "Being the first of this kind organized at KAU Head Quarters, the appreciation and positive feedback we received are really encouraging. The satisfaction of the visitors motivates us to organise such programmes in future. We could send important messages on food security, food safety and applications of advanced technologies in agriculture to the farming community", he said.

Smt. M. S. Jaya, IAS, District Collector, Thrissur in her key note address, said that imparting knowledge through informal channels is never easy. "While conventional Universities impart formal education to students registered with them, KAU imparts knowledge to farming community and others connected to agriculture and allied fields, in addition to the students and research scholars. KAU also develops crop varieties and farming technologies. The relevance of KAU should not be gauged by the students passed out or degrees awarded. This fact is not often properly understood or appreciated. This exhibition has brought to light the multi-faceted image of KAU", she said.

Sri.S.Gopinath, Inspector General of Police, and Prof. Kalpetta Narayanan, Writer spoke about Kerala's abundance of agricultural wealth and narrated how agriculture evolved in ancient times. Farmers' indebtedness towards society should be matched by the society's indebtedness to farmers, they stressed.

The KAU Executive Committee member, Adv. Thomas Unniyadan MLA, honoured the award winning farmers, while Director of Research, Dr. T. R. Gopalakrishnan, honoured world famous paddy researcher and former Director of Research, Dr. R Gopalakrishnan and Dr. P. Rajendran, Associate Director of Research, who remodeled the Agricultural Research Station, Anakkayam and Regional Agricultural Research Station, Ambalavayal. Prizes for best stalls in various categories were

given during the function. Dr Joy Mathew, Dr. P. Ahamed, Dr. V. R. Ramachandran and Dr. Jose Mathew, University level officers distributed certificates to participants, volunteers and those who proposed logo and name for the event. Dr P. V. Balachandran, Director of Extension, welcomed the gathering and Dr. A. M. Ranjith, General Convener, proposed vote of thanks.

The South Indian Agricultural Fair 2014 held at KAU main Campus, Vellanikkara, came to a close on March 6th 2014, evening. The State Agricultural Universities, ICAR Institutes, Line departments concerned with agriculture and allied areas, Commodity Boards, public sector Units, Banking institutions and private agencies in Southern States showcased their technological achievements and extension activities, during the fair.

The fair was a huge success in creating a platform, wherein research organizations, development departments, extension agencies, non governmental organizations, input agencies, business firms and farmers converged to share knowledge and experience in the field of agriculture and provided an opportunity to update the latest technological advancements and also facilitated the motivation of younger generation to professional agriculture. The fair successfully illustrated science and technological developments in agriculture and allied areas.

Editorial Team

Report:
Seminars & Technology Meet

Seminar Series – an overview

Dr. Sakeer Hussain A.[1] and Dr. P.G Sadhan Kumar[2]

Well organized seminars were the hall mark of Agrifiesta 2014, the South Indian Regional Agricultural Fair. A series of seven seminars were organized by the Seminar Committee of Agrifiesta 2014. Beginning with the seminar on Farm Mechanisation on the first day, every day of the expo was devoted to an important topic as listed below:

Date	Venue	Topic
28-02-2014 10 am – 2pm	Seminar Hall, College of Horticulture, Vellanikkara	Farm mechanization
02-03-2014 10 am – 2pm	Seminar Hall, College of Horticulture, Vellanikkara	Potential of Hi-tech agriculture in Kerala
03-03-2014 10 am – 2pm	Seminar Hall, College of Horticulture, Vellanikkara	Applications of ICT in Agriculture
03-03-2014 10 am – 2pm	AV Hall (Dept. of Pomology and Floriculture), College of Horticulture, Vellanikkara	Biotechnology and Agriculture
04-03-2014 10 am – 2pm	Seminar Hall, College of Horticulture, Vellanikkara	Family Farming
05-03-2014 10 am – 4pm	Seminar Hall, College of Horticulture, Vellanikkara	Microbial inoculants in spice production
06-03-2014 10 am – 2pm	Seminar Hall, College of Horticulture, Vellanikkara	Scientific crop production in pepper

Farm mechanization

The first seminar on Farm mechanization was inaugurated by Dr. B. Madhusoodanakurup, Vice-Chancellor, Kerala University of Fisheries and Ocean Studies, who stressed the need for developing and propagating user-friendly machines in the field of agriculture. Sri.R.Ajithkumar, Director of Agriculture, Kerala, presided and Adv. Thomas Babu, Chairman, Kerala State Agricultural Prices Board, delivered the keynote address in the presence of Dr. P. Rajendran, Vice Chancellor and Dr. P. V. Balachandran, Director of Extension, Kerala Agricultural University.

The Seminar was moderated by Dr. Sivaswami, Dean, KCAET, Tavanur. Presentations were made by Dr. U. Jaikumaran, Dr. P. R. Jayan and Dr. E. K. Kurian. Experts in the interaction panel included Dr. V. R. Ramachandran, Dr. Santhi Mary Mathew and Dr. K. P. Visalakshy.

Potential of Hi-tech agriculture in Kerala

The seminar was inaugurated by Dr. T. R. Gopalakrishnan, Director of Research, KAU. He highlighted the need for attaining nutritional security by producing more fruits and vegetables from unit area. He stressed the point that growing of vegetables in open field by precision farming is equally important as growing them in protected structures. It has been well demonstrated in Tamil Nadu that higher productivity can be obtained through open precision farming and at present vegetable productivity is the highest in the state of Tamil Nadu in the country, he said. Dr. Jose Mathew, Associate Director of Extension, KAU presided over the inaugural session.

The seminar session was moderated by Dr. T.E. George, Associate Director of Vegetable Mission, and the sessions were handled by Dr. C. Narayanankutty, Dr. P. K. Sudhadevi, Dr. Pradeepkumar T, Dr. Abdul Hakkim and Dr. P. Suseela. Dr. Deepthi Rai, Manager (Research), Ayurveda Research Foundation, New Delhi, gave a detailed description and demonstration on hydroponics. Sri.Ramkumar, a promising Hi-tech farmer shared his experiences and motivated the audience to adopt hi-tech farming.

Applications of ICT in agriculture

Inaugurating the Seminar on Information Technology in Agriculture on the second day, Dr. K. Narayana Gowda, Vice-Chancellor, University of Agricultural Sciences, Bengaluru pointed out that modern Information and Communication Tools can be effective instruments of technology transfer.

'In the existing extension system only 30 percent of the technologies developed by research percolate down to rural farmers. But if the 1000 crore mobile phones and other modern communication devices available in the country are used, messages and technology transfer becomes easily accessible and easily understandable, he said. The inaugural session was presided by Dr. K. Madhavan Nair, Director, Centre for IT and Instrumentation, KAU. Sri.N. K. Manoj, Managing Director, KAMCO, delivered the keynote address.

Dr. P. Ahamed, Director, Centre for E-learning, KAU, who moderated the session made a brief presentation on the possibilities and potentials of ICT in agriculture. Dr. A. Sakeer Husain, Co-ordinator of Centre for E-learning presented on the Agri infotech portal of KAU and various ICT information sources to farmers and other stakeholders of agriculture. Sri.Sheshgiri Boidi of RML Information Services made a presentation on mobile phone information services. Sri. Jolly, an IT Expert cum practising farmer, shared his experiences. The experts in the interaction panel included Dr. A. V. Santhoshkumar and Dr. V. G. Sunil.

Bio-technology and agriculture

The second seminar on the day, focused on Biotechnology, was inaugurated by KAU Vice-Chancellor, Dr. P. Rajendran, and he mentioned some of the applications of bio-technology in agriculture and highlighted its potential. Dr. P. V. Balachandran, Director of Extension, KAU, presided. Three sessions on Plant Biotechnology were dealt in the seminar. Dr. V. S. Devadas, Associate Director of Research, KAU, moderated the sessions. Dr. P. A. Valsala, Professor and Head detailed the contribution of plant tissue culture to enhance the cultivation. Dr. M.R. Shylaja has detailed the new technologies in plant biotechnology to increase the production in agriculture. Dr. Deepu Mathew has talked about the need for adopting the genetically modified crops in Indian agriculture. The pros and cons in GM crops were detailed. Experts in the interaction panel included Dr. P. A. Nazeem and Dr. P. S. Abida.

Family Farming

Sustaining the much fancied international family farming package is a challenge before the global community, said Professor C. Raveendranth, MLA. Inaugurating the Seminar on family farming, Prof. C. Raveendranath said that an unlikely shift in global economic policy and commitment on the part of all stakeholders are imperative to realize the real objectives of family farming proclamation.

"The deterioration of ecosystem has been rampant due to unhealthy competition to exploit natural wealth. Any attempt to recreate the ecosystem is praiseworthy and all should partake in it. But how far we can go without

economic and policy back up is the big question", he said.

Vice –Chancellor Dr. P. Ranjendran, KAU, termed family farming as the most energy efficient, productive and easy to manage cropping system ensuring self-sufficiency for each household. Dr. B. Mohankumar, ADG, ICAR and Sri. S. Manikumar, AGM, NABARD, were the chief guests.

The seminar was moderated by Dr. V.K. Raju, Associate Director of Research, KAU, and the sessions were handled by Dr. S. Regeena, Dr. S. Estelitta and Dr. T.K. Kunhamu. Sri.Kuttan and wife (a family practising family farming) shared their experiences.

Microbial inoculants in spice production

Dr. Homey Cherian, Director, Directorate of Arecanut and Spices Development, after inaugurating the seminar advocated farmers to adopt scientific practices in pepper production as well as to be market intelligent for getting better remuneration from the crop. Dr. Jim Thomas, Associate Director of Research, KAU, presided the inaugural session. The seminar session was moderated by Dr. N. Miniraj. Dr. K. S. Meenakumari and Dr. Sally K Mathew made the presentations on beneficial microbes for increasing spice production, and their potential. Dr. K. R. Lyla, Dr. D. Girija and Dr. Surendragopal were the experts in the interaction panel.

Scientific crop production in pepper

Dr. K. Ramaswamy, Vice-Chancellor, Tamil Nadu Agricultural University, has said that India should regain agricultural supremacy to retain global attention and attain economic growth.

Inaugurating the Seminar on Scientific management of pepper, Dr. K. Ramaswamy, reminded the farmer participants that India became an attraction to all world powers only because of its agricultural prosperity and diversity. "Agricultural scientist in the country are working hard and developing many technologies. Farmers should volunteer to choose technologies best suited for them", he said.

Dr. P. Rajendran, Vice-Chancellor, KAU, in his presidential address stressed on the need to enhance productivity of pepper in India as it is much below that of Vietnam, Thailand, etc.

Dr. Abraham Varghese, Director, NIAII, in his keynote address stressed the need of employing biological control in pepper crop protection as pesticide residue not only affects the consumer but the soil and export as well.

The session was moderated by Dr. Kanthippudi Nirmal Babu, Project Co-ordinator (Spices), IISR, Calicut. Classes were handled by Dr. V. P. Neema, Dr. V. S. Sujatha, Dr. C. R. Rini and Dr. P. M. Ajith

There was massive participation of farmers for all the seminars. The enormous support rendered by ATMA, Krishibhavans of Department of Agriculture, NABARD, KVK etc. in giving publicity to the seminar and the EXPO made it a grand success.The attendance of farmers varied from 150 to 300 plus for each seminar. After the seminars, there were lengthy and lively discussions and the doubts raised by the participating farmers were clarified by the expert panels.

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KAU Technology Meet - 2014

Dr. Alexander George[1]

The Kerala Agricultural University, has been adjudged the nation's best in academic excellence for five years in a row (2007-11). In the last one year the university has been making a concerted effort to consolidate, standardize, show case and disseminate the various technologies generated. As part of this exercise, several workshops have been held at the University headquarters in Vellanikkara as well as at the College of Agriculture, Vellayani. With the help of the staff and students of the College of Cooperation, Banking and Management, Vellanikkara and the students of the MBA programme on Agri-Business Management, a workshop was organised at the Central Training Institute, Mannuthy, to formulate viable business plans for the shortlisted technologies. This whole process has led to refinement of the technology and made it a viable package for takers especially because the financial viability of the venture has been worked out to meet the requirements of institutions that can provide financial assistance for start up projects. Some of the technologies were suited only for big entrepreneurs to take up as they required substantial initial investment. Other technologies were suited for medium investment ventures. Yet others were suited for unemployed women, youth or Self Help Groups. The technologies were further classified under six major heads: (1) Technology for production of safe-to-eat food (2) Bio technology (3) Bio waste management (4) Engineering design and equipments (5) Value addition and (6) Production and storage of high value ornamentals. Fifty KAUs technologies were showcased at the KAU Technology Meet held on 1st March 2014 at the 'Uthara' Auditorium of the College of Horticulture, Vellanikkara. This programme was sponsored by the National Bank for Agriculture and Rural Development (NABARD), Thiruvananthapuram. The welcome address was made by Dr. P. V. Balachandran, Director of Extension, Kerala Agricultural University. Sri. R. Amalorpavanathan, Chief General Manager, NABARD, Kerala, inaugurated the KAU Technology Meet and special addresses were made by Dr. M. Anandaraj, Director, Indian Institute of Spices Research, Kozhikode, Dr. Safeena A.N., IAS, Development Commissioner, Cochin Special Economic Zone (CSEZ), and Dr. T. R. Gopalakrishnan, Director of Research, Kerala Agricultural University. Dr. Jose Mathew, Associate Director of Extension, KAU, expressed the vote of thanks. This was followed by a presentation listing the 50 technologies showcased. The Principal Investigators of each technology were simultaneously available at each of the 50 technology stations to explain their technology with the help of models, charts, samples and presentations. It was for the first time that the Kerala Agricultural University was attempting such a show casing of technology. Over 260 persons from various walks of life participated in the KAU Technology Meet with subsequent enquires coming directly to the concerned Principal Investigators.

The Central Training Institute, Mannuthy has taken a lead role in the year long process of consolidation and show casing of KAU's technologies and gone on to propose the institutionalisation of this process by establishing a KAU Technology Hub in the KAU budget proposals for the year 2014-15. This hub will serve for technology consolidation, incubation, dissemination, consultancy and hand holding for start up ventures and entrepreneurs. Generous financial support for this proposed project will help make dream become a reality.

1. Professor and Head, Central Training Institute, Mannuthy

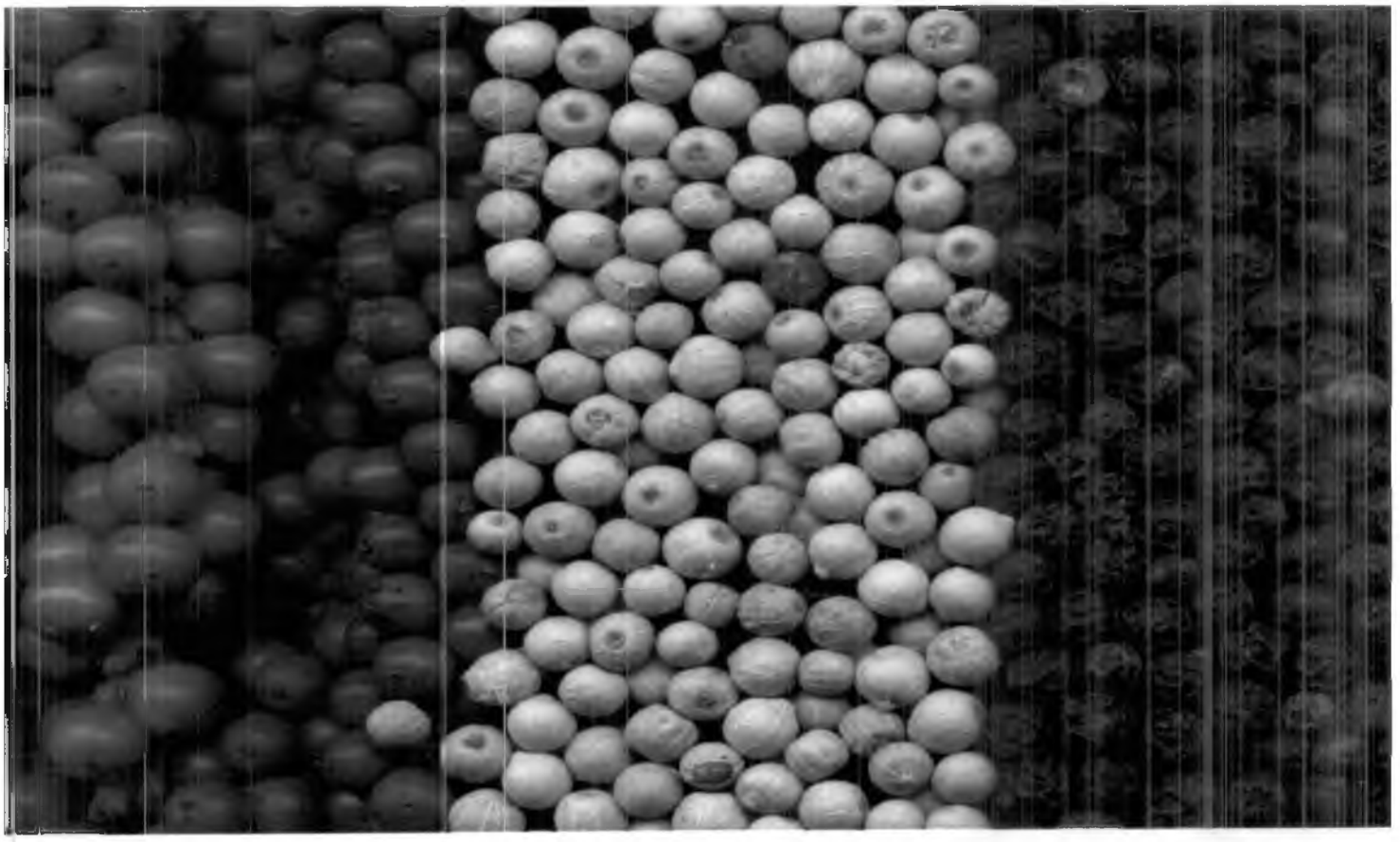
KAU TECHNOLOGIES FOR COMMERCIALIZATION

S. No	Name of technology	Name &address of scientist	P. No
I	Technology for production of safe to eat food		
1	Development of copper fungicide tolerant *Trichoderma viride*	Dr. K. Surendra Gopal, Assoc. Professor, Dept. of Agricultural Microbiology, College of Horticulture, Vellanikkara.	35
2	Enhancement of shelf life of bio formulations	Dr. K. Surendra Gopal, Assoc. Professor, Dept. of Agricultural Microbiology, College of Horticulture, Vellanikkara.	36
3	KAU pheromone traps against mango fruit fly and melon fly	Dr. Jiji. T, Professor, Dept. of Agricultural Entomology, College of Agriculture, Vellayani. Trivandrum. Pin Code-695 522	37
4	Low cost technology for the mass multiplication of *Trichoderma and Psuedomonas fluorescens*	Dr. K. Surendra Gopal, Assoc. Professor, Dept. of Agricultural Microbiology, College of Horticulture, Vellanikkara.	38
5	Microbial inoculants for crop protection and nutrition	Dr. P. Sivaprasad, Professor & Head, (Retd.) ADR, NARP (SR) CoA, Vellayani. Trivandrum.	39
6	Nemabio: the bacterial bio-inoculant Bacillus macerans for the management of root-knot nematode in spices, fruit crops and vegetables	Dr. M. S. Sheela, ADR (PP&BCAP), CoA, Vellayani. Trivandrum.	41
7	Nemafug: fungi - panacea for nematode management in vegetables and pepper	Dr. M. S. Sheela, ADR (PP&BCAP), CoA, Vellayani. Trivandrum.	43
8	Internationally accredited facility for pesticide residue testing in food /agricultural commodities - a paid service available to entrepreneurs	Dr. S. Naseema Beevi, Professor & Head, Pesticide Residue Research and Analytical Laboratory, College of Agriculture, Vellayani PO, Thiruvananthapuram Dist.,	44

9	Veggie wash to clean up vegetables from pesticide residues	Dr. Thomas Biju Mathew, Professor of Entomology, Pesticide Residue Research and Analytical Laboratory, College of Agriculture, Vellayani, Thiruvananthapuram.	46
10	Bio pesticide for vegetables	Dr. Jiji. T, Professor, Dept. of Agricultural Entomology, College of Agriculture, Vellayani. Trivandrum.	49
11	Birds nest designs	Dr. Mani Chellappan Assoc. Professor, CoH, Vellanikara	50
II	**Biotechnology**		
12	Kerala Agricultural University tissue culture protocols for commercialization	Dr. K. Rajmohan, Professor & Course Director, Integrated Biotechnology Course, Department of Plant Biotechnology, College of Agriculture, Vellayani	52
13	Wildlife forensic analysis - using DNA finger printing	Dr. P. O. Nameer, Assoc. Professor & Head, College of Forestry, Vellanikkara.	54
14	Antiserum bank for tissue culture banana	Dr S. Estelitta, Professor (Plant Pathology), Communication Centre, Mannuthy	59
III	**Bio waste management**		
15	Microbial inoculants for household waste management	Dr. P. Sivaprasad, (Retd.) Professor & Head, ADR, NARP (SR), College of Agriculture, Vellayani	60
16	Microbial inoculants for waste management in apartments, hotels and canteens	Dr. D. Girija, Professor & Head, Department of Ag. Microbiology, College of Horticulture, KAU P. O., Thrissur.	61

34	Herbicide applicator	Dr. Jayan P. R., Assoc. Prof. & Head, Dept. of Farm Power Machinery and Energy, KCAET, Tavanur,	94
35	Coleus harvester	Dr. Jayan, P. R, Assoc. Prof. & Head, Dept. of Farm Power Machinery and Energy, KCAET, Tavanur,	96
36	Power operated continuous coconut husking machine	Dr. Jayan, P. R, Assoc. Prof. & Head, Dept. of Farm Power Machinery and Energy, KCAET, Tavanur,	98
37	Banana sucker uprooting equipment as an attachment to tractor	Dr. Jayan, P. R, Assoc. Prof. & Head, Dept. of Farm Power Macwhinery and Energy, KCAET, Tavanur,	100
38	Coleus peeler	Dr. Jayan, P. R, Assoc. Prof. & Head, Dept. of Farm Power Machinery and Energy, KCAET, Tavanur,	102
39	Copra separator	Dr. Jayan, P. R, Assoc. Prof. & Head, Dept. of Farm Power Machinery and Energy, KCAET, Tavanur,	103
40	Goat faecal pellet pulverizing machine	Dr. Jayan, P. R, Assoc. Prof. & Head, Dept. of Farm Power Machinery and Energy, KCAET, Tavanur,	104
41	Intensive Integrated Vertical Farm Unit	Dr. Giggin T, Assistant Professor, KrishiVigyan Kendra, Kannur- 670 142.	105
42	A bio reactor for conversion of liquid waste to energy using 'High rate biomethenation technology'	Dr. Shaji James P Associate Professor and Head, KrishiVigyan Kendra, Palakkad-679 306	107

KAU Technologies
for Commercialization



1. DEVELOPMENT OF COPPER FUNGICIDE TOLERANT *Trichoderma viride*

INTRODUCTION

The use of fungicides and bioagents are two important components in the integrated disease management. However, the compatibility of bioagents with the agrochemicals is essential for the success of integrated disease management concept. In Kerala, copper fungicides are extensively used against many soil borne pathogens, especially in spices and vegetables.

UNIQUENESS

Recent years have witnessed an increase in the use of *Trichodema* in black pepper gardens as a bioprotectant against *Phytophthora* rot and also as a plant growth promoter. At the time of disease outbreak, it becomes necessary to apply copper oxychloride which may adversely affect the survival of *Trichoderma*. Use of tolerant strain of *Trichoderma* will help to overcome such situation. Through a research project, 10 *Trichoderma* isolates have been identified which showed tolerance to copper oxychloride fungicide at 1% concentration (10g/l) which is two times more than the recommended dose. *Trichoderma viride* of KAU and other four isolates of *Trichoderma harzianum* showed tolerance to copper oxychloride 5% (50g/l), copper hydroxide 0. 2% (2g/l) and mancozeb 0. 4% (4g/l). These tolerant strains of *Trichoderma viride* showed antagonistic activity against major soil borne pathogens viz *Pythium, Phytophthora, Rhizoctonia, Fusarium, Sclerotium* and *Ralstonia solanacearum*.

SCOPE FOR COMMERCIALIZATION

The copper tolerant strains of *Trichoderma* will be beneficial to the farming community especially to spices and vegetables growers as these can be applied together with copper fungicides for successful integrated disease management. This technology is available to entrepreuners and institutions.

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2. ENHANCEMENT OF SHELF LIFE OF BIOFORMULATIONS

At present, the bioformulations available have a shelf life of about 4 months. Moreover, there is a high possibility of contamination during this period, which adversely affects the quality of bioformulations.

The technology developed for enhancement of shelf-life of bioformulation will have 12-18 months period. The technology developed will enhance the shelf life of *Trichoderma viride* from 4 months to 12 months and *Psuedomonas fluorescens* from 4 to 18 months with the addition of nutritional supplements. These bioformulations have been tested extensively under field conditions. This technology is available for entrepreuners and institutions.

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3. KAU PHEROMONE TRAPS AGAINST MANGO FRUIT FLY AND MELON FLY

INTRODUCTION

It is a simple, viable, eco-friendly and cost effective technology that can be widely adopted as a component of IPM, for the management of fruit flies threatening the cultivation of mango and cucurbitaceous vegetables in Kerala. Methyl eugenol traps can be used for the efficient management of mango fruit fly *Bactrocera dorsalis*, attacking mango and guava. Cuelure traps are effective against the melon fly *Bactrocera cucurbitae* infesting cucurbitaceous vegetables.

UNIQUENESS

The technology was evolved and approved as national recommendation under an ICAR-UK-DFID Project. Further refinement of the technology for Kerala conditions, especially by modifying the container and standardizing trap density was done under an APEDA project and popularization of the technology among Kerala farmers was done under an RKVY Project. As such, the technology is sound and viable and can bring about substantial reduction in pesticide usage in agriculture. By following fruitfly IPM incorporating pheromone trap as a component there is 70-80 per cent reduction in the fruitfly incidence when compared to the control. Methyl eugenol trap consists of a transparent plastic container with four side entry holes and a plywood block, soaked in alcohol, methyl eugenol and malathion mixture, hung inside. In cuelure traps, instead of methyl eugenol, cuelure is used as parapheromone.

SCOPE FOR COMMERCIALIZATION

This technology can be widely adopted and popularized as a component of IPM of fruit flies in mango and cucurbitaceous vegetables of Kerala. The trap density was standardized as one per 15 cents (17 per ha). The cost involved per ha will be Rs. 1700 to 2550. The containers can be reused and only plywood blocks are to be replaced. This can save approximately Rs. 5000 towards the cost of pesticides and application charges.

CREDITS

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4. LOW COST TECHNOLOGY FOR THE MASS MULTIPLICATION OF *Trichoderma* AND *Psuedomonas fluorescens*

INTRODUCTION

Organic farming is a farming system that avoids the use of chemical fertilizers and pesticides. In this context, the use of bioagents, for the control of plant diseases, assumes greater importance due to its ecofriendly nature. *Trichoderma* sp and *Psuedomonas fluorescens* are the two popular biocontrol agents in Kerala and also outside the state. Even though, the technology is available for mass multiplication of these bioagents, the cost of production is high. At present, the mass multiplication of *Trichoderma viride* and *Psuedomonas fluorescens* is done using media namely potato dextrose broth/Trichoderma Selective Medium (TSM) and King's B respectively. The cost involved in the mass multiplication of *Trichoderma viride in* PDB is *Rs.* 35/kg and *Psuedomonas fluorescens* in King's B is Rs. 45/kg.

UNIQUENESS

The technology developed by KAU for mass multiplication of *Trichoderma* and *Psuedomonas fluorescens* is very cheap (Rs. 18/kg) and very high population of the bioagents can be obtained within short period of time (*Trichoderma* sp 19, 000 x 10^9 cfu/ml and *Psuedomonas fluorescens* 7530 x 10^{11} cfu/ml). The population in potato dextrose broth which is commonly used for the mass multiplication of *Trichoderma* yields 364 x 10^9 cfu/ml at 15 days after incubation where as in the technology developed by us yields 1240 - 19, 000x 10^9 cfu/ml at 10 days after incubation. This shows that the *Trichoderma* increases almost by 4 - 50 times than the potato dextrose broth there by improves the quality of formulation with high population of the organism within short period of time. The population in Kings B medium, which is commonly used for mass multiplication of *Psuedomonas fluorescens* yields 1440 x 10^{11} cfu/ ml at two days after incubation. The technology developed yields 1344 – 7530 x 10^{11} cfu/ml and whose population is almost same and six times more than that of King's B medium. The technology using this liquid medium is cost effective and economical than King's B medium.

SCOPE FOR COMMERCIALIZATION

The technology has been transferred to the bioformulation production units of KAU and currently, Central Nursery and BCCP, KAU, Vellanikkara, are successfully utilizing this technology for the commercial production of bioagents. This technology is available to entrepreuners and institutions.

CREDITS

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5. MICROBIAL INOCULANTS FOR CROP PROTECTION AND NUTRITION

INTRODUCTION

Exploitation of microorganisms for disease management and nutrition is one of the most viable technologies which is environmentally safe and ensures sustainability of soil health. In the context of the high cost of fertilizers and plant protection chemicals, the role of microbial inoculants assumes special significance. Microbial inoculant technology is a powerful tool for enriching soil fertility, crop nutrition and soil health. A series of products such as *Pseudomonas*, *Trichoderma*, PGPR MixII (consortium of biocontrol agents) for crop disease management and *Azospirillum*, *Azotobacter*, P solubilizer, K solubilizer, AMF, PGPR Mix I (consortium of biofertilizer organisms) for NPK nutrition have been developed by KAU. The cultures of *Pseudomonas* and *Trichoderma* developed are highly effective having broad spectrum of antagonistic activity against an array of plant pathogens causing serious diseases of crop plants of Kerala. Similarly, highly efficient cultures of biofertilzer organisms- *Azospirillum, Azotobacter, Rhizobium*, P solubilzers and AMF have also been developed. PGPR Mix I and PGPR Mix II are the recently developed microbial consortium for NPK nutrition and for disease management of crop plants respectively, which has been widely accepted by the farmers of Kerala.

UNIQUENESS

The use of microbial technology for disease management and nutrition helps to avoid application of hazardous fungicides and chemicals. During the year 2009-2010, approximately 1500 tons of biocontrol agents and 200 tons of nitrogen fixers have been produced and marketed with KAU technology in Kerala, which is equivalent to 250 tons of chemical fungicides and 2000 tons of nitrogenous fertilizers respectively. The production of Microbial inoculants in the State during 2009-2010 was only 1500 tons, whereas the demand is approximately 15000 tons. Eventhough the technology has already been transferred, considering the high demand, there is ample scope for further boosting up production.

SCOPE FOR COMMERCIALIZATION

The technology developed by Kerala Agricultural University for disease management and plant nutrition has already been transferred to State Biocontrol Lab, Mannuthy, Biofertilizer production centre, Parottukonam, 16 private companies, NGO's, District Panchayat, Government institutions (SBCL, Mannuthy), other research stations of KAU etc. At present 34 microbial inoculant production centres are functioning in Kerala with the mother culture and technology provided

by Kerala Agricultural University. The technology is so potential and viable that more and more farmers are being attracted. Kerala Agricultural University has successfully developed and made microbial inoculant technology a reality in Kerala.

CREDITS

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6. NEMABIO- THE BACTERIAL BIOINOCULANT *Bacillus macerans* FOR THE MANAGEMENT OF ROOT-KNOT NEMATODE IN SPICES, FRUIT CROPS AND VEGETABLES

INTRODUCTION

Root-knot nematode is a major nematode pest, which attacks a variety of crops in all parts of India. Nematicides available in the market are general biocides, hence banned in all the states. Carbofuran is the only available chemical in other states having nematicidal property. This chemical too was banned in Kerala, considering the effect on other non-target organisms. The talc formulation of this is found very effective in managing root-knot nematodes in various crops. *Bacillus macerans* was first reported from pepper gardens in Wyanad area. This bacterium is having both ovicidal and larvicidal properties. It can be integrated as a component in Integrated Pest Management strategy of vegetables, pepper and banana. It is used for soil application and is cost effective also. No other biopesticide effective against nematodes is available in India, at present.

UNIQUENESS

This potent bacteria can be formulated (cfu 10^6 spores/ml) and used for nematode management in vegetable crops as it can bring about 70-75 per cent reduction of nematode population in vegetable and pepper rhizosphere. Since it is compatible with recommended pesticides, it can be used in vegetable IPM and also in organic production of vegetables, pepper and banana. The application of biopesticide is cost effective and eco friendly (Rs 100 per kg). Pesticide free produce will be available for consumption and will fetch premium price. The cost towards repeated application of pesticides can be saved.

SCOPE FOR COMMERCIALIZATION

It can be applied as seed treatment, soil drenching and seedling root dip treatment. It is recommended in Package of Practices for the management of nematodes in bhindi, brinjal, pepper and medicinal plants.

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7. NEMAFUG: FUNGI - PANACEA FOR NEMATODE MANAGEMENT IN VEGETABLES AND PEPPER

INTRODUCTION

Root-knot nematode is a major nematode pest, attacking a variety of crops in all parts of India. Nematicides available in the market are general biocides hence banned in all the states. Carbofuran is the only available chemical in other states having nematicidal property. This chemical too was banned in Kerala considering the effect on other non-target organisms. The talc formulation of this is found very effective in managing root-knot nematodes in various crops. *Paecilomyces lilacinus* is an egg parasite. It can be integrated as a component in Integrated Pest Management strategy of vegetables and pepper. It is used in soil application and cost effective also. No other biopesticide effective against nematodes is available in India at present.

UNIQUENESS

This potent fungi can be formulated (10^6 spores/g) and used for nematode management in vegetable crops as it can bring about 70-75% reduction of nematode population in vegetable and pepper rhizosphere. Since it is compatible with recommended pesticides, it can be used in vegetable IPM and also in organic production of vegetables and pepper. The application of biopesticide is cost effective and eco friendly (Rs 70 per kg). Pesticide free produce will be available for consumption and will fetch premium price. The cost towards repeated application of pesticides can be saved.

SCOPE FOR COMMERCIALIZATION

It can be used for seed treatment, soil drenching and seedling root dip treatment. It is recommended in Package of Practice for the management of nematodes in bhindi and brinjal. It is also having insecticidal and fungicidal effect.

CREDITS

- **Dr. M. S. Sheela,** ADR (PP&BCAP), COA, Vellayani, Trivandrum - 695 522
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- **Smt. Remya S R,** Research Fellow, COA, Vellayani.

8. INTERNATIONALLY ACCREDITED FACILITY FOR PESTICIDE RESIDUE TESTING IN FOOD / AGRICULTURAL COMMODITIES - A PAID SERVICE AVAILABLE TO ENTREPRENEURS

INTRODUCTION

Pesticides are toxic materials, and several of them, with high mammalian toxicity, are used even now in India. The use of pesticides in increasing agricultural production leaves a chance for the presence of residues in the harvested produce and hence warrants a strict monitoring and surveillance to ensure consumer safety. Contamination of Food material/Agricultural commodities with the residues of pesticides at a level above the Maximum Residue Limit(MRL), makes it unfit for sale/export. MRL is the legal trading limit for any contaminant. Pesticide residue constitutes one of the non tariff barriers in the international trade. Any commodity intended for export, if contaminated with pesticides above the respective MRL is likely to be rejected. If rejected, in addition to the cost of the produce and freight charges, the disposal charges also have to be paid by the exporter. It is in this context, the importance of accredited testing facilities arises.

UNIQUENESS

Each consignment can be safely exported, if accompanied by a certificate of analysis from an ISO-17025:2005 accredited testing laboratory in compliance with the international standards for pesticide/microbe/ any other contaminant. Kerala Agricultural University has established a pesticide residue analysis laboratory, accredited by NABL under ISO 17025-2005, with a wide scope of covering a variety of Food and Agricultural commodities, the services of which can be availed by exporters, certifying agencies, premium hotels, organic outlets etc., on commercial basis. Laboratory accreditation provides a formal recognition of the competence and analytical capability of the laboratory to perform a test/ analysis in line with internationally accepted methods and protocols. The analytical reports issued from such laboratory will be reliable, dependable and acceptable by any forum. It gives an assurance to the customers that the analysis performed in these laboratories is correct not for once, but forever.

SCOPE FOR COMMERCIALIZATION

The Pesticide Residue Research and Analytical Laboratory, under the All India Network Project on Pesticide Residues at College of Agriculture, Vellayani, is accredited for performing analysis of pesticide residue from diverse samples like Fruits, Vegetables, Cereals, Pulses, Cardamom, Pepper, Water, Ghee, Milk, Fish and Meat. The laboratory is adequately equipped with state of the art instruments like LC-MS/MS, GC-MS, GLC, HPLC etc., for analysis of 60 different pesticides from these commodities, and issue certificates with NABL logo. It is in the process of installation of some of the most modern equipments for strengthening the analytical capability and thus ensuring a better service in future.

Certificate No : T-2157

Contact

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The laboratory imparts both analytical and training services to entrepreneurs and institutions.

CREDITS

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9. VEGGIE WASH TO CLEAN UP VEGETABLES FROM PESTICIDE RESIDUES

INTRODUCTION

Good news for the manufacturers of household products, vegetable retailers, hyper /super markets and vegetable exporters: The Pesticide residue researchers of KAU has developed a product /process to clean the veggies and fruits from the risk of pesticides, by dipping in a solution (Veggie Wash) for 15 minutes followed by rigorous washing in water. Pesticide load on fruits and vegetables depends on the nature of fruit surface (waxy or non-waxy), types and dosage of pesticides used prior to harvest, number of sprays given and interval between last spray and harvest. As consumers are unable to detect or measure the level of pesticide residues in what they buy from market, the only solution to avoid the risk from pesticide is to identify the risky vegetables and to decontaminate them before consumption. Thus there was a felt need for development of a low cost, easy to use, household product capable of cleansing the fruits and vegetables from pesticide residues, before consumption.

UNIQUENESS

Formula for a household product (Veggie Wash) for cleaning fruits and vegetables from pesticides has been standardized in the Pesticide Residue Analytical and Research laboratory (PRRAL), Kerala Agricultural University, Vellayani. This needs to be done only for a select list of 2 dozen vegetables, which are mint leaves, curry leaves, green chilli, coriander leaves, chilli (big), amaranthus (green and red), vegetable cowpea, celery, capsicum (green, yellow, and red), bhindi, cauliflower, cabbage (green and violet), carrot, radish (white), melon (oriental pickling), gooseberry, onion (small), brinjal (long), drumstick, and ivy gourd because the rest are "Safe to eat" after normal cooking practices. Of these, amaranthus and vegetable cowpea are the only risky vegetables produced in Kerala and all the rest are coming from Tamil Nadu, Karnataka and Andra Pradesh.

Samples of 64 different types of vegetables were collected monthly from markets in Kerala and tested in PRRAL under the state plan scheme. Based on the test reports of a total no. of 1200 samples analysed during the past one year (January – December 2013), 40 types of "Pesticide free" vegetables were identified: salad cucumber, tomato, onion (big), potato, bitter gourd, bottle gourd, snake gourd, smooth gourd, cluster beans, green peas, ginger, garlic, brinjal (round), bush beans, beetroot, chow chow, radish (red), turnip, beans, pumpkin, ridge gourd, ash gourd, colocasia, dioscorea, elephant foot yam, tapioca, sweet potato, pineapple, water melon (green and kiran) banana (raw), raw mango, nendran, and imported vegetables viz. broccoli, Chinese cabbage, lettuce, leek, parsley, spring onion, and zucchini were free from any pesticide. This group of 40 vegetables need not be subjected to any decontamination process and these may be cooked/used as salads after normal washing.

SCOPE FOR COMMERCIALIZATION

Manufacturers of household products can buy the formula of "Veggie Wash" which is a mixture of natural/ plant based products in a specific proportion, along with the detailed business plan. Composition of veggie wash will be the trade secret of KAU, which was standardised as an Ideal combination of compound A (capable of removing 67 -93% of applied pesticides) and compound B (capable of removing 65 -99% of applied pesticides), which together gave maximum efficiency (80-95%) in removing the pesticide residues from vegetables. This product could be manufactured with minimum investment at an estimated RoI of > 400%. It may be marketed in attractive and biodegradable plastic bottles (100ml, 250 ml, 500 ml, 1l or 5l) or in 20 g sachets for household use. It is also proposed to make spray bottles (500 ml or 1l) with which consumers can just spray the solution directly to vegetables and wash rigorously, to make them pesticide free.

This product is also intended for decontamination at commercial level, for vegetable traders and super / hyper markets to use. The process is very simple, low cost and easily adaptable by any vegetable retailer or exporter at the unpacking and handling / sorting stage. Materials required for cleaning the vegetables / fruits are a set of three large tubs (90 - 100l capacity) and linen baskets of size just to fit inside the tub. All you have to do is to fill about one third of the tub (30l) with water, to pour 100 ml of "Veggie Wash" and to mix it thoroughly. Put the vegetables inside the linen basket and immerse it into the solution. Keep it for 15 minutes with gentle agitation. Take out the basket, allow it to drain and immerse into second tub with water. Take out after 2 minutes, repeat washing with water in the 3rd tub and drain completely. Take out vegetables and wipe them using clean cotton towels. Keep in perforated trays and expose to sunlight for 15 minutes. Pack in attractive, perforated packages, label as 'Safe to Eat' for sale, at premium price, in separate counter. Safety of treated vegetables can be tested by sending random samples to PRRAL, Vellayani, and test reports may be displayed at the counter.

CREDITS

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Plate. 1: KAU Veggie Wash

Plate. 2: Tub and linen basket to decontaminate vegetable

Plate. 3: Washing the vegetables to decontaminate from the pesticide residues

10. BIO PESTICIDE FOR VEGETABLES

UNIQUENESS

The new isolates of the entomopathogenic fungi *Beauveria bassiana* (ITCC 6063) and *Paecilomyces lilacinus*(ITCC 6064) are found very effective for managing vegetable pests. Talc based formulations of *B. bassiana* is effective against the snakegourd caterpillar *Anadevidia peponis*, the pumpkin caterpillar *Diaphania indica*, the fruit flies (*Bactrocera cucurbitae* and *B. dorsalis)* and the sucking pests in vegetables. *Paecilomyces lilacinus* is effective against the snakegourd caterpillar *Anadevidia peponis*, the pumpkin caterpillar *Diaphania indicia* and the fruit flies (*Bactrocera cucurbitae* and *B. dorsalis).*

The fungi are also pathogenic to the pupal stage of fruit flies and hence can be integrated as a component of IPM of fruit flies in mango and cucurbitaceous vegetables. It can be used for the soil application for managing the pupal stage of fruit flies.

SCOPE FOR COMMERCIALIZATION

The technology was evolved and approved under the ICAR *adhoc* Project " **Evolving biocontrol measures for the management of vegetable pests".** As per the suggestion of the ICAR, in the final workshop of the project, to popularize the technology among farmers, the technology was further refined under a KAU Plan Project, and popularized under a RKVY project **on "Participatory integrated management of fruit flies infesting fruits and vegetables".** As such, the technology is sound and viable and can bring about substantial reduction in pesticide usage in agriculture. No other potent biopesticide for controlling vegetable pests is available in Kerala, at present.

The entomopathogenic fungi can be formulated (CFU 10^6spores /ml) and used for the pest management in vegetable crops as it can bring about 65-75% reduction in the pest incidence in vegetables. This technology can be widely adopted and popularized for pest management in vegetables. It can be adopted as a component of the IPM of fruit flies in mango and cucurbitaceous vegetables of Kerala, as it can be well used for the soil application for managing the pupae of fruit flies.

The application of biopesticide is cost effective and eco friendly. The pesticide residue free produce will be available for consumption. The cost towards pesticides can be saved.

CREDITS

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11. BIRD NEST DESIGNS

INTRODUCTION

Pests and diseases need to be controlled to maintain the quality and quantity of food, feed, and fiber produced by growers around the world. Different approaches may be used to prevent, mitigate or control plant pest and diseases. Beyond good agronomic and horticultural practices, growers often rely heavily on chemical fertilizers and pesticides. Such an input to agriculture has contributed significantly to the spectacular improvements in crop productivity and quality for many years. However, the environmental pollution caused by excessive use and misuse of agrochemicals, as well as fear-mongering by some opponents of pesticides, has led to considerable changes in people's attitudes towards the use of pesticides in agriculture. Today, there are strict regulations on chemical pesticide use, and there is political pressure to remove the most hazardous chemicals from the market. A good variety of biological controls are available for use, but further development and effective adoption will require a greater understanding of the complex interactions among plants, people, and the environment. To this end, a technology to attract and conserve beneficial birds in agro ecosystem will definitely be an addition to the agriculture system, in controlling the pests and diseases.

Birds are natural enemies in the agriculture fields. The presence of such birds in the field enhances the pest control and prevent outbreaks. Different species of birds prefer different nest boxes of particular size. Thus enhancing the availability of such boxes in the field help in colonizing the birds in the field. These birds will feed on the pests during the breeding season and feed them to their young ones and many birds subsist on a variety of pests. So bird nest can create a good impact on controlling pest in the field.

UNIQUENESS

This technology is developed to conserve beneficial birds (bio control agents) in the agro ecosystem and to attract and colonise beneficial birds in the agriculture field. The technology is developed to attract barn owl, spotted owlet, myna, robin, kestrel, sparrow etc. which are effective bio-control agents on rodents and other insect pests in crop fields.

SCOPE FOR COMMERCIALIZATION

Estimated demand: With the increasing health consciousness among the people, there is growing need for agriculture products produced without using harmful pesticides. In this situation there is a changing demand from the farmers to undertake good agriculture operations to increase the agriculture production. Here the application of organic fertilizers and pest control measures are being adopted by the farmers. Hence, availability of bird nests to increase the pest control in the field by attracting natural enemies to the field by providing better habitat will fetch a good market.

Potential customers: The conservationists, natural farming personnel, etc.

CREDITS

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12. KERALA AGRICULTURAL UNIVERSITY TISSUE CULTURE PROTOCOLS FOR COMMERCIALIZATION

INTRODUCTION

The Plant tissue culture (PTC) broadly refers to the *in vitro* culture of a single cell, tissue or organs of a plant origin on nutrient medium under aseptic conditions. PTC has multi various applications in crop improvement and vegetative propagation of crop plants. Micropropagation refers to the production of large number of plantlets using *in vitro* culture technique from a small plant part like shoot tip or nodal segments in limited space and time. Micropropagation is not hindered by seasonal affects. The technique is highly useful in planting material production of high value horticultural crops, where per hectare planting material requirement is high and there is difficulty to produce them conventionally. Eg. Banana, pineapple, orchids etc. Challenges also exist in practical application of micropropagation as the procedure has to be standardized by dedicated research for each crop species and there can be genotypic specificity also. The technology is labour intensive and expertise demanding.

UNIQUENESS

The Kerala Agricultural University started plant tissue culture works during 1980 and in the span of last three decades *in vitro* regeneration protocols were standardized for more than 30 crop species. Some of them are: Fruit crops - banana, pineapple and jack; Spices - black pepper, cardamom, ginger, curry leaf and turmeric; Medicinal and aromatic plants- *Holostemma, Tylophora, Gymnema, Trichopus, Artemisia* and *Kacholam*; Flowers – orchids, gerbera and anthuriums; Vegetables – capsicum, tomato, pumpkin and ridge gourd, others – *Exacum, Myriophyllum, Aquillaria, Spathiphyllum* and some aquarium plants. These TC protocols are useful for rapid mass multiplication of these crops for solving scarcity of planting materials. It is also useful in rapid multiplication of elite materials, endangered species and genetic transformation works. TC plants are free from pests and diseases. Micropropagation protocols are useful for farmers, entrepreneurs and scientists.

SCOPE FOR COMMERCIALIZATION

Micropropagation protocols of banana, orchid, anthurium, pineapple, curry leaf and black pepper has been commercialized. The technology is useful for starting up mega enterprises with a capital financial outlay of more than ten crores and for micro enterprises with an investment of Rs. 5 to 20 lakhs. Plants can be sold as hardened ones and in culture bottles. With suitable modifications, overseas order for the supply of desirable varieties of banana, pineapple, orchids and anthuriums can be taken up.

TC banana is replacing conventional suckers owing to their superiority manifested as early maturity, disease free nature and uniform bunching. The Standardized micropropagation protocols are available for different Nendran varieties, Robusta, Grand Naine, Njalipoovan, Kadali, Red Banana etc. There is immense scope for starting up mega and micro enterprises for the supply of TC planting materials of banana, as at present only one per cent of state demand is met by existing labs. It can be started as production units as well as hardening units. Orchids and anthurium are

commodities of international trade as cut flowers and potted plants. KAU has the TC regeneration protocols for different Dendrobium cultivars like Sonia-17, Emma white, Singapore red etc. Orchid hybridization and seed germination technology are also available. This will create tremendous variability in various orchid generas like Vanda, Catleya, Oncidium, Cymbidium etc.

In anthurium TC regeneration protocols are available for Tropical red, Agnihotri, Mirungu white etc. TC regeneration protocols are also available for Gerbera, an ornamental highly valued at present for stage and other indoor decoration. Micropropagation protocol standardized for the large scale production of pineapple variety 'Mauritius' is highly useful as the requirement of planting materials is 40, 000/ha in high density planting. Curry leaf is an important medicinal spice of daily demand in every household, and there is scope for its commercial production. The TC plants can be sold in bottles as well as after hardening.

TC based entrepreneurship requires Research and Development support and technical guidance. So operation in private, public partnership mode is preferred.

Commercial TC production units of KAU

KAU is producing TC banana, orchids, anthuriums, pineapple and curry leaf in various research stations/ colleges. Major producing units are CPBMB, CoH, Vellanikkara; BRS, Kannara; ARS, Vyttila; CoA, Padannakkad.

Consultancy

Kerala Agricultural University will provide training and consultancy service for the start up of entrepreneurships based on micropropagation protocols of suitable crops on demand from stake holders.

CREDITS

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13. WILDLIFE FORENSIC ANALYSIS AND MEAT IDENTIFICATION - USING DNA FINGER PRINTING

UNIQUENESS

India is considered as a hot spot of biodiversity contributing about 7. 6% of mammals, 12% birds, 11% fishes and 6% of flowering plants to the total world population. But, unfortunately, India also has 172 animal species considered globally threatened (Groombridge, 1994). Extinction of the species is part of the natural process and is also an irreversible process. However, it is occurring at a much higher rate than speciation because of human activities such as habitat destruction and poaching (Shivaji *et al.*, 2003). The Kerala scenario on the wildlife offence data compiled by the Wildlife Crime Investigation Bureau, Ministry of Environment and Forests of Govt. of India, is quite alarming (Fig. 1).

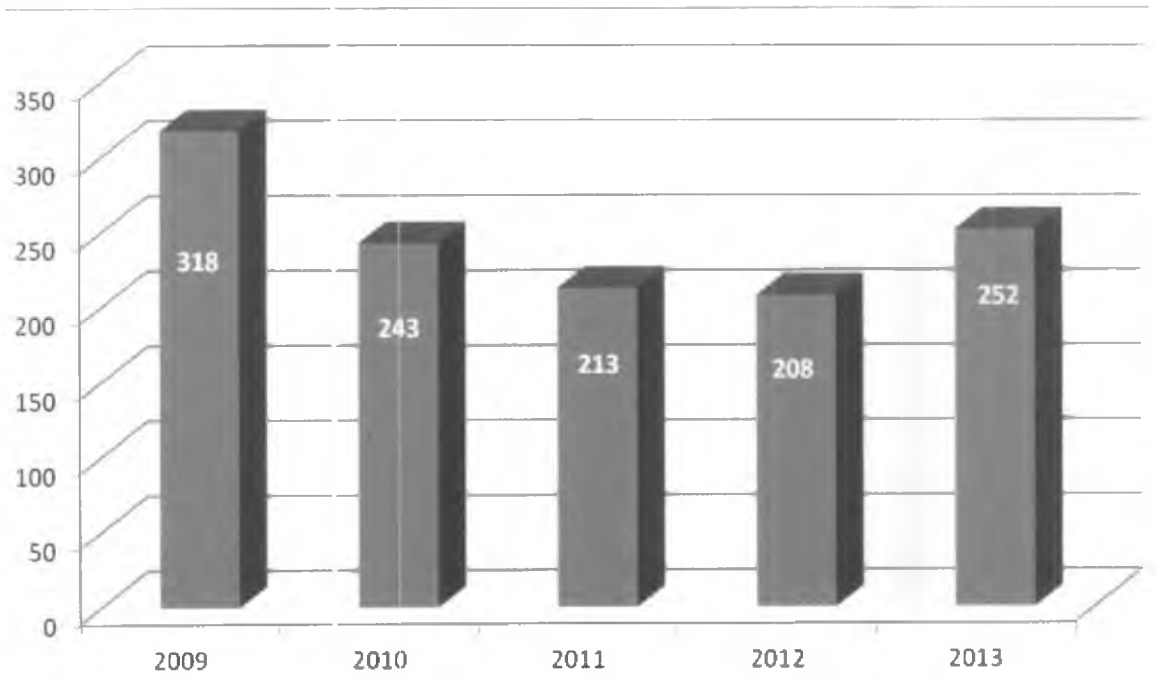


Fig. 1 Statistics on wildlife offence in Kerala between 2009 and 2013

In many cases the culprits escape the litigation process, mainly because the evidence is weak. So there is an urgent need to conserve the species with the help of biotechnological approaches and also *in situ* methods. The Wildlife Forensic Unit of KAU has developed a protocol for the identification of the wild animal species from the unknown tissue samples, using DNA fingerprinting techniques.

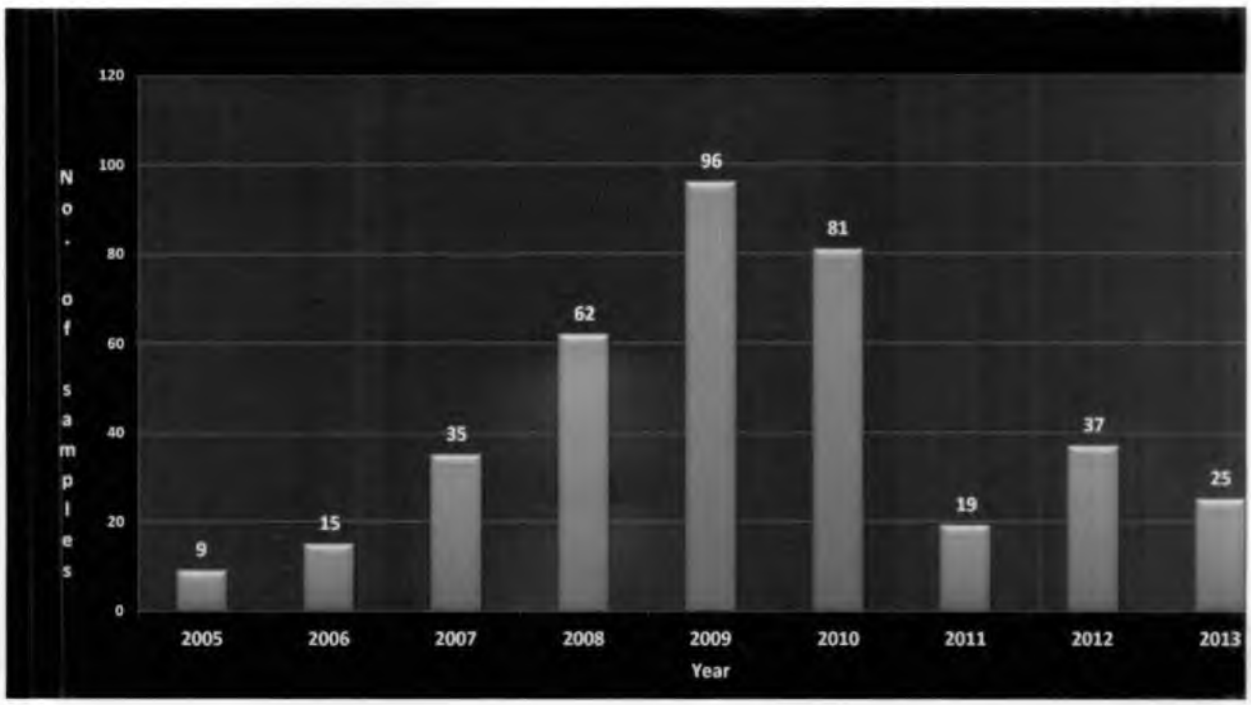


Fig. 2 Number of wildlife samples processed at the WFU, KAU between 2005 to 2013

Leopard skin

Tiger skin

Spotted Deer antler

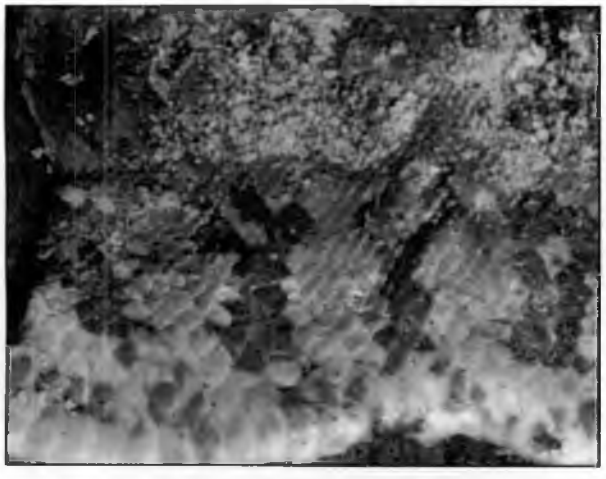
Sambar Deer antler

Nilgiri Tahr horn

Tiger - skull

Banjara made of Monitor Lizard skin

Carapace of Black Turtle

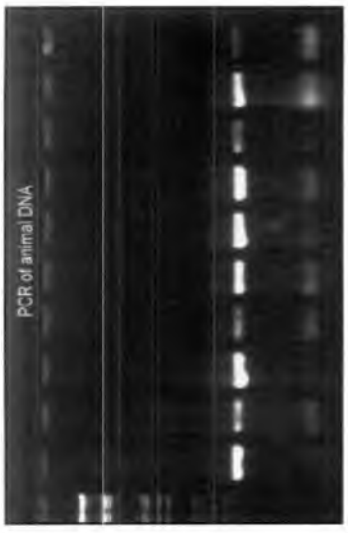


Python skin

Tusk of elephant

Tusk of elephant

The Wildlife Forensic Unit of KAU is the third such facility in the country, the other two being the Laboratory for the Conservation of Endangered Species (LaCONES)under CCMB, Hyderabad, and the Wildlife Institute of India, Dehradun. Wildlife Forensic Unit has been functioning at the College of Forestry of KAU, since 2005, and until now has processed about 400 wild animal samples, which the unit received through the honorable court of law from across the State (Fig. 2).



SCOPE FOR COMMERCIALIZATION

Apart from the forensic analysis, this technology also could be used for the test of the adulteration of the meat available in the market. Such a facility would be of immense use for the restaurants, catering units and also for the meat exporting firms.

Here is an example of such a case handled at the WFU, COF. A curry was brought to the WFU by a leading catering firm at Kottayam. They suspected that instead of mutton, the meat vendor had supplied them with beef. We had tested the genuinity of the meat from the curry, as could conclusively prove that the meat used in the curry was beef and not mutton. This may be one use by the general public on this technology of KAU.

CREDITS

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14. ANTISERUM BANK FOR TISSUE CULTURE BANANA

INTRODUCTION

Banana is one of the major fruit crops in Kerala, grown in about 99, 000 hectares. The planting material requirement in this area is about 25 crores. However, in spite of all awareness creation programs, virus diseases are prevalent, causing serious crop loss and yield reduction in this crop. Hence, TC plants are preferred as disease free planting materials. To get virus free TC plants, ex plant materials are to be screened to ensure as virus free before rapid multiplication, for which virus indexing is required.

UNIQUENESS

The Serological methods are easy for virus detection, but lack of availability of antiserum is the major drawback prohibiting large scale virus indexing. Even though many TC labs are functioning in Kerala and other states, lack of availability of antiserum is the serious concern to ensure virus indexing and thus the supply of disease free TC plants. This proposed project envisages development of an antiserum bank, which can make antiserum in sufficient quantity for the needy clients. There will be a good market demand for the antiserum produced, along with ensuring large scale production of disease free TC plants for farming community.

SCOPE FOR COMMERCIALIZATION

The project will help to reduce dependence on antiserum from abroad, and the cost also will be substantially reduced. The business plan of this project indicates that I ml of antiserum can be sold at Rs 20, 000, replacing Rs 30, 000 now being spent to get it from abroad. The lab test will cost Rs 600/- per one test and Rs 2400/- for testing for four viruses prevalent in Kerala.

The business plan indicates the cost of technology is Rs 1. 5 crores and estimated to be technically feasible with high rates of returns.

CREDITS

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15. MICROBIAL INOCULANTS FOR HOUSEHOLD WASTE MANAGEMENT

INTRODUCTION

Household waste management is a serious challenge in Kerala. On an average 6000 tons of solid waste is generated across the State per day. The health and environmental issues related to waste disposal necessitated immediate technological intervention and developed strategies for the proper and safe disposal of waste generated. Improper handling of household waste causes adverse effect to the public and deteriorates the environment. Microbial Inoculant Technology offers great potential and could be effectively exploited for the management of degradable waste. Micro-organisms capable of decomposition of cellulose, lignin etc. could be effectively used for waste disposal. Research initiated by the Kerala Agricultural University in this direction has culminated in a simple technology of waste treatment that could be used for disposal of even low quantity of waste, particularly the household waste.

UNIQUENESS

The lignocellulolytic organisms developed and named "Composting Inoculum" is a consortium of micro-organisms capable of decomposition of vegetable as well as food waste. This technique has been successfully pilot tested at Santhigiri Ashramam for decomposition of herbal and kitchen waste of the Ashramam. The Composting Inoculum developed by KAU is gaining much popularity in Kerala, for composting vegetable and food waste. The technology is unique, comparatively simple and low cost, yielding good quality compost for home gardening. This simple technology helps to convert waste to manure within 40 to 45 days using the Composting Inoculum in earthen flower pots. Another advantage of the technology is that the compost generated could be utilized as the source of inoculum for the next cycle of composting. During 2012-13 a total quantity of 5000 kg of inoculum has already been supplied on trial basis and the demand is increasing. The Government of Kerala has recommended the use of these cultures for waste management as per GO. (Rt)No. 1946/2012/LSGD dated13-07-2012.

SCOPE FOR COMMERCIALIZATION

The waste management service has to be provided essentially by Municipal and local authorities. This low cost method could be effectively implemented through the local bodies of the State. Efforts should be taken to achieve it with the participation of NGOs, Community organizations such as Kudumbasree. Composting of domestic waste at household level should be encouraged through peoples' participation, making them aware of the consequences of improper handling of waste, dissemination of information on different composting techniques etc..

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16. MICROBIAL INOCULANTS FOR WASTE MANAGEMENT IN APARTMENTS, HOTELS AND CANTEENS

INTRODUCTION

The biosolid waste management is one of the major problems faced by the municipalities and corporations of the State. Composting is the method conventionally used for converting the biosolid waste into organic manure and it requires cowdung as a source of microbes for decomposition. Cowdung is not easily available in urban areas. This technology for aerobic composting, in Thumburmuzhi model unit using microbial inoculants, is suitable for housing colonies and flats with 20-30 families. It is also suitable for canteens and schools. The units may be established on the ground floor or even on the terrace and requires very little space (150 sq. ft). It does not involve any mixing or turning over, and hence labour requirement is minimal. Good quality compost rich in plant-available nutrients (N: 0. 99% P: 1. 11% K: 1. 33%, pH 7. 4 and a C:N ratio of 22:1) can be obtained in a period of 80-90 days.

UNIQUENESS

The microbial inoculants is an efficient decomposer of cellulose, lignin, starch and proteins. It may be used as liquid formulation or carrier-based formulation. Shelf life of carrier-based formulation is more (three months) than that of liquid (one month). The process involves aerobic composting in Thumburmuzhi model units of 4'x4'x4', made of ferrocement, protected from rain by roofing. Two such units are required in a place. There is provision for removing the slabs of the unit. Biosolid waste is layered with dry leaves/ dry coconut leaves/ sawdust. Microbial inoculant is sprinkled over dry leaves before the next layer of solid waste is added. The unit can be filled in a period of two and a half to three months, in a housing colony/ flat of 20-30 families. The unit is covered with a shade net once the unit is full and left undisturbed for 80-90 days for decomposition. Subsequent additions will be in the second unit. By the time the second one is full, the decomposition in the first unit will be complete. No foul smell is produced, as in the case of anaerobic composting. The contents are taken out, powdered, sieved and packed for sale.

SCOPE FOR COMMERCIALIZATION

SHGs, NGOs, Local bodies, Entrepreneurs with social commitment may buy the technology and implement it in hostels, canteens, schools, colleges, housing colonies, flats and apartments. The segregation of waste will be at source (individual house). They will be provided with different colour bins for biodegradable waste, plastic and glass. One person will be in charge of collecting waste from each house and adding it into the composting unit, on daily basis.

The technology will be sold at a cost of Rs. 5 lakhs. Mother culture will be provided every year and follow up and supervision will be there for three years. The technology will have more of social impact from community hygiene point of view. Good quality compost can be sold at Rs. 8/- per kg. It can also be enriched with microbial inoculants like bio fertilizers and sold at a higher cost.

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17. RAPID VERMICOMPOSTING

INTRODUCTION

Nature has its own ways of recycling and reusing biowastes for maintaining a clean environment and sustaining productivity. Earthworms, known as farmers' friend or intestine of earth, plough the land to make the soil more healthy, productive and sustainable. Recently, we have realized their potential in the management of biowastes resulting in the production of quality organic manure, vermicompost (black gold). At present organic farming is gaining considerable momentum and there is scarcity of commonly used organic manures like farmyard manure, green manure etc. A huge quantity of organic waste is accumulating in our surroundings causing environmental pollution. These non-toxic wastes are valuable sources for plant nutrients and humus. Most of this biowaste can be converted into vermicompost by utilizing earthworm as biological agent.

UNIQUENESS

The Kerala Agricultural University has identified efficient earthworm species (*Eudrillus eugineae*), suitable for vermicomposting under Kerala condition and standardized technologies for mass multiplication of worms and production of vermicompost for different scales.

Vermitechnology is a muti benefit programme and is nature's low cost ecofriendly technology for solid waste management, quality manure production and worm meal production. It is a short duration profitable business for employment & income generation. Vermicompost is utilized as a well balanced organic fertilizer for organic farming and sustainable agriculture. The use of vermitechnology is not for personal gain, but for the preservation of environment and natural resources. Vermicomposting is a highly profitable venture along with a dairy unit. Enriched vermicompost can be produced by utilizing biotic (microbes, azolla, leguminous green manures etc.,) and abiotic (rock phosphate, oil cakes and other natural materials) components by which the composting processes will be enhanced.

SCOPE FOR COMMERCIALIZATION

The project envisages the production and sale of vermicompost, enriched vermicompost, worm meal, vermiwash, household vermicomposting kit, low cost vermiwash collection unit, which are the most economically feasible applications. The project also aims to maintain a clean environment by insitu waste management, there by creating a healthy society.

The technology description includes biological waste management resulting in quality manure production (solid and liquid organic manures) and worm meal production. The proposed KAU sale prize for the technology is 6 lakhs. The unit of sale is technology document and training.

The promotion of the technology is through advertisement in print media and distribution through channel of dealers -Wholesaler – Retailers (specialized agricultural input stores), primary Agricultural Credit Societies, Farmers' Service Societies etc.

The potential take holders of different components of vermitechnology viz. earthworms, worm meal, vermicompost, vermiwash and production units like house hold vermicompost kit, vermiwash collection unit are fish hatcheries, tropical fish stores, pet stores, zoos, poultry growers, nurseries, garden supply stores, landscapers, general public, bait and tackle shops, worm growers, composters, organic cultivators or fisher people, teaching and research institutions both private and government and residential associations.

A growing number of individuals and institutions are taking interest in the application of vermitechnology. As no sophisticated infrastructures and equipments are required, the entry into the industry is extremely easy for both small and large scale producers. As the approximate benefit cost ratios under different scale of production is between 1. 5 to 3. 5 (>1) the project proposal is technically feasible, financially viable and ecologically sound.

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18. WORM MEAL PRODUCTION

INTRODUCTION

The ornamental fish culturing in India has increased at a higher rate, but ornamental fish feed is very costly. Recently with the rising cost of imported fish meal, the worm meal has been recognized as a potential substrate. Unlike the production of fish meal which relies on the exploitation of wild fisheries, production of worm meal depends on the recycling of farm waste. It is therefore a more environment friendly product and is economically viable also. Worm meal is a protein rich meal made from ground earthworm meat. Its protein content is about 46% with 10% fat. It can be used as an ingredient of animal feed as well as fish feed. The protein and amino acid content of protein meal made from earthworms closely resemble those of meat meal and fish meal, which are commonly used as protein sources in feeds prepared for the intensive rearing of livestock. Worm meal preparation can be an additional source of income for farmers who resort vermiculture as an agri-enterpreneurship. So study was initiated as a P. G project in 2010 and continued till 2014 so as to formulate earthworm meal as fish feeds for aqua culture.

UNIQUENESS

Kerala Agricultural University has identified efficient earthworm species (Eudrillus eugineae) suitable for vermicomposting under Kerala condition and standardized technologies for mass multiplication of worms and production of vermicompost for different scales.

Vermitechnology is a muti benefit programme and is nature's low cost ecofriendly technology for solid waste management, quality manure production and worm meal production. It is a short duration profitable business for employment & income generation. Vermicompost is utilized as a well balanced organic fertilizer for organic farming and sustainable agriculture. The use of vermitechnology is not for personal gain but for the preservation of environment and natural resources. Vermicomposting is a highly profitable venture along with a dairy unit. Enriched vermicompost can be produced by utilizing biotic (microbes, azolla, leguminous green manures etc.,) and abiotic (rock phosphate, oil cakes and other natural materials) components by which the composting processes will be enhanced.

SCOPE FOR COMMERCIALIZATION

The economics of six feed materials were calculated in terms of protein, carbohydrate and fat equivalents.

Comparative economics of six feed materials

Feed material	Cost of production for 1 kg feed material	Protein equivalent	Carbohydrate equivalent	Fat equivalent	Composite value
	Rs/kg				
Exotic worm meal	5700	131. 18	379. 24	551. 79	354. 07
Native worm meal	3850	92. 53	196. 43	372. 70	220. 55
Ready made fish feed(Tubifex)	6666. 66	167. 78	309. 18	1083. 90	520. 28
Locally prepared fish meal	830. 00	20. 32	20. 18	47. 89	29. 47
Protein substituted with exotic worm meal	4200	101. 67	95. 93	235. 55	144. 38

Among the six feed materials locally prepared fish feed is the cheapest followed by protein substituted with exotic worm meal and native worm meal in terms of protein and carbohydrate. Since it is a major protein source and a simple technology, this can be utilized for ornamental fish culture and poultry unit managers.

CREDITS

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19. BIOTICALLY ENRICHED ELEPHANT DUNG

INTRODUCTION

Elephant is a simple stomached animal with microbial digestion of cellulose in sacculated caeco colon. Fermentation is also evident in duodenum which is rich in protozoa and the rest of gut is mainly concerned with consolidation of faeces and reabsorption of water. Normally an elephant defaecates 12 to 15 times per day, at the rate of 5-8 balls at a time. Each faecal bolus weighs about 1-2 kg in weight and has 100 to 160mm in diameter and 70 to 180 mm in length. So a healthy elephant produces 100-150 kg dung per day. Since the dung is lignocellulose complex, it takes a lot of time for natural degradation. The issue becomes a major concern, especially during the festival off season, when elephants are tethered for a long of time. Moreover, the accumulation of dung near the animal can harm its health also.

Dumping of huge quantity of dung is a common practice in elephant conservation centres. The waste accumulation creates severe socio economic problems. Even though burning is the major way adopted for dung disposal, it can create breathing difficulties to the people living nearby. Also burning can result in the loss of organic carbon, which can otherwise nourish soil fertility, especially for tropical soils. During rainy season, the condition become more pathetic due to the accumulation of dung, since burning cannot be practised. Direct application of dung as a manure has little scope, as it may cause wilting of plants due to excess heat generation during its decomposition. Moreover, the lignocellulolytic nature of dung also demands effective decomposers for rapid decomposition of dung.

UNIQUENESS

A study on dung chemistry revealed that it has high nutrient composition. The manurial value of elephant dung was estimated as 48. 18%C, 0. 86% N, 0. 34% P, 0. 37% K, 0. 19% Ca^{2+}, 0. 05% Mg^{2+} with a pH value of 6. 9. Dung was rich in crude fibre (21. 4%) and low in crude fat (2. 8%). Cellulose, hemi cellulose and lignin fractions were accounted as 35. 8, 30. 1 and 17. 5 per cent respectively.

The FYM and elephant dung in the ratio 1:8 must be pre composted with *Aspergillus flavus* and *Bacillus subtilis,* in order to reduce the maturity period of compost. Moreover, the same treatment recorded high rate of microbial activity, maximum earth worm multiplication rate and high nitrogen, phosphorus and calcium status with minimum maturity days for composting. Regarding the practical utility of work, it was found that a benefit cost ratio of 1. 2 was estimated for vermicomposting of elephant dung using a tank (1 m^3) of 300kg capacity and with the introduction of 1500 earthworms for a period of 50-60 days with the help of effective lignocellulose degraders, *Aspergillus flavus* and *Bacillus subtilis.*

Methodology

During decomposition of elephant dung, temperature may rise. So micro-organisms, like *Aspergillus flavus* and *Bacillus subtilis,* are used for precomposting. 250 ml microbial culture is used with 1kg cowdung and 8 kg elephant dung.

The microbial culture is available from the microbiology department, College of Horticulture, Vellanikkara. After precomposting vermicomposting should be done, using Eudrillus euginease and Eisenia foetida.

Procedure for vermicomposting

1. At the bottom of the pit, coconut husk should be laid for imbibing water.
2. Mix cowdung, elephant dung in the ratio 1:8.
3. Microbial culture should be added at the rate of 250 ml for 1 kg elephant dung.
4. After two weeks worms can be introduced.
5. Cover with gunny bags.
6. Watering should be done according to the need.

SCOPE FOR COMMERCIALIZATION

The project is technically feasible and economically viable and hence can be commercially adopted.

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20. VALUE ADDED PRODUCTS FROM JACKFRUIT

INTRODUCTION

Jackfruit is an organic fruit, available in plenty, at affordable prices, but not fully utilized for commercial purposes. At present, a huge proportion of fruit is wasted causing enormous loss of the resource of the State. Many varieties are available in the State which has tremendous potential to be processed into specific products.

UNIQUENESS

A number of processed products were standardized and consumer tested, which are ready at present for technology transfer. Preserves, Beverages, dehydrated and confectionary products were standardized from ripe jackfruit, while Ready to Cook(RTC) curry mixes, dehydrated powders, flakes and savouries were standardized from tender jackfruit as well as from raw jackfruit. Protocol for preparation of jackfruit seed flour was developed and tested. It is of high commercial value as it is Gluten free starch.

SCOPE FOR COMMERCIALIZATION

Processed jack fruit products have excellent market in the domestic and export front. Traditional food products of jackfruit are relished by Keralites in the domestic circle and abroad. Seed flour serve as a raw material for bakery products and health drinks. Waste arising from jackfruit processing could be converted into good manure and valuable resource for biofuel. Commercial Jackfruit processing venture should be attempted on a multiline approach starting from the tender jackfruit products to seed flour and waste utilization, if it is economically viable and successful.

An investment of 60-70 lakhs is required in order to set up the infrastructure and machinery with a capacity to process appox. 100 tons of jackfruit.

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21. *'KERAAMRUTHAM'*
A HEALTH DRINK FROM COCONUT INFLORESCENCE SAP

INTRODUCTION

Coconut is one of the most important crops of Kerala. It is used mainly for culinary purposes (30%) and for copra 70% (ie., 85% for oil & 15% for ball copra). Only 2% of the nuts are used as tender nuts. Value addition and product diversification remain the most viable, but least explored areas, as the coconut is concerned. Amidst various possibilities like nut, copra, oil etc, the coconut inflorescence sap offer itself as an unexplored yet promising candidate for product diversification in several counts, like regularity of production, less time in realizing income, reduced impact of pest and diseases like eryiophid mite, mahali etc.

Coconut Inflorescence sap is a sweet juice exuding from the unopened inflorescence - the spathe of coconut palms by selective cutting of it. The process is called tapping, and it is a traditional practice of almost all coconut growing places, specially in the islands. The juice extracted is collected in earthen vessels and allowed to natural fermentation by yeast and the juice transform to "Toddy", a non distilled alcoholic beverage of specific odour and taste. If the fermentation processes are controlled/ arrested, the juice obtained is very sweet and nutritious, and it can be used as non alcoholic beverage.

UNIQUENESS

The Kerala Agricultural University has developed methods for the extraction of the sap and its collection without fermentation and further preservation of it as '*Keraamrutham*'- an alcohol free product from coconut inflorescence sap, and also preparation of Palm jaggery (*Kerachakkara*).

Keraamrutham : Technologies have been standardised for arresting fermentation of inflorescence sap and its preservation as alcohol free product *(Keraamrutham)*. It has a keeping quality for more than three months under refrigerated condition(4-8^{0}c). It is a superior and delicious health drink with qualities and taste better than tender coconut water. There is ample scope for large scale production, by adopting the improved packing and preservation technologies. The advantage of '*Keraamrutham*' over tender coconut water is that one can market product of almost uniform taste and quality which being the major hurdle in tender coconut water packing. Moreover, daily availability of raw material can be ensured in this.

Nutritionally, the '*Keraamrutham*' is superior to the tender coconut water. The available total soluble sugars, vitamins and minerals are low in tender nut water, say the total sugars : 3. 3%, minerals like potash : 5. 32mg/100ml, Calcium: 0. 578mg/100ml, Phosporus: 1. 18mg/100ml, and Iron: 0. 154mg/100ml.

Nutrients		Minerals (mg/100ml)	
Total sugar	15 -18 %	K (Potash)	9. 05
Vitamin c	1. 3mg/100ml	Ca (Calcium)	6. 00
Phenols	8. 0mg/100ml	P (Phosphorus)	1. 50
Na (Sodium)		Fe (Iron)	4. 50
		0. 95	

Kerachakkara (Palm jaggery/ gur)

The procedure for the preparation of '*Kerachakkara*', the good quality Palm jaggery/gur with desirable physical properties, from the coconut inflorescence sap is also developed.

UNIQUENESS

Economics: Considering a tapper could tap 12 palms daily and each palm yield on an average 1. 5 litres of sap per day, the total inflorescence sap would be 18 litres per day, from 12 palms tapped by one person. From this processing 12 litres as final product can be obtained after processing. This can be made into 60 bottles of 200 ml each. Being a health drink, one bottle of this could be sold at Rs. 25/-. The total income per day will be Rs. 1500/- and it is Rs. 45, 000/- per month. A farmer will be able to realise one third of this amount as profit and the remaining 2/3 as tapping cost, processing, establishment and marketing charges.

A palm can be tapped for six months at a stretch in a year and can be allowed for the next six months for normal tender nut or coconut production as a health restoration measure for the palm. Hence usually 20-30 % of the palms in farmers' garden can be used for tapping at a time. This will help the farmers in getting higher income from coconut garden by utilizing their palms for both value added products like Keraamrutham, Kerachakkara (palm jaggery), tender nuts, and traditional coconut, copra and coconut oil.

CREDITS

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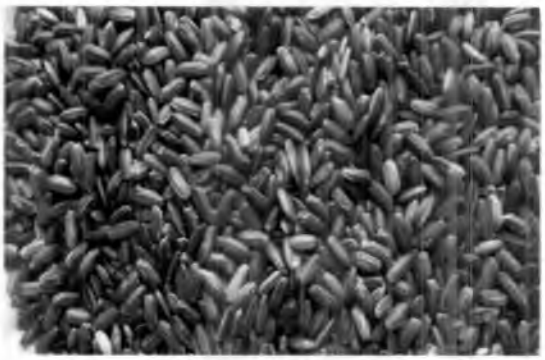
22. NJAVARA BASED HEALTH DRINK

INTRODUCTION

In India, the ancient books Charakasamhitha and Susruthasamhitha, which embody the principles of Ayurveda (traditional health care system), describe the medicinal properties of a rice strain called "Sashtika." It is believed that "Njavara" a medicinal rice strain from Kerala State, India, is Sashtika. Shastika means rice that is harvested within sixty days of sowing. From time immemorial it has been the only cultivar traditionally used in Ayurvedic system of medicine. It is believed that njavara cultivated in the uplands is more active medicinally. Inspite of its low productivity, it is cultivated enthusiastically on account of its being a health food for people of all ages.



Development of foods that promote health and well being is one of the key priorities of the food industry. In this context, KAU has developed a refreshing health food, first of its kind from njavara, which can be a very good alternative to the presently available so called health drinks and energy boosters.

UNIQUENESS

Njavara is a cereal having medicinal and nutraceutical properties to rectify the basic ills affecting the circulatory, respiratory and digestive system. The medicinal properties appear to be attributable to the sulphar containing amino acid, Methionine which is involved in the metabolic pathway of the biosynthesis of Thiamine (Vitamin B1), the deficiency of which causes beriberi. Njavara is richer than pulses in free amino acid content, entitling it to be called a proteinaceous cereal.

According to Ayurveda classics, regular consumption of Njavara gruel prepared in cow milk with sugar ensures longevity. This gruel is considered as a health tonic and effective in removing general fatigue. The rice is said to be a safe food recommended for new born babies and as a supplementary diet for the underweight. Local healers claim that it can cure stomach ulcers and generate blood to wipe off anaemia. A number of other uses are also reported by people across the state. These properties are now being harnessed in a health drink which has already been granted registration by FSSAI.

SCOPE FOR COMMERCIALIZATION

The Indian health drinks market is still in its infancy, due to the lack of awareness among the population. In value terms, the health drink market is around Rs 1, 400 crore and in volume terms, around 65, 000 tonnes per annum. Glaxo Smith Kline (GSK) with four brands - Horlicks, Boost, Viva and Maltova - is the leader in Indian health drink market. Complan, Glucon D from Heinz India and Cadbury India's Bournvita are also popular among the Indian health drink brands. Health Food Drink (HFD) is targeted at children aged 5–18. Instead of focusing on particular age group, Njavara health drink is going to cater the health and nutritional requirements of entire

population, irrespective of age and sex. Since it has medicinal and nutritive properties, the product can be consumed by persons having health problems related to circulatory, respiratory and digestive systems. So the product has competitive advantages than other substitutes in the market. So the prospective customers of the product will be children, teenagers, adults and aged people. The potential takers include food manufacturers, Kudumbasree, SHG's, and NGOs etc.

CREDITS

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Product produced, promoted and popularised

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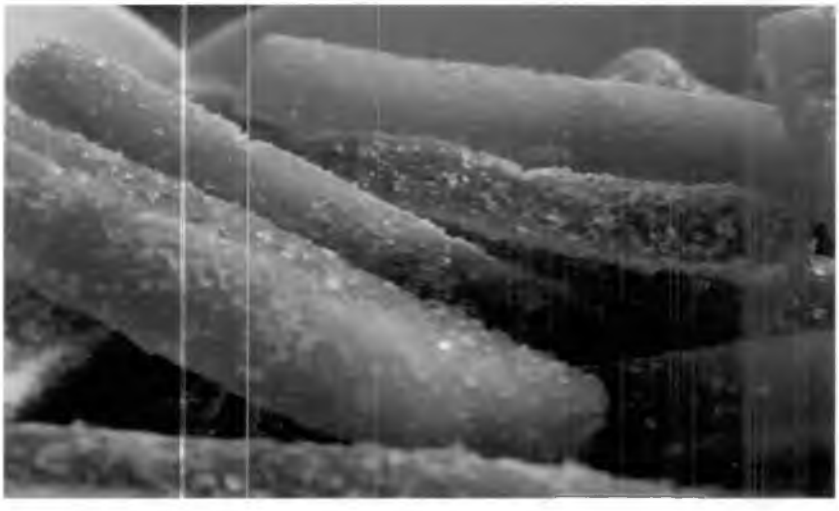
23. OSMO-DEHYDRATED FRUITS

Osmo-dehydrated fruits are intermediate moisture products having better sensory quality (texture, flavour, appearance) compared to conventionally dehydrated products.

Fruits suitable for Osmo-dehydration: Mango, banana, jackfruit, aonla, nutmeg rind



UNIQUENESS

- Osmotic dehydration is considered as a potential alternative to conventional dehydration technique.
- It is a process in which water is partially removed by immersion in a hypertonic solution (highly concentrated sugar solution) by the process of osmosis.
- Preserved by Hurdle Technology.
- Have high nutritive value, because of better retention of nutrients.
- Energy saving process.
- Technology suited for bulk production of products from tropical fruits.
- The technology involved is simple and all types of entrepreneurs can adopt it.
- In case of nutmeg rind chunks, it is a simple, effective and economic method of waste utilisation.
- Nutmeg rind chunks has medicinal value, can act as a digestive stimulant.
- Aonla chunks could be popularised for its nutritional value and also as a mouth freshener.
- These products are not common in the markets of Kerala.

- ❖ The product can be used as such as snacks or in pudding, icecream, fruit salad etc.
- ❖ Shelf life -6months.

SCOPE FOR COMMERCIALIZATION

1. **Technology description:** Osmodehydrated products based on mango, banana, aonla, jackfruit, nutmeg rind
2. **Unit of sale:** Technology document

- ✖ The product could be marketed under a brand name in attractive consumer packages, in different unit sizes.
- ✖ The osmo - dehydrated products could be marketed in rigid plastic containers/PE-Al laminated covers,

The potential takers of this product will be Food processing industries, Exporters, Self-help groups.

CREDITS

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24. DEVELOPMENT OF PROCESS PROTOCOL FOR *Garcinia cambogia* POWDER

UNIQUENESS

Garcinia cambogia (weight reducing agents) is a nutraceuitical/dietry supplement as a source of hydroxy citric acid. Since the fruits are harvested during the monsoon season, sun drying is almost impossible. Hence the only alternative is to dry it artificially using firewood. Approximately 22 kg of firewood is required to get 1 kg dry Garcinia fruit rind. The developed method is the first attempt for producing *Garcinia cambogia* powder directly from fresh fruits using a spray drier, which can be stored for more than six months without any deterioration in quality. Thus there is huge saving in the labour involved.

CREDITS

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25. THERMALLY PROCESSED CANNED TENDER JACKFRUIT

INTRODUCTION

Jackfruit (*Artocarpus heterophyllus*) is a seasonal fruit found in almost all the humid tropical regions of the world. In India, it is grown in southern and eastern states viz., Kerala, Karnataka, Tamilnadu, West Bengal, Bihar etc. Jackfruit is a nutritious fruit, rich in vitamins A, B and C, potassium, β carotene, calcium, iron, proteins and carbohydrates. It played a major role in fulfilling the food and nutritional needs of the local communities. But now, the jackfruit has lost its status and is one of the under exploited fruits. The major reason for the under utilization of jackfruit may because of its highly perishable nature due to inherent composition and textural characteristics. This has limited its storage for a longer time which adversely affects its market potential. Processing of tender jackfruit as vegetable may be a feasible solution to address the above issue. The improvement in the quality and shelf life that can be achieved by jackfruit processing can fetch better price for the product in the market and thus help to improve the financial status of the jackfruit growers in the state and ultimately contributes to state and national economy.

OBJECTIVES

- To generate employment opportunities in food processing sector
- To popularize ready to cook tender jackfruit product among consumers
- To produce and sale of 200000 cans of processed tender jackfruit in Kerala

BENEFITS OF PROCESSING

- Converts raw food and other farm produce into edible, usable and palatable form
- Helps to store perishable and semi-perishable agricultural commodities, avoid glut in the market, check post harvest losses and make the produce available during off-season
- Development of ready-to-consumer products, hence saves time for cooking
- Helps in improving palatability and organoleptic quality of the produce by value addition
- Helps in easing marketing and distribution tasks
- Increases seasonal availability of many foods

UNIQUENESS

Jackfruit an organic fruit, available in plenty and is not fully utilized for commercial purposes. A huge proportion of fruit is wasted causing enormous loss of this resource by preserving its quality. As the research on the canning of tender jackfruit has not been much discussed in the literature, the Kerala Agricultural University (KAU) developed a technology that gives a standardized procedure for the postharvest processing and extended storage of tender jackfruit as a fresh vegetable.

SCOPE FOR COMMERCIALIZATION

Processed jack fruit products have excellent market in the domestic and export front. Traditional food products of jackfruit are relished by Keralites at home and abroad. Thermally processed ready to eat or cook products offer advantages over the conventional products as they can be stored for a longer period of time. This technology will indeed prove to be a milestone in the Indian jackfruit processing industry by way of assuring year round availability of tender jackfruit. It will undoubtedly ensure the economic security of the farmer as well as establish a significant place in the international market. The proposed KAU sale price for the product is Rs. 25/can of 250 g. An additional benefit of around Rs. 7/can can be achieved by implementing the process protocol. The product has the huge potential for export and also in domestic market.

Business plan

Production capacity – 200000 cans

Particulars	Amount
Raw material	`603610
Fixed cost	`3479650
Working capital	`2190330
Depreciation cost	`223437.5

Loan

Particulars	Amount	Margin %	Interest %
Fixed capital	3479650	25	12
Working capital	2190330	25	13.25

Economic analysis

Payback period	3.1 years
NPV	1878619
IRR	39%
BC ratio	1.33
Break even point	248470

Conclusion

The project is technically feasible and economically viable and hence can be commercially adopted.

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26. BANANA FIBRE BAGS

INTRODUCTION

Large quantity of bio-waste, generated every year, due to banana cultivation, needs to be disposed off. The wasted pseudostem can be used as a source for fine quality fibre which is highly valued in the market for its durability and strength.

UNIQUENESS

A large quantity of waste is generated after bunch harvest. Fine quality fibre can be extracted from the waste banana leaf-sheath and the fibre fetches premium price. An array of products can be made using banana fibre, namely, handicrafts, utility products, paper and fine quality textiles. The advantages of banana fibre is that the raw material is available in plenty and free of cost, and extraction is easy. There is no need of chemicals or retting as in other plant fibres. Currently, only limited products are prepared out of this versatile fibre. The process followed is also cumbersome.

The present proposal is for recycling the banana waste for the preparation of low cost carry bags (reusable), using banana fibre as a substitute for plastic carry bags to mitigate environmental pollution.

SCOPE FOR COMMERCIALIZATION

One kilogram of banana fibre can be obtained from 5-8 banana plants. From one hectare of banana orchard, an additional income of Rs. 75, 000 can be obtained through fibre extraction alone. Conversion into products fetches higher income. The proposed low cost carry bags can be made with the help of sewing machines instead of the traditional plating or roping techniques, which is laborious and time consuming. The waste material after fibre extraction can be converted into vermicompost, which will provide additional income.

The cost for starting a banana fibre unit is very low as it involves only a Banana fibre extractor machine and a sewing machine. The raw material is available free of cost. The Benefit Cost Ratio is high in this venture. This can be taken up as a Small Scale Industry Unit. Protection of environment and utilisation of biowaste are added advantages.

CONCLUSION

Ideal for JLGs and SHGs as the labour cost can be reduced. Production process is easy as it is mechanized. Its eco-friendly nature enhances market value. Benefit Cost Ratio is high.

CREDITS

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27. IMPROVED PROCESS AND PACKAGING FOR SEMISOLID CENTRAL TRAVANCORE JAGGERY (PATHIYAN) FOR HOUSEHOLD USE

INTRODUCTION

Jaggery, the natural sweetener, is one of the most important ingredients in many ayurvedic preparations and prasadams at temples. Besides these, it can be also used in household consumption, bakeries & restaurants, other eateries, beneficial microbial production, silage preparation etc. Jaggery production is an ecofriendly cottage industry and the capital cost is very limited. Jaggery from central Travancore region has been accorded with geographical indication registration as 'Central Travancore Jaggery'. It can be produced only in the Central Travancore region. The semisolid form of Central Travancore Jaggery (Pathiyan) is a specialty of upper Kuttanadu. It is organically prepared without the use of any chemicals except quick lime supernatant solution. A medicinal plant has been identified as clarificant at Agricultural Research Station, Thiruvalla, for the preparation of pathiyan, thereby improving its colour and flavour. As the product is organically prepared, it can be introduced in niche market, especially focused on organic product. Major demand is from households of central Travancore. The NRIs of the region always prefer to buy this jaggery rather than the jaggery from elsewhere and are available in market. Currently, the product is available only in bulk quantity (25-27 kg in tins) and hence, it cannot be consumed by individual households. In order to make the product available to households, a new packing technology and improved production technology were standardised at the station.

UNIQUENESS


Pathiyan Jaggery

- A natural sweetener
- Very sweet with good taste
- Appealing colour
- Do not have the salty taste unlike that of jaggery from alkaline soils.
- Prepared without the use of any chemicals (except the occasional use of quick lime supernatant solution)
- A medicinal plant identified is used for clarification of juice instead of chemicals.

SCOPE FOR COMMERCIALIZATION

Since the product is organically processed and GI patented, it will get a good customer demand throughout the year. Most of the jaggery available in the market is salty in taste, but Pathiyan is very tasty and do not have the salty taste. As the product has high demand, its production will increase each year, resulting in increase of sugarcane cultivation, which in turn will help the farmers in improving their standard of living. The product can mainly be marketed in the southern districts of Kerala i.e. from Kottayam to Trivandrum, and can be expanded to all the other districts of Kerala. It can be marketed through supermarkets and sales outlets. The product can expect a better demand throughout the year.

Sale price of the technology amounts to Rs. 50000/ and trainings can be imparted at ARS, Thiruvalla, at an amount of Rs. 5000/per person/week. The unit of sale is the technology document, which comprises of production process and packing technology. Business plan is for a working period is 100 days/annum from December to March, with a production of 65 tons of pathiyan jaggery per season. The technology can be taken up by the progressive sugarcane farmers and also by SHGs and NGOs of the region. The product is GI protected and can be produced under the consensus of the farmer society.

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28. QUICK COOKING RICE

Quick cooking rice: The rice is precooked under high pressure and temperature and then dehydrated. The product can be reconstituted with boiling water within 5 minutes. Quick cooking rice is pre cooked and gelatinized to some extent in water, steam or both. The cooked or partially cooked rice is dried in a fluidized bed drier in such a manner so as to retain the rice grains in porous and open structured conditions.

Instant Fried Rice: Basmati rice is precooked under high pressure and temperature and finally dehydrated in hot air. Similarly the vegetables and ingredients are cooked and dehydrated. The preparation of instant fried rice is done by reconstituting the dried basmati rice and dehydrated vegetables with masala mix in boiling water for five minutes.

Instant Rice noodles: The rice flour is made into soft dough with boiling water to gelatinize the rice flour. It is then extruded to obtain noodles. The noodles are then steamed, blanched and dried in hot air. The preparation of instant rice noodles is done by reconstituting the noodles in boiling water for five minutes.

Rice flakes – Cocoa powder coated: 100g of rice flakes is roasted at 100^0 C for 1-2 minutes to make the flakes curly and crispy. Prepare sugar solution in 50 ml of water with 100g of sugar along with 4g of cocoa powder, stir continuously to mix cocoa powder uniformly till the brix value reaches 60-65 or thread stage. Now the rice flakes are added to the solution to obtain uniformly coated rice flakes. Allow this product to cool to the ambient temperature for a period of 5-10 minutes.

CREDITS

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29. RED BANANA COOL- RED BANANA READY TO SERVE BEVERAGE FROM JUICE EXTRACTED THROUGH ENZYME CLARIFICATION

UNIQUENESS

Red Banana has high demand due to its health benefits, special aroma and flavour. Banana juice is pulpy and turbid if we are extracting the juice by simple pulping. The developed technology for juice extraction from Red Banana through enzyme clarification yielded clear juice with peculiar 'red banana flavour' with high retention of nutritional value. The juice extracted can be consumed as pure juice, blended with other juices or for the preparation of fruit drink. As Red Banana is geographically distributed in the southern districts of Kerala, Ready To Serve beverage, prepared from red banana juice, can be a unique product from the south, with vast export as well as domestic potential.

SCOPE FOR COMMERCIALIZATION

With people turning more health conscious, the non- carbonated beverage segment has become one of the fastest growing and most exciting businesses. The pure fruit juices are the preferred drink among the fruit drinks. This segment is growing around 10 per cent annually and expected to grow to Rs. 177 bn by 2014-15. Among the different fruit juice sectors, banana juice is gaining popularity as pure and blended one. Among different bananas, Red Banana is of great demand in foreign countries, due to its characteristic flavour - the so called 'raspberry – banana flavour' and health benefits. It is low in calorie, good source of potassium and rich in vitamins. Red Banana juice can be promoted as health drink with cooling effect and nutritional benefits. The aroma and flavour is completely retained in the juice. RTS prepared from Red Banana juice has the potential to compete with synthetic soft drinks industry. Through value addition of Red Banana as juice and RTS, we can reduce the postharvest losses and contribute to the national economy assuring more returns to farmers.

(1) **Unit of sale**: Technology document and training

(2) **Financial benefit by the technology**: Feasible business with acceptable benefit cost ratio, more profitable if exported, and the value addition ultimately reduces postharvest losses.

(3) **Brief business plan**: Red Banana fruit juice can be marketed as pure juice or blended with other juices like orange, mango etc., which are more popular in foreign countries. The juice can also be used for making fruit drinks, like Ready to Serve beverages, squash etc.

Business plan for RTS from Red Banana juice

- Nature of the unit : Micro enterprise
- Fixed cost : Rs. 33. 65 lakhs
- Cost of technology : Rs. 15, 000
- Initial investment : Rs. 33. 8 lakhs
- Own contribution : Rs. 8. 45 lakhs
- Term loan : Rs. 25. 35 lakhs
- Average annual working capital : Rs. 257 lakhs
- Average annual revenue : Rs. 295 lakhs
- Average annual profit : Rs. 38 lakhs

(4) **Potential takers:** Beverage manufacturers, SSI Units, Individual entrepreneurs. The technology can be used by fruit processing units or even small scale fruit beverage manufactures and can promote as health drink with huge market potential.

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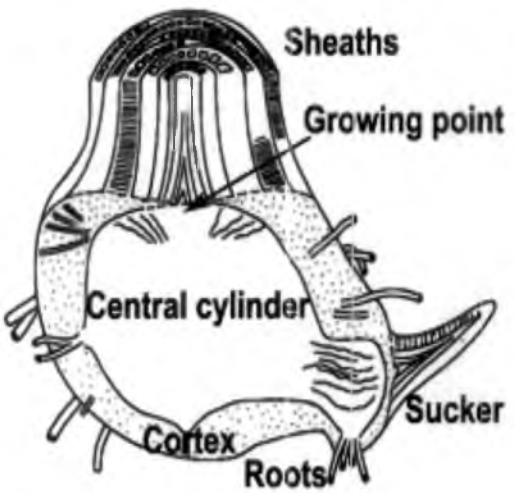
30. MARKETABLE VALUE ADDED PRODUCTS FROM ORGANIC BANANA

UNIQUENESS

Even though fruits and vegetables are converted into different commercially available value added products, the products from organically produced crops are seldom available. The technology proposed specifically aims at production and commercialization of novel value added products, particularly from economically unimportant and unused/underused parts of organically grown banana (banana rhizome and banana pseudo stem pickle, banana pseudo stem syrup etc.)



SCOPE FOR COMMERCIALIZATION

The processing unit of ARS, Anakkayam has obtained approval from the food product certification authorities (FPO License No. 21312088000011) to produce and market the products from vegetables and fruits. The unit has already produced more than 50 different value added products and started marketing. The station is utilizing maximum quantities of its farm produce, especially banana, for value addition and value added banana products like pseudo stem pickle, rhizome pickle, pseudo stem syrup etc. are now available commercially from the research station for sale.

The station has now arrived at a state of confidence to commercialize the processing unit under Revolving Fund (RF mode). The station can now produce more than 100 diversified value added products from locally available/indigenous vegetables/fruits under participatory/profit sharing mode. Technologies for production of more than 10 marketable products from banana are now available with the ARS, Anakkayam. The major prospects of this station are the following:

- The station is receiving many queries for bulk supply of value added products from Gulf countries and America and there exists ample scope for diversification and research on value addition to maximise income/returns from every unit of farm produce, especially banana. For instance, this research station has proved that more than Rs. 4000/- can be generated as assured income from a single banana plant cultivated in the station's farm through 100% product diversification. This is a particularly attractive proposition in a state facing severe agricultural crisis and unemployment issues. This has special relevance as a viable solution for rehabilitation of the victims of Gulf Nationalisation
- The station has sufficient trained manpower to scale up the technology on total value addition of banana to any level.
- The station can provide value added products, service of technical hands and can impart quality trainings in total value addition of banana through sponsored training programmes.

CREDITS

Dr. P. Rajendran,
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31. CASHEW APPLE PRODUCTS

UNIQUENESS

The production of cashew apple in India is estimated to be 60-70 lakh tones per annum. Cashew apple is highly nutritious and comparable with other tropical fruits. KAU has standardized the value addition technologies in cashew apple for the first time in India and it is exclusively KAU technology and rather value addition in the commonly wasted pseudo-fruit of Kerala. Since fresh cashew apples are not eaten as other fruits, the apples are available in plenty at cheaper rates. The products are natural and relishing. The commercially potential technology is not exploited fully and can be made available to the women groups like SHGs or *Kudumbasree* units as well as private entrepreneurs so that the net income from cashew plantation can be increased thus making cashew cultivation more economic and attractive to farmers. The technology for the removal of tannin has been standardised and long term storage techniques are also available at CRS, Madakkathara. There are eight cashew apple products, the technologies of which have been standardised at CRS, Madakkathara, viz, syrup, jam, candy, pickle, RTS drink, carbonated drink, vinegar, and chocolate. Osmotic dehydrated cashew apple is a novel value added product developed from the cashew apple having medicinal property with no side effect of sugar. It is possible to make the seasonal fruit available to the consumers throughout the year.

SCOPE FOR COMMERCIALIZATION

One of the prime areas that need immediate attention is to utilize the indigenous fruits and market the processed value added products. One such important fruit which need immediate attention is cashew apple. Cashew apple juice, being the highly nutritious food product that it merits closer attention, because of its health benefits and economic potential for farmers, entrepreneurs and consumers. Further more, the fruit has medicinal properties. Hence the value added products from cashew apple is a thrust area of research for food technologist, industrialist. There is also a vast untapped export market.

Value addition is the surest way to enhance income from cashew. Cashew farmers miss the opportunity for enhanced income generation, since they sell raw nuts to traders, and waste the nutritious cashew apple completely. The seasonal production of cashew apple is one of the greatest handicaps for the processing industry, along with its unpleasant biting sensation when used in raw form and limits the use of cashew apple as a commercial table fruit. The seasonal production, one of the limitations in cashew apple processing, is overcome through long term storage techniques. Technologies are available to remove the unpleasant biting sensation of raw cashew apple before processing, which limits its use as table fruit.

Osmotic dehydration technique enables the storage of cashew apple for a longer period, and preserves flavour, nutritional characteristics and prevents microbial spoilage. It can provide cashew apple suitable as a ready to eat snack item, which has good quality attributes. With the rapidly changing life style of people, there is likely to be an increased demand for value added and ready to eat food product in future. This dehydrated product could also be effectively utilized in bakery and confectionary industry, similar to commonly available dehydrated fruits in the market.

Business plan

Cashew (*Anacardium occidentale* L.) which is considered to be the 'Gold Mine' of the waste land, is one of the important commercial cash crops of India. The nutritious cashew apple which are available in plenty, during its season, are being wasted. The annual loss to horticultural wealth of the country by means of wastage of cashew apple alone is estimated as 240 million rupees. Though, various techniques are available to process the fruit into various products, they are yet to become popular among the common man. A production of about 2 t/ha of good cashew apple can be ensured, taking 30% of the total production as fit for processing. Thus additional income from a hectare of cashew orchard from the processing of cashew apple into various value added products would be Rs. 25, 000/-. The commercially feasible and economically viable technology could be disseminated to commercial processing units, farmers' co-operatives or Self Help Groups of women/unemployed youth, thus helping them to make a substantial contribution for the export of horticultural products to fetch foreign exchange.

Technologies available for sale

1. Clarification of cashew apple juice
2. Detanning cashew apple
3. Preparation of cashew apple products:- syrup, jam, pickle, RTS drink carbonated drink, candy, vinegar, chocolate, osmodehydrated cashew apple

Potential takers: Commercial processing units/ farmers' co-operatives / Self Help Groups of women / unemployed youth, in cashew growing tracts.

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32. IMPLEMENTATION OF GMP AND HACCP PROTOCOL FOR SAFE PEPPER PRODUCTS

INTRODUCTION

The Hazards analysis critical control point (HACCP) is the systematic preventive approach for food safety. It works on the following seven principles viz. a) hazard analysis, b) identification of critical control point (CCPs), c) establishing critical limits, d) monitoring process, e) corrective actions, f) establishing procedures for ensuring the HACCP system is working as intended, g) documentation. It addresses physical, chemical and biological hazards as means of prevention rather than finished product inspection.

India is the largest producer of pepper in the world. The Kerala state holds a major share in pepper production in India. Over last few years, the pepper industry of the state faced difficulties in fetching good price in its exports due to the non-standardized techniques adapted for its processing. It has become mandatory to exercise a strict check and control over the quality of pepper to be exported. A study was conducted to investigate the production and processing of pepper. The pepper samples were collected at different stages in the pepper process line. The microbiological analysis using serial dilution test revealed microbial contamination in the samples due to improper handling and storage practices. The study proposed a new HACCP protocol for pepper industries which is practical by modifying the existing process lines. The proposed HACCP protocol ensures the reduction in human intervention in the pepper production line and the automation of the processes, which maintain the quality of final products.

OBJECTIVES

- Improved food safety.
- Increased business awareness of food risks.
- Greater product and raw ingredient traceability.
- Increased buyer and customer confidence.
- Consistency in inspection criteria.
- Promotion of internal review of processes.
- Supports business leadership, through the direction of resources, to the safe critical elements of the process.
- Reduction in complaints.

UNIQUENESS

The pepper farming area and its productivity is declining in India. The export of pepper to international markets had also been wrecked because of the increasing consciousness on pathogens and their metabolites. The Kerala Agricultural University (KAU) made a detailed study on the existing pepper production and processing and found microbial contamination in the samples. To mitigate the issue, KAU has standardized the HACCP protocol for the pepper industry with a prior analysis of the quality of the raw pepper, by visiting the industry. This protocol mainly focuses on small scale farmers, who can exploit the international market. This protocol also helps the existing exporters.

SCOPE FOR COMMERCIALIZATION

The pepper processing units are in the need of a standardized protocol for the quality product. So there is a scope for commercializing the technology among the different levels of the pepper industry. The ability for a quality produce would increase the international trade and ultimately it benefits the national economy. As an additional benefit, 220/kg of pepper can be achieved by implementing the HACCP protocol. The potential takers are the small scale farmers and the small or medium level pepper industry

Conclusion

The project is technically feasible and economically viable and hence can be commercially adopted.

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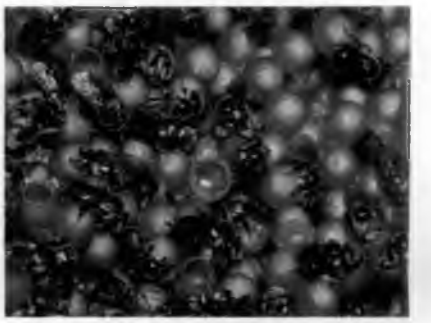
33. DAMMER BEE HIVE

INTRODUCTION

Dammer bee, *Trigona iridipenis*, also called stingless bee, whose honey is valued for its medicinal properties. Its unique medicinal property is due to the collection of nectar from even the tiniest flowers by the workers among the dammer bees. One of the bottlenecks in honey production with dammer bee is the traditional way of bee keeping in bamboo pieces, coconut shells, mud pots, etc., where the hive will be opened up completely in the hive inspection and during honey extraction. The operation results in wide gaps in the hive, which taxes more energy and labour to seal.



UNIQUENESS

It is a dammer bee hive optimized with the internal space, very suitable to the bees. Due to the sliding top and the transparent overlay, the internal space will be completely in dark. At the same time, the hive can be inspected for honey store and bee activity without really opening it fully. The hive, developed by Apiculture Unit, College of Horticulture, so efficient than the traditional ones, where a lot of bee labour will be involved to seal the hive cracks and crevices. The extra bee labour saved is utilized for the efficient collection of honey and pollination. It is not only convenient for handling the bees, but also for providing an opportunity to have more splits per hive per year.

SCOPE FOR COMMERCIALIZATION

New dammer bee hives can be fabricated in any shape and ornamentation, keeping the internal space constant, so that the bee hives can be an ideal gift, which can be passed down to generations, if maintained properly.

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34. HERBICIDE APPLICATOR

INTRODUCTION

Rice (*Oryza sativa*) is one of the most important cereal crops, which plays a key role for food security. It is the major food crop of the world by virtue of the extent and variety of uses and its adaptability to broad range of climatic and cultural conditions. About half of the world's population is dependent on rice as their principal energy supplying food grain.

Weeds are always a headache to the farming community and are the main cause of yield reduction in rice worldwide. Losses caused by weeds vary from field to field, depending on the predominant weed flora and control methods practised by farmers. Rice weed control has mainly been carried out through a combination of water management and hand-weeding, but the latter is becoming less common, due to the shortage and high cost of labour. Herbicide use has been emerged as an alternate option for relatively cheap and efficient weed control in rice. Both direct sowing and transplanting are followed in rice culture, however, the latter is preferred due to high yield, though it is tedious, time consuming and more labour oriented. Mechanical transplanting alleviate these problems and assures optimum and uniform plant stand. Weeds can still be a major problem and pre-emergence herbicide application is often resorted to for its control. Manual spraying of herbicide incurs additional cost, and the application, as an over the top treatment within 0 to 4 days after transplanting, may sometimes cause phytotoxicity. A herbicide applicator which apply the herbicide only at the interspaces of planted hills at the time of transplanting itself, as an attachment to paddy transplanter, was developed to overcome these problems.

BENEFITS

- Simple attachment to transplanter.
- Easy to operate.
- Highly efficient.
- Cost effective and useful to farmers.
- Sprays herbicide at a height ranging from 10-20 cm.

UNIQUENESS

The herbicide applicator as an attachment to mechanical paddy transplanter is a very useful machine as both herbicide application and the transplanting of paddy can be done simultaneously. The usage of developed applicator, attached with transplanter, helps in eliminating the use of labour for separate herbicide application and saves the time and money. The machine has greater acceptance and demand by the farmers.

SCOPE FOR COMMERCIALIZATION

About half of the world population is dependent on rice as their principle energy supplying food grain. Manual transplanting and herbicide application is very effective, but it is labour intensive and costly. There is often acute shortage of labourers also at the time of transplanting and the timely farm operations are very essential for getting better yield. The introduction of suitable machine for transplanting, herbicide application, harvesting, and threshing operations are very essential in Kerala, to make rice cultivation profitable. Herbicides can effectively control the weeds enhance yield and productivity of crops. Pre-emergence herbicides are usually applied to the soil at a time more or less distant from the date of transplanting the crop. In usual practice, the pre-emergence herbicides as an over the top treatment are applied 3-4 days after transplanting. However, it can be applied at the time of transplanting, if directed to the interspaces. In Kerala, labour wages are very high and paddy area and production are gradually decreasing for the last ten years, due to high cost of cultivation. In order to reduce the farming cost and drudgery in herbicide application, an attachment to paddy transplanter was designed and developed. The theoretical field capacity, actual field capacity, and field efficiency were 0. 263 ha/h, 0. 161 ha/h and 61. 21 % respectively. The cost of operation of the transplanter attached with herbicide applicator is Rs. 900/day. The usage of developed applicator attached with transplanter helps in eliminating the use of labour for separate herbicide application and saves the time and money.

Potential takers: The paddy farmers of Kerala

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35. COLEUS HARVESTER

INTRODUCTION

Coleus (*Solenostermom rotundifolius*) is also known as Chinese potato. It grows well in the warm humid climatic conditions and well drained medium fertile soil with a pH range of 5. 5 to 7. 0. It is a herbaceous annual crop spreading with succulent stem. The tips of the adventitious roots modify into small round tubers. Unlike other tuber crops, it is propagated through vegetative methods, using pieces of tender shoots. The optimum temperature for growth and development ranges from 25-30^0 C. Planting is done during June – July, every year. It is planted at 60 x 45 cm spacing (37, 030 plants/ha). Harvesting is usually done 5 – 6 months, after planting without any damage to the tubers. Traditionally, coleus is harvested manually using spade, which is a tedious and laborious work. Hence, to alleviate the drudgery of farmers while harvesting the coleus, a self propelled coleus harvester was developed and tested.

BENEFITS

- Reduces labour cost.
- Harvesting made easy.
- Saving of time.

UNIQUENESS

Coleus (*Solenostermom rotundifolius*) is widely used as a vegetable. It is grown in almost all homestead gardens of Kerala, Tamil Nadu, Karnataka, Madhya Pradesh and tribal areas of the country with warm humid climate. The low cost of cultivation, high production potential, consumer preference, good market demand and assured high returns make the crop highly popular among the vegetable growers. It is mainly cultivated in Thrissur, Palakkad and Malapppuram districts in Kerala. It is raised purely as a rain-fed crop in the state from June to December every year. The crop is manually harvested using spade and fork, which is laborious and time consuming. It requires proper handling, devoid of cuts, breakages, bruises and injuries. To overcome these problems and to decrease the cost of harvesting operation, a coleus harvester was developed and field tested. The results show that the machine is effective and have greater acceptance and demand by the farmers.

SCOPE FOR COMMERCIALIZATION

Manual harvesting of coleus is a very tedious and time consuming operation, which requires proper handling, devoid of cuts, breakages, bruises and injuries. The effective field capacity of the harvester was found to be 0. 019 ha h-1. The harvesting unit with angular tyne has maximum harvesting efficiency of 80 %. The safe operating speed of harvester was found to be 0. 3 m s-1. The cost of operation of the harvester for an hour is Rs. 77. 25. The coleus harvester developed is technically and economically viable for harvesting coleus.

Potential takers: Farmers of Palakkad and Thrissur districts of Kerala

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36. POWER OPERATED CONTINUOUS COCONUT HUSKING MACHINE

INTRODUCTION

Coconut is a tropical crop and grows mainly in coastal areas of the tropics and subtropics. It requires a hot moist climate with an average annual temperature between 20-28°C, an average annual rainfall ranging from 1000 to 1500 mm and deep alluvial or loamy soils. The first and major post harvest operation of coconut is its husking. The widely used simple husking tool for coconut is Keramithra, a coconut husking tool developed by Kerala Agricultural University. But it cannot be used for mass scale husking of coconut, as it involves lot of drudgery. Copra and coir mills need the nuts and fibre in huge quantity for running the mills as profitable units. Thus for large scale husking of coconuts, a power operated continuous coconut husking machine is developed. It is tested for different size and shape coconuts (dry and green) and its results are promising.

BENEFITS

- Relieves the operator from drudgery.
- Faster husking.
- Reduces labour cost.
- Minimizing the human energy expenditure.
- Availability of good quality husk suited to the coir industry.

UNIQUENESS

Coconut is one of the major crops in Kerala. The most important and primary post harvest operation regarding coconut is its husking. No tool other than the crowbar and KAU Coconut husking tool (*Keramithra*) is available for large scale husking of coconut. But these tools cannot be used for mass scale husking of coconut, as it involves lot of drudgery. Copra and coir mills need the nuts and fibre in huge quantity for running the mills as profitable units. The prototype developed at KAU gave satisfactory results during testing and is found as an effective machine for large scale husking of coconut. The husk obtained from this machine need not require much processing and can be used directly for making coir. Even women labourers can operate the machine.

SCOPE FOR COMMERCIALIZATION

The power operated continuous coconut husking machine was mainly indented for large scale husking of coconut. The husks obtained from the machine are in a softened form and so it is an additional advantage for the unit. The capacity of the machine was 450-500 nuts/h. The power required was 0. 7units/h. The operating cost of the power operated coconut husking machine is Rs. 95. 374 per hour and the cost of husking per nut is Rs. 0. 267. This technology will indeed prove to be a milestone in the coconut husking industry and ensure the economic security of the farmer and also will establish a significant place in the international market.

Potential takers: Coconut and Coir industries.

CREDITS

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37. BANANA SUCKER UPROOTING EQUIPMENT AS AN ATTACHMENT TO TRACTOR

INTRODUCTION

Bananas and plantains are one of the most important commercial food crops among these and are found especially in the tropics. About 70 per cent of the farmers are using suckers as planting material, while the 30 per cent of the farmers are using tissue culture seedlings. Sword suckers with well-developed rhizome, conical or spherical in shape, actively growing and weighing approximately 450 to 700 g. are commonly used as propagation material. Farmers usually allow only two or three suckers around a mother plant to grow to maintain the quality of the suckers. After harvesting the banana, the sword suckers should be dug out and separated from mother plant for fresh planting. This is done by using a sharp hatchet or spade, taking care that the sword suckers are not in any way damaged. Only two months interval is obtained between harvest and fresh planting. Uprooting the mother plant and suckers, clearing the land etc. are highly labour intensive operations in banana cultivation. The present practice of uprooting takes a lot of time and energy. It is expected that the proposed machine shall uproot the entire soil rhizome composite, so that it facilitates not only easy de-suckering, but also land clearing to a certain extend, and thereby reducing the labour requirement and saves the money of the farmers.

BENEFITS

- Economical for large banana farms.
- Reduction in labour cost by about 50-60 percent.
- Reduced energy and time consumption.

UNIQUENESS

Banana (Musa spp.) is a delicate and highly perishable fruit of tropics. It is one of the important commercial fruits which occupy the first place among the fresh fruits and vegetables in the world trade. It is propagated mainly through suckers. The suckers should be dug out and separated from the mother plant for fresh plantings. This is usually done by means of a hatchet and spade, taking care that healthy suckers do not get damaged. No ratooning is practiced in "Nendran" variety of banana. Hence, every year, fresh planting is necessary. Only two months' gap is obtained between harvest and fresh planting. Uprooting the mother plant and suckers, clearing the land etc., are

highly labour intensive in banana cultivation. The present practice of uprooting the suckers and land clearing take a lot of time and energy. By taking into consideration, the non availability of labours, high wage rates and timeliness in operation, a banana sucker uprooting machine was developed as an attachment to a tractor. The machine is found to be very much effective and is accepted by banana farmers.

SCOPE FOR COMMERCIALIZATION

Banana sucker uprooting machine with separate hydraulic system was technically and economically feasible for the uprooting operation of the banana suckers. The machine uproots a banana clump within 3 to 4 minutes. Hence, the machine can uproot 100 to 120 clumps per day in eight hours. The field capacity of the machine is 0. 19 ha h-1. The cost of operation per hour is Rs. 450.

Potential takers: **Farmers' groups in Thrissur, Palakkad, Wayanad, Malapuram and Ernakulam districts of Kerala.**

CREDITS

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38. COLEUS PEELER

INTRODUCTION

Coleus (*Solenostermom rotundifolius*) is also known as Chinese potato. It is widely used as a vegetable. It is grown in homestead gardens of Tamil Nadu, Kerala, Karnataka, Madhya Pradesh and tribal areas all over the country. Low cost of cultivation, high production potential, consumer preference, good market demand and assured high returns make the crop highly popular among vegetables growers in Kerala. It is mainly cultivated in Thrissur, Palakkad and Malapppuram districts. It is raised purely as a rain-fed crop in the state from June to December ever year. The peeling of the tubers is very difficult and a time consuming process. Hence a coleus peeler is developed as an attachment to the table top wet grinder for culinary purpose and is of high demand.

BENEFITS

- Simple attachment.
- Easy to use.
- Avoid drudgery of manual peeling.

UNIQUENESS

The tool is very much effective for peeling coleus on small scale/ household purpose. It is a simple technology which works as an attachment of a table top wet grinder.

SCOPE FOR COMMERCIALIZATION

As it is simple homestead appliance, it is very much acceptable by the housewives. It is a technically and economically viable home appliance. The table top wet grinder with this attachment is an attractive option for shops/super markets that are involved in minimal processing of vegetables.

Potential takers: The vegetable and super market owners

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39. COPRA SEPARATOR

INTRODUCTION

Coconut is one of the major crops of Kerala. The major product which increases the economic share of our country is coconut oil. The coconut oil is produced from copra. In the conventional practice, copra is seperated from coconut shell by using knife. In many places, this method is still being continued for want of a better alternative. Hence a copra separator unit is suitably designed and developed.

BENEFITS

- Simple hand operated device.
- Useful for coconut farmers and copra making units.
- Can separate 12 copras from the shells in one minute.

UNIQUENESS

The tool is very effective for separating copra from coconut shell. It is a simple, portable and light weight hand operated tool, which can be fixed on a table or slab for operation.

SCOPE FOR COMMERCIALIZATION

As it is a small, simple and light weight tool, it is very much acceptable by the farmers and was technically and economically found suitable for separating semidried copra from coconut shell. The tool will be an aid to the workers/farmers working in the area of copra processing and will enhance worker skill and reduce drudgery.

Potential takers: The farmers and copra processors in Kozhikode, Malappuram, Thrissur, Kannur and Thiruvananthapuram districts of Kerala.

CREDITS

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40. GOAT FAECAL PELLET PULVERIZING MACHINE

INTRODUCTION

The goat faecal matter is a good farm yard manure. The dried goat faecal pellets cannot use directly, as it will not disintegrate easily with soil. Also it needs to be pulverized, especially for making pot mixture and for easy application, as farm yard manure. Hence, a faecal pellet pulverizer was developed and tested. The results show that the machine is effective and has greater acceptance and demand among the farmers.

BENEFITS

- Safe and easy to use.
- Simple machine.
- Pulverized feacal powder can be used for making the potting mixture.

UNIQUENESS

It can be used for pulverizing goat as well as rabbit faecal pellets. It will be a useful machine for the goat farmers and the horticultural nurseries of the State. Also it provides an opportunity for the goat farmers to get more income by way of selling pulverized feacal powder.

SCOPE FOR COMMERCIALIZATION

As it is a simple machine and is much acceptable by the goat farmers. It is technically and economically suitable machine for making pulverized feacal powder. The capacity of the machine is about 45 kg./h.

Potential takers: The farmers of Palakkad, Wayanad, Malappuram, Kozhikode, Kasargode and Pathanamthitta districts of Kerala

CREDITS

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41. INTENSIVE INTEGRATED VERTICAL FARM UNIT

INTRODUCTION

Livestock provides the major share of protein requirement of our people with non-vegetarian lifestyle. Space requirement is going to be the main constraint in livestock production in the near future and state like Kerala, is already facing it. Fodder production is the major constraint in livestock rearing as the land availability is meager and cost is high. The fodder grass needs good sunlight for growth and water logging retards its growth. These factors affect the choice of land for grass cultivation. Considering all these factors, KAU has developed an innovative design for Intensive Integrated Vertical Farming system known as GIGGINS FARM VILLA (Growables in Irigated Growbags, Goats Integrated for Nutritional Security with Fowl, Azoll and Rabbit Management Vertically and Intensively in Limited Land Available), which can accommodate Goat, Rabbit, Poultry, Azolla and Fodder or Vegetables in less than one cent of land area. The utility of vertical space for fodder cultivation helps fodder to get enough sunlight, and cultivating in pots reduce water logging. The biggest advantage in this cultivation is that, it prevents overheating of the shed and provides a cool atmosphere for animals, which helps to reduce heat stress. This innovative design aims at the use of space vertically with high-tech integrated farming system, so that maximum revenue can generate from a unit space.

UNIQUENESS

This is an innovative Intensified Integrated Vertical Farming System, where two galleries supporting each other forms the roof for the two-storey animal house, in which ground floor is for poultry and first floor is for goat. Rabbit is accommodated in hanging cages and Azolla is grown in tanks over rabbit cage. These sheds are provided with automatic drinker facility and no-wastage feeders. Galleries can accommodate grow bags with micro irrigation for cultivating fodder for animals, or as kitchen garden for a small family, or for cultivating high value vegetables or flowers or fruits etc. Separate provisions are there for collecting manure and urine of goats and

rabbits, which can be used as manure for the items in gallery, which helps in organic farming. Animal components are planned in such a way that returns are there at different time intervals like daily returns, monthly returns, half yearly returns etc.

SCOPE FOR COMMERCIALIZATION

GIGGINS FARM VILLA already got nation-wide attention through various media. In the Kerala Budget 2014, it is proposed to promote this model and offered subsidy for potential takers. As it is announced in Budget 2014, one unit in each Panchayat itself will have a market volume of at least 1, 000 units in this financial year itself. Potential takers already expressed their interest in this project. Since high-tech farming is getting more support from Government and having good acceptance, we can expect a good response from even individual purchasers.

Financial benefit or cost saving that will accrue by the technology

This is an innovative Intensified Integrated Vertical Farming System where floor area is 384 sq. ft, which gives an effective area of 944 sq. ft. The structure's life is generally 10-15 years. The financial advantage of our structure is that,

Cost of regular shed construction (944 sq. ft)@Rs. 1, 000/sq. ft	9, 50, 000/-
Cost of GIGGINS FARM VILLA	3, 50, 000/-
Savings	6, 00, 000/-

Potential Takers

The potential takers are Government of Kerala, Local Self Governments, Department of Animal Husbandry, Kerala Livestock Development Board, proposed Kerala Goat Development Board, Kudumbarsee units, SHGs, NGOs etc.

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42. A BIO REACTOR FOR CONVERSION OF LIQUID WASTE TO ENERGY USING 'HIGH RATE BIOMETHENATION TECHNOLOGY'

INTRODUCTION

Many agro processing industries such as rice mills, coconut oil mills and rubber latex units let out large quantities of organic effluents, which are often not properly treated resulting in air and water pollution. At the same time, thermal energy from fire wood is used in many of these industries to process heat. Anaerobic treatment of these organic effluents is an eco-friendly method to convert them into energy as biogas. Even though this process has the twin advantages of energy production along with pollution reduction, the conventional biogas technology has handicaps like slow operation, instability and the requirement of large digester volumes. The biomethanation of these low strength- high volume liquid wastes is possible only with high-rate anaerobic bioreactors, which have the capacity to treat them at tremendously short retention time compared to conventional biogas systems. The immobilization of bacterial cells inside the bioreactor is the technology used in these bioreactors. This is being achieved through engineering techniques like creation of hydraulic conditions suitable for formation and retention of granular sludge (UASB reactor) as well as the fixed film concept used in upflow anaerobic filters (UAF). In order to further reduce the process difficulties in start-up and operation, an Upflow Anaerobic Hybrid Bioreactor (UAHBR) in which two cell immobilization techniques viz. UAF and UASB are hybridized, was developed.

Based on the earlier research conducted (author1) on a similar bioreactor for energy conversion of sago factory effluent, laboratory scale studies were conducted which revealed the compatibility of agricultural byproducts like coconut shells and rubber seed shells as matrix for cell immobilization in high rate bioreactors. UAHBRs were designed and fabricated with these materials as media for cell immobilization and the performance was evaluated for Rice Mill Effluent (RME) in comparison with a similar reactor with polyurethene media at various Hydraulic Retention Times (HRT). The upper half of the reactors were filled with media for cell immobilisation where as the lower half was intended for sludge bed. The effluent pH values were in the range 7. 0 – 8. 6, even though the influent (raw RME) had a low pH (3. 8 – 3. 9). The laboratory evaluation of the UAHRs were conducted by operating them at HRTs 10, 5, 4, 3, 2, 1 and 0. 8 day.

Subsequent to the success observed in laboratory scale studies, a pilot scale bioreactor with pre-processed coconut shells was fabricated and installed in a coconut oil mill for energy conversion of waste coconut water. The process parameters were studied with the pilot scale unit, which led to the construction and successful operation of a full scale system.

UNIQUENESS

The developed system has the following advantages:

- Eco-friendly technology- Hygienic and odourless.
- Possibility of producing eco-friendly energy (Biogas) for thermal application.

- Biogas from larger systems can be used to produce electricity.
- Affordable effluent treatment.
- Compact and easy to operate- Less space requirement.
- Minimum maintenance and zero energy cost.
- Cell immobilization technique used.
- Hydraulic retention time (HRT) reduced to 1/6 to 1/15 th of Conventional biogas plants (5-2 days).
- Hybrid design in which coconut shells are used as media.
- Any organic effluents can be converted to energy.

- The discharge from the plant can be used for washing and irrigation purposes.

SCOPE FOR COMMERCIALIZATION

- A unique technology which is not available in the market.
- Locally sourced materials can be used for construction.
- Hand holding by a reputed institution (KAU).
- Better hygiene and compactness ensures increased consumer preference.
- Custom designed models can be installed as per client demand.
- Can be installed at a very competitive price.
- Scope for pre fabrication, which will further decrease the cost of construction and increase profit margin.

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43. POWER OPERATED NUTMEG SHELLER

INTRODUCTION

Nutmeg is an important stimulant, carminative, astringent, aphrodisiac and hallucinogen spice widely used in food and pharmaceutical industry. Nutmeg is removed from the shell after drying. Shelling of the nutmeg has been one of the most troublesome bottlenecks to profitable commercial exploitation of nutmeg industry. Traditionally, nutmeg is shelled by hand cracking in which the worker shells the nuts manually and individually with a hammer. This slow and laborious task is harmful to the worker, since it is a dedicational task carried out in bending posture for long period. More over it injures the operator's finger. Manual cracking generally results in kernel spoilage. Usually women are employed for this laborious task and the work is carried out in sitting posture.

Think Spice, Think Nutmeg

UNIQUENESS

It has been recognized that centrifugal impact can effectively be used for dehusking plant materials such as leaves, straw and seeds. Our invention embodies this general method of shelling in a workable practical machine. It ensures individual shelling of nutmeg in succession. Additionally, the kernel is separated immediately and permanently from its shell. This machine can also be used for efficient selling of nuts used for ayurvedic medicines.

The continuous power operated nutmeg sheller comprises of feeding chute, shelling unit, cleaning unit and a power transmission unit. Storage chamber and feeding chute are main stationary components of the nutmeg sheller for feeding the nutmegs into shelling unit.

Dried nutmegs are fed to the storage chamber, from where it moves to the feeding chute and falls in to the shelling chamber in a controlled rate. When the rotor blades hit the nutmeg, partial breakage occurs and these nuts are directed to hit the inclined hitting plane, where complete breakage of the shell occurs. The nuts along with the broken shells are allowed to fall on the inclined sieve. The shelled nuts roll down the sieve and the shells get collected in the sieve. On continuous shake, these shells get deposited in the waste basin kept below the sieve.

Patent No. (Temporary) : 236/CHE/2013

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44. ORGANIC FERTIGATOR

INTRODUCTION

The cultivable land area in Kerala is decreasing day by day, because of industrialisation and urbanisation. More than ninety per cent of the households in Kerala are only of 10 - 20 cents now. So as to maximise crop production and to ensure food security for the growing population, hi - tech farming techniques could be introduced in these micro holdings. Hi-tech farming practices are reported to enhance crop production by almost 10 folds. Drip fertigation is an inevitable component of hi-tech precision farming and it efficiently utilizes the major inputs - water and nutrients through their conjunctive application. At present, water soluble chemical fertilizers alone are applied through fertigation. If there is a mechanism to apply organic manures also along with irrigation water, it can save application time, labour and above all, help production of organic crop produce. Also, it could supplement the routine fertigation practice for INM strategies. However, the filtration of organic manure solutions is quite difficult, because of the presence of finer debris. Organic solutions which contain fine debris can clog the irrigation channels and impair organic fertigation.

In this context, a mechanism was designed to filter out the debris from organic manure solutions, so as to prepare them for a smooth run in fertigation. The technology standardised by the Agronomic Research Centre, Kerala Agricultural University, has achieved the task of filtering out debris free, nutrient rich organic filtrates. This technology is expected to be well appreciated by farmers, who are interested in organic farming. The vegetables available in markets today are loaded with dangerous chemicals and therefore this technology could be a boon for people who prefer household farming to be done in organic ways.

UNIQUENESS

Organic manures are usually applied manually to crop basins. Labour cost incurred for this is much high. Unlike fertilizers, huge quantities are applied in case of organic manures. In this context, organic fertigation assumes much relevance as it can reduce labour and time for the same. The organic fertigator developed here consists of three major parts - a settling tank for keeping manure solutions, a filtering unit and a tank meant for collecting the filtrate. Organic manures on thorough mixing with water will be fed to the system. The supernatant will then be passed through a three tier filtering device, so as to get a clear organic solution. This can pass through the minute holes of micro irrigation systems, without any problem of clogging.

SCOPE FOR COMMERCIALIZATION

Organic manures can be supplied through micro irrigation systems and thereby saving time and labour for application. Hence the proposed unit is of much scope.

Potential takers – The micro level entrepreneurs and irrigation companies

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45. PORTABLE POT STAND FOR URBAN HOUSEHOLDS

INTRODUCTION

United Nations has declared 2014 as the "International Year of Family Farming ". Nurturing a home garden, growing beautiful ornamental plants and nutritious vegetable crops, is a cherished dream of every household. Even city dwellers running on tight schedules prefer to tender vegetables and ornamentals, so as to get relieved from daily stress. Many of them are interested in growing maximum possible plants in the limited courtyard or even on the terraces. Recently, people understand the hazards of pesticide residues in vegetables available in the markets and majority are cultivating vegetables in home gardens.

It is estimated that about six lakh houses, each having around 500 Sq. Ft open terrace area, are available in our State. This means that, there is a potential to grow 6000 acres of vegetables in these terraces. Considering this enormous potential, our State Government has implemented many schemes to encourage home gardens and family farming. Grow bags filled with potting mixture and planted with vegetable seedlings were issued to families and there was great demand from the public for these kits. However, the major constraint experienced by the family, is finding spare time for daily plant care activities, especially irrigation. The plants will wilt and dry, if the inhabitants happen to be away from home even for a few days. Another constraint experienced, especially by the employed people, while shifting their residences on transfer, is that they will have to leave behind their plants which they tendered and nurtured with care for many years. The portable pot stand is a solution to these practical problems.

UNIQUENESS

Here, the irrigation and fertilizer application can be automated and you can leave your crop un-attended even for many days, while you are away from home. While shifting residence, you can easily dismantle and transport the components of the pot stand and reassemble it in your new house, just like your furniture. In addition, it also solves the limitation of space to a great extent. The stand has a stepped (multi tier) concept to reduce the space requirement.

The water tank and fertilizer tank are placed on the top most step of the stand and are connected to the drip irrigation system through a valve. When the valve is opened, water will flow down through the drip system under gravitational force. A portion of water could be bypassed through the fertilizer tank using suitable valves, to enable fertigation as and when required.

The entire system can be automated at an extra cost, when the family is frequently away from home. Opening and closing of the valve for irrigation, can be controlled by a timer. Every day, it opens at a fixed time, and automatically closes after a pre-defined duration of time. Water supply

to the main water tank can be automated using a float valve. If required, pumping of water to the main water tank itself can be automated using the V-guard water level controlling equipment, available in the market. The stand can be fixed on roller-wheels to move it easily, from place to place. Both vegetable and ornamental plants can be raised in the pots or grow bags placed on the stand.

SCOPE FOR COMMERCIALIZATION

- Many people especially of urban areas are interested in vegetable growing/gardening.
- But there are severe limitations - shortage of space, labour, time and occasional shifting of residence.
- Hence the concept of a self irrigating, portable stand for pot culture will be much appreciated by the urban group.
- This will encourage more people especially city dwellers to vegetable growing/ gardening.
- Irrigation can be done easily through drip system without power requirement, through gravitational flow by adjusting a valve.
- The tank provided on top needs to be filled only once in a week. There is scope for automation also.

Financial Benefit For User

- Expenses on purchase of vegetables for an average family will be around Rs. 500/ month, Rs. 6000/year. This can be considerably saved.
- Calculating a life period of 15 years for the unit, the cost on purchase of the same can be roughly calculated as Rs. 913/- per year.
- An additional of Rs. 1000 will be needed for purchase of seeds/manures/fertilizers.
- Hence the net saving will be roughly Rs. 4000/year.

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46. SEED EXTRACTOR FOR ASH GOURD AND CUCUMBER

UNIQUENESS

Ash gourd seed extractor made by Ambala machinery private limited 44, Haryana, in which the whole vegetable is crushed and the valuable mesocarp cannot be used for value addition. The drawbacks were the need for continuous water pumping, excess power consumption, and chances for accidents to the operators. The newly developed extractor can be used for extraction of both ash gourd and cucumber seeds, without causing any damage to the edible portion. The cost of the equipment is very less with very low power consumption. It does not need water supply for extraction, and a low power dc motor is used (17W), in it. Moreover, it does not contain injury causing parts.

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47. WHITE PEPPER DECORTICATOR

UNIQUENESS

Foreign exchange earning from export of spices is increasing every year. The white pepper demand is on the increase, because of its greater and worldwide appreciation in food preparations. In the International market, white pepper is traded at 10-40% higher price compared to black pepper. Conventional methods are time consuming, laborious and also affect the quality of the produce. As white pepper is having export potential, the quality of the product is required to be upgraded for high earning. Therefore, it is essential to have a simple, low cost black pepper decorticator for the production of white pepper. The capacity of the machine is 14 kg/hr with a decortications efficiency of 92%.

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48. PROTOCOL FOR POST-HARVEST MANAGEMENT OF ANTHURIUM AND DENDROBIUM

UNIQUENESS

A complete package including the stage of harvest, pre-cooling, pulsing, plugging, covering, packing, storage and holding for the flowers from harvesting till they reach the consumer has been standardized. It is unique in the sense that no such complete package is already available for both Anthurium and Dendrobium.

CREDITS

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49. FOLIAGE PLANTS FOR CONTROLLING ATMOSPHERIC POLLUTION

INTRODUCTION

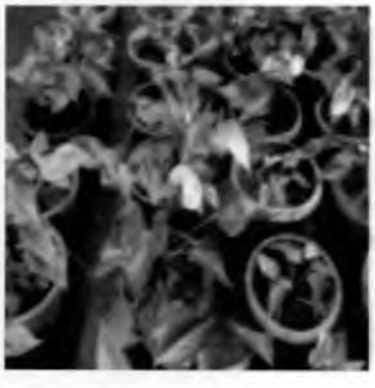
The foliage ornamental industry has created a major breakthrough in floriculture business in the recent years. The potted plants especially foliage is growing very fast on account of non-availability of ground space in cities. Plants from at least 100 genera and 1000 species are grown as foliage plants. These plants have widely diverse forms, patterns of foliar variegation, and colours. Based on their appearance, foliage plants can be categorized into three groups: green leaf, variegated-leaf and flowering plants.

UNIQUENESS

The scope of reducing pollution inside residential and commercial buildings, by keeping selected indoor foliage plants, suitable for different shade levels and temperatures, is manifested, which is unique.

POLLUTION TOLERANT PLANTS

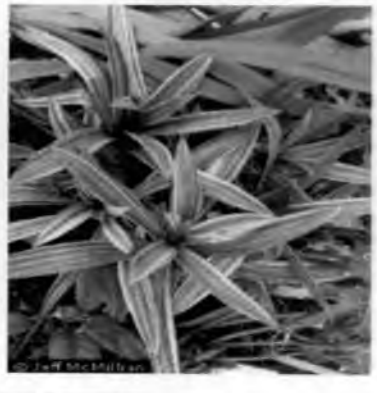
Anthurium andreanum



Calathea zebrina

POLLUTION INDEX PLANTS

Syngonium podophyllum



Tradescantia spathacea sitara

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50. TECHNOLOGY FOR PRODUCTION OF LONG-LASTING AND ECO-FRIENDLY FLORAL CRAFTS

INTRODUCTION

Now floriculture has been identified as one of the possible areas for diversification in agri-business. Among the various segments of floriuculture, dry flowers and plants have become very popular, due to non perishability of the produce, leading to their longer life indoors. They are cheaper, eco-friendly, biodegradable and not depended on weather or season. Dried arrangements are more versatile and they suit modern times. Foliage, flowers, seeds, pods, berries etc., with low moisture content, and with fibrous tissues and attractive shape and pattern can be used.

UNIQUENESS

Dry flowers and plants are gaining popularity as everlasting and eco-friendly products for indoor decoration as well as for a variety of other aesthetic and commercial uses. In Kerala, being a humid tropical zone, diversity in plant species is very high. An explorative field survey was conducted in different districts of Kerala and identified plant species/ materials suitable for dry flower production.

For the technology, the technique of dehydration of different flowers and foliage has been standardized. Also skeltonizing leaves, bleaching and dyeing procedure for different plant species/ materials and development of floral crafts using dried flowers and plant parts are also carried out. From the benefit cost analysis, it has been observed that there is high margin of profit in the venture. It is unique in the sense that commercial technology now available is from low humid zone.

Eragrostis uniloides

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51. ECO-COMPATIBLE DESIGN FOR GROWING DENDROBIUM AND ANTHURIUM IN KERALA

UNIQUENESS

This technology involves boosting flower yield in commercial cultivation of Dendrobium and Anthurium by regulating the growing conditions. A double layer shading, the lower level being at a height of 2. 5m for the purpose of changing according to weather conditions. The top layer of roofing material which was permanently fitted to the main structure was shade net (25%). The bottom roofing was provided with shade net (25%) during summer months and with UV stabilized polythene sheets (70gsm) during rainy season. This system is found compatible in Kerala conditions and is being recommended to the orchid growers of Kerala.

CREDITS

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REPORT ON AGRO CLINIC

Dr. Sosamma Jacob[1] and Dr. Haseena Bhaskar[2]

An Agro clinic was conducted in the South Indian Agricultural Fair-2014 at the College of Horticulture from 27-02-14 to 06-03-2014. The Agro clinic was organized along with the Agro clinic module of Rural Agricultural Work Experience Programme (RAWEP) of the final year BSc. (Ag) students of the College of Horticulture. The RAWEP-Agro clinic module leaders, viz., Head of Departments of Agricultural Entomology and Plant Pathology were in full charge and they co-ordinated all activities of the Agro clinic, which included establishing and equipping Agro clinic stall and overall supervision of the functioning of Agro clinic during the SIAF. Resource persons from various Departments namely Agricultural Entomology (Dr. Haseena Bhaskar), Plant Pathology (Dr. Sheela Paul and Dr. Sainamol Kurian)), Agronomy(Dr. P.S.John), Soil Science & Agricultural Chemistry (Sri. Visweswaran), Olericulture (Dr. Prasanna, K.P.), Pomology and Floriculture (Dr. Parameswaran), Plantation Crops & Spices, Microbiology (Dr. D. Girija) and Agricultural Engineering (Dr. P.K. Visalakshy) were deputed for conducting the clinic. The full batch of final year B.Sc (Ag) students along with the support of resource persons conducted the Agro clinic in a very successful manner on all days of the SIAF.

Prior to the commencement of the Agro clinic in SIAF, an orientation programme was organized for the final year B.Sc (Ag) students on 27.02.14 under the leadership of Dr. Sosamma Jacob, Professor & Head, Department of Agricultural Entomology, in order to equip and empower the students for the diagnosis and making recommendations of plant health and the field problems of farmers, who visit the Agro clinic. Other resource persons from the Departments of Agricultural Entomology and Plant pathology also participated in the orientation programme. Dr. Haseena Bhaskar, Associate Professor(Agrl. Entomology), course teacher for Agro clinic co-ordinated the daily activities of the conduct of the clinic. The students were divided into nine groups, each group representing one or two major crops of Kerala and were assigned with the responsibility of diagnosing and suggesting remedies for farmers' problems on the crop concerned, during the conduct of the clinic. They arranged and displayed various exhibits, live specimens, symptoms and demonstrations in the stall of the Agro clinic. Preparation of exhibits, collection of samples and arrangement of the Agro clinic stall were all done by the students

The Agro clinic has functioned between 10.00 am to 5.00 pm on all days of the SIAF. The clinic was attended by the students in four shifts under the guidance of resource persons from different Departments.

A variety of exhibits for the benefit of farmers were displayed in the Agro clinic stall. Few of them are listed below.

1. Field diagnostic kit.
2. Fresh specimens of damage symptoms due to pest attack, disease incidence, nutritional deficiency, physiological disorder etc. in major crops of Kerala.
3. Potted plants of vegetable crops infested with sucking pests.
4. Natural enemies of crop pests (Predators and parasites).
5. Freshly prepared Botanical pesticides.
6. Microbial biocontrol agents against pests and diseases.
7. Different types of insect traps for pest management (sticky traps, bait traps, pheromone traps, rodent traps, storage pest traps etc.).
8. Plants having insecticidal and fungicidal properties.
9. Display charts showing the dosages of different plant protection chemicals and fertilizer recommen dations for major crops of Kerala.

During the clinic, demonstrations were also carried out on the following techniques for the farmers.

1. Preparation of botanical insecticides such as neem oil emulsion, neem garlic extract, tobacco decoction and neem seed kernel extract.
2. Preparation of Bordeaux mixture and Bordeaux paste.
3. Setting of bait traps and pheromone traps for pest management.
4. Ooze test for the detection of bacterial disease incidence in crops.

A register was maintained in the clinic to record the details such as name and addresses of farmers and consultancy services provided like problems identified and recommendations suggested.

A total of 456 farmers registered for consultancy in the Agro clinic stall during the SIAF. Field problems on different crops such as rice, vegetables - cucurbits, cowpea, chilli, brinjal, bhindi, amaranthus etc., fruit crops like banana and mango, spices namely pepper, ginger and nutmeg, plantation crops like coconut, coffee, rubber etc. were diagnosed and rendered necessary recommendations /solutions for the plant health problems of farmers in the Agro clinic. Thus the Agro clinic conducted by the RAWEP students under the guidance of the teachers. Module teachers of the College of Horticulture could render a good service to the farming community and thereby could get an award for the Agro clinic stall of SIAF-2014.

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VIEW OF AGRO CLINIC STALL IN SIAF - 2014

അവാർഡ് ജേതാക്കൾക്ക് ആദരം

1. നെൽക്കതിർ അവാർഡ് നേടിയ വടക്കേ കോഞ്ചിറ പുഞ്ചപാടശേഖര സമിതി – പ്രസിഡന്റ് ശ്രീ. ഇ. പി. ജേക്കബ്, സെക്രട്ടറി ശ്രീ. എ. ആർ. രവീന്ദ്രൻ
2. ഹരിതമിത്ര ശ്രീ. പി. ആർ. ജോസഫ്
3. കർഷകോത്തമ ശ്രീ. കെ. ബിനു
4. ഉദ്യാനശ്രേഷ്ഠ ശ്രീ. കെ. വിനു
5. പൈതൃക നെൽവിത്തു സംരക്ഷകൻ ശ്രീ. ചെറുവയൽ രാമൻ

Honouring Award Winning Farmers And Scientists

നെൽക്കതിർ അവാർഡ് 2012

വടക്കേ കോഞ്ചിറ പുഞ്ചക്കോൾ പാടശേഖര കമ്മിറ്റി, തൃശ്ശൂർ

ഏറ്റവും നല്ല കർഷകക്കൂട്ടായ്മയ്ക്കുള്ള അവാർഡ് നേടി നെൽക്കൃഷിയിൽ വിജയം കൊയ്യുകയാണ് തൃശ്ശൂർ വടക്കേ കോഞ്ചിറ പുഞ്ചക്കോൾ പാടശേഖര കമ്മിറ്റി. നെൽക്കതിർ അവാർഡ് നേടിയ ഈ കർഷകക്കൂട്ടായ്മ വരും കർഷകതലമുറക്ക് ഒരു മാതൃക തന്നെയാണ്. തൃശൂരിൽ 320 ഏക്കറുകളി ലായി പരന്നുകിടക്കുന്ന നെൽപ്പാടങ്ങൾ ഇവർക്കു സ്വന്തം. നെൽക്കൃഷിയാണ് മുഖ്യ വിളയെങ്കിലും കുറഞ്ഞ തോതിൽ പച്ചക്കറി കൃഷിയും ഇവർ ചെയ്തു വരുന്നു.

കോൾ നിലങ്ങളായ ഇവരുടെ കൃഷിയിടങ്ങളിൽ വെള്ളം കയറ്റിയിട്ടുണ്ട്. കൃഷിയിടങ്ങളിൽ പ്രധാന മായും വിതക്കുന്നത് പ്രതിരോധ ശേഷിയുള്ള ഇനമാണ്.

ഒക്ടോബർ 1 നു വിത്തുപാകി ജനുവരി- ഫെബ്രുവരി ആകുമ്പോഴേക്കും വിളവെടുക്കുന്ന ഇവരുടെ രീതി തന്നെയാണ് ഇവരെ ഇത്രയും നല്ല വിളവ് കൊയ്യാൻ സഹായിച്ചത്. ഇതിന്റെ ഫലമായി ഒരു ഏക്ക റിൽ നിന്ന് 30-35 ക്വിന്റലിനുപകരം 45 ക്വിന്റൽ വരെ ഇവർ കൊയ്തു.

കൃഷി വകുപ്പിന്റെ അകമഴിഞ്ഞ സഹായ സന്നദ്ധത ഇവർക്ക് വലിയൊരു താങ്ങാണ്. ജൈവകൃഷിരീതി യാണ് ഒരളവുവരെ ഇവരുടെ വിജയത്തിനാസ്പദം. സ്യൂഡോമോണാസ്, ട്രൈക്കോഡെർമ തുടങ്ങിയ കീട നിയന്ത്രണോപാധികൾ ഇവർ ചെയ്തു വരുന്നു. പഴമക്കാരിൽ നിന്നുള്ള അറിവുകളും, നിർദേശങ്ങളും മുറതെറ്റാതെ ചെയ്തു വരുന്ന ഈ കർഷകർക്ക് അവരുടെ ആത്മാർത്ഥതയ്ക്ക് കിട്ടിയ പ്രതിഫലം തന്നെയാണ് ഈ അവാർഡ്.

ഹരിത മിത്ര 2012

ശ്രീ. പി. ആർ. ജോസഫ് പള്ളൻ

പള്ളൻവീട്, അഷ്ടമിച്ചിറ, മാള, തൃശൂർ. Ph:9744622871

1994 വരെ ഇന്ത്യയുടെ സുരക്ഷാഭടനായി സേവനമനുഷ്ഠിച്ച ശേഷം ഒരു മുഴുവൻസമയ പച്ചക്കറി കർഷകനായി കൃഷിയിലേക്കിറങ്ങിത്തിരിച്ച ഒരു വ്യക്തിത്വമാണ് ശ്രീ. പി. ആർ. ജോസഫ്. മാളയിലെ നിറപ്പാടത്തെ 7 ഏക്കറും ഒരു കാർഷിക പരീക്ഷണശാലയാക്കി മാറ്റിയ ഇദ്ദേഹം, വിവിധ പച്ചക്കറി കൾക്കൊപ്പം വാഴയും, കപ്പയും പാട്ടത്തിനെടുത്ത 40 ഏക്കർ ഭൂമിയിൽ വർഷം മുഴുവൻ കൃഷി ചെയ്തു വരുന്നു.

സ്വയം രൂപകല്പനചെയ്ത, രണ്ടുവർഷം നീളുന്ന സമയവും, സ്ഥലവും ഉൾപ്പെടുത്തിയുള്ള വിളപരി ക്രമം ഇദ്ദേഹത്തിന്റെ മാത്രം പ്രത്യേകതയാണ്.

ജൈവകൃഷി അവലംബിക്കുന്നതോടൊപ്പം ആധുനിക രീതിയായ പ്രിസിഷൻ ഫാമിംഗ്, പ്ലാസ്റ്റിക് പുത യിടൽ എന്നിവയും തന്റെ കൃഷിയിടത്തിൽ പരീക്ഷിച്ചുകൊണ്ടിരിക്കുന്നു.

സാമൂഹ്യ പ്രതിബദ്ധതയുള്ള ഈ കർഷകൻ കൃഷിവകുപ്പുമായി സഹകരിച്ച് തൃശ്ശൂർ മാനസികാ രോഗ്യാശുപത്രിയിൽ പച്ചക്കറി, വാഴ എന്നിവ കൃഷി ചെയ്തു വരുന്നു. പച്ചക്കറി തോട്ടം കാണുവാനും, പഠിക്കുവാനും വരുന്ന കർഷകർക്കും പ്രത്യേകം സമയം കണ്ടെത്തുന്നു.

പച്ചക്കറി കർഷകനുള്ള സംസ്ഥാന അവാർഡായ ഹരിതമിത്ര അവാർഡ് കൂടാതെ മറ്റ് ഒട്ടനവധി അവാർഡുകളും അദ്ദേഹത്തെ തേടിയെത്തിട്ടുണ്ട്.

സഹധർമ്മിണി അന്നം ജോസഫും മക്കളായ അജയും, വിജയും അടങ്ങുന്നതാണ് ഈ കർഷകന്റെ കൊച്ചു കുടുംബം.

കർഷോകത്തമ അവാർഡ്

ശ്രീ. ബിനു കെ.

മൺട്രോ തുരുത്ത്, കൊല്ലം

കാർഷികവൃത്തി ജീവനോപാധിയും സമൂഹമധ്യത്തിൽ മാന്യതനേടാൻ സഹായകവുമായ സദ്സംരംഭ വുമാണെന്ന് സ്വന്തം ജീവിതം കൊണ്ടു തെളിയിച്ച കേരളത്തിലെ കർഷക പ്രതിഭയാണ് ബിനു കരു ണാകരൻ. ഈ കർഷകന്റെ സാക്ഷ്യപെടുത്തൽ ഈ മേഖലയിലേക്ക് കടന്നുവരുവാൻ നമ്മുടെ യുവ തലമുറയ്ക്ക് പ്രേരണയും പ്രചോദനവുമാകുന്നു. ഈ കർഷകന്റെ അദ്ധ്വാനത്തിന് ഏറ്റവും നല്ല ഉദാഹരണമാണ് 2012 ലെ കർഷകോത്തമ അവാർഡ്.

സമ്മിശ്രകൃഷിരീതിയാണ് ഈ കർഷകൻ തന്റെ കൃഷിയിടത്തിൽ നടത്തിവരുന്നത്. 10 ഏക്കറിൽ തെങ്ങ് പ്രധാനമായും കൃഷി ചെയ്യുന്നു. ഇതിന്റെ ഇടത്തോടുകളിൽ കരിമീൻ, ചെമ്മീൻ മുതലായ മത്സ്യങ്ങളെയും വളർത്തുന്നു. ഒരേക്കർ തെങ്ങിൻതോപ്പിലെ ഇടത്തോടുകളിൽ വലകെട്ടിത്തി രിച്ച് 150 താറാവുകളെയും, കരിമീനുകളെയും സമ്മിശ്രമായി വളർത്തുന്നു. ആദ്യത്തെ 20 ദിവസം മുട്ടയും കക്കയും ചേർത്ത് കേക്ക് രൂപത്തിലുള്ള തീറ്റയുണ്ടാക്കി ചെറുകണികകളായി നൽകു മ്പോൾ കുഞ്ഞുങ്ങളുടെ അതിജീവനനിരക്കും വളർച്ചയും വർദ്ധിക്കുന്നുവെന്ന് ബിനു തന്റെ കൃഷിയിൽ നിന്ന് കണ്ടെത്തി. തെങ്ങിന് ഇടവിളയായി ഇഞ്ചി, മഞ്ഞൾ, കൈതച്ചക്ക, ചേമ്പ്, ചേന എന്നിവയും കൃഷി ചെയ്യുന്നുണ്ട്. ചെറുതേനീച്ചയുടേയും, വൻതേനീച്ചയുടെയും ഇരുപതോളം കോള നികളുണ്ട്. ചെമ്മീൻ പാടങ്ങളിൽ ചെമ്മീൻ ഇല്ലാത്ത സമയത്ത് പൊക്കാളി ഇനത്തിൽപ്പെട്ട നെല്ല് കൃഷി ചെയ്യുന്നു. തെങ്ങിന് ഇടവിളയായി കരനെല്ലും ഉണ്ട്. തോട്ടത്തിലെ ജൈവാവശിഷ്ടങ്ങൾ തന്നെ ഉപ യോഗിച്ച് മണ്ണിര കമ്പോസ്റ്റ് ഉണ്ടാക്കി കൃഷിക്ക് എടുക്കുന്നു. ഇതു വഴി ജൈവവളത്തിന്റെ ഉപയോഗം ലാഭിക്കാൻ കഴിയുന്നു.

കൃഷി മാത്രമല്ല, മറിച്ച് കാർഷികവൃത്തിയുടെ പുരോഗമനത്തിനുവേണ്ടിയും പരിശ്രമിക്കുന്ന ഒരു വ്യക്തി യാണ് ബിനു കരുണാകരൻ. നാളികേര വികസന ബോർഡിന്റെ നേതൃത്വത്തിലുള്ള സി. പി. എസ് രൂപീകരിച്ച് ഇടവിള പ്രോത്സാഹനം, വിപണനം, എന്നിവ കൂടാതെ കൊമ്പൻ ചെല്ലിക്കെതിരായ മിത്ര കുമിളായ മെറ്റാറൈസിയത്തിന്റെ ഉത്പാദനവും അതിന്റെ വിപണനവും നടത്തി വരുന്നു. ഈ സൊസൈറ്റിയുടെ പ്രസിഡന്റായും കല്ലട നാളികേര ഉത്പാദനഫെഡറേഷന്റെ ഡയറക്ടർ ബോർഡ് മെമ്പറായും ഈ കർഷകൻ പ്രവർത്തിച്ചു വരുന്നു. ആത്മയുടെ ആഭിമുഖ്യത്തിൽ ഗ്രീൻ ഐലന്റ് എന്ന പേരിൽ ഒരു എഫ്. ഐ. ജി. രൂപികരിച്ച് വിവിധ കൃഷികൾ കൂട്ടായി ചെയ്തു വരുന്നു. ഇതിന്റെ സെക്രട്ടറിയും കൂടിയാണ് ഈ കർഷകൻ. തന്റെ കൃഷിയിടത്തിൽ നിന്ന് പ്രതിമാസം 35000 രൂപയോളം ഈ കർഷകൻ സമ്പാദിക്കുന്നു. സംസ്ഥാന സർക്കാറിന്റെ 2012-2013ലെ കർഷകോത്തമ അവാർഡ്, 2011-12 വർഷത്തെ മൺട്രോ തുരുത്ത് പഞ്ചായത്തിലെ മികച്ച കർഷകനുള്ള പുരസ്ക്കാരങ്ങൾ മുത ലായവ ഈ കർഷകന്റെ അദ്ധ്വാനത്തിന്റെ അംഗീകാരങ്ങളാണ്.

കൃഷി വെറുമൊരു ജീവനോപാധിയല്ല മറിച്ച് ഒരു പ്രേരണയും, പ്രചോദനവുമാണെന്ന് ബിനു തന്റെ കാർഷകവൃത്തിയിലൂടെ യുവതലമുറയ്ക്ക് കാണിച്ചുകൊടുക്കുകയാണ്.

ഉദ്യാനശ്രേഷ്ഠ അവാർഡ്

ശ്രീ. വിനു കെ.

ശ്രീരാഗം, പുത്തൻത്തോപ്പ് പി. ഒ., തിരുവനന്തപുരം

കാർഷികവൃത്തിയെ മുൻനിർത്തി സമൂഹമധ്യത്തിൽ ഉയരങ്ങൾ കീഴടക്കുന്ന കേരളത്തിലെ കർഷക പ്രതിഭയാണ് ശ്രീ. വിനു. കെ. കൃഷി വെറുമൊരു ജീവനോപാധിയല്ല, മറിച്ച് ജീവിതദർശനമാക്കി മാറ്റിയിരിക്കുകയാണ് വിനു എന്ന സാധാരണ കർഷകൻ. ഇതിനു ഏറ്റവും വലിയ സാക്ഷ്യമാണ് 2012 ലെ ഉദ്യാനശ്രേഷ്ഠ ബഹുമതി ഇദ്ദേഹത്തിന് ലഭിച്ചത്. കേരളത്തിലെ ഏറ്റവും നല്ല ഉദ്യാനകർഷകന് സംസ്ഥാന ഗവൺമെന്റ് നൽകി വരുന്ന പുരസ്കാരമാണിത്.

പത്ത് ഏക്കറിൽ മഴവില്ല് തീർത്തിരിക്കുകയാണ് വിനു. പ്രധാനമായും ഓർക്കിഡുകളെയാണ് വിനു തന്റെ ഉദ്യാനത്തിൽ വളർത്തുന്നത്. അന്നീ ബ്ലാക്ക് എന്ന ഒരു തരം ഓർക്കിഡുകളെയാണ് ഈ കർഷകൻ പ്രധാനമായും കൃഷി ചെയ്യുന്നത്. ബാക്കി കൃഷി സ്ഥലത്ത് സ്പൈഡർ എന്ന ഓർക്കിഡും ഇദ്ദേഹം കൃഷി ചെയ്യുന്നു. കൃഷിസ്ഥലത്തിന് കൂടുതൽ മനോഹാരിത പകരാൻ ഹെലിക്കോണിയ, കോസ്റ്റസ്, തുടങ്ങിയ പൂച്ചെടികളുടെ വിവിധ ഇനങ്ങളും ഇദ്ദേഹം തന്റെ ഉദ്യാനത്തിൽ വളർത്തുന്നുണ്ട്.

നാല്പത്തെട്ട് വയസ്സുള്ള ഇദ്ദേഹം തന്റെ അച്ഛന്റെ പാത പിന്തുടർന്നുകൊണ്ടാണ് ഈ കൃഷിയിലേക്ക് മുന്നോട്ട് വന്നത്. അച്ഛൻ ചെയ്തിരുന്ന കൃഷിരീതിയിൽ നിന്ന് വ്യത്യസ്തമായ കൃഷിരീതിയാണ് ഇദ്ദേഹം അവലംബിക്കുന്നത്. ദിവസവും പന്ത്രണ്ട് മണിക്കൂർ ഇദ്ദേഹം തന്റെ കൃഷി സ്ഥലത്ത് ചെലവഴിക്കുന്നു. പൂക്കൾ പറിക്കുന്നതു മുതൽ പാക്കിംഗ് വരെ ഇദ്ദേഹം സൂക്ഷ്മമായി പരിശോധിക്കുന്നു. പുതിയതരം കൃഷിരീതികൾ കണ്ടുപിടിക്കുന്നതിനും, പുതിയവിത്തിനങ്ങൾക്കും വേണ്ടി ഇദ്ദേഹം മലേഷ്യ, തായ്ലന്റ് മുതലായ രാജ്യങ്ങൾ സന്ദർശിക്കുകയും കാര്യങ്ങൾ മനസ്സിലാക്കുകയും ചെയ്യുന്നു.

യുവ കർഷകർക്ക് ഒരു മാതൃകയാണ് വിനു എന്ന ഈ കർഷകൻ. കാർഷികവൃത്തി മോശമാണെന്ന് പറയുന്നവരുടെ ചോദ്യത്തിന് ഒരു ഉത്തരമാണ് അദ്ദേഹം. ഈ കർഷകൻ തന്റെ കൃഷി സ്ഥലത്തുനിന്ന് മാസം രണ്ട് ലക്ഷത്തോളം രൂപ സമ്പാദിക്കുന്നു. കൃഷിയെ തന്റേതായ രീതിയിൽ സമീപിക്കുകയാണ് ഈ കർഷകൻ.

ഗ്രീൻ ഇൻഡിവിജ്വൽ അവാർഡ്

ശ്രീ. കെ. രാമൻ

ചെറുവയൽ ഹൗസ്, കമനാ. പി. ഒ, മാനന്തവാടി, വയനാട്

അന്യം നിന്നു പോകുന്ന വയനാടൻ പൈതൃക നെല്ലിനങ്ങളുടെ സംരക്ഷകനെന്നാണ് ശ്രീ. ചെറുവയൽ രാമൻ അറിയപ്പെടുന്നത്. 2012 ൽ കേരള സംസ്ഥാന ജൈവ വൈവിധ്യ ബോർഡിന്റെ (Kerala State Biodiversity Board) ഗ്രീൻ ഇൻഡിവിജ്വൽ അവാർഡ് ഈ ആദിവാസി കർഷക പ്രമുഖനെ തേടിയെത്തി. പി. വി. തമ്പി മെമ്മോറിയൽ എൻഡോവ്മെന്റ് അവാർഡ്, കർഷക ജ്യോതി അവാർഡ്, വിശിഷ്ടസേവാ അവാർഡ് തുടങ്ങിയ അവാർഡുകളും അദ്ദേഹത്തിനു ലഭിച്ചിട്ടുണ്ട്. ശ്രീ. ചെറുവയൽ രാമന്റെ ജീവിതകഥയെ ആസ്പദമാക്കി സ്കൂൾ വിദ്യാർത്ഥികൾ നിർമ്മിച്ച 'രാമേട്ടന്റെ പാടം' എന്ന ഡോക്യുമെന്ററി സംസ്ഥാന തല അവാർഡ് കരസ്ഥമാക്കുകയുണ്ടായി.

വയനാട്ടിലെ പരമ്പരാഗത നെല്ലിനങ്ങളായ ജീരകശാല, ഗന്ധകശാല, പാൽത്തൊണ്ടി, മാരത്തൊണ്ടി, ചെന്തൊണ്ടി, ചോമാല, കയമ, ഉരുണിക്കയമ, അടുക്കൽ, കല്ലടിയാര്യൻ തുടങ്ങിയ മുപ്പത്തിമൂന്ന് ഇനം നെൽ വിത്തുകൾ രാമേട്ടന്റെ ജൈവകലവറയിൽ സംരക്ഷിക്കപ്പെടുന്നു. ഇവയിൽ പലവിത്തുകളും ഇന്നും രാമേട്ടന്റെ പാടത്തു മാത്രമാണ് നിലനിൽക്കുന്നത് എന്നതാണ് ഈ കർഷകനെ ഏറ്റവും ആദരണീയനാക്കുന്നത്. പത്താം വയസ്സിൽ തുടങ്ങിയ കൃഷിയോടുള്ള ആഭിമുഖ്യം അറുപത്തിയഞ്ചാം വയസ്സിലും രാമേട്ടൻ കാത്തുസൂക്ഷിക്കുന്നു.

പുറമെ നിന്നുള്ള സാമ്പത്തിക സഹായങ്ങൾ ഒന്നുമില്ലാതെയാണ് ഒരു നിയോഗം പോലെ ഈ വിത്തുകളത്രയും അദ്ദേഹം സൂക്ഷിച്ചു പോരുന്നത്. അതും ജൈവ രീതിയിലൂടെത്തന്നെ. കൃഷിയിലെ പാരമ്പര്യ വിജ്ഞാനവും വിത്ത് ശേഖരവും അമൂല്യനിധിയായി സംരക്ഷിച്ച്, വരുംതലമുറക്കായി കരുതിവെക്കുകയെന്ന ആദിവാസി സമൂഹത്തിന്റെ നിയോഗം ശ്രീ. ചെറുവയൽ രാമനിലൂടെ സാക്ഷാത്കരിക്കപ്പെടുകയാണ്.

SCIENTISTS HONOURED

Dr. P. Rajendran, Associate Director of Research, was honoured for outstanding performance in developing the Agricultural Research Station, Anakkayam and the Regional Agricultural Research Station, Ambalavayal.

Dr. R. Gopalakrishnan, the Former Director of Research, was also honoured complimented by KAU for his exemplary service in Rice Research during his tenure. Dr. T. R. Gopalakrishnan, Director of Research, KAU gave away the awards to these scientists, who have established a commendable landmark in the history of the Kerala Agricultural University.

Cultural Programmes

Report

Dr P Suresh Kumar[1] And Dr Sreevalsan J Menon[2]

Cultural programmes were held on all days from Feb 28th to March 6th in 2014, in the evenings. On Feb 28th, Sri. Gopinath Muthukad, the renowned magician of Kerala, conducted a magic show which was much appreciated by all. The inaugural function coincided with the magic show. Sri. Muthukad invited the Honourable Chief Minister of Kerala Sri. Oommen Chandy to perform a magic, much to the audience delight. Sri. Muthukad later continued the show. Around five thousand people attended the cultural evening on that day.

On 1st March, the cultural evening was inaugurated by Sri. M. P. Vincent, MLA and KAU Executive Committee Member and was presided over by the Director of Extension, KAU. The guest of honour was Mr. K. C. Ashokan, the Managing Director, Veena Graviers and printers, Nadathara, who was also the sponsor of the evening programme. The members of the Kerala Kalamandalam gave a wonderful programme of classical dances such as Mohiniyattam and Bharathanatyam in groups. Around 2000 people attended the evening's cultural programmes.

On 2nd March, the cultural evening was inaugurated by the Honorable Vice Chancellor, KAU. The guests of honour were the Honorable Vice Chancellor, UAS Bangalore, Dr.Narayana Gowda, Sri.R.Gopalakrishnan, the Secretary, Kerala Sahithya Academy and Sri.P.K.Prathapan, the Chairman and Managing Director, Parayil Group of Agencies, Muscat & Kerala. The cultural programmes were presented by Krishi Padashala, Pattambi. It consisted of Nadanpattu, a drama based on nature conservation and Tayambaka. Around 2500 people attended the programme.

On 3rd March, the inaugural programme was attended by many dignitaries including the Hon'ble Vice Chancellor and Fr. Paul Poovathinkal, the Principal, Chetana School of Music. Sri.Jayaraj Warrier, the popular cine artist, presented a musical programme highlighting melodious songs from the annals of 75 years of Malayalam cinema. The programme was a huge hit and drew around 5000 people to the show.

On 4th March, Padmasree Kalamandalam Kshemavathi, the exponent and guru of Mohiniyattam, graced the inaugural function along with Sri.K.P.Narayanan, Nupur Manures India (P) Ltd., who was one of the sponsors of the programme. The cultural evening was organized by the students of KAU. Students from the four campuses participated in the cultural evenings and a huge audience came out in support.

Cultural Programmes

On 5th March, Sri. K. K. Karnan, the Chairman and MD, the Nirapara group of companies and Dr. Kochumon, the Chairman and MD, Haritha Pharmaceuticals, were the guests along with the Hon'ble Vice Chancellor and the Director of Extension, KAU. The evening's musical show was organized by Symphony, the cultural club of KAU. Students, teachers, non teaching staff and labourers enthusiastically participated in the programme. Classical dances, Thiruvathirakali, mimicry by Kalabhavan Salim, and the one-act play by Nandakishore were the other programmes on that day.

The mela came to a close on the 6th of March and the evenings cultural programmes were organized by the students of KAU who put up a grand show of dance and music. While all the programmes were received well by the public, all credits must go to the students and staffs of KAU, who put up an amazing display of talent and camaraderie. All ice were broken between the different campuses and students mingled freely amongst each other forgetting their political discords and animosities. One of the big achievements of this mela was that it brought back we-feeling among the KAU fraternity. The student volunteers and participants in the cultural programmes work tirelessly towards the success of the festival. Buoyed by the success of this mela students have asked for a campus day to be held every year so that students from different campuses can get to know each other and work together keeping the spirit of friendship and camaraderie. These and many others are the unintended additional benefits from Agrifiesta 2014. All eyes onto Agrifiesta 2015.....

Acknowledgement

All members of the cultural committee actively participated in organizing each day's programme. Each day's programme was entrusted to one scientist who was supported by nonteaching staff and ten student volunteers. Responsibility was shared equally between all members. The committee places on record the excellent support of the Arts Club Secretaries of various colleges who played a pivotal role in organising the programmes. Special thanks are also due to Mr.M.N.Pavithran, Farm Manager, ATIC who took up the leadership in raising an amount of Rs. 3.00 Lakhs from more than twenty sponsors.

1. Professor and Head,
Radio Tracer Lab,
Kerala Agricultural University,
Vellanikkara, Thrissur

2. Associate Professor,
Agricultural Technology Information Centre
Kerala Agricultural University
Mannuthy.

Cultural Programmes

കാർഷിക സർവ്വകലാശാല: പ്രശ്നപരിഹാരത്തിന് നടപടിയെടുക്കും - മുഖ്യമന്ത്രി

മണ്ണുത്തി കാർഷിക സർവ്വകലാശാലയിൽ നടക്കുന്ന വിദ്യാർത്ഥി കാർഷികവിജ്ഞാനമേള മുഖ്യമന്ത്രി


കുളിരുള്ള കാഴ്ചകൾ: കൃഷിയുടെ

Selected
Clippings from Media

ദക്ഷിണേന്ത്യൻ കാർഷിക വിജ്ഞാന മേളയ്ക്കു തുടക്കം

ദക്ഷിണേന്ത്യൻ കാർഷിക വിജ്ഞാന മേളയ്ക്കു തുടക്കം

മണ്ണുത്തി • ദക്ഷിണേന്ത്യൻ കാർഷിക വിജ്ഞാന മേളയ്ക്കു കേരള കാർഷിക സർവകലാശാലയിൽ തുടക്കമായി. കാർഷികവൃത്തി ലാഭകരമാക്കുന്നതിനുള്ള ആധുനികസങ്കേതങ്ങളും പുതിയ സാങ്കേതിക വിദ്യകളുമെല്ലാം മേളയിലൂടെ ആകർഷണങ്ങളാണ്.

ആദ്യ ദിനത്തിൽ കാർഷിക വ്യവഹാരങ്ങളെക്കുറിച്ചു നടന്ന ശിൽപശാല ഡോ. ബി. മധുസൂദനക്കുറുപ്പ് ഉദ്ഘാടനം ചെയ്തു. കൃഷി വകുപ്പ് ഡയറക്ടർ ആർ. അജിത്കുമാർ അധ്യക്ഷത വഹിച്ചു. കാർഷിക സർവകലാശാല വൈസ് ചാൻസലർ ഡോ. പി. രാജേന്ദ്രൻ, ഡീൻ ഡോ. [illegible] വൽസലകുമാരി, എം.പി. [illegible] എന്നിവർ പ്രസംഗിച്ചു.

ഇനി ഒരാഴ്ച കാർഷികോത്സവം

മുഖ്യമന്ത്രി മാന്ത്രികവടിവീശി; ചട്ടിയിൽ മാ

മണ്ണുത്തി: ഒരു പോളിത്തീൻ ബാഗിൽ മാങ്ങാണ്ടിയും മണ്ണും വെള്ളവും ഇട്ട് ഒരു പെട്ടിക്കുള്ളിലാക്കി അടച്ചു. പിന്നെ മുഖ്യമന്ത്രിയുടെ ഊഴമായിരുന്നു.

ഉമ്മൻചാണ്ടി ജ്ഞാനപീഠ ജേതാവ് എസ്. ഗോപിനാഥ് മുതുകാടിന്റെ വടി കൊണ്ട് ഭാഗ്യചിഹ്നമായ പെട്ടിയിൽ തട്ടി. തൂറന്നു ഒരു മാവിൻ തൈ. ദക്ഷിണേന്ത്യൻ കാർഷികമേളയിലെ ഉദ്ഘാടന

ദക്ഷിണേന്ത്യൻ കാർഷിക വിജ്ഞാനമേള

(അഗ്രി ഫിയസ്റ്റ 2014)

കേരള കാർഷിക സർവ്വകലാശാല, കേന്ദ്ര കൃഷി സഹകരണ വകുപ്പ് സംയുക്തസംരംഭം

2014 ഫെബ്രുവരി 28 മുതൽ
മാർച്ച് 6 വരെ




ഉദ്ഘാടനം

ബഹു. കേരള മുഖ്യമന്ത്രി **ശ്രീ. ഉമ്മൻ ചാണ്ടി**

അദ്ധ്യക്ഷൻ

ശ്രീ. കെ. പി. മോഹനൻ

ബഹു. കൃഷി-മൃഗസംരക്ഷണ വകുപ്പ് മന്ത്രി

2014 ഫെബ്രുവരി 28 ന് വൈകുന്നേരം 7.30 മണി

വേദി : **കേരള കാർഷിക സർവ്വകലാശാല ആസ്ഥാനം**

വെള്ളാനിക്കര, തൃശ്ശൂർ

ബഹുമാനപ്പെട്ട തൃശ്ശൂർ മേയർ, എം. പി മാർ, എം. എൽ. എ. മാർ, ജനപ്രതിനിധികൾ, തുടങ്ങിയവർ പങ്കെടുക്കുന്നു.

ടെക്നോളജി മീറ്റ്/കാർഷിക പ്രദർശനം/സെമിനാറുകൾ
കാർഷിക മത്സരങ്ങൾ/അഗ്രോ ക്ലിനിക്ക്/ കലാസന്ധ്യകൾ

സഹപ്രായോജകർ

ആത്മ, സംസ്ഥാന കൃഷിവകുപ്പ്

നബാർഡ്

വെള്ളാനിക്കര

21.02.2014

ബഹുമാന്യ സുഹൃത്തെ,

കേരള കാർഷിക സർവ്വകലാശാലയും, കേന്ദ്ര, കൃഷി സഹകരണ വകുപ്പും സംയുക്തമായി 2014 ഫെബ്രുവരി 28 മുതൽ മാർച്ച് 6 വരെ തൃശ്ശൂർ, വെള്ളാനിക്കരയിൽ ദക്ഷിണേന്ത്യൻ കാർഷിക വിജ്ഞാനമേള (അഗ്രി ഫിയസ്റ്റ 2014) സംഘടിപ്പിക്കുകയാണ്.

നബാർഡിന്റെയും, ആത്മയുടെയും സഹകരണത്തോടെ സംഘടിപ്പിക്കുന്ന മേളയിൽ ദക്ഷിണേന്ത്യയിലെ കാർഷിക സർവ്വകലാശാലകൾ, ഗവേഷണ സ്ഥാപനങ്ങൾ, കൃഷിവിജ്ഞാന കേന്ദ്രങ്ങൾ, സർക്കാർ-അർദ്ധ സർക്കാർ വകുപ്പുകൾ, കാർഷിക കൂട്ടായ്മകൾ തുടങ്ങി കൃഷി-കൃഷിയനുബന്ധ മേഖലയിലുള്ള മുൻ നിര സ്ഥാപനങ്ങളെല്ലാം അണിനിരക്കും. ഇരുന്നൂറിൽപരം പ്രദർശനശാലകളിലായി കാർഷിക രംഗത്തെ ഗവേഷണ നേട്ടങ്ങളും, സാങ്കേതിക മുന്നേറ്റങ്ങളും പ്രദർശനത്തിനെത്തും. സമകാലിക കാർഷിക പ്രശ്നങ്ങൾ സംബന്ധിച്ച ചർച്ചകളും, ശില്പശാലകളും ഈ സംഗമത്തിന്റെ ഭാഗമാണ്.

ഫെബ്രുവരി 28 രാവിലെ 10 മണിക്കാരംഭിക്കുന്ന മേളയുടെ ഉദ്ഘാടനം അന്ന് വൈകിട്ട് 7.30ന് ബഹുമാനപ്പെട്ട കേരള മുഖ്യമന്ത്രി ശ്രീ. ഉമ്മൻചാണ്ടി നിർവ്വഹിക്കും. ബഹു. സംസ്ഥാന കൃഷി വകുപ്പ് മന്ത്രി ശ്രീ. കെ. പി. മോഹനൻ അദ്ധ്യക്ഷത വഹിക്കുന്ന ചടങ്ങിൽ ജനനേതാക്കളും, സാംസ്കാരിക നായകരും മറ്റു വിശിഷ്ടാതിഥികളും പങ്കെടുക്കും.

ദക്ഷിണേന്ത്യൻ കാർഷിക സർവ്വകലാശാലകളുടെ വൈസ് ചാൻസലർമാർ, ഇന്ത്യൻ കാർഷിക ഗവേഷണ കൗൺസിൽ സ്ഥാപനങ്ങളുടെ മേധാവികൾ, ജനപ്രതിനിധികൾ, കൃഷി വകുപ്പു മേധാവികൾ, നബാർഡ് ജനറൽ മാനേജർ, കർഷക പ്രമുഖർ തുടങ്ങിയവർ മേളയിൽ മുഖ്യാതിഥികളായിരിക്കും.

ഓരോ ദിവസവും നടക്കുന്ന സെമിനാറുകളിൽ വിഖ്യാതരായ കാർഷിക ശാസ്ത്രജ്ഞരും, ജനപ്രതിനിധികളും, കർഷകരും പങ്കെടുക്കും. കാർഷിക മൽസരങ്ങൾ മേളയുടെ ഭാഗമായിരിക്കും.

സാംസ്കാരിക നായകരും, കലാപ്രതിഭകളും പങ്കെടുക്കുന്ന കലാസന്ധ്യകൾ, വിനോദോപാധികൾ, രുചി പകരും ഭക്ഷണശാലകൾ എന്നിവ മേളയുടെ മറ്റാകർഷണങ്ങളാണ്.

തൃശ്ശൂരിന്റെ തിരുമുറ്റത്ത് അരങ്ങേറുന്ന ഈ കാർഷിക വിജ്ഞാനമേളയിലേക്ക് സസ്നേഹം ക്ഷണിക്കുന്നു.

ഡോ. പി. രാജേന്ദ്രൻ
വൈസ് ചാൻസലർ,
കേരള കാർഷിക സർവ്വകലാശാല,
രക്ഷാധികാരി,
സൗത്ത് ഇന്ത്യൻ അഗ്രി. എക്സ്പോ 2014

ശ്രീ. എം. പി. വിൻസന്റ്, എം.എൽ.എ
കെ.എ.യു ഭരണ സമിതി അംഗം
ചെയർമാൻ,
സൗത്ത് ഇന്ത്യൻ അഗ്രി. എക്സ്പോ 2014

ഡോ. പി. വി. ബാലചന്ദ്രൻ
വിജ്ഞാന വ്യാപന വിഭാഗം മേധാവി
ഓർഗനൈസിംഗ് സെക്രട്ടറി,
സൗത്ത് ഇന്ത്യൻ അഗ്രി. എക്സ്പോ 2014

ഡോ. എ. എം. രൺജിത്ത്
കമ്മ്യൂണിക്കേഷൻ സെന്റർ മേധാവി
ജനറൽ കൺവീനർ,
സൗത്ത് ഇന്ത്യൻ അഗ്രി. എക്സ്പോ 2014




കാര്യപരിപാടി

2014 ഫെബ്രുവരി 28 വെള്ളി

കാർഷിക പ്രദർശനം ആരംഭം : രാവിലെ 10.00 ന്

മഹനീയ സാന്നിദ്ധ്യം : **ഡോ. പി. രാജേന്ദ്രൻ**
ബഹു.വൈസ് ചാൻസലർ, കെ.എ.യു

കാർഷിക പ്രദർശനസമയം : രാവിലെ 10 മണി മുതൽ വൈകുന്നേരം 8 മണി വരെ

കാർഷിക സെമിനാർ : രാവിലെ 10 മണി മുതൽ 1 മണി വരെ

വിഷയം : **കാർഷിക മേഖലയിലെ യന്ത്രവത്ക്കരണം**

വേദി : സെമിനാർ ഹാൾ, കോളേജ് ഓഫ് ഹോർട്ടികൾച്ചർ, വെള്ളാനിക്കര

അദ്ധ്യക്ഷൻ : **ശ്രീ. ആർ. അജിത്കുമാർ**
ഡയറക്ടർ, സംസ്ഥാന കൃഷിവകുപ്പ്

ഉദ്ഘാടനം : **ഡോ. ബി. മധുസൂദന കുറുപ്പ്**
ബഹു.വൈസ് ചാൻസലർ,
കേരള യൂണിവേഴ്സിറ്റി ഓഫ് ഫിഷറീസ് & ഓഷ്യൻ സയൻസസ്, പനങ്ങാട്

മുഖ്യാതിഥികൾ : **അഡ്വ. തോമസ് ബാബു**
ചെയർമാൻ, കമ്മീഷൻ ഓഫ് കോസ്റ്റ്സ് & പ്രൈസസ്, തിരുവനന്തപുരം

ഡോ. കെ. ആർ. വിശ്വംഭരൻ
മുൻ വൈസ് ചാൻസലർ, കെ.എ.യു

മോഡറേറ്റർ : **ഡോ.എം.ശിവസ്വാമി**
ഡീൻ, കേളപ്പജി കോളേജ് ഓഫ് അഗ്രി. എഞ്ചിനിയറിങ്ങ്, തവനൂർ, കെ.എ.യു

വിഷയാവതരണം : **ഡോ. യു. ജയകുമാരൻ**
പ്രൊഫസർ & ഹെഡ്, കാർഷിക ഗവേഷണ കേന്ദ്രം, മണ്ണുത്തി

ഡോ. വി. ആർ. രാമചന്ദ്രൻ
ഡയറക്ടർ ഓഫ് ഫിസിക്കൽ പ്ലാന്റ്, കെ.എ.യു

ഡോ. കെ. പി. വിശാലാക്ഷി
പ്രൊഫസർ & ഹെഡ്, ഡിപ്പാർട്ട്മെന്റ് ഓഫ് അഗ്രി. എഞ്ചിനീയറിങ്ങ്,
കോളേജ് ഓഫ് ഹോർട്ടികൾച്ചർ, വെള്ളാനിക്കര

വിദഗ്ധ സമിതി അംഗങ്ങൾ : **ഡോ. ഇ. കെ. കുര്യൻ**
സ്പെഷ്യൽ ഓഫീസർ, അക്കാദമി ഓഫ് ക്ലൈമറ്റ്
ചെയ്ഞ്ച് & എഡ്യൂക്കേഷണൽ റിസർച്ച്, കെ.എ.യു

ഡോ.ശാന്തിമേരി മാത്യു
പ്രൊഫസർ & ഹെഡ്, കേളപ്പജി കോളേജ് ഓഫ് അഗ്രി. എഞ്ചിനീയറിങ്ങ്, തവനൂർ

ഡോ. പി. ആർ. ജയൻ
അസോ. പ്രൊഫസർ, കേളപ്പജി കോളേജ് ഓഫ് അഗ്രി. എഞ്ചിനീയറിങ്ങ്, തവനൂർ

തത്സമയ കാർഷിക മത്സരങ്ങൾ

അഗ്രോ ക്ലിനിക്ക് : രാവിലെ 10 മണി മുതൽ 1 മണി വരെ
കാർഷിക കീട-രോഗ ശാസ്ത്ര വിഭാഗങ്ങൾ, ബിരുദ വിദ്യാർത്ഥികൾ
കോളേജ് ഓഫ് ഹോർട്ടികൾച്ചർ, വെള്ളാനിക്കര

വൈകുന്നേരം 6 മണി : പ്രൊഫ. ഗോപിനാഥ് മുതുകാട് നയിക്കുന്ന മാജിക് ഷോ




ഉദ്ഘാടന സമ്മേളനം

2014 ഫെബ്രുവരി 28 വൈകുന്നേരം 7.30 ന്

വേദി : കേരള കാർഷിക സർവ്വകലാശാല ആസ്ഥാനം, വെള്ളാനിക്കര

കാര്യപരിപാടി

ആമന്ത്രണ ഗാനം	:	യൂണിവേഴ്സിറ്റി ക്വയർ
സ്വാഗതം	:	**ശ്രീ. എം. പി. വിൻസന്റ്**, ബഹു. എം.എൽ.എ
അധ്യക്ഷൻ	:	**ശ്രീ. കെ. പി. മോഹനൻ**, ബഹു. കൃഷി- മൃഗസംരക്ഷണ വകുപ്പ് മന്ത്രി
ആമുഖപ്രസംഗം	:	**ഡോ. പി. രാജേന്ദ്രൻ**, ബഹു. വൈസ് ചാൻസലർ
കാർഷിക വിജ്ഞാനമേള വിശദീകരണം	:	**ഡോ. പി. വി. ബാലചന്ദ്രൻ**, വിജ്ഞാനവ്യാപന വിഭാഗം മേധാവി
കാർഷിക വിജ്ഞാന മേള ഉദ്ഘാടനം	:	**ശ്രീ. ഉമ്മൻ ചാണ്ടി**, ബഹു. കേരള മുഖ്യമന്ത്രി
പുസ്തക പ്രകാശനം	:	**ശ്രീ. കെ. ബാബു,** ബഹു. ഫിഷറീസ്- തുറമുഖ- എക്സൈസ് വകുപ്പ് മന്ത്രി
പുസ്തക സ്വീകരണം	:	**ശ്രീമതി കെ. ജി. ഓമന,** പ്രിൻസിപ്പൽ കൃഷി ഓഫീസർ, തൃശ്ശൂർ
സിഡി പ്രകാശനം	:	**ഡോ. ബി. മധുസൂദന കുറുപ്പ്**, ബഹു.വൈസ് ചാൻസലർ, കേരള യൂണിവേഴ്സിറ്റി ഓഫ് ഫിഷറീസ് & ഓഷ്യൻ സയൻസസ്, പനങ്ങാട്
സിഡി സ്വീകരണം	:	**ഡോ. ജോസ് മാത്യു**, അസോ. ഡയറക്ടർ, വിജ്ഞാനവ്യാപന വിഭാഗം
മുഖ്യപ്രഭാഷണം	:	**ശ്രീ. രാജൻ ജെ. പല്ലൻ**, ബഹു. മേയർ, തൃശ്ശൂർ കോർപ്പറേഷൻ
വിശിഷ്ടാതിഥികൾ	:	**ശ്രീ. പി. സി. ചാക്കോ**, ബഹു. എം.പി **ശ്രീ. കെ. പി. ധനപാലൻ**, ബഹു. എം.പി **ശ്രീ. പി. കെ. ബിജു**, ബഹു. എം.പി
ആശംസകൾ	:	**അഡ്വ. തോമസ് ഉണ്ണിയാടൻ**, ബഹു. എം.എൽ.എ **ശ്രീ. ഐ.സി. ബാലകൃഷ്ണൻ**, ബഹു. എം.എൽ.എ **പ്രൊഫ.സി. രവീന്ദ്രനാഥ്**, ബഹു. എം.എൽ.എ **ശ്രീ. പി. എ. മാധവൻ**, ബഹു. എം.എൽ.എ **ശ്രീ. തേറമ്പിൽ രാമകൃഷ്ണൻ**, ബഹു. എം.എൽ.എ **ശ്രീ. ടി. എൻ. പ്രതാപൻ**, ബഹു. എം.എൽ.എ **ശ്രീ. സി. സി. ശ്രീകുമാർ**, ജില്ലാ പഞ്ചായത്ത് പ്രസിഡണ്ട്, തൃശ്ശൂർ **ശ്രീ. നന്ദൻ കുന്നത്ത്**, പ്രസിഡണ്ട്, ഒല്ലൂക്കര ബ്ലോക്ക് പഞ്ചായത്ത് **ശ്രീമതി പി. വി. സരോജിനി**, ഡെപ്യൂട്ടി മേയർ **ശ്രീമതി സുജാത ബാലകൃഷ്ണൻ**, പ്രസിഡണ്ട്, മാടക്കത്തറ പഞ്ചായത്ത് **ശ്രീ. ഇ. വി. പുഷ്പൻ**, മെമ്പർ, മാടക്കത്തറ പഞ്ചായത്ത് **ഡോ. കെ. ആർ. വിശ്വംഭരൻ**, മുൻ വൈസ് ചാൻസലർ, കെ.എ.യു **ശ്രീ. ആർ. അജിത്കുമാർ**, ഡയറക്ടർ, സംസ്ഥാന കൃഷിവകുപ്പ്
മഹനീയ സാന്നിധ്യം	:	**ശ്രീ. പി. എ. സലാം**, പൂക്കോട്ടൂർ ഗ്രാമപഞ്ചായത്ത് പ്രസിഡണ്ട്, & ഭരണ സമിതി അംഗം, കെ.എ.യു **ശ്രീ. ജോണി ചിറയത്ത്**, പ്രസിഡണ്ട്, പുത്തൂർ പഞ്ചായത്ത് **ശ്രീ. റോയി കെ. ദേവസ്സി**, പ്രസിഡണ്ട്, പാണഞ്ചേരി പഞ്ചായത്ത്




ശ്രീമതി സജിത ബാബുരാജ്, പ്രസിഡണ്ട്, നടത്തറ പഞ്ചായത്ത്
ശ്രീ. പി. യു. ഹംസ, കൗൺസിലർ, തൃശ്ശൂർ കോർപ്പറേഷൻ
ശ്രീമതി ജയശ്രീ ദാസ്ക്കരൻ, കൗൺസിലർ, തൃശ്ശൂർ കോർപ്പറേഷൻ
ശ്രീ. എം. കെ. വർഗ്ഗീസ്, കൗൺസിലർ, തൃശ്ശൂർ കോർപ്പറേഷൻ
ശ്രീ. സുബ്രതോ ബിശ്വാസ്, അഗ്രികൾച്ചറൽ പ്രൊഡക്ഷൻ കമ്മീഷണർ & ഭരണ സമിതി അംഗം, കെ.എ.യു
ശ്രീമതി എം. എസ്. ജയ, ഐ എ എസ്, ജില്ലാ കളക്ടർ, തൃശ്ശൂർ
ശ്രീ. പി. പ്രകാശ്, ഡിസ്ട്രിക് പോലീസ് ചീഫ്, തൃശ്ശൂർ
അഡ്വ. സോണി സെബാസ്റ്റ്യൻ, ഭരണ സമിതി അംഗം, കെ.എ.യു
ശ്രീമതി പി. ബേബി ബാലമ്പ്രത്ത്, ഭരണ സമിതി അംഗം, കെ.എ.യു
ഡോ. ജോസ് ജോസഫ്, പ്രൊഫസർ & ഭരണ സമിതി അംഗം, കെ.എ.യു
ഡോ. ജിജു പി. അലക്സ്, ജനറൽ കൗൺസിൽ അംഗം, കെ.എ.യു.
ഡോ. എഫ്. മേരി റെജീന, ജനറൽ കൗൺസിൽ അംഗം, കെ.എ.യു.
ശ്രീ. കെ. ഗിരീന്ദ്ര ബാബു, ജനറൽ കൗൺസിൽ അംഗം, കെ.എ.യു.
ശ്രീ. വി.എസ്. സത്യശീലൻ, ജനറൽ കൗൺസിൽ അംഗം, കെ.എ.യു.
ശ്രീ. പി. ജി. ബാബുരാജ്, ജനറൽ കൗൺസിൽ അംഗം, കെ.എ.യു.
ശ്രീ. എം.എൻ. മോഹനൻ, ജനറൽ കൗൺസിൽ അംഗം, കെ.എ.യു.
ഡോ. ടി. ആർ. ഗോപാലകൃഷ്ണൻ, ഡയറക്ടർ ഓഫ് റിസർച്ച്, കെ.എ.യു.
ഡോ. സ്വരൂപ് ജോൺ, ഡീൻ, കോളേജ് ഓഫ് അഗ്രികൾച്ചർ, വെള്ളായണി
ഡോ. എം. ശിവസ്വാമി, ഡീൻ, കേളപ്പജി കോളേജ് ഓഫ് അഗ്രികൾച്ചറൽ എഞ്ചിനീയറിങ്ങ്, തവനൂർ
ഡോ. കെ. സുധാകര, ഡീൻ, കോളേജ് ഓഫ് ഫോറസ്ട്രി, വെള്ളാനിക്കര.
ഡോ. ജോയ് മാത്യു, പ്രൊഫസർ & കംപ്ട്രോളർ, കെ.എ.യു
ഡോ. സാജൻ കുര്യൻ, ഡയറക്ടർ (പ്ലാനിംഗ്), കെ.എ.യു
ഡോ. വി. ആർ. രാമചന്ദ്രൻ, ഡയറക്ടർ ഓഫ് ഫിസിക്കൽ പ്ലാന്റ്, കെ.എ.യു
ശ്രീ. രാജാജി മാത്യു തോമസ്, മുൻ എം.എൽ.എ.
ശ്രീ. ഐ. പി. പോൾ, മുൻ മേയർ, തൃശ്ശൂർ കോർപ്പറേഷൻ
ശ്രീ. കെ. വി. ദാസൻ, മുൻ ജില്ലാ പഞ്ചായത്ത് പ്രസിഡണ്ട്
ഡോ. പി. കെ. വത്സലകുമാരി, അസോ. ഡീൻ, കോളേജ് ഓഫ് ഹോർട്ടിക്കൾച്ചർ, വെള്ളാനിക്കര
ഡോ. എ. സുകുമാരൻ, അസോ. ഡീൻ, കോളേജ് ഓഫ് കോ-ഓപ്പറേഷൻ ബാങ്കിങ്ങ് & മാനേജ്മെന്റ്, വെള്ളാനിക്കര
ഡോ. എം. ഗോവിന്ദൻ, അസോ. ഡീൻ, കോളേജ് ഓഫ് അഗ്രിക്കൾച്ചർ, പടന്നക്കാട്
ശ്രീമതി മേഴ്സി തോമസ്, പ്രോജക്ട് ഡയറക്ടർ, ആത്മ, തൃശ്ശൂർ
ശ്രീ. ദാസ്ക്കരൻ ആദംകാവിൽ, ജില്ലാ കോ-ഓപ്പറേറ്റീവ് ബാങ്ക് ഭരണസമിതിയംഗം
ശ്രീ. വി. എം. രാധാകൃഷ്ണൻ, പ്രസ് ക്ലബ് പ്രസിഡണ്ട്

നന്ദി : **ഡോ. എ. എം. രൺജിത്ത്**, ജനറൽ കൺവീനർ
പ്രൊഫസർ & ഹെഡ്, കമ്മ്യൂണിക്കേഷൻ സെന്റർ, മണ്ണുത്തി




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കാർഷിക പ്രദർശനം : രാവിലെ 10 മണി മുതൽ വൈകുന്നേരം 8 മണി വരെ

കെ.എ.യു. ടെക്നോളജി മീറ്റ്
: രാവിലെ 11 മണി മുതൽ

കേരള കാർഷിക സർവ്വകലാശാല വികസിപ്പിച്ച സാങ്കേതിക വിദ്യകളുടെ അവതരണം
: കേരള കാർഷിക സർവ്വകലാശാല ശാസ്ത്രജ്ഞർ

വേദി : 'ഉത്തര' ഓഡിറ്റോറിയം, റൂഫ് ടോപ്പ്, കോളേജ് ഓഫ് ഹോർട്ടികൾച്ചർ, വെള്ളാനിക്കര

അദ്ധ്യക്ഷൻ : **ഡോ. പി. വി. ബാലചന്ദ്രൻ**, വിജ്ഞാന വ്യാപന വിഭാഗം മേധാവി
കേരള കാർഷിക സർവ്വകലാശാല

ഉദ്ഘാടനം : **ശ്രീ. ആർ. അമലോർപ്പവനാഥൻ**, ചീഫ് ജനറൽ മാനേജർ, നബാർഡ്, കേരള

മുഖ്യാതിഥികൾ : **ഡോ. എം. ആനന്ദരാജ്**, ഡയറക്ടർ, ഭാരതീയ സുഗന്ധ വിള ഗവേഷണ കേന്ദ്രം,
കോഴിക്കോട് ഭരണ സമിതി അംഗം, കെ.എ.യു.
ഡോ. എ. സഫീന, ഐ.എ.എസ്., സി.ഇ.ഒ., സ്പെഷ്യൽ എക്കണോമിക്ക് സോൺ, കൊച്ചി

മോഡറേറ്റർ : **ഡോ. എ. സുകുമാരൻ**, അസോ. ഡീൻ,
കോളേജ് ഓഫ് കോ-ഓപ്പറേഷൻ ബാങ്കിങ്ങ് & മാനേജ്മെന്റ്, കെ.എ.യു.

ക്രോഡീകരണം : **ഡോ. അലക്സാണ്ടർ ജോർജ്ജ്**,
പ്രൊഫസർ & ഹെഡ്, സെൻട്രൽ ട്രെയിനിങ്ങ് ഇൻസ്റ്റിറ്റ്യൂട്ട്, കെ.എ.യു

തത്സമയ കാർഷിക മത്സരങ്ങൾ :

അഗ്രോ ക്ലീനിക്ക് : രാവിലെ 10 മണി മുതൽ 1 മണി വരെ

പൊതു സമ്മേളനം : **വൈകുന്നേരം 5 മണി**

മുഖ്യാതിഥികൾ : **ശ്രീ. തേനമ്പിൽ രാമകൃഷ്ണൻ**, ബഹു. എം.എൽ.എ
ശ്രീ. കെ. ജയകുമാർ, ബഹു. വൈസ് ചാൻസലർ, മലയാളം സർവ്വകലാശാല
ശ്രീ. ഇ. കെ. പ്രകാശ്, സ്പെഷ്യൽ സെക്രട്ടറി (ഫിനാൻസ്), ഭരണ സമിതി അംഗം
ഡോ. ജോസ് ജോസഫ്, പ്രൊഫസർ, ഭരണ സമിതി അംഗം, കെ.എ.യു
ശ്രീ. പി. എ. സലാം, പൂക്കോട്ടൂർ ഗ്രാമപഞ്ചായത്ത് പ്രസിഡണ്ട്
ഭരണ സമിതി അംഗം, കെ.എ.യു
ശ്രീമതി പി. ബേബി ബാലസ്രുത്ത്, ഭരണ സമിതി അംഗം, കെ.എ.യു

നൃത്തസന്ധ്യ

വൈകുന്നേരം 6 മണി : കേരള കലാമണ്ഡലം അവതരിപ്പിക്കുന്ന നൃത്തനൃത്യങ്ങൾ

മുഖ്യാതിഥി : ശ്രീ. കെ.സി. അശോകൻ, എം.ഡി, വീണ ഗ്രേവിയേഴ്സ് & പ്രിന്റേഴ്സ്, നടത്തറ




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കാർഷിക പ്രദർശനം : രാവിലെ 10 മണി മുതൽ വൈകുന്നേരം 8 മണി വരെ

കാർഷിക സെമിനാർ : രാവിലെ 10 മണി മുതൽ 1 മണി വരെ

വിഷയം : ഹൈടെക്ക് കൃഷി - കേരളത്തിന്റെ സാദ്ധ്യതകൾ

വേദി : സെമിനാർ ഹാൾ, കോളേജ് ഓഫ് ഹോർട്ടികൾച്ചർ, വെള്ളാനിക്കര

അദ്ധ്യക്ഷൻ : **ഡോ. ടി. ആർ. ഗോപാലകൃഷ്ണൻ**, ഡയറക്ടർ ഓഫ് റിസർച്ച്, കെ.എ.യു

ഉദ്ഘാടനം : **ശ്രീമതി റാണി കുമുദിനി**, ഐ.എ.എസ്, ജോയിന്റ് സെക്രട്ടറി, ഗവ. ഓഫ് ഇന്ത്യ

മുഖ്യാതിഥികൾ : **ഡോ. ബി. അശോക്**, ബഹു. വൈസ് ചാൻസലർ
കേരള വെറ്ററിനറി & അനിമൽ സയൻസ് യൂണിവേഴ്സിറ്റി
ഡോ. ഇ. വടിവേൽ, വിജ്ഞാനവ്യാപന വിദ്യാഗം മേധാവി (റിട്ട.)
തമിഴ്നാട് കാർഷിക സർവ്വകലാശാല, കോയമ്പത്തൂർ

മോഡറേറ്റർ : **ഡോ. ടി. ഇ. ജോർജ്ജ്**, അസോ. ഡയറക്ടർ ഓഫ് റിസർച്ച് (വെജിറ്റബിൾ മിഷൻ)

വിഷയാവതരണം : **ഡോ. സി. നാരായണൻ കുട്ടി**, പ്രൊഫസർ, കാർഷിക ഗവേഷണ കേന്ദ്രം, മണ്ണുത്തി
ഡോ. പി. കെ. സുധാദേവി, പ്രൊഫസർ, കോളേജ് ഓഫ് ഹോർട്ടികൾച്ചർ, വെള്ളാനിക്കര
ഡോ. ടി. പ്രദീപ് കുമാർ, അസോ. പ്രൊഫസർ, കോളേജ് ഓഫ് ഹോർട്ടികൾച്ചർ, വെള്ളാനിക്കര
ശ്രീ. അമർ പ്രകാശ്, ആയുർവേദ റിസർച്ച് ഫൗണ്ടേഷൻ, ന്യൂഡൽഹി

വിദഗ്ധ സമിതി അംഗങ്ങൾ : **ഡോ. കെ. പ്രതാപൻ**, ഡയറക്ടർ, സംസ്ഥാന ഹോർട്ടികൾച്ചർ മിഷൻ, തിരുവനന്തപുരം
ഡോ. പി. കെ. രാജീവൻ, മുൻ രജിസ്ട്രാർ, കെ.എ.യു
ഡോ. പി. രാജേന്ദ്രൻ, അസോ. ഡയറക്ടർ ഓഫ് റിസർച്ച്, പ്രാദേശിക കാർഷിക ഗവേഷണകേന്ദ്രം, അമ്പലവയൽ
ഡോ. വി. എം. അബ്ദുൾ ഹക്കീം, അസോ. പ്രൊഫസർ, കേളപ്പജി കോളേജ് ഓഫ് അഗ്രി. എഞ്ചിനിയറിങ്ങ്, തവനൂർ
ഡോ. പി. സുശീല, അസോ. പ്രൊഫസർ, കമ്മ്യൂണിക്കേഷൻ സെന്റർ, മണ്ണുത്തി.
ഡോ. എഫ്. മേരി റെജീന, അസോ. പ്രൊഫസർ, കൃഷി വിജ്ഞാനകേന്ദ്രം, തൃശ്ശൂർ

കാർഷികാനുഭവം പങ്കുവയ്ക്കൽ
: **ശ്രീ. രാംകുമാർ**, കർഷകൻ

തത്സമയ കാർഷിക മത്സരങ്ങൾ

അഗ്രോ ക്ലിനിക്ക് : രാവിലെ 10 മണി മുതൽ 1 മണി വരെ

പൊതു സമ്മേളനം : വൈകുന്നേരം 5 മണി

മുഖ്യാതിഥികൾ : **ശ്രീ. തിരുവഞ്ചൂർ രാധാകൃഷ്ണൻ**, ബഹു. വനം - കായികം - സിനിമ വകുപ്പ് മന്ത്രി
ശ്രീ. വി. എസ്. സുനിൽകുമാർ, ബഹു. എം.എൽ.എ.
അഡ്വ. സോണി സെബാസ്റ്റ്യൻ, ഭരണ സമിതി അംഗം, കെ.എ.യു.

കലാസന്ധ്യ

വൈകുന്നേരം 6 മണി : നാടകം *അവതരണം: കൃഷി പാഠശാല, പട്ടാമ്പി*
നാടൻപാട്ട്, തായമ്പക

മുഖ്യാതിഥികൾ : **ശ്രീ. ആർ. ഗോപാലകൃഷ്ണൻ**, സെക്രട്ടറി, കേരള സാഹിത്യ അക്കാദമി
ശ്രീ. പി. കെ. പ്രതാപൻ, ചെയർമാൻ & എം.ഡി, പാറയിൽ ഗ്രൂപ്പ് ഓഫ് കമ്പനീസ്, മസ്ക്കറ്റ് & കേരള




2014 മാർച്ച് 3 തീയ്യതികൾ

കാർഷിക പ്രദർശനം	:	രാവിലെ 10 മണി മുതൽ വൈകുന്നേരം 8 മണി വരെ
കാർഷിക സെമിനാർ (1)	:	10 മണി മുതൽ 1 മണി വരെ
വിഷയം	:	**വിവര സാങ്കേതിക വിദ്യയും കൃഷിയും**
വേദി	:	സെമിനാർ ഹാൾ, കോളേജ് ഓഫ് ഹോർട്ടികൾച്ചർ, വെള്ളാനിക്കര
അദ്ധ്യക്ഷൻ	:	**ഡോ. കെ. മാധവൻ നായർ**, ഡയറക്ടർ, സെന്റർ ഫോർ ഇൻഫൊർമേഷൻ ടെക്നോളജി & ഇൻസ്ട്രുമെന്റേഷൻ, കെ.എ.യു
ഉദ്ഘാടനം	:	**ശ്രീ. കെ. ആർ. ജ്യോതിലാൽ**, ഐ.എ.എസ്., സെക്രട്ടറി (കൃഷി)
മുഖാതിഥി	:	**ഡോ. കെ. നാരായണ ഗൗഡ**, ബഹു. വൈസ് ചാൻസലർ, യു.എ.എസ്, ജി.കെ.വി.കെ, ബങ്കളൂരു.
മോഡറേറ്റർ	:	**ഡോ. പി. അഹമ്മദ്**, ഡയറക്ടർ, സെന്റർ ഫോർ ഇ-ലേണിംഗ് & ഡയറക്ടർ, സ്റ്റുഡന്റ്സ് വെൽഫെയർ, കെ.എ.യു
വിഷയാവതരണം	:	**ഡോ. എ. സക്കീർ ഹുസൈൻ**, കോ-ഓർഡിനേറ്റർ, സെന്റർ ഫോർ ഇ-ലേണിംഗ് **ശ്രീ. ഭുവീന്ദ്രൻ**, ആർ.എം.എൽ ഇൻഫൊർമേഷൻ സർവീസസ്
വിദഗ്ധ സമിതി അംഗങ്ങൾ	:	**ശ്രീ. അജിത്ത് കുമാർ**, ഐ.ഐ.ഐ.റ്റി.എം.കെ **ഡോ. എ. വി. സന്തോഷ് കുമാർ**, അസോ. പ്രൊഫസർ, കോളേജ് ഓഫ് ഫോറസ്ട്രി, വെള്ളാനിക്കര **ഡോ. വി. ജി. സുനിൽ**, അസി. പ്രൊഫസർ, കൃഷി വിജ്ഞാന കേന്ദ്രം, തവനൂർ
അനുഭവം പങ്കുവയ്ക്കൽ	:	**ശ്രീ. ജോളി**, യുവ കർഷകൻ
കാർഷിക സെമിനാർ (2)	:	രാവിലെ 10 മണി മുതൽ 1 മണി വരെ
വിഷയം	:	ജൈവ സാങ്കേതിക വിദ്യയും കൃഷിയും
വേദി	:	പോമോളജി ലാബ്, കോളേജ് ഓഫ് ഹോർട്ടികൾച്ചർ, വെള്ളാനിക്കര
അദ്ധ്യക്ഷൻ	:	**ഡോ. പി. കെ. വത്സലകുമാരി**, അസോ. ഡീൻ, കോളേജ് ഓഫ് ഹോർട്ടികൾച്ചർ, വെള്ളാനിക്കര
മുഖ്യാതിഥി	:	**ഡോ. ജെ. തോമസ്**, റബ്ബർ പ്രൊഡക്ഷൻ കമ്മീഷണർ, റബ്ബർ ബോർഡ്, കോട്ടയം
മോഡറേറ്റർ	:	**ഡോ. വി. എസ്. ദേവദാസ്**, അസോ. ഡയറക്ടർ ഓഫ് റിസർച്ച് (സീഡ്സ്), കെ.എ.യു
വിഷയാവതരണം	:	**ഡോ. പി. എ. വൽസല**, പ്രൊഫസർ & ഹെഡ്, ബയോടെക്നോളജി വിഭാഗം, കെ.എ.യു **ഡോ. പി. എ. നസീം**, പ്രൊഫസർ & ഹെഡ്, ബയോഇൻഫൊർമാറ്റിക്സ് വിഭാഗം, കെ.എ.യു **ഡോ. ദീപു മാത്യു**, അസി. പ്രൊഫസർ, ബയോടെക്നോളജി വിഭാഗം, കെ.എ.യു
തത്സമയ കാർഷിക മത്സരങ്ങൾ		
അഗ്രോ ക്ലിനിക്ക്	:	രാവിലെ 10 മണി മുതൽ 1 മണി വരെ
പൊതു സമ്മേളനം	:	വൈകുന്നേരം 5 മണി
മുഖ്യാതിഥികൾ	:	**ശ്രീ. സി. എൻ. ബാലകൃഷ്ണൻ**, ബഹു.സഹകരണ വകുപ്പ് മന്ത്രി **ശ്രീ. ബി. ഡി. ദേവസി**, ബഹു. എം.എൽ.എ
കലാസന്ധ്യ		
വൈകുന്നേരം 6 മണി	:	**75 വർഷത്തെ മലയാള സിനിമ സംഗീതം** സംവിധാനം **ശ്രീ. ജയരാജ് വാര്യർ**
മുഖ്യാതിഥികൾ	:	**ഫാദർ പോൾ പൂവ്വത്തിങ്കൽ**, പ്രിൻസിപ്പൽ, ചേതന മ്യൂസിക് കോളേജ്, തൃശ്ശൂർ **ശ്രീ. കെ. വി. സദാനന്ദൻ**, എം. ഡി, ഹോട്ടൽ എലൈറ്റ് ഇന്റർനാഷണൽ, തൃശ്ശൂർ




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കാർഷിക പ്രദർശനം	: രാവിലെ 10 മണി മുതൽ വൈകുന്നേരം 8 മണി വരെ
കാർഷിക സെമിനാർ	: രാവിലെ 10 മണി മുതൽ 1 മണി വരെ
വിഷയം	: ഫാമിലി ഫാമിങ്ങ് (കുടുംബ കൃഷി)
വേദി	: സെമിനാർ ഹാൾ, കോളേജ് ഓഫ് ഹോർട്ടികൾച്ചർ, വെള്ളാനിക്കര
അദ്ധ്യക്ഷൻ	: ഡോ. ജോസ് മാത്യു, അസോ. ഡയറക്ടർ ഓഫ് എക്സ്റ്റൻഷൻ
ഉദ്ഘാടനം	: ഡോ. എ. പദ്മരാജു, ബഹു. വൈസ് ചാൻസലർ, എ.എൻ.ജി.ആർ.എ.യു, ഹൈദരാബാദ്
മുഖ്യാതിഥികൾ	: പ്രൊഫ. സി. രവീന്ദ്രനാഥ്, ബഹു. എം.എൽ.എ ഡോ. ബി. മോഹൻകുമാർ, അസി. ഡയറക്ടർ ജനറൽ, ഐ.സി.എ.ആർ, ന്യൂഡൽഹി ശ്രീ. എസ്. മണികുമാർ, എ.ജി.എം., നബാർഡ്
മോഡറേറ്റർ	: ഡോ. വി. കെ. രാജു, അസോ. ഡയറക്ടർ ഓഫ് റിസർച്ച്(ഫാംസ്), കെ.എ.യു
വിഷയാവതരണം	: ഡോ. എസ്. റെജീന, പ്രൊഫസർ & ഹെഡ്, കൃഷിസമ്പ്രദായ ഗവേഷണ കേന്ദ്രം, കൊട്ടാരക്കര ഡോ. എ. അനിൽകുമാർ, എം.എസ്.എസ്.ആർ.എഫ്, കൽപ്പറ്റ
വിദഗ്ധ സമിതി അംഗങ്ങൾ	: ഡോ. എസ്. എസ്റ്റലിറ്റ, പ്രൊഫസർ, കമ്മ്യൂണിക്കേഷൻ സെന്റർ, കെ.എ.യു. ഡോ. ടി. കെ. കുഞ്ഞാമു, അസോ. പ്രൊഫസർ, കോളേജ് ഓഫ് ഫോറസ്ട്രി, വെള്ളാനിക്കര
കാർഷികാനുഭവം പങ്കുവയ്ക്കൽ	: ശ്രീ. കെ. എ. കുട്ടൻ & ഫാമിലി (കുടുംബ കൃഷി പ്രയോഗവൽക്കരിക്കുന്ന കർഷക കുടുംബം)

തത്സമയ കാർഷിക മത്സരങ്ങൾ:

അഗ്രോക്ലിനിക്ക്	: രാവിലെ 10 മണി മുതൽ 1 മണി വരെ
പൊതു സമ്മേളനം	: വൈകുന്നേരം 5 മണി
മുഖ്യാതിഥികൾ	: ശ്രീ. പി. ജെ. ജോസഫ്, ബഹു. ജലസേചന വകുപ്പ് മന്ത്രി ശ്രീ. ബാബു എം. പാലിശ്ശേരി, ബഹു. എം.എൽ.എ

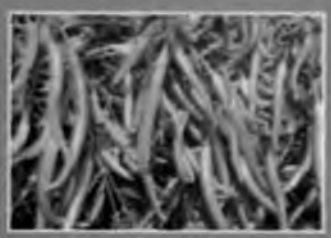
മെഗാ ഷോ

വൈകുന്നേരം 6 മണി	: കേരള കാർഷിക സർവ്വകലാശാല വിദ്യാർത്ഥികൾ
മുഖ്യാതിഥികൾ	: പത്മശ്രീ കലാമണ്ഡലം ക്ഷേമാവതി ശ്രീ. കെ. പി. നടരാജൻ, ചെയർമാൻ & എം.ഡി., നൂപുർ മാനുവേഴ്സ് ഇന്ത്യ പ്രൈ.ലി.




2014 മാർച്ച് 5 ബുധൻ

കാർഷിക പ്രദർശനം	:	രാവിലെ 10 മണി മുതൽ വൈകുന്നേരം 8 മണി വരെ
കാർഷിക സെമിനാർ	:	രാവിലെ 10 മണി മുതൽ 1 മണി വരെ
വിഷയം	:	സുഗന്ധ വിളകളിൽ സൂക്ഷ്മാണുക്കളുടെ പ്രയോഗം
വേദി	:	സെമിനാർ ഹാൾ, കോളേജ് ഓഫ് ഹോർട്ടികൾച്ചർ, വെള്ളാനിക്കര
അദ്ധ്യക്ഷൻ	:	ഡോ. ജിം തോമസ്, അസോ. ഡയറക്ടർ ഓഫ് റിസർച്ച് (അഡാപ്റ്റീവ് റിസർച്ച് & ട്രെയിനിങ്ങ്)
ഉദ്ഘാടനം	:	ഡോ. കെ. വി. പീറ്റർ, മുൻ വൈസ് ചാൻസലർ, കെ.എ.യു
മുഖ്യാതിഥികൾ	:	ഡോ.എം. കെ. കൃഷ്ണകുമാർ, ഡെപ്യൂട്ടി ഡയറക്ടർ ജനറൽ (ഹോർട്ടികൾച്ചർ) ഐ.സി.എ.ആർ, ന്യൂഡൽഹി ഡോ. ഹോമി ചെറിയാൻ, ഡയറക്ടർ കമുക് - സുഗന്ധ വിള വികസന ഡയറക്ടറേറ്റ്, കോഴിക്കോട്
മോഡറേറ്റർ	:	ഡോ. എസ്. പാത്തുമ്മാൾ ബീവി, അസോ. ഡയറക്ടർ ഓഫ് റിസർച്ച് (മോണിറ്ററിങ്ങ് & ഇവാലുവേഷൻ), കെ.എ.യു
വിഷയാവതരണം	:	ഡോ. സാലി കെ. മാത്യു, പ്രൊഫസർ, കെ.എ.യു ഡോ. എൻ. മിനിരാജ്, പ്രൊഫസർ, കെ.എ.യു ഡോ. കെ. എസ്. മീനാകുമാരി, പ്രൊഫസർ, കെ.എ.യു ഡോ. കെ. സുരേന്ദ്ര ഗോപാൽ, അസോ. പ്രൊഫസർ, കെ.എ.യു
വിദഗ്ധ സമിതി അംഗങ്ങൾ	:	ഡോ. കെ. ആർ. ലൈല, പ്രൊഫസർ, കെ.എ.യു ഡോ. ഡി. ഗിരിജ, പ്രൊഫസർ, കെ.എ.യു
തത്സമയ കാർഷിക മത്സരങ്ങൾ	:	
അഗ്രോ ക്ലിനിക്ക്	:	രാവിലെ 10 മണി മുതൽ 1 മണി വരെ
പൊതു സമ്മേളനം	:	വൈകുന്നേരം 5 മണി
മുഖ്യാതിഥികൾ	:	ശ്രീ. ഐ. സി. ബാലകൃഷ്ണൻ, ബഹു.എം.എൽ.എ ശ്രീ. കെ. വി. അബ്ദുൾ ഖാദർ, ബഹു.എം.എൽ.എ
കലാസന്ധ്യ വൈകുന്നേരം 6 മണി	:	കാർഷിക സർവ്വകലാശാല കുടുംബ സംഗമവും, കെ.എ.യു. കൾച്ചറൽ ക്ലബ് സിംഫണി അവതരിപ്പിക്കുന്ന കലാപരിപാടികളും.
മുഖ്യാതിഥികൾ	:	ശ്രീ. കെ. കെ. കർണൻ, ചെയർമാൻ & എം.ഡി, നിറപറ ഗ്രൂപ്പ് ഓഫ് കമ്പനീസ് ഡോ. കൊച്ചുമോൻ, ചെയർമാൻ & എം.ഡി, ഹരിത ഗ്രൂപ്പ് ഓഫ് കമ്പനീസ്

2014 മാർച്ച് 6 വ്യാഴം

കാർഷിക പ്രദർശനം	:	രാവിലെ 10 മണി മുതൽ വൈകുന്നേരം 8 മണി വരെ
കാർഷിക സെമിനാർ	:	രാവിലെ 10 മണി മുതൽ 1 മണി വരെ
വിഷയം	:	ശാസ്ത്രീയ വിളപരിപാലനം – കുരുമുളക് കൃഷിയിൽ
വേദി	:	സെമിനാർ ഹാൾ, കോളേജ് ഓഫ് ഹോർട്ടികൾച്ചർ, വെള്ളാനിക്കര
അദ്ധ്യക്ഷൻ	:	**ഡോ. ഇ. വി. നൈബി**, ഡയറക്ടർ (അക്കാദമിക്ക്), കെ.എ.യു
ഉദ്ഘാടനം	:	**ഡോ. എം. അബ്ദുൾ സലാം**, ബഹു. വൈസ് ചാൻസലർ, കാലിക്കറ്റ് യൂണിവേഴ്സിറ്റി
മുഖ്യാതിഥികൾ	:	**ഡോ. കെ. രാമസാമി**, ബഹു. വൈസ് ചാൻസലർ, തമിഴ്നാട് കാർഷിക സർവ്വകലാശാല, കോയമ്പത്തൂർ
		ഡോ. എബ്രഹാം വർഗ്ഗീസ്, ഡയറക്ടർ, നാഷണൽ ബ്യൂറോ ഓഫ് അഗ്രികൾച്ചറലി ഇംപോർട്ടന്റ് ഇൻസെക്ട്സ് (എൻ.ബി.എ.ഐ), ബങ്കളൂരു.
മോഡറേറ്റർ	:	**ഡോ. ഐ. ജോൺകുട്ടി**, അസോ. ഡയറക്ടർ ഓഫ് റിസർച്ച് (പ്ലാനിങ്ങ്), കെ.എ.യു
വിഷയാവതരണം	:	**ഡോ. കാന്തിപുടി നിർമ്മൽ ബാബു**, പ്രോജക്ട് കോ-ഓർഡിനേറ്റർ, (സുഗന്ധ വിളകൾ), ഭാരതീയ സുഗന്ധ വിള ഗവേഷണ കേന്ദ്രം, കോഴിക്കോട്
		ഡോ. വി. പി. നീമ, പ്രൊഫസർ & ഹെഡ്, കുരുമുളക് ഗവേഷണ കേന്ദ്രം, പന്നിയൂർ, കെ.എ.യു.
		ഡോ. വി. എസ്. സുജാത, പ്രൊഫസർ, കോളേജ് ഓഫ് ഹോർട്ടികൾച്ചർ, വെള്ളാനിക്കര
വിദഗ്ധ സമിതി അംഗങ്ങൾ	:	**ഡോ. സി. ആർ. റിനി**, അസി.പ്രൊഫസർ, കെ.എ.യു
		ഡോ. പി. എം. അജിത്ത്, അസി. പ്രൊഫസർ, കെ.എ.യു
തത്സമയ കാർഷിക മത്സരങ്ങൾ	:	
അഗ്രോ ക്ലിനിക്ക്	:	രാവിലെ 10 മണി മുതൽ 1 മണി വരെ




സമാപന സമ്മേളനം

2014 മാർച്ച് 6 വ്യാഴം ഒരുമണിക്കുശേഷം 3 മണിക്ക്

വേദി : കേരള കാർഷിക സർവ്വകലാശാല ആസ്ഥാനം, വെള്ളാനിക്കര

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ആമന്ത്രണ ഗാനം	: യൂണിവേഴ്സിറ്റി ക്വയർ
സ്വാഗതം	: **ശ്രീ. എം. പി. വിൻസന്റ്**, ബഹു. എം.എൽ.എ. ചെയർമാൻ, സൗത്ത് ഇന്ത്യൻ അഗ്രി.എക്സ്പോ 2014
അധ്യക്ഷൻ	: **ശ്രീ. കെ. പി. മോഹനൻ** ബഹു. കൃഷി - മൃഗസംരക്ഷണ വകുപ്പ് മന്ത്രി
ഉദ്ഘാടനം	: **ശ്രീ. കെ. വി. തോമസ്**, ബഹു. കേന്ദ്ര ഭക്ഷ്യ - സിവിൽ സപ്ലൈസ് വകുപ്പ് മന്ത്രി
അവാർഡ് ജേതാക്കളായ കർഷകരെ ആദരിക്കൽ	: **അഡ്വ. തോമസ് ഉണ്ണിയാടൻ**, ബഹു. എം.എൽ.എ.
കാർഷിക വിജ്ഞാനമേള അവലോകനം	: **ഡോ. പി. രാജേന്ദ്രൻ**, ബഹു. വൈസ് ചാൻസലർ,
കാർഷിക മേള അവാർഡ് വിതരണം	: **ശ്രീ. പി. എ. മാധവൻ**, ബഹു. എം.എൽ.എ.
കാർഷിക സെമിനാർ സംക്ഷിപ്ത വിവരണം	: **ഡോ. പി. വി. ബാലചന്ദ്രൻ**, വിജ്ഞാന വ്യാപന വിഭാഗം മേധാവി ഓർഗനൈസിംഗ് സെക്രട്ടറി, സൗത്ത് ഇന്ത്യൻ അഗ്രി.എക്സ്പോ 2014
നന്ദി	: **ഡോ. എ. എം. രൺജിത്ത്**, കമ്മ്യൂണിക്കേഷൻ സെന്റർ മേധാവി ജനറൽ കൺവീനർ, സൗത്ത് ഇന്ത്യൻ അഗ്രി. എക്സ്പോ 2014
മെഗാ ഷോ വൈകുന്നേരം 6 മണി	: കേരള കാർഷിക സർവ്വകലാശാല വിദ്യാർത്ഥികൾ

വിജ്ഞാനവ്യാപന വിഭാഗം

കേരള കാർഷിക സർവ്വകലാശാല

മണ്ണുത്തി, തൃശൂർ 680651

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Organising Committee of South Indian Agri Fair - 2014

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General Secretary, Students Union, CCBM, Vellanikkara
General Secretary, Students Union, ACCER, Vellanikkara

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Sri. M. K. Ajayakumar, Section Officer, CC, Mannuthy
Student's representatives of CoF, Vellanikkara

Seminar/Agro clinic /Open Forum

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President, Madakkathra Panchayath.

Co-Chairman : Dr. P. G. Sadankumar, Professor, COH, Vellanikkara

Convener : Dr. Sakeer Hussain. A, Asst. Professor (SS), COH, Vellanikkara

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Sri. T. P. Aboobacker, Farm Officer, COH, Mannuthy
Sri. Kumar
Mr. Abijith,Student,CoH
Sri. Muthu

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		Dr. A. K. Sreelatha, Asst. Professor, COH, Vellanikkara
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FARMING

Exhibitors

List of Exhibitors
List of KAU institutions participated in SIAF 2014

Sl. No	Name, and addresses of the institutions under KAU participated in SIAE 2014
1.	**Communication Centre** Mannuthy, Thrissur Phone: 0487 2370773 Email:ccmannuthy@kau.in
2.	**College of Horticulture** Vellanikkara, KAU P.O., Thrissur - 680 656 Phone: 0487 2438301 E-mail: cohvka@kau.in; adhort@kau.in Participated Departments: Agronomy, Agricultural Economics, Agricultural Engineering, Agricultural Entomology, Agricultural Extension, Agricultural Meteorology, Agricultural Microbiology, Agro clinic, AINP on Apiculture & Ornithology, Biotechnology & Bio-Informatics, Home science, Medicinal and aromatic plants, Mushroom Unit, Olericulture, Plant Breeding, & Genetics, Plant Pathology, Plantation Crops & Spices, Pomology & Floriculture, Processing Technology, Seed Technology, Soil Science and Radio Tracer Lab, Students, COH, Vermi compost Unit
3.	**Agricultural Technology Information Centre** Mannuthy, Thrissur Phone: 0487 2370540 Email:atic@kau.in
4.	**College of Agriculture** Vellayani, Thiruvananthapuram Phone: 0471 2381915, 2382439 Email:deanagri@kau.in
5.	**Academy of Climate Change Education and Research** Vellanikkara, KAU P. O., Thrissur-680 656 Phone: 0487 2371931 Email: accer@kau.in
6.	**College of Co-operation, Banking & Management (CCBM)** Vellanikkara, KAU P. O., Thrissur-680 656 Phone: 0487 2370367 Email:adccbm@kau.in Participated Departments: Rural Banking and Finance Management, Rural Marketing Management and Co-operative Management, Rural Marketing Management, Agri-Business Management and students
7.	**College of Agriculture** Padannakkad, Kasargod Phone: 0467 2280616 Email: adpad@kau.in
8.	**Kelappaji College of Agricultural Engineering & Technology (KCAE & T)** Tavanur, Malappuram Phone: (0494) 2686214, 2686009 Email: deanengg@kau.in

9.	**Centre for E- Learning** IT-BT Complex, Vellanikkara, KAU P.O., Thrissur-680656 Phone: 0487 2370920 Email: cel@kau.in
10.	**Instructional Farm** Vellanikkara, KAU P. O., Thrissur-680656 Phone: 0487 2371751 Email:ifvka@kau.in
11.	**Central Nursery** Vellanikkara, KAU P. O., Thrissur-680656 Phone: 0487 2374332 Email: centnursery@kau.in
12.	**Regional Agricultural Research Station** Pilicode, Kasaragod- 670 353 Phone: 0467 2260554 Email: adrpil@kau.in
13.	**Regional Agricultural Research Station** Ambalavayal, Wayanad-673 593 Phone: 04936 260421 Email: adramb@kau.in
14.	**Agricultural Research Station** Anakkayam, Malappuram District - 676501 Phone: 0483 2864239 Email:arsanakkayam@kau.in
15.	**Regional Agricultural Research Station** Pattambi Phone: 0466 2212228 Email: adrptb@kau.in
16.	**Cardamom Research Station** Pampadumpara, Idukki District - 685556 Phone: 04868 236263 Email:crspam@kau.in
17.	**Cashew Research Station** Madakkathara, Thrissur District-680656 Phone: 0487 2370339 Email:crsmadakkathra@kau.in
18.	**Banana Research Station** Kannara, Thrissur District - 680652 Phone: 0487 2699087 Email:brskannara@kau.in
19.	**College of Forestry** KAU P. O.,Thrissur-680656 Phone: 0487 2370050, 2371018 Email: adforestryt@kau.in
20.	**Pepper Research Station** Panniyoor, Kannur District-670142 Phone: 0460 2227287 Email:prspanniyur@kau.in

21.	**Regional Agricultural Research Station** Kerala Agricultural University, Kumarakom, Kottayam District - 686566 Phone: 0481 2524421 Email:adrkum@kau.in
22.	**Aromatic and Medicinal Plants Research Station** Odakkali, Ernakulam District - 683549 Phone: 0484 2659881 Email: amprs@kau.in
23.	**Rice Research Station** Vyttila, Ernakulam District - 682019 Phone: 0484 22809963. Email: rrsvyttila@kau.in
24.	**Rice Research Station** Moncompu, Alappuzha District- 688 503 Phone: 0477 2702245 Email: rrsmoncompu@kau.in
25.	**Agricultural Research Station** Thiruvalla, Pathanamthitta District - 686102 Phone: 0469 2604181 Email : srsthiruvalla@kau.in
26.	**Agricultural Research Station** Mannuthy, Thrissur District-680651 Phone: 0487 2370726 Email:arsmannuthy@kau.in
27.	**Farming Systems Research Station** Sadanandapuram, Kollam District - 691550 Phone: 0474 2663535 Email:fsrskottarakkara@kau.in
28.	**Onattukara Regional Agricultural Research Station** Kayamkulam, Alappuzha Phone: 0479 2443192 Email: orars@kau.in
29.	**Agronomic Research Station** Chalakudy, Thrissur District - 680307 Phone: 0487 2702116 Email: arschalakudy@kau.in
30.	**Cocoa Research Centre** Vellanikkara, KAU P. O., Thrissur Phone: 0487 2438451 Email: ccrp@kau.in
31.	**Krishi Vigyan Kendra** Ambalavayal, Wayanad District-670142 Phone: 04936 260411 Email: kvkwayanaad@kau.in

32.	**Krishi Vigyan Kendra** Mele Pattambi, Palakkad District -679306 Phone: 0466 2212279 Email: kvkpalakkad@kau.in
33.	**Krishi Vigyan Kendra** Sadanandapuram, Kollam District - 691550 Phone: 0474 2459388 Email: kvkkollam@kau.in
34.	**Krishi Vigyan Kendra** Kumarakom, Kottayam District - 686566 Phone: 0481 2523120 Email: kvkkottayam@kau.in
35.	**Krishi Vigyan Kendra** Mannuthy, Thrissur District - 680651 Phone: 0487 2375855 Email: kvkthrissur@kau.in
36.	**Krishi Vigyan Kendra** Tavanur, Malappuram District – 679573 Phone: 0494 2686329 Email:kvkmalappuramr@kau.in
37.	**Krishi Vigyan Kendra** Kanjirangad, Kannur District-670142 Phone: 0460 2226087 Email:kvkkannur@kau.in

List of Public Sector Units / Government institutions / Research Institutes / State Agricultural Universities / Banks participated in Agrifiesta 2014

We acknowledge duly our prestigious exhibitors for organising Agrifiesta 2014 as grand festival.

Sl. No	Name and addresses of the Public Sector Units / Banks participated in SIAF 2014
1.	**Vegetable and Fruit Promotion Council of Keralam** Mythri Bhavan, Near Doordarshan Kendra, Kakkanad, Kochi-37 Phone: 0484-2427544, 2427455, 2427560 Email: mail@vfpck.org
2.	**Kerala Feeds Limited (KFL)** Kallettumkara, Thrissur - 680683 Phone: 0480-2720192, 2720179 Fax: 0480 2720194 Email: kflinfo@keralafeeds.com
3.	**State Horticulture Mission** Kerala University P. O., Palayam, Trivandrum 695034 Phone: 04712330856, 2330857 Fax No: 0471 2330857 Email: mdshmkerala@yahoo.co.in

4.	**Jain Irrigation Systems Ltd.** 126, West Ponnurangam Road, R.S. Puram, Coimbatore -02. Phone: 0422-2547318 Fax: 0422-2540365; Email: jaincoimbatore@jains.com
5.	**Fertilisers And Chemicals Travancore Limited (FACT)** Cochin Division, Ambalamedu, Ernakulam – 682303 Phone: 0484 2720325 Website: www.factltd.co.in
6.	**Kerala Livestock Development Board (KLDB)** Dhoni Farm, Palakkad Phone: 0491 2556127 Fax: 0491 2556127 Website: www.livestock.kerala.gov.in
7.	**Kerala Kera Karshakha Sahakarana Federation (KERAFED)** "KERA TOWER", Water Works Compound, Vellayambalam, Vikas Bhavan P.O., Thiruvananthapuram - 695 033 Phone: 0471 2321660, 2326153, 2326209, 2326736 Fax: 0471 2326298 Email: kerafed@giasmd01.vsnl.net.in
8.	**Kerala Agro Machinery Corporation Ltd.** Athani, Ernakulam - 683 585 Phone: 0484 2474301 to 2474305 Fax: 91- 484- 474589 Email: kamco@ satyam.net.in
9.	**Coconut Development Board** Government of India, Ministry of Agriculture, P.B.No.1021, Kera Bhavan, Kochi – 682 011 Fax: 0484 2377902 Website: coconutboard.nic.in
10.	**Kerala Pineapple Mission** Nadukkara Agro Processing Factory, Muvattupuzha, Avoly P.O., Phone:. 0485 2261547 / 2261451 Fax: 0485 2261551 Email: jiveagrofruit@gmail.com
11.	**Oil Palm India Ltd.** Regd.office XIV/130, Kodimatha, Kottayam South P.O., Kottayam-686 013, Kerala Phone: 0481 2561442 Email: opilktm@dataone.in & mdopil@yahoo.in
12.	**National Bank For Agriculture And Rural Development,** Post Box No 5613 Punnen Road, Statue, Thiruvananthapuram – 695 039, Kerala Phone: 0471 2323859, 2334940 Email : trivandrum@nabard.org
13.	**Central Tuber Crops Research Institute (CTCRI)** Sreekaryam, Thiruvananthapuram- 695017, Kerala. Phone: 0471 2598551 FAX: +91 - 471 2590063 Emaii:ctcritvm@yahoo.com

14.	**University of Agricultural Sciences** Dharwad, Dharwad -580005, Karnataka. Phone : 0091 836 2747958 FAX : 0091-836-2745276 Email : oregistrar@uasd.in
15.	**YSR Horticultural University** Post Box # 7, Venkataramannagudem-534 101, West Godavari District, Andhra Pradesh Phone: +91 - 8818 – 28431 Fax: +91 - 8818 – 284223 Email: vc@drysrhu.edu.in
16.	**Tamil Nadu Agricultural University** Lawley Road, Coimbatore 641003, Tamil Nadu Phone: +91 422 6611200 Email: info@tnau.ac.in
17.	**Central Plantation Crops Research Institute (CPCRI)** Kudlu.P. O., Kasaragod, Kerala, 671124 Phone: 04994 232894 Fax: 04994-232322 Email: cpcri@nic.in
18.	**NBPGR Regional Station - Thrissur** Vellanikkara, KAU P.O., Thrissur – 680656 Fax: +91-0487-2372589 Website: www.nbpgr.ernet.in
19.	**Directorate of Arecanut and Spices Development** Ministry of Agriculture, Government of India , Calicut- 673005 Kerala Phone: 0495 2765501 Fax: 0495 2765777 Email: spicedte@nic.in
20.	**Kerala Veterinary and Animal Sciences University** Pookode, Wayanad-673576 Phone : 04936-209209 Email: vc@kvasu.ac.in
21.	**Kerala University of Fisheries and Ocean Sciences** Panangad P. O., Kochi-682 506 Website: www.kufos.ac.in
22.	**Krishi Vigyan Kendra** Indian Institute of Spices Research, Peruvannamuzhi P.O., Calicut , Kerala, - 673 528 Phone: 0496 2662372 Fax : 0091-496- 2662372 Email: kvk@spices.res.in, kvkcalicut@gmail.com
23.	**Krishi Vigyan Kendra** CPCRI Regional Station, P. O., Krishnapuram, Kayamkulam, Alleppey - 690 533 Fax: 0479 2449268 Email: kvkalapuzha@hotmail.com

24.	**Krishi Vigyan Kendra** Mitraniketan, Vellanad,Thiruvananthapuram-695 543 Phone: 0472-2882086 Email: trivandrumkvk@yahoo.co.in
25.	**State Bio-control Lab** Department of Agriculture, Mannuthy P. O., Thrissur Phone: 0487-2374605 Email: sbclgov@gmail.com
26.	**Farm Information Bureau** Edappally, Cochin - 682024 Phone: 0484 2344935 Website: fibkerala.gov.in
27.	**District Mission** Kudumbashree, Civil Station, Collectorate, Thrissur. Phone: 0487-2362517 Email: spemtsr@kudumbashree.org

Pavilion Awards

Best Pavilion Awards

Sl. No	Particulars	Award Winner/ Institute
1	Best Overall Stall (Among the Departments of Colleges) Excellent in Planning, Execution, Team work, Stall/ Field Display, Interaction and providing Farm Fresh Vegetables	Dept. of Olericulture, College of Horticulture, Vellanikkara (overall Trophy)
2	Best KAU stall (Among Research Stations)	Banana Research Station, Kannara & its sub-centre on Pine Apple Research Station,Vellanikkara (overall Trophy)
3	Best stall among Public Sector Units	VFPCK, Kakkanad
4	Best Private Stall	Kavungal Agency, Mannuthy
5	Best Display among Premium Stalls	Redlands, Mannuthy
6	Best Premium Stall in Public Interaction	Jain Irrigation
7	Best KVK stall	KVK, Kannur
8	Best Technology in exhibition (Working model)	1. Mushroom unit, Dept. of Pathology, COH, Vellanikkara 2. Hi-tech farming Unit, Communication Centre, Mannuthy
9	Best innovative showcasing of eco-friendly technology	Ornithology and Apiculture unit (Dept. of Entomology), College of Horticulture, Vellanikkara
10	Best in Aggressive Marketing	College of Co-operation, Banking and Management, Vellanikkara
11	Best in Deliverables and Services	Central Nursery, Vellanikkara
12	Best Display/Stall arrangements	RARS, Pillicode
13	Best in Display of Engineering Models	KCAET, Tavannur
14	Best in Farm Consultancy	1. Santhwanam, College of Agriculture, Velayani 2. Apiculture Unit(AINP), College of Agriculture, Dept of Entomology, Vellayani
15	Best in Student Involvement & Participation	Agro Clinic : Final Year B.Sc.(Ag) Students of the College of Horticulture, Vellanikkara/Students of College of Forestry, Vellanikkara
16	Best Natural Ambience & maintenance of premises	AICRP on Medicinal Plants, College of Horticulture, Vellanikkara
17	Best Volunteer in Communication skills at the exhibition stall	Miss. Nirphathi T. K. , 2nd Year B.Sc. (Ag.) student, College of Horticulture, Vellanikkara

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3.	Proteck Circuits & Systems Pvt. Ltd. 15, Medavakkam Road, Sholinganallur, Chennai - 600 119 Phone: + 91-44-2450 6000, Fax: + 91-44-2450 6006 Email : info@proteck.co.in
4.	Parayil Agencies Parayil Junction, M.G Road, Thrissur- 680001 Phone: +914876444788
5.	New India Assurance Company Perinchery Building Round North, Trichur - 680 001 Phone: 0487 – 2331003, 2331113 Email: nia.760301@newindia.co.in
6.	Realgard Power Systems Pvt. Ltd. 6th floor, Haya Tower, Westfort, Poothole P.O., Thrissur, Kerala - 680 004 Phone: +91 8129333131 Email: mktg@realgard.com
7.	Thrissur Builders Machingal Lane(North End), Thrissur-680001 Phone: +91- 487 2336652 Email: marketing@tbpl.in
8.	Kerala Gramin Bank PB No.10, Head Office, KGB Towers, AK Road, Uphill, Malappuram - 676 505 Phone: 0483 2734269 Email: nfo@nmgbank.com
9.	State Bank of Travancore KAU Campus branch, Vellanikkara P. O., Thrissur- 680654 Phone: 0487 2371948 Email: vellanikara@sbt.co.in

10.	Regional Agro Industries Development Corporation (RAIDCO) P.B.NO.407, SPCA Road, Kannur-2 Phone: 0497 2700276/875, 2702445, Fax : 0497 2700192 Website: www.radico.com
11.	ESCCO JSR Square Kalathode, Ollukkara-680655, Thrissur - 680 656 Phone: 0487-2375777 Website: www.emfil.org
12.	Fibre Family Padannakadu P. O., Cherthala, Alappuzha Phone: 0487-2595560, 9447036402
14.	Plantation and Estate Suppliers Erinjeri Angadi, Chemmannur Bldg, PB.No.72, Thrissur -680 001 Phone: 0487-2440014, 9446760187 Email: pes@covercrops.org
15.	V.R.Supreme Marketing foods (P) Ltd. Panangad P. O., Kodungallur Phone: 9847786207
16.	Surya Seeds & Nursery Vithanassery, Nenmara, Palakkad Phone: 9744231821
17.	Ayurvet. Ltd 6th Floor, Sagar Plaza, Dist center, New Delhi-92 Phone: 011-22455992/94, 9560193172
18.	Double Horse Food Products Nellikunnu,Thrissur - 5 Phone: 9446003352
19.	Kavungal Agency Mannuthy P. O., Thrissur Phone: 9388888500
20.	SBI Life Insurance Co. Ltd. Thrissur -20 Phone: 0487 6459608, 9946350845
21.	Garden Seeds Nenmara, Palakkad Phone: 9605992462
22.	National Insurance Company Ltd. Divisional Office, Thrissur Phone: 0487 2331392, 2331055, Fax: 2331831
23.	Indian Farmers Fertilizer Co-operative Ltd IFFCO Bhavan, Thottekattu Road, Kochi-682 011 Phone: 0484-2380164, 2383021, 9447783661

24.	Nice chemicals Pvt. Ltd. Manimala Road, Edappally, Cochin - 24 Phone: 04842802755, 9447145583
25.	Hindusthan Trading Company Airport Road, Pullikkal, Malappuram- 973 367 Phone: 0483-2792683, 9744222240
26.	Godrej Agrovet Ltd. Green Land Agrocares, Panchayath Shopping Complex, Valappad Phone: 0487-2395744, 9946105331
27.	EMCON Environmental Measurements & Controls, K.P.Vallon Road, Kadavanthara, Cochin-682020 Phone: 04842317971 Website: www.emconindia.com
28.	Swad Food Products Lourde Nagar, Kachery P. O., Anchery, Thrissur Mobile: +91 9387 924 441, 9605 211 222 Email: sales@swadfoodproducts.com
29.	Nupur Manures India (P) Ltd. Mannuthy P. O., Thrissur Phone: 0487-2731867, 9495384681
30.	Indian Potash Ltd. Kadavil Court, Pullepady Cross Road, Cochin - 18 Phone: 0480-2354435, 9349007088
31.	Kairali Marketing Associates Sun Grace Avenue, Chiyyaram, Thrissur – 682026 Phone: 0487 2250011 Email: kairali11@sancharnet.in
32.	Anjan Associates 2/23 Kodu Tower, Manjakulan Road, Palakkad Dt Phone: 0481-2504003, 9446074538
33.	Haritha Pharmaceuticals Varandarappilly, Thrissur – 680303 Phone: 0480 2763803, 2760791 Website: www.harithagroup.com
34.	Polgo Udyog Engineers & Consultants, Gandhigram Road, Mullakkad, Irinjalakuda, Thrissur – 680121 Phone: 0480-2826064, 2825064 Website: www.poljo.com
34.	Garware-Wall-Ropes Limited Annasalai, Chennai-600-002 Phone: 9380543162 Email: pnarasimhan@garwareropes.com

35.	The Regional Agro Industrial Development Co-operative of Kerala Ltd. (RAIDCO) P.B.NO.407, SPCA Road, Kannur - 2 Phone : 0497 2700276/875, 2702445, Fax : 0497 2700192 Email: chairman@raidco.in
36.	Kollam Fresh Chikkis Eravipuram P. O., Kollam
37.	Veena Gravure Printers Krishnapuram, Nadathara P. O., Thrissur – 680 751 Phone: 0487 2429946, Fax: 0487 2429335 Email: eenascreentsr@gmail.com
38.	K B R Gokulam Nadathara P. O., Thrissur Dt Phone: 8592002000, 9645000333
39.	SL Agro Tech Kodali, Thrissur - 680699 Phone: 9847855928, 8943151017
40.	ESSEN Multi pack Ltd ESSEN Road, Veravel(Shaper), Rajkot-360024, Gujarat Phone: +91 2827 252018 Email: vpa@essenpoly.com
41.	Venus Digital Arcade Kalathode, Thrissur Dt Phone: 0487-2371747, 9349371757 Email: info@Venusdigitalarcade.com
42.	Vasudha Natural Farming Udaya Nagar, Punkunnam, Ayyanthole P. O., Thrissur- 680003 Phone: +91 487 2382665 Email: info@vasudharetail.com
43.	Kudilingal kudi house Rayamangalaur P. O., Kuruppampadi, Ernakulam -683545 Phone: 9947623567
44.	G-NOME Systems Ground Floor, Suharsha Towers, Shornur Road, Thrissur Phone: 0487 2322892, 2320204 Email: gnomessystemssales@gmail.com
45.	Sowparnika Herbal Garden Mulayam P. O., Thrissur Phone: 9656419856
46.	MICASO Environmental Solutions Sree Vazheliparambil Building, Near Marottichadu Junction, Kalady -683574 Phone: 811956075, 9249896075

47.	Muhammedkutty Meppadi, Wyanad Phone: 9656908114
48.	Greencare Agro labs St.Pratric Church Building,Calicut -673002 Phone: 9447426627, 9747488660
49.	Veema Distributors Kechery-680501 Phone: 048885241529, 329696, 9961614656
50.	Star Health Insurance Ambika Arcade, Door no 25/651, Mahatma Gandhi Road, Naduvilal, Thrissur - 680001 Phone: 0487 232 5211 Website: www.starhealth.in
51.	Green Light Trading Punkunnam P. O., Thrissur Phone: 2380147, 9447725500 Email: greenlighttrading@gmail.com
52.	Inpsych Counselling centre Green Land Avennue Road, Kolazhy P. O., Thrissur Phone: 9495636923
53.	MCP Motors(India) Pvt.Ltd. MCP Hyundai, Marathakkara P. O., Thrissur Phone: 8569975740
54.	Shabu P J Palayamkode house, Chalakudy P. O., Thrissur Phone: 9544857803
55.	Jaya P R Padinjarootveedu, Nellankkara P. O., Thrissur
56.	Indraprastha Hero Kuriachira, Thrissur Phone: 0487-2254344, 8156862255
57.	VST Tillers & Tractors Ltd. Whitefield Road, Mahadewapura, Banglore, Karnataka State Phone: 09447138426 / 9895979720
58.	Redlands Ashlyn Motors Bypas Junction, Nadathara P. O., Thrissur Phone: 0487 2442460, 9020782248
59.	Teams Global Village Academy Thalikode, Mudicode P. O., Thrissur Phone: 9388877779

60.	Krishna Hair Oil Uppath House, Anchery High School, Thrissur Phone: 9446424045
61.	G. B. Enterprises East Marady, Muvattupuzha, Ernakulam Phone: 8281631354
62.	Chooral Thailam Kumaru Ayurvedics, Cherai, Paravoor, Ernakulam Phone: 9605036187
63.	Kizzar Lab Mosquito Killer lamp, Muchiparambil House, Mundoor, Thrissur Phone: 9961943202
64.	Karappan. M. C. Bamboo Cottage Industry, Arattupuzha, Thrissur- 680562 Phone: 93491 28170
65.	Pradeep PEN, Thoyakkavil, Ayyanthole P. O., Thrissur Phone: 9142687774
66.	Hameed Hydrogen balloons Thondiveetil, Thottapady, Thrissur
67.	Green Eden Agro & Co. Marottichal P. O., Thrissur Phone: 0487 2689064 Email: info@greenedenagro.com
68.	Rekha Ullas Chappals Arakkal House, Thalikulam P. O., Thrissur
69.	ITL Motors Pvt. Ltd. NH 47 Bye Pass Road, Kuttanellur P. O., Thrissur - 680 014 Phone: 0487 3300222, 9388396179 Website: www.itlmotors.com
70.	Dr. P.N. Sughathan Ayurveda Clinic Thrissur
71.	Haritha Pharmaceuticals Varandarappilly,Thrissur Phone: 0480 2760791 Email: info@harithagroup.com
72.	Pain & Palliative Care Society Old Dist. Hospital Building Thrissur - 680 001 Phone: 9446423512 Email: ppcs.thrissur@gmail.com

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