संवादपत्र
NEWSLETTER
भाकृअनुप – केंद्रीय तटीय कृषि अनुसंधान संस्थान
(भारतीय कृषि अनुसंधान परिषद)
ICAR - Central Coastal Agricultural Research Institute
(Indian Council of Agricultural Research)

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हर कदम, हर डगर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद

Agrisearch with a human touch

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Director's Desk

Coastal saline soils constitutes nearly 31% (2.10 Mha) of the total salt affected area (6.74 Mha) in the country. The affected states include West Bengal, Orissa, Andhra Pradesh, Tamil Nadu, Kerala, Karnataka, Goa, Maharashtra and Gujarat and the Andamon and Nicobar Islands. The entire area is monocropped with rice being the only crop grown during the monsoon season. The land remain fallow during the rest of the year due to lack of good quality irrigation water and high level of soil salinity. Salinity, water stagnation and submergence are the common problems encountered in these soils. Ingression of tidal water from adjoining creeks causing salinity, where as high rainfall coupled with tidal movement of water causes submergence and water stagnation. Due to these prevailing conditions, the productivity of the area has remained very low. The climate and physical features of the coastal saline soils are well suited to rice crop in monsoon season and considerable efforts at several locations of the country were made to improve its productivity. CSR-1, 2 and 3 are the first salt tolerant rice varieties developed for the coastal saline soils in West Bengal and are selection from the local landraces Damodar, Dasal and Getu, respectively.

Among the western states, Kerala, Karnataka, Goa, Maharashtra coast share similar climatic conditions. The rainfall pattern and soil type are mostly same except in Kerala soils are slightly acidic. Coastal saline soils of these states are known by unique names like Pokkali tracts in Kerala, Gajani bhoomi in Karnataka; and in Goa and Maharashtra are called by Khazan and Khar land, respectively. The preference for rice varieties in these regions is red kernelled coarse grained rice varieties which are medium in duration and suitable for parboiled rice.

ICAR-Central Coastal Agricultural Research Institute, is involved in the development of salinity tolerant high yielding rice since 2010. In the year 2017, Institute has released two high yielding rice varieties viz., Goa dhan-1 and Goa dhan-2 for the salt affected coastal saline soils of Goa state. Both the varieties are pure line selections from Korgut, a popular traditional rice landrace of the state. Many of such land races are still popular among the farmers in these states. Korgut and Asgo from Goa, Khala Ratta and Bhura Ratta from Maharashtra coast, Khari Kagga and Bili Kagga from Karnataka coast and Chettiviruppu and Pokkali from the Kerala coast are the few examples. The challenge in these regions is to breed / develop dual stress tolerant rice varieties which can tolerate submergence along with salinity.

Chakurkar
DIRECTOR

RESEARCH HIGHLIGHTS

Effects of soil and water conservation measures on properties of lateritic soils

(Sujeet Desai and G R Mahajan)

Long term (13 years) effects of soil and water conservation measures on soil properties in lateritic soils on sloping land under mango was investigated. The experiment involved four treatments namely continuous contour trench + *vetiveria zizanoides* (CCT+VB), staggered contour trench + *vetiveria zizanoides* (SCT+VB), *vetiveria zizanoides* (VB) and control treatment. Soil samples from three depths viz. 0-30 cm, 30-60 cm and 60-90 cm were collected from different treatments. The lowest bulk density (1.10 Mg m^{-3}) and highest available nitrogen (104.4 mg kg^{-1}) and available potassium (83.74 mg kg^{-1}) were found in CCT+VB treatment at 0-30 cm depth. At 30-60 cm depth lowest bulk density (1.09 Mg m^{-3}) and highest pH (5.21) was found in CCT+VB treatment whereas highest available nitrogen (72.72 mg kg^{-1}) was found in vetiveria zizanoides (VB) treatment. The analyses of soil samples of 60-90 cm depth revealed no significant of effect soil and water conservation measures on soil properties. Adoption of soil and water conservation measures in lateritic soils on sloping land improved the properties of top soil.

Comparison of different empirical techniques for modelling daily reference evapotranspiration

(Bappa Das)

Accurate estimation of evapotranspiration is required to determine the water requirement of crops which is generally computed by multiplying crop coefficient (Kc) with reference evapotranspiration (ET0). Though several models have been developed earlier for quantifying ET0, these models need local validation. We have compared the performance of 30 empirical models viz. mass-, temperature- and radiation-based for ET0 estimation of Goa. The results revealed that Penman, Hargreaves3 and Turc were the best among mass-, temperature- and radiation-based models (R2 = 0.51, 0.52 and 0.93, respectively). Radiation-based models outperformed among all other models. The identified models can be used for accurate estimation of ET0 and computing crop water requirement for the studied region with limited weather data.

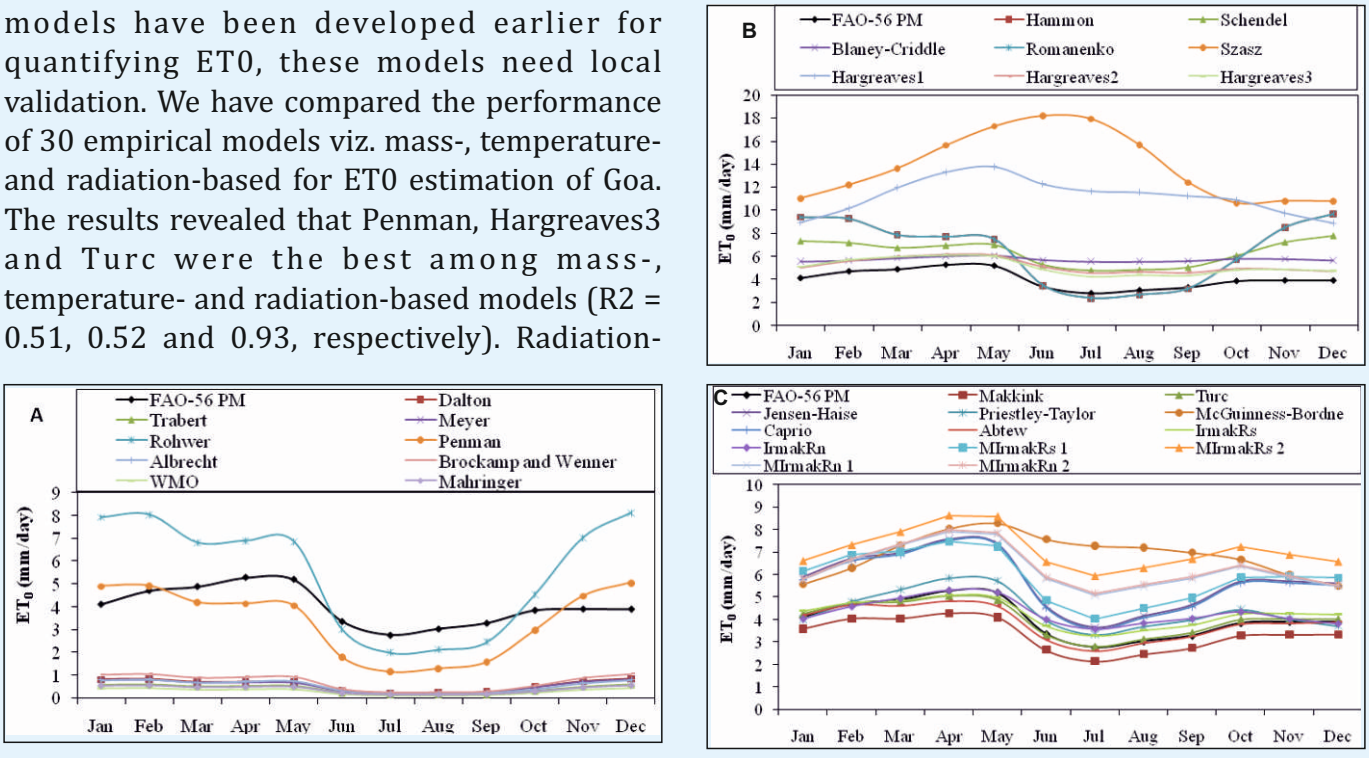


Fig. Comparison of mean monthly ET_0 for each (A) mass-, (B) temperature- and (C) radiation-based and FAO-56 PM model

Energy consumption and greenhouse gas emission from rice production system

(Paramesha V and Bappa Das)

During recent years, the energy consumption and greenhouse gas (GHG) emissions are of major concern across the globe. In this regard, a study was conducted to know the energy use pattern and efficiency of rice farmers in coastal state using data envelopment analysis. The result indicated that energy use efficiency, energy productivity, net energy and human energy profitability of rice production system were 2.40, 0.16 MJ/kg, 15728 MJ/ha and 42.8, respectively. Based on technical and pure technical efficiency 5 and 21 farmers were found efficient, respectively. The econometric model depicted that nitrogen, farmyard manure and seeds have positive impact on crop yield while labour and diesel have negative impact both on crop yield and energy. Nitrogenous fertiliser, diesel, and machinery are the main non-renewable inputs contributing to the GHG emissions. The consumption of indirect (81.7 %) and non-renewable (73.8 %) energy were found higher than direct (18.3%) and renewable energy (26.2%). Our findings suggested that to conserve energy and reduce GHG emissions the farmers of this region should adopt conservation tillage and better crop management practices.

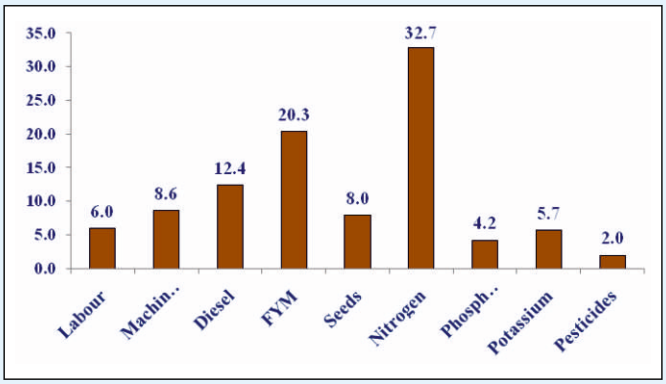


Figure 1. The share (%) of total mean energy inputs in rice production system

Table. Greenhouse gas (GHG) emissions coefficients of inputs and Estimated GHG for rice using non-renewable inputs

Input	Unit	GHG ($kg\ CO_2$ eq unit-1)	coefficient ($kg\ CO_2$ eq ha^{-1})
Machinery	MJ	0.071	68.5
Diesel fuel	L	2.76	67.9
Nitrogen	kg	1.3	72.1
Phosphorus	kg	0.2	7.8
Potassium	kg	0.2	11.4
Insecticides	kg	5.1	5.9

Exploration for wild and landrace germplasm of rice in the coastal regions of Goa, Karnataka and Maharashtra

(Manohara KK)

Since 2010, exploration of wild and landrace germplasm of rice were undertaken in the coastal regions of Goa, Karnataka and Maharashtra coasts as these regions were known to possess rich diversity in rice. During the 2017 Kharif season, 15 landraces were collected from the Uttara Kannada district of Karnataka and were added to the existing collections. Till date 107 germplasm of rice were collected of which 53 (25 landraces + 28 wild rice) are from Goa, 47 from Karnataka and seven are from Maharashtra. These are being maintained at the Institute farm as field gene bank. Most of these collections are from the salinity hot spots showing tolerance to salinity stress and few are flash flooding tolerant. The collections are useful in breeding dual stress tolerant rice varieties for coastal saline low lying areas which are often affected with salinity and water stagnation.

Sahbhagi Dhan - a drought tolerant rice variety for rainfed upland areas of Goa

(Manohara KK)

During Kharif 2017, Front Line Demonstrations on drought tolerant rice variety Sahbhagi Dhan was taken up in the farmers field at Gaodongrim and Cotigao villages of canacona taluka in South Goa district of Goa. The variety was developed by National Rice Research Institute, Cuttack, in collaboration with International Rice Research Institute, Philippines. All together about 6.0 ha area was covered under Sahbhagi dhan in 20 farmers' field. The variety has given average grain yield of 5.0 t/ha compared to the farmers variety Jyothi which yielded 3.0-3.5 t/ha.

Selection of areca plants with dwarf stature with large fruit/chali

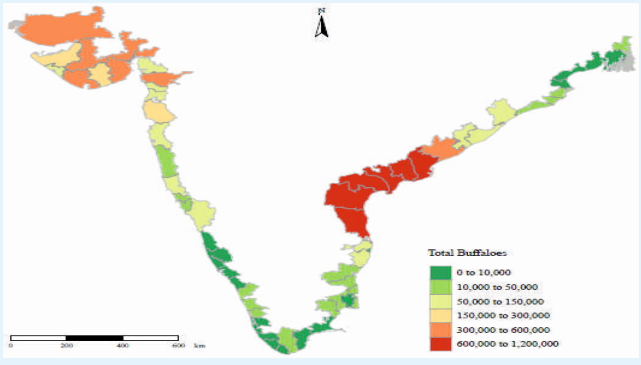
(V Arunachalam)

Areca/betel nut palm is a major crop of coastal humid tropics and contributes to the economy of farmers. Dwarf form of areca "Hirehalli Dwarf" is employed in breeding programs to develop hybrids with dwarf stature and high yield. Hirehalli Dwarf has undesirable traits of small fruit size and low yield. During the study on half-sib progenies of Hirehalli Dwarf at Goa, segregating plants with tall, dwarf and intermediate stature were observed. After seven years of planting and observation, few rare individuals (9/2126) among the segregating plants were found with a combination of desirable traits dwarf stature (internodal length of 1-1.5 cm) and large fruit weighing > 50 g fresh weight with a recovery of >12 g of dry chali per fruit. The nursery is raised by seeds from selected plants. A block of 32 progenies of the selected plants is established to advance the population for characterisation and seed multiplication.

Buffalo production scenario in coastal India

(Gokuldas PP, Bappa Das, Chakurkar EB)

Buffalo production in India is predominantly un-organized and production systems vary based on topography and vegetation. Various breeds such as Murrah, Pandharpuri, Jaffarabadi, Chilika are found in the coastal belt of the country. There are about 9.61 million animals (8.5 million-female, 1.1 million-male) in coastal region which is 9% of the total population in the country. About 2.8 million households practice farming. Total number of milch buffaloes is 3.5 million. Among the total male buffaloes, there are about 85,000 active breeding bulls in the coastal region. Buffaloes are raised in extensive system in the coastal and hilly areas where large-scale pasture land and enough green forage are available.



NEW INITIATIVES

Lining of large size water harvesting pond in laterite soils

(Sujeet Desai)

Lining of large size water harvesting pond involves different steps. Initially the inner sides of the pond are sprayed with high concentration herbicide like glyphosate @ 10 ml/lit of water to kill the weeds and unwanted plants. Later about 10-15 cm thick layer of paddy straw is layed along the sides of the pond to provide a smooth surface. Once the paddy straw is layed, geotextile mat are layed along the slope of the pond to make the side slopes stable. The paddy straw and geotextile mat not only provides smooth surface but also protects the silpaulin lining materials from damage caused by stones and other sharp materials. A 300 GSM thickness silpaulin lining material is used to line the sides and bottom of the pond. After laying the silpaulin, it is properly set and fixed in the trench dugout around the pond and covered with soil to ensure that the sheet does not get displaced.

Virgin coconut oil by fermentation method

(Arunachalam V, Chethan Kumar HB and Sunetra Talaulikar)

Virgin coconut oil (VCO) is prepared from the kernel of fresh mature coconut fruits rather than the conventional dry copra. VCO is a value added product with premium price and has good market potential due to health and nutritional benefits. VCO is prepared using different methods such as hot process, cold press and fermentation. A new initiative was made on easy preparation of VCO using fermentation method by employing bacterial strains obtained from National Collection of Dairy Cultures (NCDC) of ICAR-National Dairy Research Institute (NDRI) Karnal. Two bacterial cultures *Lactobacillus fermentum*, culture no. 141, *Lactobacillus delbrueckii ssp. bulgaricus* culture no. 184 were procured, retrieved and maintained at laboratory conditions. The cultures are tested for their ability to ferment the coconut milk to obtain VCO.

Pilot studies on semen processing and Artificial Insemination in backyard poultry birds reared under coastal climate

(Gokuldas PP, Sinny Kerkar, RS Rajkumar, EB Chakurkar)

Together with other scientific management practices, reproductive management is also an important component for efficient poultry production. Controlled breeding using artificial insemination (A.I.) is especially important for broiler breeds, other improved varieties, where fertility is low due to heavy body weight. Also, low fertility can results from lower libido and unsuccessful mating during adverse climatic stress conditions. In this backdrop, pilot studies on standardizing semen collection and A.I were initiated in Gramapriya birds, an improved egg purpose poultry variety suitable for backyard farming. A total of 220 inseminations through intra-cloacal method using pooled un-diluted semen were performed and evaluation of overall efficacy and fertility are under progress.

MAJOR EVENTS

World Coconut day celebrations

World Coconut day was celebrated at the institute with support from ICAR-AICRP on Palms-Goa centre and ICAR-KVK North Goa on 4th September, 2017. Dr EB Chakurkar, Director, Dr V Arunachalam Prin. Scientist (Horticulture) & In-charge, ICAR-AICRP on Palms-Goa centre and Mr. RS Joshi from Directorate of Agriculture, Govt. of Goa graced the occasion. About 25 farmers from various parts of the state participated and in the technical session, Mr. RS Joshi briefed the farmers about various schemes and subsidies through coconut development board. Dr AR Desai, Sr. Scientist (Horticulture) explained various options available in coconut to include intercrops to improve the income. Dr. MJ Gupta, Scientist (Agril. structres and process eng.) explained the mechanization in coconut cultivation. Dr. V Arunachalam, Prin. Scientist (Horticulture) briefed the varieties, hybrids of coconut, mother palms selection and nursery management aspects. Dr S Priya Devi Sr. Scientist (Horticulture) briefed the various fruit crops suitable for intercropping in coconut garden. Ms. Sunetra Talaulikar SMS (Home Science) KVK, North Goa, explained the value addition aspects of coconut with special reference to virgin coconut oil. The farmers actively interacted with the experts and clarified their doubts on various aspects of coconut cultivation and utilization.

संसदीय राजभाषा समिति की दूसरी उपसमिति द्वारा दिनांक 09.09.2017 को भाकृअनुप - केन्द्रीय तटीय कृषि अनुसंधान संस्थान, गोवा में राजभाषा संबंधी निरीक्षण

संसदीय राजभाषा समिति की दूसरी उपसमिति द्वारा दिनांक 09.09.2017 को भाकृअनुप - केन्द्रीय तटीय कृषि अनुसंधान संस्थान, गोवा में राजभाषा संबंधी निरीक्षण किया गया। संसदीय राजभाषा समिति की दूसरी उपसमिति के निम्नलिखित सदस्य राजभाषा संबंधी निरीक्षण हेतु गोवा आए थे -

1. डॉ सत्यनारायण जटिया, संसद सदस्य (राज्य सभा) व उपाध्यक्ष (संसदीय राजभाषा समिति की दूसरी उपसमिति)
2. डॉ प्रसन्न कुमार पाटसाणी, संसद सदस्य (लोक सभा) व संयोजक (संसदीय राजभाषा समिति की दूसरी उपसमिति)
3. डॉ सुनील बलीराम गायकवाड़, संसद सदस्य (लोक सभा) व सदस्य (संसदीय राजभाषा समिति की दूसरी उपसमिति)
4. श्री लक्ष्मी नारायण यादव, संसद सदस्य (लोक सभा) व सदस्य (संसदीय राजभाषा समिति की दूसरी उपसमिति)

समिति के सदस्यों का स्वागत करते हुए संस्थान के निदेशक (कार्यकारी) डॉ एकनाथ भा चाकुरकर ने सदस्यों को संस्थान की गतिविधियों के बारे में अवगत कराया।

संस्थान के निरीक्षण के दौरान समिति के सदस्यों ने संस्थान में चल रहे अनुसंधान संबंधी तथा राजभाषा संबंधी कार्यों की विशेष प्रशंसा की। इस दौरान संस्थान द्वारा आयोजित प्रदर्शनी का सभी सदस्यों ने अवलोकन किया तथा विभिन्न तकनीकी तथा प्रशासनिक प्रकाशनों के बारे

में जानकारी ली । समिति के सदस्यों द्वारा हिन्दी के प्रचार एवं प्रसार के लिए संदेश भी जारी किया गया।

इस अवसर पर संस्थान द्वारा प्रकाशित एक तकनीकी विवरणिका "भाकृअनुप: केन्द्रीय तटीय कृषि अनुसंधान संस्थान, गोवा - एक झलक" का विमोचन किया गया।

इस निरीक्षण के लिए मुख्यालय से डॉ शिव कुमार ध्यानी (प्रधान वैज्ञानिक - प्रा स प्र), श्रीमति सीमा चोपड़ा (निदेशक -राजभाषा) तथा श्री ओम प्रकाश जोशी (सहायक मुख्य तकनीकी अधिकारी) तथा संस्थान से श्री सौरभ मुनि वित्त एवं लेखा अधिकारी / सचिव (रा॰का॰स॰), डॉ गोपाल रा महाजन (वैज्ञानिक-मृदा विज्ञान), श्री सोमनाथ (प्रशासनिक अधिकारी) व श्री सिद्धार्थ मराठे (तकनीकी अधिकारी) ने निरीक्षण में भाग लिया।

धन्यवाद ज्ञापन डॉ शिव कुमार ध्यानी (प्रधान वैज्ञानिक - प्रा. स प्र, नई दिल्ली) द्वारा दिया गया।

Training Programme on Chilli Cultivation

Training Programme on Chilli Cultivation was organised at this Institute by Deccan Fine Chemicals (India) Pvt. Ltd. in association with this Institute on 10-10-2017. The inaugural ceremony was held at conference hall in the forenoon. The chief guest of the function was Dr E. B. Chakurkar Director (A) ICAR-CCARI Old Goa. Mr. Kiran Desai, Site Head, Deccan Fine Chemicals (India) Pvt. Ltd. graced the occasion. Around 130 farmers from Dhulapi, Cumbarzua, Amona, Priol, Khorlim and Karmali villages attended the programme. During the technical session, Dr. R. Ramesh, Principal Scientist (Plant Pathology) gave a lecture on the Integrated pest and disease management of chilli and Dr. M. Thangam, Principal Scientist (Horticulture Veg - Science) gave a lecture on the Cultivation of Chilli

Meeting on Geographical Indications (GI) registration of Khola Chilli

A meeting with officials of Goa State Council of Science & Technology, Saligao along with the members of Khola Chilli Cultivators' Group was held at this Institute on 10th October, 2017 in order to prepare a road map for Geographical Indication (GI) registration of Khola Chilli. Dr. E.B. Chakurkar, Director (A), ICAR-CCARI chaired the meeting along with Mr. Deepak Parab, Member secretary, Goa State Council of Science and Technology, Saligao along with Madhuri Shetye (Assistant). Representatives of Khola Chilli Cultivator's Group, Shri Ratnakar Velip, (President), Mrs. Suvidha Zaravkar (Secretary) and Mrs. Radha Talpikar (Treasurer), Mrs. Sumita S. Velip (Member) were also present for the above meeting. Various points pertinent to the procedure and formalities for GI registration for "Khola Chillies" was discussed. Dr. Gokuldas, P.P. Scientist (A.R.), IPR Cell Co-ordinator facilitated the conduct of the meeting at this Institute.

World Egg Day Celebrations

ICAR-Central Coastal Agricultural Research Institute, Ela, Old Goa celebrated the "World Egg Day" on Friday 13th October, 2017. Dr Aman Syed, managing Director (South Asia), Alltech Biotechnology Pvt. Ltd, Bangalore graced the occasion as the chief guest. Dr Aman Syed described the growth of Indian layer industry and underlined the importance of the egg in human nutrition. Dr. E. B. Chakurkar, Director welcomed and urged the congregation to include egg as a potential source of protein in diet. A lecture on Nutritive value and value addition to eggs was delivered by Dr. R Solomon Rajkumar, Scientist (Livestock Products Technology). On this occasion an 'Egg Recipe competition" was organized at the venue. Around 40 entrances were participated in the competition.

World Food Day celebrations

ICAR-Central Coastal Agricultural Research Institute, Old Goa, organized 'Rice Field day' on the occasion of "World Food Day" on Friday 16th October, 2017. Mr. Nelson Figueriedo, Director, Department of Agriculture, Govt of Goa, graced the occasion as the chief guest. Nelson Figueriedo appreciated the efforts of the ICAR Goa in releasing new salt tolerant rice varieties for the state. He also outlined different schemes available for the farmers and requested all the farmers to make use of govt schemes. Dr. EB Chakurkar, Director of the institute urged the farmers to focus on community farming and to go for processing and value addition of agricultural and horticultural produce so that they can get better price in the market. Mr. Sanjeev Mayekar, Project Director, ATMA (North Goa), outlined the different activities and schemes under the ATMA programme. Dr. Manohara, KK, scientist in plant breeding organized the programme and gave a lecture on 'New varieties of rice for Goa - Involving farmers in quality seed production'. In his presentation, he highlighted on the new varieties of rice viz., Goa Dhan-1 and Goa Dhan -2, which were released recently by the institute for the coastal saline soils, and also urged farmers to take up cultivation of variety Sabhagidhan in the upland areas. Around 100 participants including farmers and officers from ATMA prgramme of the department of agriculture attended the programme. Later farmers were taken for field visit at the institute demonstration and seed production plots.

Women Farmers Day

Institute celebrated Women Farmers Day it on 16th October and farmers from both North and South Goa districts attended the programme. The significant role a woman plays in Indian Agriculture was emphasized by the Director, Dr. EB Chakurkar. ICAR-CCARI conducted a project to study the Technological and Nutritional interventions required in food, nutritional and economic security of Goan women farmers. The results elucidated from the project were presented by Dr. Gopal R Mahajan, Scientist (soil Science). The significant role the technologies like backyard poultry, bypass fat along with integrated cropping system play in livelihood and nutritional security of farm women were deliberated. Dr. M J Gupta, Scientist, Scientist (SS) (AS&PE), presented on drudgery reduction in farm women. She presented details on various Agricultural machinery, tools and implements used for ploughing, sowing, transplanting, weeding, harvesting, post-harvest practices like thrashing, winnowing, parboiling etc. Dr. S Priya Devi, Senior Scientist (Horticulture) delivered a lecture on role of women in agriculture, both globally and at Indian level. She stressed upon their meagre role in decision making and the existence of gender inequality, which hampers the women empowerment.

Rice Field Day at Cotigao village

ICAR-CCARI organized 'Rice field day' at Cotigao village in Canacona taluka of South Goa district on 23rd October 2017. The main objective of the field day was to appraise famers about the newly introduced upland rice variety Sabhagidhan. Seeds of Sabhagidhan were distributed to farmers through ICAR seed project to take up front line demonstrations (FLDs) cum participatory seed production. An area of 6 ha was covered under FLDs in both *Gaodongrem* and*Cotigao* villages of South Goa. During the field day, farmers were taken through the FLD field's and were informed about the benefit of growing Sabhagidhan under upland (*morod*) conditions. Later small interaction meeting was arranged with the farmers. Dr. E. B. Chakurkar, director ICAR-CCARI, speaking on the occasion, briefed the farmers about the different technologies available at ICAR-CCARI. Shri. Babu Narhari Komarapant, progressive farmer urged farmers to take up various other allied activities along with the regular rice farming for better income. Dr. Manohara KK Scientist in plant breeding, briefed farmers about the new variety Sabhagidhan and its advantage over the traditionally grown varieties like Jaya, Jyothi and Karjat-3. He also informed the success of earlier FLDs on Sabhagidhan in the neighboring villages.

Training programme on Integrated Pest & Disease Management in major crops of Goa

One Day training programme on Integrated Pest & Disease Management in major crops of Goa was conducted to the ATM & BTM staff of North Goa and Suth Goa Districts on 28-10-2017. Lectures on the Insect pest and disease management were given by Dr. R. Ramesh, Principal Scientist, (Plant Pathology). Dr. R. Maruthadurai, Scientist, (Agricultural Entomology). Detailed discussions on pest and diseses were held. Twenty Four officials participated in the programme.

Cashew Stakeholders' Workshop on Analysis of Cashew Value Chain in Goa

ICAR-CCARI hosted a workshop on "Analysis of Cashew Value Chain in Goa" on 31st October, 2017, to facilitate a Project of The Directorate of Cashewnut and Cocoa Development, Kochi, executed through the UAS, Dharwad. Cashew farmers being the first link of cashew value chain, expressed the concern about the major constraints such as need for location specific varieties, permanent solution for cashew stem and root borer, marketing problems, role of co-operative societies, post harvest handling of RCNs and cashew apples, small scale processing opportunities and constraints, raw cashew nut price policies, researchable issues, etc., during the technical sessions. The uniqueness of the workshop was evident among the participants who were in themselves, the cashew farmers, processors, agriculture officers, extension and marketing agencies also. While presiding over the function, Dr. EB Chakurkar, Director, of the institute, emphatically remarked for the complementary interaction among the stakeholders. In his inaugural address Dr. Venkatesh Hubballi, Director, DCCD, Kochi, emphasized the need of such value chain studies for stabilizing the national cashew scenario for competing in the international market. Shri Naveen Kumar Patle, Deputy Commissioner(Hort.), Ministry of Agriculture & Farmers' Welfare, Govt. of India, while addressing the gathering as Chief guest, stressed for a comprehensive report of the project for constructive action plan for addressing the farmers' concerns. Shri Nelson Figueiredo, Director of Agriculture, Govt. of Goa, Shri Madhav Sahakari, Chairman, Goa Cashew Manufacturers Association , Shri. Ullas Gopal Asnodkar, Chairman, Goa State Agriculture Marketing Board, besides addressing the inaugural gathering, actively interacted as vital stakeholders of the Goa cashew economy, in the technical sessions revolving around production problems, processing, value addition & marketing. Dr. SM Mundinamani, Prof. (Agril. Economics) and the Principal Investigator of the project was appraised by the participating cashew stakeholders, of the ground realities of the cashew economy in Goa for incorporating in the analysis of the cashew value chain in Goa for preparing the pragmatic report for subsequent action plan.

Distribution of fishing gear materials to tribal fishermen along Zuari estuary

A programme on "Distribution of fishing gear materials" was organised by the institute on 2nd November, 2017. Fishing gear (gillnet) materials were distributed among the tribal fisher-folk of Nauxim, Cacra and Odxal and Caranzalem. Dr. EB Chakurkar, Director of the institute briefed about the research and extension activities and Tribal Sub Plan programme of Govt. of India while inaugurating the distribution of materials, Hon. Minister for Fisheries Govt. of Goa, Shri. Vinoda Paliencar appreciated the efforts of the institute for improving the livelihood of fishermen. Shri. Janu Rozario, Sarpanch, Taleigao, welcomed the great initiative from ICAR and ensured the complete co-operation from the fishermen and panchayath officials.

Vigilance awareness week

Institute observed the vigilance awareness week from 30th October to 4th November, 2017. All the staff members actively participated in the week by taking e-pledge at cvc.nic.in as individuals. Dr EB Chakurkar, Director took e-pledge as organisation to represent the institute. The program was coordinated by Dr V Arunachalam, Vigilance Officer of the Institute. As part of vigilance awareness week, an essay writing competition was organized. Winners of the competition were rewarded with cash prizes. A video dealing with good practices, ways of dealing corruption, role of CVC was prepared by the AKMU of the institute and broadcasted in social media. Handouts with slogans of corruption awareness were distributed to the staff and public. An off-campus campaign was organized to create vigilance awareness at Heritage site of Old Goa Church at Old Goa.

Rice Field Day' at Chorao village

Institute organized 'Rice Field Day' on 4th November, 2017 at Chorao Island in the plant breeding salinity experimental farm. The objective of the field day was to appraise farmers about the newly developed salt tolerant rice varieties by the Institute. The farmers were taken through the demonstration plots of Goa dhan-1, Goa dhan-2 and also promising advanced breeding line GRS-1. Dr. Manohara, KK, Scientist (GPB), explained the farmers about the advantages of Goa dhan-1 and Goa dhan-2 over the traditionally cultivated variety Korgut. Farmers are motivated with the performance of the new varieties in the demonstration plot.

Visit of Parliamentary Standing Committee on Agriculture to the institute

The Parliamentary Standing Committee on Agriculture visited the institute during 12th to 13th November, 2017. The committee was headed by Shri. Hukumdev Narayan Yadav, Member of Parliament along with ten other members of Parliament who are part of the Committee discussed on 'Research initiatives for development of Agriculture and allied sectors in Coastal and Island regions in the country'. Dr EB Chakurkar, Director briefed about the significant achievements of the institute and its contributions to farmers. The Chairman and members appreciated the efforts and achievements of the institute for developing coastal agriculture. The committee also planted cashew grafts in the institute campus.

The First meeting of VIII Research Advisory Committee (RAC)

First meeting of VIII RAC was held from 18th to 19th November, 2017. Dr. EB Chakurkar, Director briefed the house about the Institute, status of Coastal agriculture, ongoing research projects and the research achievements. He also highlighted the scientific man power requirement of Institute to achieve the mandate and objectives of coastal agriculture research. Action taken report for the last year RAC recommendations was presented by Dr. R Ramesh, Prin. Scientist and Member Sec., RAC and reviewed by the committee. Presentations were made by the Sectional in-charges on the research accomplishments. The chairman and members of RAC appreciated the achievements made with the limited scientific and technical manpower. After detailed deliberations and discussions the RAC made the recommendations.

Training programme on Artificial Insemination in dairy animals

Institute organized a training programme on Artificial Insemination in Dairy Animals sponsored by Goa State Co-op Milk Producers' Union Ltd., Ponda during 22nd November, 2017 to 6th January, 2018. Dr. NC Sawant, Managing Director, Goa Dairy was the Chief Guest of the inaugural function. Dr. EB Chakurkar, Director (A), ICAR-CCARI presided over the inaugural function and in his speech, he highlighted the importance of artificial insemination in dairy animals. Dr. Gokuldas PP, Scientist (AR) and Training Coordinator, briefed about the course curriculum and training schedule. Seven participants selected from different societies under Goa Dairy, participated in the program. Training programme covered important aspects like frozen semen handling, technique of A.I., estrus detection, handling of liquid nitrogen containers and topics like first aid, animal restraining. Training kits including A.I. gun, gloves, training manual, technical brochures, lecture and video compilation in the form of CD and certificates were also distributed to the trainees.

National Milk Day celebrations

The institute celebrated National Milk Day at Ibrampur on 28th November, 2017. The program was chaired by Dr. EB Chakurkar, Director, ICAR-CCARI, along with Shri. HRC Prabhu, PC, KVK, North Goa, Shri Subhash Sawant, Head master, Sateri Vidya Mandir, Mrs. Sonali S Pawar, Sarpanch, Village Panchayat Ibrampur-Hankhane, Shri Govind Sawant, Chairman Shri. Sateri Milk producers cooperative society, Mr. Pramod Hingmare, Representative Delaval Pvt Ltd, Dr. Sanjay Udharwar, Dr. Susitha Rajkumar, Dr. Chetan Kumar, Ms. Maneesha, SR, scientists from the institute. The Program was attended by dairy farmers and secondary school students. Dr. EB Chakurkar, Director, ICAR-CCARI delivered an awareness lecture on importance of Clean Milk Production to the dairy farmers. Mr. Pramod Hingmire, explained about the dairy related equipments and services available from Delaval Pvt. Ltd. An essay competition on the topic Importance of Milk in Human Nutrition was also organised for the secondary school students of the Sateri Vidya Mandir. Later teat dip cup and teat disinfectant were distributed to dairy farmers.

Agriculture education day celebrations

Institute celebrated agricultural education day on 1st December, 2017. Dr. EB Chakurkar, Director, briefed about the programme and initiatives taken by the institute to inculcate the importance agricultural education among the students. Mr. Narendra Sawaikar, Hon. Member of Parliament (South Goa) was the chief guest. The scientific, technical and administration staff, staff of KVK and teachers and students of SFX High School, Siolim, Shri. Shanta Vidyalaya, Siolim, Holy Cross High School, Siolim, SS Angle Higher Secondary School, ,Mashem, Canacona, Goa, Shree Mallikarjun Higher Secondary School, Canacona, Goa and Vassant V. S. Kukalekar School of Arts and Commerce participated in the event. The programme had an essay competition and a session on 'Agricultural Education: Introduction and opportunities', wherein a detailed deliberation was given on how to pursue the agricultural education and career opportunities in various sectors by Dr. GR Mahajan, Scientist (Soil Science).

World Soil Day celebrations

Institute celebrated ''World Soil Day" on 5th December, 2017. Shri. Govind Guade, Hon'ble Minister for Tribal Welfare, Art and Culture, Govt. of Goa, was the Chief Guest and Dr. SK Singh, Director, ICAR– NBSSLUP, Nagpur was guest of honour. Dr. EB Chakurkar, Director, ICAR-CCARI in his welcome address, briefed on the importance of soil health and soil health cards. Shri. Govind Guade, advised all the farmers to get their soils tested and use manures and fertilizer in a balanced manner to maintain soil fertility and crop yields. Dr. SK Singh, Director, ICAR-NBSSLUP briefed different types of soil in Goa and methods to maintain the soil fertility by following soil health card recommendations. About 180 Soil health cards were distributed to the farmers to the farmers from different villages Sal, Pilgao, Keri, Surla and Priol. During the technical session, Dr. Gopal Mahajan, Scientist, ICAR-CCARI and Mr. Shashi Vishwakarma, Technical Officer, KVK, discussed in detail about soil health card its importance and use.

Visit of Shri. Radha Mohan Singh, Hon. Union Minister for Agriculture and Farmers' Welfare and AquaGoa mega fish festival

Shri. Radha Mohan Singh, Hon. Union minister for Agriculture and Farmers' welfare. Govt of India, during his visit to Goa on 9th December, 2017 discussed with the Director and officials of ICAR-CCARI Goa about ongoing research activities of the institute during the AquaGoa mega fish festival held during 7th to 10th December, 2017 at Panjim. The discussion focused on distinct Agro-Meteorological Unit established in Goa ICAR-KVK, two salt tolerant varieties of rice released namely Goa Dhan-1 and Goa Dhan-2, release of 3 cashew varieties namely Goa Cashew–2, 3 and 4, release of unique rust-resistant red Amaranthus variety, Goa Tambadi Bhaji-1, registration of Mankurad Mango selection, registration of Agonda Goan, a local pig breed is registered with NBAGR, decision support system launched for soil-test based fertiliser recommendations, organised 570 on-farm trails, distribution of quality seeds and planting materials to farmers, development of integrated farming system models, documentation,

conservation and registration of indigenous cattle breed–Shwetakapila, evaluation of artificial fish habitats, development of low cost aquaculture systems and ornamental fish culture. An exhibition stall displaying fisheries and agricultural research and extension activities were kept during the four day fish festival. Hon'ble Minister appreciated the efforts of director and his team for excellent work being undertaken at the institute and expressed that the technologies of ICAR-CCARI will help Goa state for the development of agriculture.

First Blood Donation Camp organised by ICAR-CCARI

First blood donation camp was organised by the officials of the Blood Bank, Goa Medical College, Bambolim, Goa at the Institute on 23rd December, 2017. Around 50 staff (both permanent and contractual) and their family members participated in the noble cause conducted under the supervision of Dr. EB Chakurkar, Director. A total of 30 units of blood was collected at the camp. A certificate of appreciation was also presented by the Blood Bank, Goa Medical College, Bambolim, Goa to this Institute for organising this Camp.

"Swachh Bharat Abhiyan" Award to Ibrampur – Hankane- A village adopted under 'Mera Goan Mera Gourav' by the institute

Ibrampur –Hankane , Pernem, a village adopted by the institute under 'Mera Goan Mera Gourav" was given "Swachh Bharat Abhiyan" award and declared cleanest village in North Goa. Mrs. Sonali Pawar, Sarpanch, received the award (including cash prize of 50,000) at the hands of Smt. Mridula Sinha, Hon. Governor of Goa. The programme was also honoured by Shri Manohar Parrikar, Hon. Chief Minister, Govt. of Goa. Under the chairmanship of Dr. EB Chakurkar, Director, ICAR-CCARI, modern agricultural technologies have been demonstrated to improve the crop productivity. Dairy being the major occupation in the village, the technologies like clean milk production, use of bypass fat and introduction of improved fodder varieties like CO-5 have been demonstrated by KVK, North Goa. Under "Swachh Bharat Abhiyan" KVK along with villagers, cleaned public places, school premises etc. 'Swatchata Pakawada' was also celebrated in collaboration with Sri. Sateri Dairy Cooperative Society, to create awareness and importance of keeping the premises clean. Vermicomposting technology was demonstrated by establishing unit in the village to convert biodegradable waste into a good manure. 'Vanamahotsav' was also celebrated in collaboration with Higher Secondary School to create awareness on the importance of plants among the students.

IPR CELL /ITMU ACTIVITIES

1. Patent Filing

- Complete specification for the patent application entitled "Process for preparing cashew apple crunch and resultant food product thereof" with application serial No. 201621012413 was published by Indian Patent Office on 13/10/2017.
- Complete specification for the patent application entitled "Process for preparing nutmeg taffy and resultant food product thereof" with application serial No. 201621012414 was published by Indian Patent office on 13/10/2017.

2. Meetings/Programmes Conducted:

- IPR cell facilitated in organizing an Awareness programme on Biodiversity Act Rules and Regulations on 14th September, 2017. Mr. Pradip Sarmokadam, Member Secretary, Goa State Biodiversity Board made a detailed presentation about Biodiversity Act Rules and Regulations. Scientists and RA/SRF/JRF of ICAR-CCARI, along with the officials of Goa State Biodiversity Board participated in the programme.
- IPR Cell facilitated in organizing a an interactive meeting with officials of Goa State Council of Science & Technology (GSCST), Saligao and the members of Khola Chilli Cultivators' Group at the Institute on 10th October, 2017, in order to prepare a road map for Geographical Indication (GI) registration of Khola Chilli. Shri Deepak Parab, Member Secretary, GSCST, Saligao-Goa and Shri Ratnakar Velip, President, Khola Chilli Cultivators' Group along with other members participated in the meeting

WORKSHOP/ SEMINAR/SYMPOSIA/ TRAINING ATTENDED

Date	Name of Scientist	Programme	Venue
6th September, 2017	Manohara KK	ICAR-IRRI Collaborative project meeting on Salinity and Global Rice Array	Bengaluru, Karnataka
5th to 8th September, 2017	Thangam M Maneesha SR	International Symposium on Horticulture: Priorities and Emerging Trends.	ICAR - IIHR, Bengaluru
8th September, 2017	Gokuldas PP	Regional Interactive Workshop on India's 6th National Report to CBD	Ahmedabad, Gujarat
15th September, 2017	Susitha Rajkumar	National workshop on "Ethics and welfare concerns in research for human and animal health"	CVAS, Pookode, Kerala
19th September, 2017	Sreekanth GB	Peoples Biodiversity Workshop (PBR) for the Coastal Biodiversity Management Committees in the State of Goa	Goa State Biodiversity Board, Saligao, Goa
28th September, 2017	Chakurkar EB Shivasharanapp N	Presentation of SFC memorandum (2017-2020)	Krishi Bhawan, New Delhi
4th October, 2017	Sreekanth GB	Workshop on "LED light fishing and bull trawling outside the territorial waters of coastal states"	Secretariat, Porvorim, Goa.
5th to 7th October, 2017	Ramesh R	Special symposium on "Microbial antagonists and their role in biological control of plant diseases"	Anand Agricultural University, Anand
6th October, 2017	Chakurkar EB	ASRB assessment committee meeting	ASRB, New Delhi.
3rd November, 2017	Chakurkar EB	Meeting under chairmanship of prof. M.S. Swaminathan regarding doubling of farmers Income by 2022	Krishi Bhawan, New Delhi
3rd to 5th November, 2017	Paramesha V	Annual group meeting of AICRP on IFS	RARI, Durgapur, Jaipur
21st to 24th November, 2017	Sreekanth GB	11th Indian Fisheries and Aquaculture Forum,	Le-Meridian Hotel, Kochi, Kerala
28th to 30th November, 2017	Nibedita Nayak	XXXIV National conference on "Innovations for safe and sustainable poultry production."	NIMNANS Convention centre, Bengaluru
7th to 9th December, 2017	Sujeet Desai	Interactive Seminar. The Foresight Agrimonde-Terra for 2050: The Indian Perspective	ICAR-NASC, New Delhi
7th to 10th December, 2017	Chakurkar EB Sreekanth GB	Aqua Goa Mega Fish festival	Panjim, Goa

PERSONALIA

Awards and Recognition

Dr. Sreekanth GB

Young Scientist Award by the Asian Fisheries Society, Indian Branch during the 11th Indian Fisheries and Aquaculture Forum at ICAR-CIFT, Kochi, Kerala during 21st to 24th November, 2017.

Dr. V Arunachalam

Editorial member, Journal of Food Agriculture and Environment (WFL Publishers) Finland

Dr. Nibedita Nayak

IPSA- Kerala Chapter Award for excellence in Poultry nutrition " in XXXIV Annual conference of Indian Poultry Science Association (IPSACON-2017) at ICAR-NIANP, Bengaluru, Karnataka during 28th to 30th November, 2017.