Volume 21 No. 1 January - March, 2016

भातेताअनुसं समाचार
IIOPR News

An ISO 9001:2008 Certified Institute

ICAR- Indian Institute of Oil Palm Research, Pedavegi - 534 450, Andhra Pradesh; Web site: http://dopr.gov.in

From Director's Desk

Oil palm being a humid tropical crop, requires water to meet its evaporative demand. It is being cultivated as a rainfed crop across the globe except in India and some parts of Thailand. The crop comes up well under high rainfall conditions of tropical region having mean annual rainfall of 1800 to 2000 mm. Compensating the requisite water need through irrigation warrants a good source of ground/ other source of water, which is possible only when there is enough rainfall. India faced two years of drought during 2014 and 2015 due to the impact of El Nino Southern Oscillation and the recent predictions by India Meteorological Department gives a ray of hope because the monsoon is expected to become normal by the middle of rainy season. However, the summer conditions are severe in most of the oil palm growing areas necessitating some measures to conserve moisture and to bring down the cost of production. If the drought conditions prolong and sufficient water is not made available, it will result in reduced sex ratio with production of more number of male flowers and thereby reduced FFB yields. The pollinating weevil population also gets affected if temperatures remain high (>40^{0}C) for prolonged periods of time.

Irrigation through drip or micro-sprinkler can save water up to fifty per cent in comparison with basin method of irrigation. Immediately after planting, a basin should be formed around the plant to facilitate better water and fertilizer management. Growing of green manure crops like sunhemp in the basins would help out in reducing the impact of heat. Mulching the basins with any biowastes like maize leaves, oil palm fronds, empty fruit bunches or banana trash can reduce the water loss through

evaporation and enhance the water use efficiency of the palms. This practice also helps in regulating the soil temperature besides adding organic matter to the soil. In younger plantations ablation is another important operation to be practiced during summer which would aid in proper utilization of nutrients for vegetative and root growth to help in efficient utilization of inputs. Under prolonged drought conditions, application of Farm Yard Manure or green manure upto 100 kg per palm would aid in mitigating the severity of water stress. In order to save the rain received, making longitudinal trenches of 1 foot wide and 2 feet deep in between 4-5 rows of oil palm would be of great significance. Once, normal conditions prevail, application of potassium would help in moderating the ill effects of drought, followed by application of other fertilizers. Hence, adoption of better management practices like micro irrigation system, mulching and green manuring would definitely play an important role in mitigating the drought during the ongoing summer season.

R.K.Mathur

Farmers' Corner

1.Mulching in palm basins: Covering the palm basins with biological waste materials like oil palm fronds, empty fruit bunches, sugarcane or banana trash, maize leaves *etc* would reduce water loss and thereby maintains better microclimate.

2.Weed management: Palm basins should be maintained weed free to make applied water maximum available for oil palm plants.

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Sectoral News

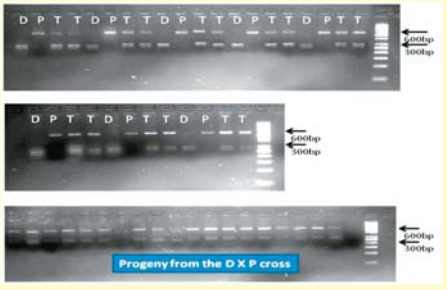
Climate influences the distribution of crops over different regions of the world, while weather influences the crop production and productivity. The crop yields are the integrated result of environmental and physiological processes that occur during the crop growing period. So, the crop-weather interaction can also be called as bio-physical interaction. The weather induced variability in crop yield is as high as 50% according to WMO (World Meteorological Organization). Hence, weather forecast plays an important role in managing these interactions to our advantage.

The scientific meteorology has begun in Europe between 15th and 16th centuries with the inventions of barometer, thermometer, hygrometer and wind measuring instruments. In the year 1875, India Meteorological Department was established to bring all meteorological work in the country under a central authority. In view of the importance of forewarning of monsoon seasonal rainfall for the agricultural economy of the country, Blanford initiated the system of Long Range Forecasting (LRF). Sir Gilbert Walker has identified a phenomenon of linking monsoon with global meteorological situations and discovered Southern Oscillation phenomenon. First weather service viz., 'Farmers Weather Bulletin' was issued by the IMD in collaboration with All India Radio on daily basis (afternoon) and broadcasted in 26 regional languages. Later, IMD has introduced Agricultural Meteorological Advisory Services like 'Agro-meterological Advisory Bulletin',' Tentative Crop Outlook' and 'Crop Yield Forecast'.

Research update - Achievements/ Methodologies / Innovative Technologies / Genetic stock

A single CAPS marker to identify the dura, pisifera and tenera fruit forms governed by SHELL gene (Kalyana babu)

Developed eight gene specific primer pairs (EST-SSRs) from genes like oil palm MADS box transcription factor21 like, *Arbidopsis thaliana* agamous like MADS box AGL11, AGL5, AGL1 mRNA sequences. One cleaved amplified polymorphic site (CAPS) marker was identified which can differentiate the dura, pisifera and tenera fruit forms. The CAPS marker produced two alleles (280 and 250bp) in dura forms, three alleles in tenera forms (550, 280, and 250bp) one allele in pisifera form (550bp).



Differentiation of dura, pisifera and tenera oil palm genotypes using CAPS marker.

A novel method developed for hybridisation in oil palm
(G Ravichandran and L Saravanan)

A novel method has been developed to effect controlled pollination in oil palm hybrid seed production through a device along with desired pollen with the help of pollinating weevils. The size of the bunch so formed is comparable with the bunch formed through traditional pollination.

Impact of El Nino on oil palm pest incidence (P Kalidas)

Impact of Elnino conditions on reducing the oil palm pest incidence was observed with low or nil or late infestation of major pests like psychids and leaf web worm.

DRIS norms developed for Andhra Pradesh (S K Behera, B N Rao, K Suresh, K Manorama and K Ramachandrudu)

Soil and leaf samples collected from oil palm plantations of West Godavari district of Andhra Pradesh were analysed for different parameters and using leaf analysis values, DRIS norms and indices were estimated for Andhra Pradesh. The requirement orders of different nutrients were found to be B > Mg > K > N > P. Optimum leaf nutrient ranges were also derived for routine diagnostic and advisory purposes.

Intercropping systems with ornamental crops (K Ramachandrudu)

Standardized oil palm intercropping systems with ornamental shade loving crops *i.e.*, fish tail fern, cordyline, philodendron, asparagus, dieffenbachia and dracaena in grown up oil palm gardens. They can be replanted after 4-5 years.

Ornamental crops grown in oil palm matured garden as intercropa

Millipede as a good composting agent (K Ramachandrudu)

Millipede has been identified as good composting agent for converting oil palm biomass to nutrient rich compost. Millipedes are found as hardy, amenable for domestication and quick multiplication. Nutrient status of milli-compost (2.58% N, 0.26% P, 0.54% K & 2.58 meq Ca) can be compared with nutrient status of vermi-compost (2.39% N, 0.27% P, 0.58% K & 2.13 meq Ca). Based on the preliminary studies so far, *in situ* composting of oil palm leaves in the basin itself can be done with millipedes.

Milli-compost with millipedes

Methodology for *in vitro* germination of oil palm (*Elaesi guineensis* Jacq.) zygotic embryos standardized (D Ramajayam, G Ravichandran, P Murugesan, P Naveen Kumar and B Kalyana Babu)

The zygotic embryos excised from open pollinated *dura* & *tenera* and controlled *D* x *P* were inoculated in five different media. Among the five different media tried, MS recorded lowest germination of ZEs (57.2%). The germination of ZEs from *D* x *P* was lowest (40.0%) in MS while dura recorded highest (81.7%) in Y3 medium. At the end of three months after inoculation of ZEs, the plant fresh (107.8 mg) and dry (14.2 mg) weight of *dura* was highest than *tenera* and *D* x *P* hybrids which recorded on par with each other. The plant fresh and dry weights (mg) were highest in MS+AC (115.4 & 15.1) and N6 media (98.7 & 13.3) whereas, the MS media recorded lowest plant fresh (76.6) and dry (10.0) weight which were on par with ½ MS and Y3 media.

Mobile apps developed (K.L.Maryrani and M V Prasad)

Four mobile apps in English viz., Oil palm cultivation practices, Oil palm nutrient management, Oil palm pest management and Oil palm disease management were developed. These apps are placed in Google Play Store for public.

Nigerian source of Germplasm collected from Little Andaman (P Murugesan, D Ramajayam ,G Ravichandran, K Sunil Kumar, P Naveen Kumar and R K Mathur)

Eleven germplasm accessions were collected from Hut Bay, Little Andaman oil palm plantations.

Germplasm accession (from Kalpata, Wayanad) with high Oil to Bunch ratio (P Murugesan, D Ramajayam G Ravaichandran, K Sunil Kumar, P Naveen Kumar and R K Mathur)

One accession with high oil to bunch ratio (32%) was collected from Kalpeta, Waynad.

A method for long distance transportation of germinated seeds of oil palm

(G Ravichandran, D Ramajayam, Kalyana Babu, P Murugesan and P Naveen Kumar)

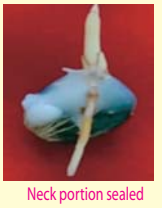
For long distance transportation of germinated seeds, a paste was designed to give a coat near the neck portion where plumule and radicle differentiate. The same was planted in the primary nursery for a period of four months and found that the establishment did not get affected by the pasting material and establishment is on par with control.

Labour saving machinery for hybrid seed production process in oil palm

(G Ravichandran and Vidhan Singh)

The existing de-pericarping machine is suitably modified in such a way that all the remnants over the seeds were removed during the second de-pericarping itself. Advantages are saving of labour, time (4 days during seed processing) and less breakage of seeds.

Germplasm accession (from Kalpata, Waynad)



Neck portion sealed germinated seeds

Cryopreservation of oil palm pollen (K. Sunilkumar)

Statistical analysis of bunch parameters showed that there was no significant variation between fresh as well as cryo stored pollen for *in vivo* fruit set . Thus, cryo preserved pollen was found on par with fresh pollen with respect to viability, vigour and in effecting normal pollination and fruit set.

Transfer of Technology

a) Regional workshops

Two regional workshops were organized to discuss issues related to scope of oil palm, achievements of area, production, constraints and strategies for increasing the area under oil palm and enhancing oil palm production.

First work shop was organized on "Technological strategies for enhancing oil palm production in western region of India" at Belgaum, Karnataka on 28th January, 2016. Delegates (100) consisting of officers of State department of agriculture/horticulture, staff of oil palm processing units, scientific staff of ICAR, SAU and KVKs from Kerala, Karnataka, Goa, Gujarat and Maharashtra attended the workshop.

Interaction with stakeholders

The second workshop was organized at Aizawl, Mizoram on "Technological strategies for enhancing oil palm production in North Eastern Region of India" during 2-3 February, 2016. Participants (117) consisting of officers of State department of agriculture/ horticulture, staff of oil palm processing units, scientific staff of ICAR, SAU and KVKs from Mizoram, Arunachal Pradesh, Nagaland, Meghalaya, Assam and West Bengal attended.

Technical session- presentation by Scientist from ICAR-IIOPR

b) Officers training programmes organised

Nine officers trained on "Soil and leaf nutrient analysis in oil palm" at IIOPR, Pedavegi during 19-21 January, 2016.

Thirty three officers of State Department of Agriculture, Arunachal Pradesh were trained in State Level Training Programme on "Oil Palm production technology" at Pasighat, Arunachal Pradesh during January 20-21, 2016.

c) Farmers training programmes organised

Two training programmes conducted to 42 farmers of A. P. on "Recommended practices for oil palm cultivation".

Five on-farm training programmes conducted to 183 farmers of A. P. and Mizoram on "Recommended practices for improving productivity".

d) Participation in Krishimela/Exhibition

Dr K.Sunilkumar participated in the Krishimela arranged in connection with Launching function of Centenary celebration of CPCRI at Kasaragod on 12th March, 2016 and exhibited Oil palm technologies

e) Diagnostic Field Visits

1. Dr P. Murugesan

a) Visited Kulathupuzha during 15.2.2016 to 16.02.2016 and recommended disease management techniques to farmers

b) Visited Kalpeta farmers' fields in Wayanad district of Kerala from 24.03.2016 to 26.03.2016. Assessed the performance of indigenous planting materials and guidance was given to famers on avian pests and disease management practices

c) Visited commercial plantations of Andaman & Nicobar Islands Forest and Plantation Development Corporation Limited at Hut Bay during 18.02.2016 – 25.02.2016 (1600 ha) and offered tips for old plantation management and counseled the field staff on best management practices

2. Drs.R K Mathur, Naveen Kumar P, Rao B N and Ramajayam D undertook a field visit on 03.02.2016 to seed garden and farmers fields in Mizoram.

Technology demonstration

Dr P Kalidas demonstrated the impact of acoustics using alarm sounds on reducing the incidence of avian pests at Punadipadu, Krishna Dt. On 23rd February and 16th March, 2016

New projects sanctioned

Screening through genomic *in situ* hybridization technique and seed desiccation tolerance of selected inter specific hybrids of oil palm in *planta* and *in vitro* (DST–SERB, Dew Delhi, Govt. of India) : P. Murugrsan

ICAR-Extramural research project entitled 'Induction of embryogeny and plant regeneration through induced androgenesis / gynogenesis in horticultural crops' at IIHR, Bengaluru (Lead Centre) and IIOPR, Pedavegi (Collaborative Centre) for a period of two years from January 2016 to 31st March 2017: D.Ramajayam.

Publications

Research articles published

1. Behera S K, Rao B N, Suresh K, Ramachandrudu K and Manorama K. (2016). Soil fertility, leaf nutrient concentration and yield limiting nutrients in oil palm (*Elaeis guineensis* Jacq.) plantations of Surat district of Gujarat. *Indian Journal of Agricultural Sciences.* (In press).

2. Behera S K, Suresh K, Rao B N, Manoja K, and Manorama K. (2016). Soil nutrient status and leaf nutrient norms in oil palm (*Elaeis guineensis* Jacq.) plantations grown on west coastal area of India. *Communications in Soil Science and Plant Analysis.* 47(2): 255-262. DOI:10.1080/00103624.2015.118120.

3. Behera S K, Suresh K, Ramachandrudu K, Manorama K, and Rao B N. (2016). Mapping spatial variability of leaf nutrient status of oil palm (*Elaeis guineensis* Jacq.) plantations in India. *Crop & Pasture Sciences*. 67(1): 109-116. http://dx.doi.org/10.1071/CP15029.

4. Goutam Mandal, Mathur R K, Sunil Kumar K and Murugesan P. (2015). Exploration and collection of oil palm germplasm from Little Andaman, *Int. J. Bio-res. Env. Agril. Sci.* 1(1): 32-35

e-Publications

1.Mary Rani K L and Prasad M V (2015). Mobile App on Oil palm cultivation practices. ICAR-IIOPR, Pedavegi.

2.Mary Rani K L, Prasad M V and Sanjib Kumar Behera. (2015). Mobile App on Oil palm nutrient management. ICAR-IIOPR, Pedavegi.

3.Mary Rani K L, Prasad M V, Kalidas P and Saravanan L. (2015). Mobile App on Oil palm pest management. ICAR-IIOPR, Pedavegi.

4.Mary Rani K L, Prasad M V and Praveena Deepthi K. (2015). Mobile App on Oil palm disease management. ICAR-IIOPR, Pedavegi.

5.Kalidas P. (2016). Prospects and problems for oil palm cultivation in North Eastern Region. Academia.edu. 7th March, 2016

Reports submitted

1.Kalidas P, Suresh K, Ramachandrudu K and Sanjib Kumar Behera. 2016. Report on Feasibility Studies for Oil Palm Cultivation in Sagar and Sundarbans Islands of West Bengal, India. Submitted to DAC, Min of Agri., Cooperation and Farmers Welfare, New Delhi. Jan., 2016. 28p.

2.Murugesan P. 2015. Report on the feasibility of Oil Palm cultivation at Maruthamparai unit of Arasu Rubber Corporation Ltd, Nagercoil, Tamil Nadu, (C.No.D1/8215/14 dated 21.01.2015 from MD, ARC, and F. No.PME/ 12(E)/2011,dated, April 8, 2015) p 5.

3.Murugesan, P and Sunil Kumar K. 2015. Project report on International collaborative research project on exchange of germplasm between India and Malaysia, ICAR –IIOPR Research Centre Palode, Pacha-695562, Thiruvanathapuram, Kerala. p 25.

Participation in Seminars/ Symposia / Workshops

1. Naveen Kumar P, presented a paper on "Scope and Status of Oil Palm Seed Gardens in India", in International Symposium on Sustainable Horticulture during March 14-16, 2016 at Aizawl, Mizoram (authors: Naveen Kumar P, Mathur R K, Ravichandran G, Ramajayam D, Sunilkumar K, Murugesan P and Kalyana Babu B)

2. Kalidas, P

a) Presented a paper on "IPM practices for oil palm" (authors: Kalidas P and Saravanan L) in Brain storming workshop on Integrated Pest Management for major crops at NASC, New Delhi during 16-17th February, 2016

b) Presented a paper on "Prospects and problems for oil palm cultivation in NEH region" in National Seminar on Integrated development of horticulture in sub tropical and hill region, during 17-19th February, 2016 at Guwahati, Assam.196-200.

c) Kalidas P participated in a one day workshop on "Nanotechnology in agriculture: A focus on insects and insect resources"at ICAR-NBAIR, Bangalore, on 19th March, 2016.

3. Murugesan P attended CRP-AB (fruits & perennial crops) meeting at ICAR-IISR, Calicut on 27.01.2016 and presented progress of research on oil palm germplasm characterization, documentation & technical programme of IIOPR for 2016-17.

4. Mathur R K, Director participated in second "World Noni Congress" at Chennai on 18.3.2016.

5. Sunil Kumar K

a) Presented a paper on "Package of practices for oil palm cultivation" in *Promotion of oil palm cultivation in West Bengal through national Mission on oil seeds and oil palm*, at Jalpaiguri, West Bengal on 20.2.16

b) Participated in "National seminar on Biocontaminant in diagnostic laboratories", oragnised by CDIO, Govt. of kerala at Palode on 20.1.16

c) Attended joint meeting of Standing committee and Working committee of PLACROSYM-XXII on 15th March, 2016 at CPCRI, Kasaragod.

6. Ramajayam D

a) Participated and presented a key note talk on "Oil palm (*Elaeis guineensis* Jacq.) tissue culture initiatives at ICAR-IIOPR" (authors : Ramajayam D, Naveen Kumar P, Ravichandran G and Kalyana Babu B) in National conference on *'New Horizons in Plant Biotechnology: Innovative Products and Applications'* organized by Department of Biotechnology and School of Bio Sciences and Technology, VIT University, Vellore, Tamil Nadu, during March 11-12, 2016.

b) Participated in the deliberations of the 3rd NMOOP-State Level Standing Committee meeting organized by the Department of Agriculture, Government of Tamilnadu at Conference Hall, Secretariat, Chennai on 16.02.2016.

c) Participated in the one day state level brainstorming programme to Universities, Research/Scientific organizations and NGOs on the Biological Diversity Act, 2002, A.P. Rules, 2006 and Accesses Benefit sharing Mechanism on 4th March, 2016 at Hotel Ilapuram, Vijayawada, Andhra Pradesh conducted by Andhra Pradesh State Biodiversity Board.

7. Maryrani K L

a. Participated in the 8th GCRA International Conference on "Innovative Digital Applications for Sustainable Development" during January 5-7, 2016 at University of Agricultural Sciences, Bangalore.

b. Participated in 4th Annual workshop on NKN at the core of Cyber Space during January 21-22, 2016 at JNTU, Hyderabad.

Training courses attended

1.Dr R K Mathur, Director attended Executive Development Programme on "Leadership Management" at NAARM, Hyderabad during 20th to 26th February, 2016

2.Dr. S. K. Behera attended training programme on "Soil carbon sequestration" at ICAR-IISS, Bhopal during February 23-24, 2016.

3.Dr.P.Preethi and Ms H P Bhagya attended training on "Conservation, Cultivation and Post harvest Management of Medicinal and Aromatic Plants" conducted by ICAR-Directorate of Medicinal and Aromatic Plants Research (DMAPR), Anand, Gujarat during 20.01.2016 to 22.01.2016

4.Mr J.Mohan Rao, Technical Officer, attended "Competence enhancement training programme for Technical Officers of ICAR" during 1.3.2016 to 10.3.2016 at NAARM, Hyderabad

5.Mr Nasir Hussain attended training programme on "Pension and retirement benefits & pay fixation" at CTRI, Rajahmahendravaram on 26.3.2016

6.Mr S.K.Saida attended a training programme on "Purchase procedures" at CTRI, Rajahmahendravaram on 26.3.2016.

Radio talk

Dr P Kalidas participated in an interview on "IPM practices for oil palm pest problems". AIR, Vijayawada, on 17th January, 2016.

Recognition

1. Dr.R K Mathur, Director participated in IMC meeting of IIOR, Hyderabad on 10th to 12th February, 2016.

2. Dr.R.K.Mathur, Director attended Interaction Meeting of Directors, Vice Chancellors of Agricultural Universities with Director General, ICAR during 25th to 27th March, 2016.

3. Dr.K.Suresh and Dr.K.Manorama: Expert Members of CAS screening committee of ANGRAU scientists.

4. Dr.K. Ramachandrudu: Member, Inspection Team constituted by the Directorate of Agriculture for inspecting the status of oil palm nurseries and demonstration of practices for management of over aged seedlings in Mizoram state during March 2016.

5. Dr.P. Murugesan: External Member, DPC for technical staffs of ICAR-CTCRI, nominated by ASRB, New Delhi.

Personalia (Transfers / New appointments/ superannuation)

1.Sri K.Visweswara Rao, Technical Officer attained superannuation on 31.1.2016.

Events

Foundation day

1.Celebrated 22nd foundation day of ICAR-IIOPR on 19.2.2016. On this occasion a farmers' day was organized for the farmers of MGMG villages, lectures were delivered on various aspects of oil palm cultivation.

Institute foundation day celebrations

3.IRC meeting was conducted on 8th and 9th of March, 2016.

4.Internal auditing training was given to IIOPR staff members during 7th to 9th January, 2016.

5.Road safety awareness week was celebrated during 11th to 17th January, 2016.

6. An interface meet of '**Mera Gaon Mera Gaurav**' was organized at IIOPR-RC Palode on 29.3.16 during which exhibition on oil palm technologies was also arranged.

Distinguished Visitors

1.Sri Chiranjiv Choudhary, IFS, Commissioner of Horticulture, Govt. of Andhra Pradesh.

2.Sri Kaibalya Pradhan, Member, CACP.

3.Dr.P.Rethinam, Former Director of ICAR-NRCOP visited Palode Research Centre on 04.03.2016.

4.Dr.H.C.Maheswarappa, Project Coordinator, AICRP (palms.

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Printed @ NIG, VIA