

भातेताअनुसं समाचार



IIOPR

An ISO 9001:2008 Certified Institute

News



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

From Director's Desk



There is a rising mismatch between requirement vis-s-vis production of edible oil at the national level leading to wide gap between supply and demand; resulting in substantial import of edible oil with a huge drain of foreign exchange. This has necessitated to look forward for an alternate and potential crop which can enhance oil production with a high level of productivity *per se*; here oil palm appears to be very promising as the highest oil yielding (4-6 metric tonnes of oil per ha per year) perennial crop species.

Consequently, there is rising demand for the quality planting materials of oil palm at national level. The productivity of an oil palm plantation depends on many factors; the most important being quality of the oil palm seedlings. This in turn depends on quality planting materials. Currently, the commercial planting material in oil palm is a hybrid (called tenera), which is obtained from cross pollination of selected heterogenous parental palms; resulting in non-uniform and variable plantation. The near-future alternative to pre-germinated seed (DxP) is tissue-cultured palms which provide true copies of high yielding tenera palms for commercial planting.

Therefore, tissue culture in oil palm is a power tool to develop uniform planting material at commercial scale on one hand and it has wider applications in breeding programmes aiming for bringing uniformity in planting materials and mother palms, development of semi and bi-clonal seeds and haploidy and double haploidy breeding.

Ramets (Clones) obtained through tissue culture of individual high yielding tenera hybrid palms (ortets) provide a powerful shortcut not only to mass multiplication or micropropagation but also yield enhancement (about 20 to 30% improvement over DxP seed planting materials). Further, it also offers other desirable characteristics viz. uniform tree stands comprising identical yield potential, better input use efficiency etc. Therefore, in spite of the greater cost of ramets compared with DxP material and their greater fertilizer requirements, clones offer a large economic advantages over seed propagated planting materials. At present, clones constitute about 2% of the total world oil palm planting material production of 321.5 million. The advantages of semi-clonal and bi-clonal seeds over the conventional DxP seeds include; i) Greater degree of uniformity, ii) Low cost on seed production than tissue culture plantlets, iii) Low risk of clonal abnormality, iv) Require a small tissue culture set up to clone the parents as the number of plantlets production per ortet are lower when compared to commercial tenera cloning, v) Give an oil yield gain of 15% (7.95 to 9.52 t/ ha/year) over conventional DxP hybrid seeds.

To discuss the strategies for research on oil palm tissue culture and developing a roadmap for moving ahead, a brainstorming session on 'Oil Palm Tissue culture' was organized at ICAR-Indian Institute of Oil Palm Research, Pedavegi, Andhra Pradesh on 20.09.2016. The technical session was chaired by Dr. W.S. Dhillon, ADG (HS-I), ICAR. Scientists from NARS and ICAR-IIOPR working on tissue culture / somatic embryogenesis in oil palm and related crops participated in the deliberations.

R.K.Mathur

Sectoral News

Oil Palm Mobile Apps

ICAR-IIOPR has released four mobile applications (apps) in three languages (Hindi, English and Telugu) on oil palm for the stakeholders viz., farmers, field level extension functionaries, processing and technical personnel involved in oil palm development programme. These apps can be downloaded from Google play store by typing following (URL) address.

Title of mobile app	link
Oil palm-Cultivation Practices तेल ताइ की खेती ఆయిల్ పామ్ - పోషకాల యాజమాన్యం	https://play.google.com/store/apps/details?id=com.cdac.CultivationPractices&hl=en https://play.google.com/store/apps/details?id=com.cdac.oilpalmulti_hin https://play.google.com/store/apps/details?id=com.cdac.oilpalm_telugu
Oil palm-Nutrient Management तेल ताइ की पोषक तत्वों का प्रबंध ఆయిల్ పామ్ - పోషకాల యాజమాన్యం	https://play.google.com/store/apps/details?id=com.cdac.nutrientoilpalm_Eng&hl=en https://play.google.com/store/apps/details?id=com.cdac.oilpalmnutrient_Hin https://play.google.com/store/apps/details?id=com.cdac.oilpalmnutrient_tel
Oil palm-Pest Management तेल ताइ की पीड़क प्रबंधन ఆయిల్ పామ్-పురుగుల యాజమాన్యం	https://play.google.com/store/apps/details?id=com.cdac.OilPalmPest_Eng&hl=en https://play.google.com/store/apps/details?id=com.cdac.oilpalmpest_Hin https://play.google.com/store/apps/details?id=com.cdac.oilpalmpest_tel
Oil palm-Disease Management तेल ताइ - बीमारियों का प्रबंध ఆయిల్ పామ్-ఆరుగ్గు యాజమాన్యం	https://play.google.com/store/apps/details?id=com.cdac.diseasesmanagement&hl=en https://play.google.com/store/apps/details?id=com.cdac.oilpalm_disease_Hin https://play.google.com/store/apps/details?id=com.cdac.oilpalm_disease_tel

NEW PROJECT

S K Behera, K Suresh and K Manorama (2016) Inter-institutional project (between ICAR-IIOPR, Pedavegi and ICAR-NBSLUP, Nagpur) - A collaborative research project entitled "Delineation of potential areas for oil palm cultivation in India using remote sensing and GIS techniques" initiated.

Forth coming events

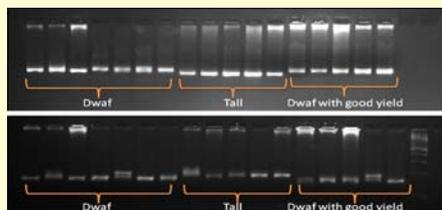
Training programme on "Nursery management in Oil Palm" during 16 to 18th November, 2016.

Model Training Course on "Application of ICT tools for dissemination of oil palm technology for increasing area and production" during 15-22nd December, 2016

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

Identification of SSR markers linked to short stature of oil palm (Kalyana Babu)

Shorter stature of oil palm plant facilitates easy harvesting and extends economic yield period of the palm by five years or so. Hence, in the present study Bulk Segregant Analysis (BSA) was done with 400 SSR markers (both genomic and genic) among three bulks of DNA. A total of 50 SSR markers were able to find polymorphism between the bulks of dwarf, tall and dwarf with good yield genotypes. However, only two SSR markers were able to clearly differentiate the dwarf and dwarf with good yield individual genotypes from tall genotypes which can be used to identify the dwarf palms.

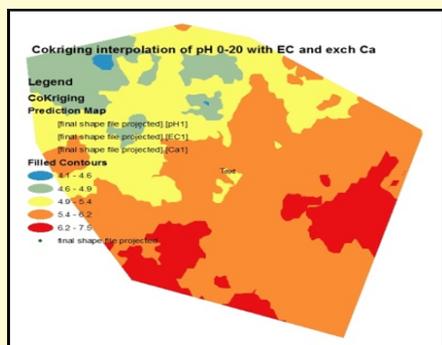


The gel pattern of the SSR primers between the individual genotypes

Cokriging is superior to ordinary kriging for interpolating soil parameters

(K Manorama, S K Behera, K Suresh, K Ramachandrudu and B N Rao)

A proper comparison of Geostatistical techniques and quantification of their precision in soil parameter prediction at unsampled locations could benefit largely in precision agriculture. In this study, it was tried to compare kriging and cokriging interpolation techniques by taking pH as the target variable (TV) and the covariables were selected based on the degree of correlation with the TV. Prediction errors were estimated for validation of two methods. Prediction maps of different kriging models were developed and compared. Cokriging was superior to ordinary kriging in predicting the soil pH variability. Cokriging with a highly correlated single covariable ($r^2=0.7$) could improve the precision of prediction by 45 per cent and inclusion of more than one



covariable even with less correlation could show additive effect in improving the precision of prediction maps.

Characterization, conservation and documentation of oil palm germplasm

Genetic stock of *Elaeis oleifera* with longest bunch stalk (P Murugesan)

Longest bunch stalk (60 cm) with a total length of 82.5 cm bunch length was recorded in one of the *Elaeis oleifera* progeny palm.



Though, some inflorescences are abnormal, newly formed bunches became normal. Interestingly abnormal female stalk had lengthy bunch (97cm) and stalk length (76.5cm).

Germplasm collected from Kulathupuzha, Kerala (K Sunilkumar)

Three Germplasm accessions of Zaire source viz. KLPA- D108, a *dura* of big fruit size; KLPA- D13 *dura* for dwarfness, thin shell and KLPA -P1, a *pisifera* of dwarf and compact canopy were collected from Oil palm India Ltd estate at Kulathupuzha, Kerala.

Genetic diversity and performance of African germplasm planted at Athirapally

(P Murugesan, R.K.Mathur, K.Sunil Kumar, D Ramajayam, G.Ravichandran and P.Naveen Kumar)

Germplasm collected from Guinea Biassu, Zambia, Tanzania, Camaroon under FAO programme, and planted in Athirapally (Plantation Corporation of Kerala Limited) during 1998 was studied for genetic variation and screened for desirable traits. The results revealed that Guinea Bissau recorded maximum bunch numbers (15) when compared to other sources. One accession ZS 7; PN 241 from Zambia source recorded maximum fruit numbers (3627 Nos) followed by ZS 8; PN 263 (3600 Nos), GB 34/313 PN 82(3500 Nos). Maximum (221.93 Kg/ Palm / Year) Fresh Fruit Bunch yield was recorded in TS 9 (palm no 66) source followed by ZS 7; PN 62 (192.55), ZS-7; PN 136 (159.58), TS 11; PN 284 (152.10). GB 35/314 (PN 128) source had short rachis length (2.39 m).

Established new Dura Improvement experiment (K Sunilkumar)

A new Dura Improvement block under 'Breeding for high yield in oil palm' with targeted FFB yield more than 35 tonnes/ha has been established at RC, Palode with twenty five crosses (*inter se* and selfs) developed using best available.

Development and *In-silico* functional characterization of EST based micro-satellite markers in oil palm (Kalyana Babu)

EST database consisting of 40,979 EST sequences in fasta format spanning 27Mb of oil palm genome were downloaded. A total of 3,721 primer pairs were identified and developed. The tri and tetra nucleotide repeat motifs were most prevalent (each 24.75%) followed by di nucleotide repeat motifs. The mapping of ESTs having SSRs by Blast2Go resulted in identification of 19.2 per cent sequences with GO annotation.

Management of leaf webworm, *Acia meyricki* (L Saravanan and P Kalidas)

Pesticides viz., deltamethrin 2.8 % EC (at the rate of 1ml/litre of water) and thiodicarb 75.0% WP (0.5 g /litre of water) effectively controlled the pest population within a day after spraying. Fipronil 5.0 % SC, (0.5 ml/ litre of water), chlorantriniprole 18.5% SC (0.5 ml/ litre of water) and dimethoate 30.0 % EC were also found to be effective and could control the pest within a week's period. The palms were free from pest infestation even after 30 days of spraying. Using the pesticides in rotation, disturb the development of insect resistance of this pest over a period.

Development of census system for leaf webworm (L Saravanan and P Kalidas)

The density of larvae was highest in the fronds located in the middle of the canopy around 17 to 25 fronds. Further, it was found that there was no significant difference statistically in the larvae density among 17 to 25 fronds. Hence, any sampling procedure or census or evaluation of efficacy of pesticides at field level for leaf webworm could be done among these fronds.

Brain storming on oil palm tissue culture

A brain storming session was organized on tissue culture in oil palm on 20.9.2016 at ICAR-IIOPR. Scientists working on tissue culture aspects of different horticultural crops participated in the programme. Dr D Ramajayam co-ordinated the programme.



Transfer of Technology

Officers training programmes organised

Field level functionaries (260) of state department of Horticulture/Agriculture from Andhra Pradesh and Nagaland and M/s. Ruchi Soya industries Ltd., were trained on oil palm technologies.

Training programme	Date	Venue	No of participants
On-Farm training programme on "Technologies for sustainable oil palm production"	April 15, 2016	Kakinada, East Godavari Dt. A. P.	115
On-Farm training programme on "Technologies for sustainable oil palm production"	April 16, 2016	Ampapuram, West Godavari Dt. A. P.	70
Multi Purpose Extension Officers trained on Oil Palm Technologies	June 07, 2016	ICAR-IIOPR, Pedavegi, A. P.	20
Appropriate technologies for sustainable production of oil palm	July 7-8, 2016	Dimapur, Nagaland	45
Oil Palm production technology	August 17-24, 2016	ICAR-IIOPR, Pedavegi, A. P.	7
Skill development on oil palm bunch analysis	September 8-9, 2016	ICAR-IIOPR, Pedavegi, A. P.	3
Total			260

Farmers training programmes organised

- Six farmers training programmes were conducted on "Recommended practices of oil palm" to 280 farmers from Andhra Pradesh.
- Two farmers' training programmes on oil palm cultivation practices were conducted to 25 farmers from Gujarat.
- Three on-farm skill development programmes on "supplementary pollination in oil palm" were conducted to 55 farmers in Bharuch and Narmada districts of Gujarat.
- Two onfarm farmers' training programmes on "sustainable oil palm production" was conducted to 342 farmers in Gujarat.

Mera Gaon Mera Gaurav

At Pedavegi

- ◆ One onfarm training cum field day was organised on "Pest Management in oil palm" at Challachintalapudi, West Godavari dt., A. P. on 10.05.2016, where in 82 farmers participated.
- ◆ Three diagnostic field visits for diseases and nutrient deficiency symptoms were conducted and one skill demonstration on preparing bio-control agents was conducted to 38 farmers in West Godavari District, A. P.
- ◆ A demonstration was organized to farmers of Makkinavarigudem village on "Fertilizer Management in oil palm" on 30.8.2016
- ◆ Thirty six farm advisories through voice SMS on oil palm production and protection were sent to 850 farmers of Mera Gaon Mera Gaurav villages.

At RC, Palode

- ◆ A workshop on "Climate Change and mitigation strategies through Plant Genetic Resources" was organized on 17.06.2016. Indigenous species of PGR could be identified for afforestation and tree planting campaign could be organised in the identified MGMG villages.
- ◆ A farmers' meet was organized on Good Agricultural Practices (GAP) – Standards for Kerala at Palode (Nannyode, Peringamala and Kulathupuzha stakeholders) on 03.08.2016 (50 farmers participated)
- ◆ A diagnostic field visit to OPIL, Kulathupuzha and rock wood oil palm plantation was organized on 02.08.2016.
- ◆ A demonstration of vermicomposting was organized at Rock wood oil palm plantation on 26.08.2016

Diagnostic field visits and Skill demonstration

- ▲ Drs MV Prasad and P Naveen Kumar undertook seven diagnostic field visits in farmers' fields of Gujarat, during September 15-16 in the farmer's plantations.
- ▲ Drs P Kalidas, MV Prasad, G Ravichandran, Mary Rani, K Praveena Deepthi and Ms. Bhagya, H P visited kavvagunta village regarding plant protection aspects in citrus and demonstrated the preparation and application of Bordeaux mixture.
- ▲ Drs B N Rao, G Ravichandran, K L Maryrani and Kalyana Babu made a diagnostic field visit to Rajahmundry and Murampudi seed gardens on 20th Aug 2016 to observe the condition of the gardens and suggest measures for their improvement
- ▲ Drs K Manorama, K Ramachandrudu, P Naveen Kumar, L Saravanan and K Praveena Deepthi made a diagnostic field visit to Makkinavarigudem village regarding organic cultivation of oil palm and suggested weed control measures on 30.8.2016
- ▲ Diagnostic field visit to Rajahmundry seed garden and Murampudi seed garden was conducted on 20th Aug 2016 along with Drs. G. Ravichandran, B.N. Rao, and K.L. Maryrani.

Exhibition

Drs P Murugesan and K Sunil Kumar arranged an oil palm exhibition in the National meet on "Prospects of coconut sector" during 29 - 30th September, 2016 conducted at ICAR-CPCRI Regional Station, Kayamkulam

Publications

Research articles published

Shukla A K, Behera S K, Lenka N K, Tiwari P K, Prakash C, Malik R S, Sinha N K, Singh V K, Patra A K, Chaudhary S K. 2016). Spatial variability of soil micronutrients in the intensively cultivated Trans-Gangetic Plains of India. *Soil & Tillage Research* 163: 282-289. DOI: 10.1016/j.still.2016.07.004

Behera S K, Suresh K, Rao B N, Mathur R K, Shukla A K, Manorama K, Ramachandrudu K, Harinarayana P and Prakash C. 2016. Spatial variability of some soil properties varies in oil palm (*Elaeis guineensis* Jacq.) plantations of west coastal area of India. *Solid Earth* 7: 979-993. DOI: 10.5194/se-7-979-2016.

Technical publications (Books, book chapters, Technical or extension bulletins, e-publications, popular articles etc)

Two Oil palm (*Elaeis guineensis*) shell specific nucleotide sequences, partial CDS were submitted to NCBI website and given GeneBank numbers (KX363799, KX447588).

Sunil Kumar K, Murugesan P and Rahana S N. 2016. Harvesting oil palm at right time fetches more return. *Indian Horticulture*, 61(3):6-9

Murugesan P, Sunil Kumar K and Mathur R K. 2016. Enriching oil palm genetic resources in India through international collaborative research project with Malaysia. *Indian Horticulture*, 61(4):33-36

Prasad, M V, Ramachandrudu K, Vajralaraju K and Sudhakar Babu K. 2016. Toli Moodu Samvatsaralu - Oil Palm totallo antarapantala sagu. (Intercrops during initial three years oil palm plantations). *Ryту nestam-monthly Telugu agricultural news magazine*, 11(9): 31-32.

Bhagya H P and Maheswarappa H P. 2016. Oil Palm Research at a Glance (In kannada: Taale beLeya samshodhane: kirunota). *Negila nudi*, 2 (8): 8-9. (Popular article in Kannada)

Radio talks

Dr K Manorama gave an interview on "Summer cultivation practices in oil palm" at AIR, Vijayawada and it was broadcast on 28.4.2016.

Dr P Murugesan delivered a radio talk on oil palm technologies which was broadcast on 30.09.2016 by AIR Trivandrum Akash vani

Participation in Seminars/Symposia / Workshops

Dr R K Mathur, Director participated in The Regional committee meeting at NAARM, Hyderabad from 23 to 26th June, 2016.

Farmers' meeting at Peddapuram on 30.8.2016.

Standing Committee meeting of NMOOP at New Delhi during 4 to 5th August, 2016.

The 2nd Convocation of Dr.YSR Horticultural university, Venkatramannagudem on 30th September, 2016

Dr P Kalidas participated in The 2nd Convocation of Dr.YSR Horti. university, Venkatramannagudem as Academic Council member on 30th September, 2016

Palm Oil Trade Seminar (POTS) -2016 held at Hyderabad on 19th May, 2016

The discussion on oil palm price fixation committee meeting of Karnataka state on 30th May, 2016

Drs R K Mathur, B N Rao and K Manorama participated in 26th annual group meeting of AICRP on Palms at CPCRI, Kasrgod, during 19 to 21st May, 2016.

Drs R K Mathur, P Naveen Kumar and D Ramajayam participated in the meeting convened by Agrinnovate India Limited to discuss issues related to IIOPR Oil Palm Tissue

Culture Technology' with the licensees on April 6, 2016 at NASC complex, New Delhi.

Dr K Sunilkumar participated and presented a paper on "Prospects of oil palm based cropping systems;" at National seminar "Plantation based cropping system for improving livelihood security" at CPCRI during 22 -23rd July, 2016

Membership in expert committees / societies

Dr P Kalidas participated as member in the 17th Academic council meeting of Dr.YSR Hort. University, at HRS, Anantharajpet, Kadapa district on 8th June, 2016

Drs P Murugesan and K Sunilkumar acted as members of expert committee for recommending outstanding mother palms for 2nd generation oil palm seed garden at Thodupuzha by OPIL.

Dr K Manorama and Ms H P Bhagya have been awarded honorary life members of Asian PGPR Society of Sustainable Agriculture (USA EIN:47-4803807 & Alabama, USA: 1309/490).

Higher studies/Skills acquired

M V Prasad, K Manorama, G Ravichandran, K P Deepthi, P Preethi, Ms H P Bhagya, A Bhanusri, Asif Mohammed, Nasir Hussain, T V

Ramakrishna, T Sai Kishore, VVS Krishnamurthy, M Ananda Rao, M Rambabu and B Gopala Krishna were awarded Internal Auditor certificates as per ISO19011:2011 covering quality management system in accordance with ISO9001:2008 by nebulous management system consultants after undergoing training (from 7th to 9th January, 2016).

Training courses attended:

Bhagya H P attended 21 days Summer school training on "Contemporary methods of conservation and management of Horticultural Genetic Resources" at Division of PGR, ICAR-IIHR, Bangalore from 07.06.2016 to 27.06.2016.

Sri Sreenivasa Bhat W, AO, Sri Nasir Hussain, Assistant and Sri Babu, GSN, LDC attended training programme on "E-Procurement of South based ICAR Institutes" at NAARM, Hyderabad from 25 to 26th April, 2016.

Sri Nasir Hussain, AAO attended training programmes on "Supply Chain Management Module under ICAR-ERP" during 16 - 17th June, 2016 and "Management development Programme on Procurement Policy Division" during 18 - 23rd July, 2016.

Recognition / Awards received

Dr Kalyana Babu received the "Jawaharlal Nehru Award for PG outstanding Doctoral thesis research in Agricultural Sciences (Crop Sciences)-2015" on the occasion of 88th ICAR foundation day at Vigyan Bhawan on 16th July, 2016 from Shri Radha Mohan Singh, Union Agricultural Minister.



Dr. S. K. Behera awarded Associate Fellow of A. P. Academy of Sciences for the year 2016

Dr K Manorama received Recognized Reviewer status from Elsevier on 23.7.2016 on the basis of her services as reviewer for Agriculture, Ecosystems and Environment Journal of Elsevier

Dr D Ramajayam was awarded for the Peerless Oral presentation on "Invitro screening of grape root stock genotypes for NaCl tolerance" in the National Conference on "Fruit Breeding in Tropics and Subtropics-An Indian Perspective" held at ICAR-Indian Institute of Horticultural Research, Bengaluru from 27 to 29th April, 2016.

Dr D Ramajayam has been awarded Certificate of Reviewing during August, 2016 in recognition of the review made for the journal Scientia Horticulturae by Elsevier, Amsterdam, The Netherlands.

Personalia (Transfers / New appointments / superannuation)

Dr P Naven Kumar has been promoted from Senior Scientist to Principal Scientist w.e.f. 27.11.2014

Dr K Sunil Kumar, Senior Scientist, has been promoted to Principal Scientist w.e.f. 02.12.2014.

Dr S K Behera, Senior Scientist, IIOPR, Pedavegi has been promoted to the next higher RGP of Rs. 9000/- w.e.f. 02.05.2015.

Sri Nasir Hussain, Assistant has been appointed in the post of AAO (LDCE Quota) in the afternoon of 11.04.2016

Mr Muralidharan Pillai has been promoted from Technician to Senior Technician (Fitter) w.e.f. 18.09.2007.

Sri Ch Subba Raju, Technical Assistant (Driver) has been promoted to the next higher grade of Senior Technical Assistant (Driver) w.e.f. 29.06.2016

Sri W Sreenivasa Bhat, AO, has been transferred to NAARM, Hyderabad and relieved in the afternoon of 16.05.2016

Sri B Pardha Saradhi, Senior Technical Officer has retired from the Council's Service on superannuation and relieved in the afternoon of 31.08.2016.

Other Events

Swachhta Pakhwara (May 16-28, 2016) celebrated at ICAR - IIOPR, Pedavegi

In connection with Swachh Bharat Mission launched by Government of India, ICAR - IIOPR, Pedavegi has celebrated 'Swachhta Pakhwara' during May 16-28, 2016 at ICAR - IIOPR, Pedavegi with a series of activities It

started with taking Swachhta mass pledge on 16th May 2016.

International Yoga day

Pedavegi and Regional Centre at Palode celebrated International Yoga day on 21st June 2016 by organizing different programmes.

Sports meet

ICAR-IIOPR participated in ICAR South zone sports meet at NAARM, Hyderabad from 22 to 26th August 2016. Ms Bhagya H P got first prize in long jump and third prize in discuss through event.

RAC & IRC

Research Advisory Committee meeting was held on 23rd July 2016 and the mid term Institute Research Committee meeting was conducted on 3rd August, 2016.

Distinguished visitors

Dr N K Krishnakumar, DDG (Horticulture Science) visited IIOPR RC Palode on 25th June, 2016 and inaugurated quarantine facility for imported germplasm.



ADG Horticulture Science-II Dr W.S.Dhillon visited ICAR-IIOPR during 19th to 21st September, 2016.

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