

No.5, May 1-31, 2013



Current Titles Alert

Formerly known as Current Titles Announcement Service



Library & Documentation Unit

National Bureau of Soil Survey and Land Use Planning (NBSS&LUP)

Indian Council of Agricultural Research

Amravati Road, Nagpur-440033

JOURNALS COVERED IN THIS ISSUE

Sr. No.	Title	Vol./ Year	Issue No.
1	Clays and Clay Minerals	60/2012	No. 4, 5
2	Indian Farming	63/2013	No. 1
3	Indian Forester	139/2013	No. 4
4	Indian Journal of Agricultural Sciences	83/2013	No. 5
5	Indian Journal of Fertilisers	9/2013	No. 4, 5
6	Journal of Geological Society of India	81/2013	No. 5
7	Journal of Indian Society of Coastal Agricultural Research	30/2012	No. 2
8	Kheti	66/2013	No. 1

Clays and Clay Minerals

Volume 60 Number 4 August 2012

Contents

First-principles molecular dynamics insight into Fe^{2+} complexes adsorbed on edge surfaces of clay minerals <i>Xiandong Liu, Evert Jan Meijer, Xiancai Lu, and Rucheng Wang</i>	341
On the problems of total specific surface area and cation exchange capacity measurements in organic-rich sedimentary rocks <i>Arkadiusz Derkowski and Thomas F. Bristow</i>	348
Conformational effects of adsorbed polymer on the swelling behavior of engineered clay minerals <i>SungHo Kim, Michael A. Motyka, Angelica M. Palomino, and Nikolas J. Podraza</i>	363
The determinative role of the exchange cation and layer-charge density of smectite on aflatoxin adsorption <i>Youjun Deng, Lian Liu, Ana Luisa Berrientos Velázquez, and Joe B. Dixon</i>	374
Mineralogy of Egyptian bentonitic clays I: discriminant function analysis <i>Mohamed Agha, Ray E. Farrell, and George F. Hert</i>	387
The dispersive effect of sodium hexametaphosphate on kaolinite in saline water <i>Mark Ma</i>	405
Stereochemistry and molecular recognition on the surface of a smectite clay mineral <i>Akihiko Yamagishi and Hisako Saito</i>	411
Organic geochemical composition of the Georgia kaolins: insights into formation and diagenetic conditions <i>Michael C. Cheshire, David L. Biss, and Simon C. Brassell</i>	420
Akihiko Yamagishi: 2012 Recipient of the Marilyn and Sturges W. Bailey Distinguished Member Award <i>Robert Schoonheydt</i>	440
Forthcoming papers	442

Annual Sustaining Members, Patrons, and Benefactors of The Clay Minerals Society

Benefactors

Chevron Energy Technology Company (ETC)

Patrons

H.H. Murray & Associates
Thiele
Wvo Bon

Individuals

John D. Bloch
Carl J. Bovee
Richard K. Brown
Michael L. Cummings
Kendall T. Cygan
Yali P. Gates
Jürgen Rüdiger Gassmann
Stefan Cuggeheilm

Blair F. Jones

David A. Laird
Robert H. Lander
Dwayne (Dewey) M. Moore
Paul A. Schreder
Joseph W. Stucki
Andrew R. Thomas
Kenneth M. Towe
Michael A. Velloso

ISSN 0009-8604
CCM PA60(4)341 442(August)

Clays and Clay Minerals

Volume 60 Number 5 October 2012

Contents

Mineralogical evolution of a claystone after reaction with iron under thermal gradient <i>Marie-Camille Jodin-Gaumont, Regine Mosser-Ruck, Aurélien Randi, Olivier Pierron, Michel Cathelineau, and Nicolas Michau</i>	443
Patterned deposition of aliphane nanoparticles on silicon substrates <i>Marco Fuchs, Zaenal Abidin, Christian Kübel, Peter G. Weidler, Naoto Matsue, Toruo Hanmi, Rainor Köster, and Hartmut Gleemann</i>	456
Nitrate reduction by redox activated, polydiallyldimethylammonium-exchanged ferruginous smectite <i>Kai Su, Adi Radian, Yacl Mishael, Tizhong Yang, and Joseph W. Stucki</i>	464
Quantification of hematite and goethite concentrations in kaolin using diffuse reflectance spectroscopy: a new approach to Kubelka-Munk theory <i>Italo Gomes Gonçalves, Carlos Otávio Petter, and Jaqueline Lepkoski Machado</i>	473
The characterization of CaCO ₃ in a geothermal environment: a SEM/TEM-EELS study <i>Jin-wook Kim, Toshihiro Kogure, Kiho Yang, Sang-jae Kim, Young-nam Jang, Hoon-suck Baik, and Gill Getsey</i>	484
K Ar age constraints on the origin of micaceous minerals in Savannen River site soils, South Carolina, USA <i>Thomas E. Naumann, W. Crawford Elliott, and J. M. Wampler</i>	496
Rietveld refinement of disordered illite-smectite mixed-layer structures by a recursive algorithm. I: One-dimensional patterns <i>Kristian Ufer, Reinhard Kleeberg, Jörg Bergmann, and Reiner Dohrmann</i>	507
Rietveld refinement of disordered illite-smectite mixed-layer structures by a recursive algorithm. II: Powder-pattern refinement and quantitative phase analysis <i>Kristian Ufer, Reinhard Kleeberg, Jörg Bergmann, and Reiner Dohrmann</i>	535
Review	553
Forthcoming papers	555

Annual Sustaining Members, Patrons, and Benefactors of The Clay Minerals Society

Benefactors

Michael J. B. (2011-2012)

Patrons

1000

1000

1000

Individuals

John D. Brennan
Gail A. Bowen
Richard K. Bowen
Michael L. Cummings
Randy L. Cygan
W. P. Gates
Joseph R. Gaudreau
Stephen G. Johnson

Blair F. Jones
David A. Linds
Robert H. Linds
Dustin H. Longwell
Paul A. Schaeffer
Joseph W. Stucki
Angela R. Thomas
Kenneth H. Troot
Michael A. Verell

ISSN 0009-8604
CCM PA60(5) 555(October)



Cover I : Rice-Fish-Horticulture Farming System in the North Eastern Region

ADVISORY BOARD

Chairman : K D Kokate

Members

• M M Pandey • B Gangwar
• C S Prasad • P Das • Mruthyunjaya

Project Director, DKMA : Dr Rameshwar Singh

Incharge (EEU) : Dr R P Sharma

Editors : Reena Kandwal

Chief Production Officer : Dr V K Bharti

Production : K B Gupta

Senior Artist : Narendra Bahadur

For editorial queries contact

Reena Kandwal

011-2584 1004, 2584 1960 / 613

e mail: indfarm@icar.org.in

indfrm@icar.org.in

For Subscription and Advertisement, Contact:

S K Joshi

Business Manager, DKMA, ICAR
Krishi Anusandhan Bhavan I, Pusa
New Delhi 110 012

Telephone: 011-2584 3657

Fax: 011-2584 3657

e-mail: bmicar@icar.org.in

Subscription

Single Copy : ₹ 25
Annual : ₹ 250 (inland)
: \$ 50 (overseas)



Indian Farming

In This Issue

Editorial	2
Rice-Fish-Horticulture Farming System in the North-Eastern Region <i>B S Satapathy, T Singh and K B Pun</i>	3
Efficient cultural practices—Curbing plant diseases in the climate change era <i>Anil Kumar Singh, B P Bhatt and Deepak Singh</i>	6
Linseed: An oilseed crop with multiple uses <i>Ranbir Singh, T P Singh and M Dutta</i>	12
Gypsum bed for improving quality of alkali water <i>Y P Singh</i>	16
Prevention and control of fungal contamination and Mycotoxicosis in Animal and Poultry Feed <i>Gurpreet Kaur and Mudit Chandra</i>	18
Rearing and Production of Quail <i>M A Akbar, Sreehari S and Jeet Singh Yadav</i>	21
How to save neonatal calves from Scours <i>V.K. Gupta, Sanjay K. Yadav, P.K. Ramkumar and K.L. Khurana</i>	23

Attention !

- All disputes are subject to the exclusive jurisdiction of competent courts and forums in Delhi/ New Delhi only.
- The Council does not assume any responsibility for opinions offered by the authors in the articles and no material in any form can be reproduced without permission of the Council.
- The Council is not responsible for any delay, whatsoever, in publication/delivery of the periodicals to the subscribers due to unforeseen circumstances or postal delay.
- Readers are recommended to make appropriate enquiries before sending money, incurring expenses or entering into commitments in relation to any advertisement appearing in this publication.
- The Council does not vouch for any claims made by the authors, advertisers of products and service.
- The publisher and the editor of the publication shall not be held liable for any consequences in the event of such claims not being honoured by the advertisers.

The Indian Forester

ISSN 0019-4816

Vol. 139, No. 4; April, 2013

R.N.I. No. 4839/57

Special Issue on "Forestry Education and Training"

CONTENTS

Page No.

MESSAGES

Dr. V.K. Bahuguna, IFS, Director General, ICFRE, Dehradun

Shri R.K. Goyal, IFS, Director, IGNEA, Dehradun

PREFACE

Dr. P.P. Bhojvaid, IFS, Director, FRI, Dehradun

ARTICLES

Forestry education and training in Indian Council of Forestry Research and Education Omkar Singh, Rakesh Kumar Dogra and Anil Negi	277
Professional forestry education in India for the 21 century A.S. Dogra	282
Directions for forestry education and training in India K.D. Singh	289
Hands-on range management training for IFS Officers Vinod Rishi and Shashi Paul	295
Analysis of professional training of Indian Forest Service Officers Gopa Pandey	302
Evolution of training of IFS probationers in independent India Shashi Paul	307
Forestry education in India: Retrospect, prospect and recommendations for improvement S.M. Sulaiman Quli, V. Sivaji and K.K. Srivastava	316
Forestry education and training: Time for major reforms Ashish Kothari	324
Physical fitness: An essential component of forestry training and profession Mohit Gera	331
Applications of geospatial technology in forestry research and education: An overview Jawaid Ashraf	335
Forestry education at the state agricultural universities: Opportunities and future perspective M.N. Ramesha, H.V. Srinidhi, S.K. Dubey and N.K. Janoo	341
Growth and development of training for senior forestry personnel of India Shashi Paul and T. Rabikumar	346
Challenges of professional forestry education - A thought A.K. Lahiri	358
Forestry education and training in Jammu and Kashmir M.A. Islam, S.A. Gangoo and R. Banyal	361

..... 49

Comparison of initial professional training of senior forestry personnel in India Shashi Paul and Pramod Chand Lakra	367
NEWS AND NOTES	
Contribution of Forest Research Institute Deemed University, Dehradun in forestry education Ramesh K. Alma	375
Forestry education: Strength of dedicated forestry in Madhya Pradesh (India) A.K. Joshi and K. Bhugawkar	377
Tamil Nadu Forest Academy- in retrospect and prospect S. Balaji	379
VIEWS AND EXPRESSIONS	
A thought on thrust areas of training of today's technical level foresters A.K. Lahiri	382
Forest education at university level and its orientation M.C. Pande	385
Valuing the forests and their eco-system services S. Parameswarappa	386

FRONT COVER



Forest Research Institute
Dehradun



Indira Gandhi National Forest
Academy (IGNFA), Dehradun



Central Academy for State Forest Service
Dehradun



Tamil Nadu Agricultural University
Coimbatore



Uttarakhand University of Horticulture
and Forestry Bharsat, Uttarakhand



Dr. Y.S. Parmar University of Horticulture
and Forestry, Nauni, Solan, H.P.

Photo by - Editor

CONTENTS

Research Papers

Effect of age of seedling and spacing on yield, economics, soil health and digestibility of rice (<i>Oryza sativa</i>) genotypes under system of rice intensification	Kalyan Singh, S R Singh, J K Singh, R S Rathore, Shishu Pal Singh and Rina Roy	479
Genetic diversity analysis of mangold (<i>Tagetes</i> sp) genotypes using RAPD and ISSR markers	Namita, Sapna Panwar, Humira Sonah, Kanwar P Singh and T R Sharma	484
Hydrophysical characteristics of a sandy loam soil under bed planted maize (<i>Zea mays</i>)	Pramila Aggarwal, Rakesh Kumar and Brijesh Yadav	491
Transformation of tobacco (<i>Nicotiana tabacum</i>) with antisense soybean (<i>Glycine max</i>) oleic acid desaturase gene	H Y Duan, C E Zhou, Y Q Zhou, M M Tian, M Li, Y H Zhang and Y Zhang	497
Tillage and residue management effect on hydro-physical environment under pigeonpea (<i>Cajanus cajan</i>)-wheat (<i>Triticum aestivum</i>) rotation	Surajit Mondal, D Chakraborty, R K Tomar, Ravender Singh, R N Garg, P Aggarwal, G S Sidhu and U K Behera	502
Effect of transplanting and seedling age on growth, yield attributes and seed cotton yield of <i>Bt</i> cotton (<i>Gossypium hirsutum</i>)	Kulvir Singh, Harmandeep Singh, Kuldeep Singh and Pankaj Rathore	508
Effect of explant orientation on shoot regeneration in tomato (<i>Lycopersicon esculentum</i>)	Teena Rani, Ram C Yadav, Neelam R Yadav and Manish Kumar	514
Temporal variability of climatic parameters and potential evapotranspiration	G T Patle, D K Singh, A Sarangi, Anil Rai, Manoj Khanna and R N Saroo	518
Character association and path coefficient analysis of indigenous and exotic bitter gourd (<i>Momordica charantia</i>) germplasm	Dalamu and T K Behera	525
Sustainable quality leaf production in S 1635 mulberry (<i>Morus alba</i>) under irrigated condition through organic nutrient management	P K Chowdhury, G C Setua, A Ghosh, R Kar and S K Maity	529
Fruit size contributing traits in pomegranate (<i>Punica granatum</i>) cv Dholka under temperate condition	S Lal, N Ahmed and M K Verma	535
Soil water dynamics, root growth and water and nitrogen use efficiency of rainfed maize (<i>Zea mays</i>) in a semi-arid environment	S Pradhan, U K Chopra, K K Bandyopadhyay, P Krishnan, R Singh and A K Jain	542

Effect of planting system and phosphorous on productivity, moisture use efficiency and economics of sole and intercropped pigeonpea (<i>Cajanus cajan</i>) under rainfed conditions of northern India	Pramod Kumar, K S Rana, M A Ansari and Hariom	549
Price dynamics and market integration of natural rubber under major trade regimes of India and abroad	Anuja A R, Amit Kar, Jha G K and Rakesh Kumar	555
Performance of bioagents in management of wilt (<i>Fusarium oxysporum</i> f sp <i>cumini</i>) and their resultant effect on growth and productivity of cumin (<i>Cuminum cyminum</i>) under field conditions of arid region of Rajasthan	N Chawla and S Gangopadhyay	561
Shelf-life of <i>Trichoderma viride</i> in talc and charcoal based formulations	Sanjiv Kumar, Rakesh Kumar and Hari Om	566
Multivariate analysis of various agronomic traits in grasspea (<i>Lathyrus</i> spp) germplasm	A K Parihar, G P Dixit and D Singh	570
Short Communications		
Recent trends in breeder seed production of barley (<i>Hordeum vulgare</i>) in India	Vishnu Kumar, Raj Kumar, R P S Verma, Ajay Verma and Indu Sharma	576
Evaluation of Bambara groundnut (<i>Vigna subterranea</i>) landraces for their agronomic and physiological traits	S L Meena and F J Massawe	579
Effect of insecticides and biorationals against pod bug (<i>Clavigralla gibbosa</i>) in pigeonpea	J B Gopali, O P Sharma, Suhas Yelshetty and Rachappa V	582



INDIAN JOURNAL OF FERTILISERS

Vol. 9 No. 4 April 2013

Editor-in-Chief
Satish Chander

Consulting Art Editor
Ravi Sharma

Members
S. Nand, D. S. Yadav
T. K. Chanda, R. K. Tewatia, A. C. Dubey

In this Issue

Frank Notes : Adoption of Fertiliser Best Management Practices	10
Fertiliser Best Management Practices : Concept, Global Perspectives and Application	14
<i>Kaushik Majumdar, Adrian M. Johnston, Sudarshan Dutt, T. Satyanarayana and Terry L. Roberts</i>	
Fertiliser Best Management Practices in Important Cropping Systems	34
<i>V. Gangwar, V.K. Singh and Ravi Shankar</i>	
Fertiliser Best Management Practices in Rice for Higher Productivity	54
<i>A.K. Nayak, B. Lal, Mohammad Shahid, B.B. Panda, R. Tripathi, R. Raja and T. Mohapatra</i>	
Fertiliser Best Management Practices in Wheat for Higher Productivity	70
<i>R.K. Sharma, R.S. Chhokar, S.C. Gill, S.C. Tripathi and Indu Sharma</i>	
Fertiliser Best Management Practices for Maize Systems	80
<i>M.L. Jat, T. Satyanarayana, Kaushik Majumdar, C.M. Parihar, S.L. Jat, J.P. Tatarwal, R.K. Jat and Y.S. Saharawal</i>	
Fertiliser Best Management Practices in Sugarcane	96
<i>T.K. Srivastava, A.K. Singh and V. Visha Kumari</i>	
Fertiliser Best Management Practices in Cotton	110
<i>D. Blaise, M. V. Venugopalan, J. V. Singh and A.R. Raju</i>	
Fertiliser Best Management Practices in Pulses	122
<i>N. Nadarajan, Narendra Kumar and M. S. Venkatesh</i>	
Fertiliser Best Management Practices in Fruit Crops	138
<i>A.N. Ganeshmurthy, S.C. Kotur, H.B. Raghupathi, G.C. Satisha and L.R. Varalakshmi</i>	
Fertiliser Best Management Practices in Vegetable Crops	150
<i>Prakash S. Naik, T.D. Lama, R.B. Yadava and S.N.S. Chaurasia</i>	
Fertiliser Best Management Practices in Farm culture	160
<i>T. Janakiram, Namita, Ritu Jain, P. Pavan Kumar and Nikhil Dileep Narkar</i>	
FAI Awards 2013	178
FAI Activities	180
Agriculture Promotional Programmes	186
News in Brief	190
Fertiliser Scene	192

No. of Pages 1-192

OUR COVER

Our cover in this issue shows
Fertiliser Best Management Practices

All the papers published in Indian Journal of Fertilisers are peer-reviewed. The opinions expressed by contributors do not necessarily reflect the views of The Fertiliser Association of India.

Copyright © FAI

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publishers.

FAI BOARD OF DIRECTORS

Chairman

R. G. RAJAN, Rashtriya Chemicals and Fertilizers Ltd., Mumbai

Co-Chairmen

S. S. NANDURDIKAR, Paradeep Phosphates Ltd., Bhubaneswar

RAKESH KAPUR, Indian Farmers Fort. Coop. Ltd., New Delhi

Directors

DEEPAK ANAND

Mangalore Chemicals & Fertilizers Ltd., Bangalore

U. S. AWASTHI

Indian Farmers Fert. Coop. Ltd., New Delhi

H. S. BAWA

Zuari Agro Chemicals Ltd., Goa

D. BHATTACHARYA

Hindalco Industries Ltd., Mumbai

ATANU CHAKRABORTY

Gujarat State Fertilisers & Chemicals Ltd., Vadodra

RAJIV CHOPRA

State Trading Corporation, New Delhi

P. S. CAHLAUT

Indian Potash Ltd., New Delhi

SHAM LAL GOYAL

The Fertiliser and Chemicals Travancore Ltd., Udyogamandal

VIDEH KUMAR JAIPURIAR

Jubilant Agri. & Consumer Products Ltd., Noida

M. RAVI KANTH

Projects & Development India Ltd., Noida

ANIL KAPOOR

Chamba Fertilisers and Chemicals Ltd., New Delhi

P. K. KAUL

National Fertilizers Ltd., Noida

VIREN KAUSHIK

Kribhco Shyam Fertilizers Ltd., Noida

SHAILESH KHATIAN

Khaitan Chemicals & Fertilizers Ltd., Indore

NARAYANAN SURESH KRISHNAN

Zuari Agro Chemicals Ltd., Goa

J. C. LADDHA

Aditya Birla Nuvo Ltd., New Delhi

KAPIL MEHAN

Coromandel International Ltd., Secunderabad

S. C. MEHTA

Deepak Fertilisers & Petrochemicals Corpn., Pune

R. MUKUNDAN

Tata Chemicals Ltd., Mumbai

ASHWIN C. MUTHIAH

SPIC, Chennai

MANISH NAGPAL

Greensar Fertilizers Ltd., Chennai

C. B. PALIWAL

NCDC, New Delhi

VED PRAKASH

MMTC, New Delhi

B. B. PATTANAIK

Central Warehousing Corpn., New Delhi

K. RAHUL RAJU

Nagarjuna Fertilisers and Chemicals Ltd., Hyderabad

S.D. SINGH

Brahmaputra Valley Fertilizer Corporation Ltd., Namrup

B. D. SINHA

Krishak Bharati Coop. Ltd., Noida

RAJIV SINHA

DCM Shriram Consolidated Ltd., New Delhi

ANAND MOHAN TIWARI

Gujarat Normada Valley Fert. & Chem. Ltd., Bharuch

I. VIJAYAKUMAR

Madras Fertilizers Ltd., Chennai

Director General

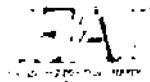
SATISH CHANDER, FAI, New Delhi.

THE FERTILISER ASSOCIATION OF INDIA

FAI House, 10 Shaheed Ji Singh Marg, New Delhi - 110 067

Tel : 91-11-25567144 Fax : 91-11-25960052

E-mail : pr@faidelhi.org Website : www.faidelhi.org



INDIAN JOURNAL OF FERTILISERS

Vol. 9 No. 5 May 2013

Editor-in-Chief
Satish Chander

Consulting Art Editor
Ravi Sharma

Members
S. Nand, D. S. Yadav
T. K. Chanda, R. K. Tewatia, A. C. Dubey

In this Issue

Frank Notes : Fertiliser Pricing Policy for Sustainable Agriculture	10
Withdrawal of Fertiliser Subsidy: Some Issues and Concerns for Farm Sector Growth in India Vijay Paul Sharma	16
Innovative Ways to Improve Efficiency of M-scar and Scrubber System on SSP Field at ICCL Haldia Khaskar Datta	32
An Analysis of Current Use of Fertiliser Prices in India and Required Policy Level Interventions H.L.S. Tandon	42
Use of Soil Health Cards in NHF: Food Security and Climate Change Mitigation Ch. Srinivasarao, B. Venkateswarlu and Vijay Sandeep Jakkula	48
Soil Fertility as Influenced by Phosphorus Management in Preceding Cereals under Luzerne-Todder-Sorghum Cropping System Ambika Tandon and C.L. Patel	62
Fertiliser Management of Vegetable and Seed Purpose Okra with Emphasis on Yield, Nand F. Fertiliser Use Efficiency and Seed Quality S.C. Kotur	70
Response of Sweet Corn to Nitrogen Levels, Azotobacter and Nitrogen Source under Humid Region of Rajasthan Harpal Mevra, Ganpat Lal Sharma and Shankar Lal Golada	78
Agriculture Promotional Programmes	88
News in Brief	94
FAI Awards 2013	97
FAI Seminars/Workshops/Training Programmes Calendar 2013-14	98
Fertiliser Scene	100

No. of Pages: 1-100

OUR COVER Our cover advocates for Pricing Policy for Sustainable Agriculture

All the pieces published in Indian Journal of Fertilisers are peer-reviewed. The opinions expressed by contributors do not necessarily reflect the views of The Fertiliser Association of India
Copyright © FAI

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publishers.

FAI BOARD OF DIRECTORS

Chairman

R. G. RAJAN, Roshniya Chemicals and Fertilizers Ltd., Mumbai

Co-Chairmen

S. S. NANDURDIKAR, Paradeep Phosphates Ltd., Bhubaneswar

RAKESH KAPUR, Indian Farmers Fertiliser Coop. Ltd., New Delhi

Directors

DEBPAK ANAND

Mangalore Chemicals & Fertilizers Ltd., Mangalore

U. S. AWASTHI

Indian Farmers Fertiliser Coop. Ltd., New Delhi

H. S. BAWA

Zuari Agro Chemicals Ltd., Goa

D. BHATTACHARYA

Hindustan Industries Ltd., Mumbai

ATANU CHAKRABORTY

Gujarat State Fertilizers & Chemicals Ltd., Vadodra

RAJIV CHOPIRA

State Trading Corporation, New Delhi

P. S. GAHIAUT

Indira Fertiliser Ltd., New Delhi

VIDEHA KUMAR JAIPURIAR

Labant Agri. & Consumer Products Ltd., Noida

M. RAVI KANTH

Products & Development Indila Ltd., Noida

ANIL KAPOOR

Chambal Fertilizers and Chemicals Ltd., New Delhi

P. K. KAUL

National Fertilizers Ltd., Noida

VIREN KAUSHIK

Knitex Shyam Fertilizers Ltd., Noida

SHAJEESH KHATTAN

Khaitan Chemicals & Fertilizers Ltd., Indore

NARAYANAN SURUSH KRISHNAN

Zuari Agro Chemicals Ltd., Goa

J. C. LADHA

Aditya Indira Nitro Ltd., New Delhi

KAPIL MEHAN

Coromandel International Ltd., Secunderabad

S. C. MEHTA

Deepak Fertilizers & Petrochemicals Corpn. Pune

R. MUKUNDAN

Meta Chemicals Ltd., Mumbai

ASHWIN C. MUTHIAH

SPIC, Chennai

MANISH NAGPAL

Grostar Fertilizers Ltd., Chennai

VED PRAKASH

MMFC, New Delhi

B. B. PATTANAIK

Central Warehousing Corpn., New Delhi

K. RAHUL RAJU

Namanam Fertilizers and Chemicals Ltd., Hyderabad

S.D. SINGH

Bechempute Valley Fertilizer Corporation Ltd., Natarajp

B. D. SINHA

Ka. Tuk Bhojati Corp Ltd., Noida

RAJIV SINHA

DCM Nutraman Consumer Ltd., New Delhi

JAIVEER SRIVASTAVA

The Fertiliser and Chemicals Travancore Ltd., Udyogamandal

ANAND MOHAN TIWARI

Gujarat Nutrida Valley Fertil. & Chem. Ltd., Bharuch

L. VIJAYAKUMAR

Midas Fertilizers Ltd., Chennai

Director General

SATISH CHANDER, FAI, New Delhi

THE FERTILISER ASSOCIATION OF INDIA

FAI House, 15 Chabed, 11 South Marg, New Delhi - 110069

Tel: 91-11-26567144 Fax: 91-11-26960052

Email: pr@faiindia.org Website: www.faiindia.org

JOURNAL of THE GEOLOGICAL SOCIETY OF INDIA

(Abstracted/Indexed in AGI's Bibliography and Index of Geology, Chemical Abstracts, Current Contents, GEOBASE, GElRef, Mineralogical Abstracts, GeoArchive, Thomson ISI database (SCIE, CC/PC & ES))

Vol. 81	MAY 2013	No. 5
---------	----------	-------

CONTENTS

Water Security in Bengaluru. SUBHAJYOTHI DAS 595

RESEARCH ARTICLES

Can Geologists Ensure Isolation of Radioactive Wastes in Deep Rock Formations over Thousands of Years? RK BAJPAI 600

Insights into the Hadean Earth from Experimental Studies of Zircon. DUSTIN TRAIL, E. BRUCE WATSON and NICHOLAS D. TAILBY 605

A Panoptic View of Western Margin of Sundaland: Causes of Seismic Vulnerability of Sumatra. ABHJIT DEONATH and BASAB MUKHOPADHYAY 637

Variation of Paleo-productivity and Terrigenous Input in the Eastern Arabian Sea during the Past 100 ka. ISHFAQ, AHMAO MIR, J.N. PATTAN, V.M. MATTA and V.K. BANAKAR 647

Features of Mineral and Chemical Composition of the Khamambettu Carbonatites, Tamil Nadu. M.V. BURTSEVA, G.S. RIPP, A.G. DOROSHKEVICH, S.G. VILADKAR and RAMMOHAN VARADAN 655

Fossil Neochelostomine Bryozoans from the Tertiary Rocks of Western Kachchh, Gujarat. M.A. SONAR and S.G. GAIKWAD 665

Clay Mineralogy of the Pleistocene Soil Horizon in Barind Tract, Bangladesh. MD. AFTABUZZAMAN, SOHAIL KABIR, MD. KHAIRUL ISLAM and M. SHAFIQU ALAM 677

Spatial Variations of Groundwater Vulnerability using Cluster Analysis. N. SUBBA RAO, P. SURYA RAO and D. DEVA VARMA 685

High-K Calc-alkaline Plutonism in Zouzan, NE of Lut Block, Eastern Iran: An Evidence for Arc Related Magmatism in Cenozoic. S.A. MAZHARI and M. SAFARI 698

Textural and Compositional Relationships of Rutile and Chromite in Sittampundi Anorthosite Complex, Tamil Nadu. P.V. SUNDER RAJU 709

Petro-chemical Investigation of some Perhydrous Indian Coals. BIMALA P. BARUAH, ARPITA SHARMA and BINOY K SAIKIA 713

CORRESPONDENCE

Hassles of Editing. SUBHAJYOTHI DAS	719
---	-----

OBITUARY

Maria Evgen'evna Raaben (1920–2012). ANSHU KUMAR SINHA and MUKUND SHARMA	721
--	-----

NEWS AND NOTES

Deep Scientific Drilling in Koyna, India – Brain-storming Workshop on Geological Investigations. N. PURNACHANDRA RAO, SUKANTA ROY and KUSUMITA ARORA	722
Report on 2 nd International Symposium on “Advances in Earthquake Science” (AES-2013) and International School on “Use of e-infrastructures for Advanced Seismic Hazard Assessment in Indian Subcontinent”. B.K. RASTOGI	724
PAGES 4th Open Science Meeting at Goa. SUMAN SARKAR	726
Geochemical Mapping - A Multiple Application. M. VENKATASWAMY	727
Hydrogeology of Aquifers in the Deccan Traps, India. RAYMOND A DURAISWAMI	729

Monthly Meeting of the Society on 29 May, 2013

*Active Tectonics in Penner Basin: Insights from Geomorphic Indices and Drainage Pattern Analysis
by L.P. Singh*

Cover

*Cathodoluminescence photomicrographs of an in situ, zircon found within fuchsite-rich domains of the
Jack Hills metaconglomerate*

ADDRESS OF EDITOR

All papers intended for publication and also related correspondence should be addressed to: B. Mahabaleswar,
Editor, Geological Society of India, No.63, 12th Cross, Basappa Layout, Gavipuram P.O., P.E. No. 1922,
Bangalore - 560 019. **Email:** editorjournalgsi@gmail.com; jgsi.journl@gmail.com; **Mobile:** 09341264052;
Telefax: 080-26613352; **Telephone:** 080-22422943; **Website:** <http://www.geosocindia.org>.

CONTENTS

Influence of Natural Salinity on Yield and Proximate Composition of Sweet Potato in Coastal Saline Soils of Eastern India	1
K. LAXMINARAYANA, D. BURMAN, D.P. SINGH and S.K. NASKAR	
Effect of Irrigation and Fertilizers Level on Growth and Yield of Gerbera (<i>Gerbera jamesonii</i> bolus) Varieties in Polyhouse under Coastal Conditions of Maharashtra	9
D. M. DINGANKAR, U. S. KADAM, P. M. HALDANKAR, A. D. RANGWALA, P. C. HALDAVEKAR and A. V. SOMAVANSHI	
Characterization of Soils and Cropping Pattern of Coastal Areas of Haldia, Paradeep and Visakhapatnam Ports	12
S. K. SARANGI, K. K. MAHANTA, SUBHASIS MANDAL and B. MAJI	
Effect of Humic Acid on Physiological Growth of Mango (<i>Mangifera indica</i> L.) Nursery Grafts Var. Alphonso under Coastal Ecosystem	19
G. N. KORAKE, P. C. HALDAVEKAR, P.M. HALDANKAR, P. C. MALI and M. M. BURONDKAR	
Intensification of Double Cropped Rice System in Krishna-Godavari Delta of Coromandel Coast	24
A. UPENDRA RAO, K. M. DAKSHINA MURTHY, C. V. REDDY and T. V. SRIDHAR	
Evaluation of Okra (<i>Abelmoschus esculentus</i>) under Micro-sprinkler Irrigation System in Saline Soils of Coastal West Bengal	29
K. K. MAHANTA, S. K. SARANGI, A. R. BAL and B. MAJI	
Photosynthetic Performance and Yield of Watermelon Grown under Biodrainage (<i>Casuarina equisetifolia</i>) Vegetation	34
S. ROY CHOWDHURY, P. S. BRAHMANAND, S. GHOSH, S. K. JENA, R. K. MOHANTY and A. KUMAR	
Response of White Onion (<i>Allium cepa</i> L.) to Deficit Irrigation under Micro-irrigation System in Konkan Region of Maharashtra	41
G. G. KADAM, M. S. MANE, S. T. PATIL and B. L. AYARE	
Effect of Irrigation with Industrial Waste Water on Soil Health in Konkan Region of Maharashtra	45
M. S. MANE, R. P. AHER and U. S. KADAM	
Development of Rainfall Intensity Duration Frequency Relationship for Wakawali of Konkan Region of Maharashtra	50
B. L. AYARE, M. S. MANE, S. T. PATIL and S. S. CHAVAN	
Development and Calibration of a Soil Water Balance Model for Paddy Field in Humid Climatic Condition	55
RANU RANI SETHI, A. KUMAR, S. P. SHARMA, R. B. SINGANDHUPE, M. DAS and S. K. JENA	
Trails Association Analysis for Seed Yield and its Attributes in Sesame (<i>Sesamum indicum</i> L.) Under Rainfed Conditions of Bay Islands	60
P. K. SINGH, T. V. R. S. SHARMA, KRISHNA KUMAR, AJANTA BIRAH, AWNINDRA K. SINGH and R. K. GAUTAM	

Genetic Diversity of Mango (<i>Mangifera indica</i> Linn.) Accessions of Andaman and Nicobar Islands Characterized by Biochemical Markers	65
R. KANNAN, T. DAMODARAN, R. P. MEDHI, G. KAPIL DEV, R. B. RAI and S. UMAMAHESHWARI	
Generation Effect of <i>Goniozus nephantidis</i> Muesbeck Reared on Rice Moth and Coconut Black Headed Caterpillar	70
V. R. SAWANT, V. S. DESAI and A. I. NARANGALKAR	
Biology of Spotted Pod Borer, <i>Maruca vitrata</i> (Fabricius)	73
S. P. VAIDYA, V. S. DESAI, K. V. NAIK and V. V. DALVI	
Effectiveness of the Trainers' Trainings on Scaling-up of Water Productivity in Agriculture in Coastal Odisha	77
SOUVIK GHOSH, ASHWANI KUMAR and TANMAYA MOHAPATRA	
Effect of Post Flowering Exogenous Application of Nutrients on Yield and Quality of Banana cv. Grand Naine	83
P. M. HALDANKAR, S. P. YELWE, K. H. PUJARI, P. C. HALDAVNEKAR and A. V. SEAMANSHP	



खेती

(कृषि परामर्शिका समाहित)
कृषि विज्ञान द्वारा ज्ञानोत्थान
की मासिक पत्रिका

वर्ष : 66, अंक : 1, अप्रैल 2013
चैत्र-वैशाख 1933 शक

E-mail: khetidipa@gmail.com

संपादन सलाहकार समिति

- | | |
|---|-------------|
| 1. डॉ. के.डी. कोकादे | अध्यक्ष |
| उप-महादेशिक, कृषि प्रकृत | |
| भारतीय कृषि अनुसंधान परिषद, नई दिल्ली | |
| 2. डॉ. ओ.पी. हुजे | सदस्य |
| पूर्व सलाहकार महाराष्ट्र | |
| भारतीय कृषि अनुसंधान परिषद, नई दिल्ली | |
| 3. डॉ. ओ.पी. सिंह | सदस्य |
| निदेशक प्रसाह, खाद्यान्न बहालपन एवं परेश कृषि | |
| एवं प्रौद्योगिकी विभाग, मेरठ | |
| 4. श्री विजय कुमार | सदस्य |
| प्रबंध निदेशक, | |
| एशिया बागवानी केंद्र | |
| 5. डॉ. पी.डी. महापात्रे | सदस्य |
| कृषि सलाहकार | |
| 6. श्री हरवीर सिंह | सदस्य |
| कृषि प्रबन्ध | |
| 7. श्री राजकुमार पाठायण | सदस्य |
| प्रगतिशील किसान | |
| 8. डॉ. जगदीप सक्सेना | सुपरव्हाइजर |
| ईनाम, दिल्ली प्रौद्योगिकी विभाग | |

संपादक : जगदीप सक्सेना
उप-संपादक : अशोक सिंह
प्रधान प्रोडक्शन अधिकारी : खिरेन्द्र कुमार भारती
तकनीकी अधिकारी : अशोक शास्त्री
वरिष्ठ कलाकार : मोहन महापात्रे

संस्थापक संपादक
खिरेन्द्र कुमार भारती
अशोक शास्त्री

अध्यक्ष भूषण कुमार
सुनील कुमार जोशी
व्यवसाय प्रबंधक
दूरभाष: 011-25643657

E-mail: bmie@icar.org.in

भारतीय कृषि अनुसंधान परिषद
कृषि अनुसंधान भवन, पूसा रोड, नई दिल्ली-12
एक प्रति: ₹. 25.00 वार्षिक: ₹. 150.00

खेती



- खेती में नए तकनीक
- खेती में नए उपकरण
- खेती में नए पशुधन
- खेती में नए फसल
- खेती में नए जल संचयन

इस अंक में

- | | |
|----------------------|--|
| 2 | संपादकीय
जगदीप सक्सेना |
| 3 | विश्लेषण : कालान्तरक काल की जीवित श्रेणी
डा. राम जेत चौधरी, शिव बदन मिश्र और धर्मेन्द्र कुमार |
| 7 | स्वास्थ्य : अलसी का औषधीय महत्त्व
डॉ. बबिता चौधरी, डॉ. मनोज कुमार त्रिपाठी और डॉ. हेमचंद्र पण्डारी |
| 9 | आमदनी : आंवला के ज्ञान द्वारा फसलों की खेती
डॉ. लक्ष्मण राम मीणा और डॉ. सुनील कुमार |
| 12 | गैर पारंपरिक ऊर्जा : ज्ञानीजी गोष्ठी में ऊर्जा ऊर्जा के उपयोग
डॉ. पी.के. शर्मा और डॉ. को.डी.के. शीधर |
| 15 | फसल सुरक्षा : समन्वित पौध पौधण द्वारा मक्का का भयंकर उत्पादन
दशरथ सिंह और डॉ. पी.पी. मीणा |
| 18 | वधाय : धान की फसल में उपभोगिताय विप्लव
रजनीश शर्मा, सुख माल और संजय |
| 22 | उपयोग : वृद्ध से ठरा धारा और लाभकारी
डा. एस. एन. राम |
| 25 | प्रबंधन : ज्ञान पहाड़ी का तयम, कृषि एवं भण्डारण
कोरिमाणि त्रिपाठी और डॉ. सुखदेव सिंह |
| 28 | सलाह : पोटोश के उचित उपयोग में सुनिश्चि में लाभ
डा. राज माल शर्मा और माधवी शर्मा |
| 30 | सफलता की गथा : जलवीर विवरणी (डा. अशोक शर्मा) से अतिरिक्त आमदनी
नीरज वर्मा |
| 32 | व्याज : आदिवासी किसानों को आर्थिक विकास
डॉ. महेंद्र सिंह, डॉ. आर.एस. शर्मा और डॉ. पी.के. सिंह |
| 34 | वैज्ञानिक उपलब्धियां : कृषि में परमाणु विज्ञान का उपयोग
डॉ. एस.एस. शर्मा, डॉ. आर.पी. शर्मा और डॉ. आर.एस. सिंह |
| ज्ञानरत्न
अंक III | श्री अरुण जयरा का परिचय क सुसंवादी में दीज
कृषि प्रौद्योगिकियों की प्रगति और श्री अशोक शर्मा |