



**In Association with**



**INTERNATIONAL CONFERENCE ON ADVANCES IN INFORMATION TECHNOLOGY AND MANAGEMENT**

*Leveraging Information Technology for  
Waste Management in Agriculture & Medicine*

**16 - 17 February 2019**



*Thakur Educational Trust's (Regd.)*

**Thakur Institute of Management Studies,  
Career Development & Research**

**(Approved by AICTE, Govt. of Maharashtra & Affiliated to University of Mumbai)**

**ISO 9001 : 2015 Certified**

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ISBN: 978-0-9972694-5-1

Printed in India Thakur Institute of Management Studies, Career Development and Research, Mumbai, India.

# **Our PEOs and POs**

## **PROGRAM EDUCATIONAL OBJECTIVES (PEOs)**

1. To enable students to gain knowledge across all domains of Information Technology with in-depth understanding of their applications.
2. To enable students to analyze problems and to design and develop software solutions using emerging tools and technologies.
3. To enable students to continue Life-long learning, Research and Entrepreneurial pursuit in their chosen fields.
4. To develop communication, teamwork, and leadership skills necessary to manage multidisciplinary projects and serve the society as responsible and ethical software professionals.

## **PROGRAM OUTCOMES (POs)**

1. Apply domain specific knowledge of computing and mathematics for designing of software solutions for defined problems and requirements.
2. Understand and analyze a problem and suggest feasible solutions.
3. Design, evaluate, and develop effective solutions for complex computing problems to meet desired needs.
4. Design and conduct experiments and use research-based methods to investigate complex computing problems.
5. Use appropriate techniques and software tools for computing activities.
6. Understand and commit to professional norms, regulations and ethics.
7. Recognize the need for and have the ability to engage in independent learning for continual professional development.
8. Understand and apply project management principles, as a member or leader in multidisciplinary environments.
9. Effectively communicate technical information, both oral and written with range of audience.
10. Analyze societal, environmental, cultural and legal issues within local and global contexts when providing software solutions.
11. Work as a member or leader in diverse teams in multidisciplinary environments.
12. Use Innovation and Entrepreneurship for creation of value and wealth.

## VISION

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Thakur Institute of Management Studies, Career Development and Research will become a premier Institute renowned internationally for providing education in Software Application to graduates from various disciplines.

## MISSION

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To achieve excellence in providing software education so that students can grasp existing as well as emerging technologies and to inculcate leadership and managerial qualities in them so that they can deliver results in the organization they join.

## QUALITY POLICY

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We, the staff, faculty and management of Thakur Institute Of Management Studies, Career Development and Research are committed to offer excellence in software education, conducive academic environment and state-of-the-art infrastructure to our students. We work as a team and interact with students in pro-active manner to achieve our Quality Objectives and fulfill all academic, statutory and regulatory requirements to entire satisfaction of our students as well as for continual improvement of QMS.

## Chief Patron's Message for ICAIM-2019



During the last few years, TIMSCDR, under the aegis of Thakur Education Group (TEG) has been excelling in its journey into the field of education and research of international standards. TIMSCDR, in its journey towards excellence has taken the initiative in organizing yet another International Conference 'International Conference on Advances in Information Technology and Management - Leveraging Information Technology for Waste Management in Agriculture and Medicine'.

The aim of the conference is not only to create awareness about the imminent issue of waste management and make people environmentally responsible but also to understand how to gain maximum return from waste resources. Achieving environmental objectives in an increasingly competitive business climate requires access to the best and most up-to-date information available. I am sure this conference will provide a platform to progressive farmers, healthcare professionals and academicians to probe into various opportunities to design and practice an integrated and sustainable system for waste management.

I take this opportunity to congratulate the organizing committee for their dedication and hard work for successfully arranging this event. I am also very grateful to all the delegates and research scholars for sharing their research work and making this conference a huge success.

**V. K. Singh**  
Chairman

## CEO's Message for ICAIM-2019



I feel privileged to welcome you all for the upcoming International Conference on Advances in Information Technology and Management titled “Leveraging Information Technology for Waste Management in Agriculture and Medicine” organized by TIMSCDR, under the aegis of Thakur Education Group (TEG).

Due to tremendous increase in human population and industrial development, waste is being generated at a colossal level and managing it has become a very challenging task for the human kind. Waste management is now not about merely dumping the unwanted things in a random way it but has become a systematic process consisting of collection, transportation, and proper disposal of garbage, sewage and other waste products.

This conference, a distinctive endeavor of TIMSCDR, will provide a platform for the exchange of ideas and findings of all intellectuals from academia, industry and research institutions in the area of application of Information Technology for waste management. I am sure this exchange of ideas among eminent and erudite personalities from relevant fields will open many more avenues of future technological enhancements.

The zeal and enthusiasm with which the organizing committee has come forward is commendable. I extend my best wishes to the faculty, delegates and the organizing committee for excellence in their endeavors.

**Mrs. Karishma Singh Mangal**  
CEO

## Director's Message for ICAIM-2019



“ You Reap What You Sow” is a familiar saying and same applies to the theme of ICAIM 2019. We will reap the fruits of devastation if we do not make conscious efforts to ensure that the waste which we throw is managed systematically and mindfully.

ICAIM 2019 like our previous conferences was a year long journey which helped our entire team understand Waste Management in the fields of Agriculture and Medicine. We paid visits to various farms which managed the Agro Waste by converting it into compost which is eventually used in the farm again. Thus promoting Organic Farming. We also tried to understand the Management of Biomedical Waste. However, we realized that the only way this waste can be decomposed is through incineration. In some cases the plastic and metal waste arising out of disposal of syringes, plastic gloves, plastic pouches is further processed to be reused. We did not however limit ourselves to study of Waste Management in Agriculture and Medicine, but also tried to investigate as how waste produced in houses can be managed. During this study we came to know about various ways of bifurcating house waste into dry and wet and further using techniques to manage the waste by converting it into compost. However, throughout this study we realized that Information Technology is not been much used for managing waste irrespective of its type. The current role of Information Technology is very limited in Waste Management. Never the less, there is scope of leveraging Information Technology for not only Managing Agro and Medical waste but also home waste.

ICAIM 2019 has successfully reached its final step due to the support of AMC (Association of Medical Consultants) and MACCIA (Maharashtra Chamber of Commerce, Industry and Agriculture). As a part of the Conference, a minuscule survey was done to understand the actual management of Agro waste in a few farms from the State of Maharashtra. Further techno savvy graduates from TIMSCDR were encouraged to write research papers inline with the theme of the Conference. Thus, the proceedings of ICAIM 2019 has 121 research papers most of which describe the use of Information Technology for Waste Management. These Research Papers were presented before senior Faculty and Industry professionals. ICAIM 2019 completes its journey with erudite talks delivered by stalwarts from the respective fields.

To execute a new idea is always a difficult task, a challenge all by itself. ICAIM 2019 with the theme of "Leveraging Information Technology for Waste Management for Agriculture & Medicine" saw the light of the day due to the unfailing support of the Faculty and the Staff of TIMSCDR who trusted in the concept of the Conference and took it ahead by passing across various hurdles. The support of the Students all through the making of ICAIM 2019 has been very encouraging.

My sincere thanks to our proactive Management whose support makes team TIMSCDR execute ICAIM every year with better and challenging themes.

I sincerely invite the delegates of ICAIM 2019 and wish them All the very Best.

**Dr. Vinita Gaikwad**

Director



## **About TIMSCDR**

The Thakur Educational Group comprises of three Trusts namely Thakur Educational Trust (Regd.), Zagdu Singh Charitable Trust (Regd.) and Zagdu Singh Educational Trust (Regd.) managed by the Thakur family and runs 16 Institutes located in Kandivali, western suburb of Mumbai.

TIMSCDR (Thakur Institute of Management Studies, Career Development and Research) is dynamic institute striving to provide quality higher education. The institute is an ISO 9001:2015 certified providing three years MCA (Master of Computer Application) course. All possible ways of acquiring academic insight and undertaking appropriate academic initiatives are explored at the institute. TIMSCDR also has an ISTE (Indian Society of Technical Education) chapter.

TIMSCDR is organizing next International Conference ICAIM-2019 which serves as a platform for gathering all academicians, industrialist, researchers and professionals in the disciplines of Information Technology, Waste Management in Agriculture & Medicine.

## **About AMC**

The Association of Medical Consultants (AMC) was established in 1972 by a small group of energetic active and concerned medical consultants from distant suburbs who often assembled and animatedly discussed their common problems. Over the years, the immense need rose for an organisation of this nature and the Association grew rapidly. It is now one of the fastest growing Associations of Specialist Doctors in Mumbai and boasts of a membership strength of more than 9000 Medical Consultants. AMC represents Consultants practicing at corporate and non corporate Tertiary care referral Hospitals (both Government and Private) and individual Consultants practicing through their own consulting rooms, Clinics & Nursing Homes spread across Greater Mumbai, Navi Mumbai and Thane districts. It is recognized as a frontline Medical Organization and is an important opinion making body which addresses vital public health and professional issues facing the medical profession in general and medical consultants in particular. AMC has effectively brought together consultants of various disciplines on one platform and aims to highlight and offer solutions to all the important day to day problems faced by consultants.

## **About MACCIA**

Maharashtra Chamber of Commerce, Industry & Agriculture (MACCIA) is the Apex Chamber of the State. The Chamber plays a pivotal role in supplementing and augmenting the efforts of Government for the economic development of the State and advancement of its people. With more than 3500 direct Members, comprising of large, medium and Small-Scale Industries, Traders, Agriculturist and Professionals, MACCIA is the only Chamber in Maharashtra, which has deep-roots in all the 35 Districts encompassing 355 Talukas of Maharashtra. In addition over 800 Local Trade and Industry Associations and professional bodies having collective membership of over 700,000 business organizations from all over the State are affiliated to the Chamber and thus it virtually functions as the State's Apex Chamber.



**Shri Santosh Mandlecha**  
President, MACCIA

Dear Friends,

Greetings from Maharashtra Chamber of Commerce, Industry & Agriculture (MACCIA) !!!

I express my appreciation for 'Thakur Institute of Management Studies, Career Development & Research' for organising this 'International Conference on Advances in Information Technology for Waste Management in Agriculture & Medicine, scheduled on 16<sup>th</sup> -17<sup>th</sup> February 2019, at Mumbai.

As the President of Maharashtra Chamber of Commerce, Industry & Agriculture (MACCIA), our organisation is very much concerned about the critical issues for Waste Management in Agriculture & Medicine.

I sincerely hope that this conference will deliberate and discuss all the different facets of this exciting topic and come up with sustainable recommendations that will lead to a better world and some strong take-home messages.

It is an excellent platform for interaction between experts and various stakeholders, and opportunity to connect with expertise through their lectures & presentations and many thought provoking strategies for future line of action.

I 'am sure that the delegates, experts, students, researchers, policy makers will all tremendously benefit from the deliberation of this conference. The success of the conference depends ultimately on all members who have worked extremely hard for organising the conference.

I wish grand success of the conference.

Thanks and with Best Regards,

**Santosh Mandlecha**

President

Maharashtra Chamber of Commerce, Industry & Agriculture (MACCIA)



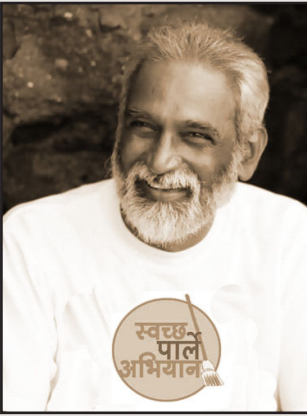
**Dr. Vipin Checker**  
President, AMC, Mumbai Chapter

The annual event ICAIM organized in association with TIMSCDR has always been an enlightening experience for all the participating delegates, specifically those from the Medical field. IT being an evolving domain, its relevance can be felt in the Medical field extensively.

The expert talks and the panel discussion provide knowledge about the latest trends in the field of IT and its use in Medicine. The Doctors Workshop is the most awaited event. Every year many Doctors gets trained in the use of simple IT application which have an impact on their day to day practice. This year's Workshop provides an insight on the use of Social Media applications like YouTube, Facebook to be connected to a patient. Over and above, the Workshop also throws light on the futuristic applications like Chatbots, AI and Augmented Reality and their role in Medicine.

My Best Wishes to all the participants of ICAIM 2019. I acknowledge the efforts of all the members of AMC and TIMSCDR in making ICAIM 2019 a grand success.

**Dr. Vipin Checker**  
President, AMC, Mumbai Chapter



**Mr. Satish G. Kolvankar**  
Architect

Application of issues about waste management on a powerful platform of IT is a remarkable idea as the information to effectively clean the environment and revive its health will be at the whole world's fingertips. This would be a great tool of social reform as it is a necessity of the time.



**Dr. Ajit Suresh Gokhale**  
Natural Solutions

"There is Nothing Called Waste"



**Mr. Suhas Mhaskar**  
CEO, Accent Technovation ([www.accentino.com](http://www.accentino.com))  
CIO & Executive Partner, Octave Automation

I am happy that an academic institute is regularly organizing an International Conference on Advances in Information Technology & Management (ICAIM). This will give an early exposure to the students about the latest developments in IT, as well as foster a strong bond between industry and academic community. I wish all success for ICAIM 2019.



**Dr. Sharad Kale**  
BARC, Mumbai

It is heartening to know that Thakur Institute of Management Studies, Career Development and Research is organizing International Conference on Advances in Information Technology and Management in collaboration with Association of Medical Consultants and Maharashtra Chambers of Commerce, Industry and Agriculture on 16th and 17th February, 2019. It's now more than two decades information technology has gathered enough speed in our country and is making difference in life of a common man. There is no sector in dynamic life of our nation which is not touched by this revolution. It becomes our prime responsibility in technology driven world to remember human values and restrict our longing for it at the cost of sustainable environment. In our quest for "more", we have to cater to the needs of our Mother Earth. Otherwise a day is not far away when communication networks would be everywhere, but there would be nothing to communicate! We must preserve our resources and more importantly our values. My best wishes for the upcoming Conference and hope it will be able to serve as a wake up call.



**Ms. Rasika Phatak**  
Farmer, Agro Consultant

अतिशय आनंदाची गोष्ट आहे ही! की, ठाकूर इंस्टिट्यूट ऑफ मॅनेजमेंट स्टडीज, करिअर डेव्हलपमेंट आणि रिसर्च ही मुंबईतील प्रतिशश संस्था, शेतीतील अवरोध (पिकांचे) थांचे व्यवस्थापन या क्षेत्रांमध्ये माहिती तंत्रज्ञानाच्या वापर वाढविण्याच्या दृष्टिने चर्चा करण्यासाठी मुंबईमध्ये दिनांक १५ फेब्रुवारी ते १६ फेब्रुवारी २०१९ या कालावधीमध्ये दोन दिवसांची आंतरराष्ट्रीय परिषदेचे आयोजन करित आहे.

निसर्गाच्या कोणत्याच कथरा नसतो. निसर्गापासून जे आपल्याला मिळतं ते आपण निसर्गाला परत द्यावं असंय अपेक्षित असतं. उदा. आताच्या पेंढा, ज्वारी, बाजरीची धसकटे-ताटं, वेगवेगळ्या पिकांचे टाकाऊ अथवा अन्न बुझकट, वाकलेला पालापसोळा, निरुपयोगी लाकूडफाटा, झाडांच्या पालापसोळा आणि इतर सर्व प्रकारचे निरुपयोगी वनस्पतिजन्य पदार्थ अशाप्रकारचे शेतीमधून निघणारे टाकाऊ पदार्थ आणि इतर सैद्ध्य धटक.

जनावरांच्या गोठ्यापासून जो कथरा तयार होतो म्हणजे प्रामुख्याने शेण-मूत्र, उष्टावळ थांचा योग्य रितीनं कंपोस्ट खत तयार करण्यासाठी वापर करावा. गाडुंखत तयार करता येईल तर उत्तम प्रतीये कंपोस्ट खत तयार होऊन ते आपल्याच परसबागेतील झाडांना धालता येईल.

फक्त गरज आहे से-शेगिय कथरा व्यवस्थापनाची आणि स्वच्छता सादरतेची. यासाठी वैयक्तिक पातळीवर आणि सामुदायिक पातळीवर यत्नवळ सातत्याने म्हणजेच रोजन्य राबविण्याची. यासर्व विषयांमध्ये माहिती तंत्रज्ञानाच्या उपयोग भारतीय शेतीच्या विविध बाबींमध्ये करण्यास मोठ्या प्रमाणात सुरुवात झाली आहे. कोकणातील विविध भागांमध्ये शेतीविषयक सल्लागार म्हणून काम करण्यासाठी आम्हांला खूप फायदेशीर ठरत असल्याच्या प्रत्यक्ष अनुभव आहे.

या संस्थेच्या संचालिका डॉ. विनिता गायकवाड आणि थांचे सर्व सहकारी, थांनी परिषदेच्या यशस्वितेसाठी खूप मेहनत घेतली आहे.

थांचे मनःपूर्वक अभिनंदन आणि परिषदेसाठी खूप खूप शुभेच्छा!



### **Dr. A. G. Mohod**

PhD (Renewable Energy Engg.), HEAD

Deptt. of Agricultural Engineering, ACD, DBSKKV, Dapoli

India generates the huge quantity of agriculture waste which, can be utilized for production of 5F: Food, Fodder, Fiber, Fertilizer and Fuel. The techno-commercially feasible technologies for the conversion of agriculture waste in to useful value added products are needed to uplift the farmers and increase the self sufficiency of the nation. Beside the advantages of agriculture waste as a renewable source, the proper utilization this source for value added product is limited due to improper information about its form, production, productivity, utilization and surplus amiability. The ICT play an important role the proper management of the agriculture waste for the conversion in to value added products. At broader level, digital technology tapping into satellite imagery is revolutionizing the way countries can assess, monitor and plan the use of their agriculture waste as natural resources. The utilization of ICT in waste management is destined to become increasingly important as implement measures to adapt the conversion technologies and mitigate climate change.

Looking to the need of current era, the International Conference on Leveraging Information Technology for Waste Management in Agriculture & Medicine will surely beneficial for the producer, researcher's, academicians and policy makers to discuss, interact and share the knowledge about the management of waste in to valuable products. I congratulate the organizers of conference and staff of Thakur Institute of Management Studies, Carrier Development and Research, Mumbai. I wish every success and good interactive deliberations during the conference.



**Mr. Rajendra Bhat**  
Nisarg Mitra Farm

शेतातील पिकांचे अवशेष हे पिकां एवढेच महत्वाचे आहे. यात प्रचंड क्षमता आहे. याचा उपयोग करून जलसंधारण, मृदा संधारण, जमीनीची उत्पादकता व सुपिकता वाढविता येते. या पासून विज व ईथेनाॅल तयार करता येते. या प्रक्रीयेतुन संमृद्धी तर करता येईलच. त्याच बरोबरा ग्लोबल वॉर्मींग सुद्धा कमी करता येणे शक्य आहे.

मी याला वेस्ट समजत नाही.



**Mr. Sanjay Bhayade**  
Sajeev Krushi

India generates the huge quantity of agriculture waste which, can be utilized for production of 5F: Food, Fodder, Fiber, Fertilizer and Fuel. The techno-commercially feasible technologies for the conversion of agriculture waste in to useful value added products are needed to uplift the farmers and increase the self sufficiency of the nation.



**Mr. Hafiz Ansari**  
Director, Envirocare Recycling Pvt. Limited

I really appreciate your college management approach towards the e-waste, which is a big threat to our environment.





**Mr. Milind Prabhu**  
State Co-ordinator, MACCIA

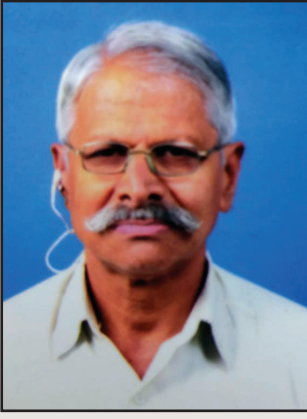
I compliment the TIMSCDR for taking this important initiative of organizing ICAIM 2019 - leveraging IT for waste management in Agriculture and medicine. Both Agriculture and Medicine sector are on a high growth path. Agriculture Production and Waste growth is going to be an integral part Indian Economy which is expected to grow close to US\$ 5 trillion in near future. As this conference will bring all key stakeholders and deliberations will further facilitate the growth and management of this important segment of our national economy.

I wish the ICAIM - 2019 all the very best and great success.  
Milind Prabhu..

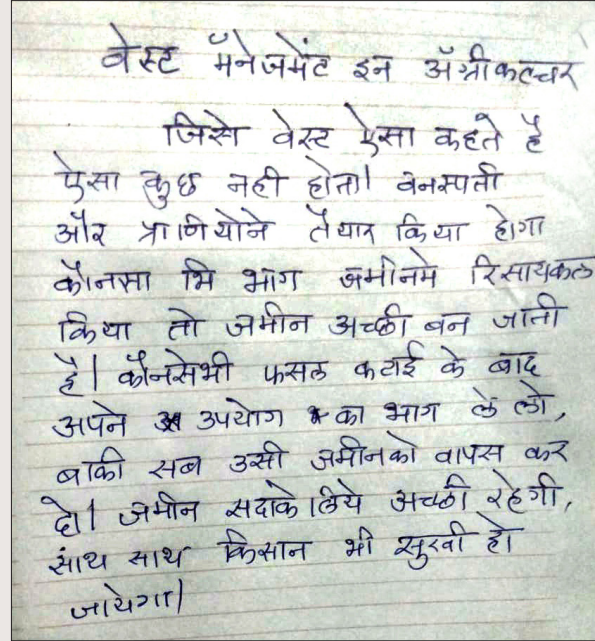


**Mr. Bhavin Gandhi**  
Director, Infinatrix Global Pvt Ltd.

I think it's a great platform to make Doctors aware of the benefits of social media & how Doctors can effectively use social media to promote their services & create a personal touch with their patients by making them aware of the latest healthcare practices prevalent in the market.



**Mr. Pratap Chiplunkar**  
Visionary Farmer



**Mr. Sanjay Bapna**  
Healthcare - Informatics, Consulting, Talent Search

Ever since the onset of multiple channels on television, normal lives for all of us changed irreversibly. Social media was the next extension of this media explosion. An average Indian spent 4 hours daily on media in 2018. 52% of this was on social media. The current forms of social media are WhatsApp, Facebook, Twitter et al. We may have different avatars in future, but social media is here to stay. It is contingent on all of us, especially those who interact with different people everyday (eg. Doctors), to understand the power of this medium and use it as a positive tool

# Best Wishes From



**Dr. Mukesh  
Gupta**  
President Elect AMC  
(2018-19)



**Dr. Aashish  
Mody**  
General and Laparoscopic  
surgeon, Aashish Nursing  
home



**Dr. Sushmita  
Bhatnagar**  
Prof. & Head – Department of  
Pediatric Surgery,  
Wadia Children's Hospital



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**Mr. Harsh  
Parikh**  
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**Mr. Jerry  
Thomas**  
(Certified Ethical Hacker  
(EC), trainer and Analyst



**Mr. Marcin  
Łotysz**  
Bin-e, Poland



**Mr. Nikhil  
Talwar**  
CyberSecurity expert

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**Dr. Mukesh Gupta**, Vice President, AMC  
**Mr. Milind Prabhu**, State Co-ordinator, MACCIA

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**Ms. Shweta Shalini**

BJP Spokesperson, Politician and Advisor to Chief Minister

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**Dr. Vipin Checker**, President, AMC  
**Dr. Suhas Kate**, Managing Trustee & Chairman - H & A Cell

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*Artitech*

**Ms. Rasika Phatak**

*Farmer, Agro Consultant*

### PROGRAM COORDINATORS

Prof. Pankaj Mudholkar, Dy. Director, TIMSCDR  
Mr. Sagar Nagare, Acting Secretary General, MACCIA  
Ms. Vanita Ghuge, Deputy Secretary, MACCIA

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## PREFACE

ICAIM 2019 was a yearlong study to understand the agro-waste management by farmers in the state of Maharashtra. This was done by seeking association of prominent bodies like MACCIA (Maharashtra Chamber of Commerce, Industry and Agriculture) and AMC (Association of Medical Consultants).

The agro-waste is great source of wealth rather than considering it as a undesirable waste. After the production in the farm, the agro-waste in the farm were either burnt or naturally converted into compost under favorable condition. But now, biomass produced from agricultural waste are used to generate energy or fuel etc. because it carries great potential to convert into energy. Since the biomass is available at every interval of time in farming sector, it is very important to manage this waste in more beneficial and efficient way.

To understand what is currently happening in the field of Agriculture various visits were paid to Farms within the State of Maharashtra. During the research study for this conference various visits were conducted in the districts of Palghar, Raigad, Solapur and Thane form the state of Maharashtra to understand the process of agro-waste management by the farmers.

Questionnaire based survey was conducted in these four districts with the farmers as respondents. The final survey data was collected from 241 Farmers. The Survey findings enabled us to understand the management of agro-waste by the farmers.

The brief finding indicated that Farmers prefer burning agro-waste in their farm, thinking that it should make their soil more fertile. Farmers need to understand the problems of burning agro-waste which is identified as a major health hazard and leads to a regional source of pollution. Also burning agro-waste causes loss of vital components in the soil such as nitrogen, phosphorus, sulphur and potassium from the top soil layer, making the soil less fertile and unviable for agriculture in the long run. Rather than considering agro-waste as unwanted waste it can be considered as a source of wealth which can be converted into energy, fuel, compost etc.

ICAIM 2019 has brought Farmers, Doctors and IT Professionals on a single platform to best understand the use of Information Technology for Waste Management in Agriculture and Medicine. It was a unique opportunity to interact with professionals from different background and with totally unique mindset and attitudes. There was immense learning during this yearlong process of making of ICAIM 2019.

I feel extremely happy to put forth before you ICAIM 2019 Proceeding which involves tireless efforts made by many. The proceeding is a unique collation of interdisciplinary research work relating to the fields of Agriculture, Medicine and Information Technology put forth by research scholars from these fields respectively. The efforts involved in the assembly of ICAIM 2019 Proceeding are truly noteworthy and can be witnessed as you read through the pages of this matchless piece of literature.

**Dr. Vinita Gaikwad**  
Director

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