



**Dr Khwaja Osama**

**Associate Professor, Department of Bioengineering, Faculty of Engineering,  
Integral University, Lucknow**

**(Phone: +91-9452684037 Email: osama.khwaja@gmail.com)**

([Google Scholar](#), | [ORCID ID](#) | [Scopus](#), | [Web of Science](#), | [Research Gate](#), | [LinkedIn](#))

## PROFILE

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- A **Research-oriented and seasoned professional** offering **10+ years** of expertise in **food science engineering, development and optimization of food production processes, food safety, quality, and efficiency**.
- Extensive hands-on experience in teaching and research in **Bioprocess Engineering and Food Process Engineering**.
- Adaptive to new technologies, and ability to work in a multicultural environment, and leading personnel.
- **Finesse in food science and engineering principles** with in-depth knowledge of food processing techniques, preservation methods, and food product development.
- **Competent at** analyzing and optimizing **food manufacturing processes** for improved efficiency, cost-effectiveness, and quality.
- **Skilled in** Research and Development (**R&D**), Food Processing, Food Science, Strategic Planning, Hazard Analysis and Critical Control Points.
- **Expertise in research towards offering composite solutions** to the industry. Well-versed in using food processing equipment.
- **Profound exposure in publishing research, attending conferences**, and delivering presentations to build a strong research network.
- Worked on **several projects in food technology**. Performed a collaborative approach towards learning, teaching, research, and functioning.
- **Mentor various B Tech and M Tech students** in Food Technology, Biotechnology, and Biomedical Engineering.
- **Worked as** a coordinator for 5 undergraduate programs running in the Department of Bioengineering. Departmental in charge of criteria **7 of NAAC**.
- **Member** of Academic Council, Integral University, Lucknow
- **Deputy Chairperson**, Departmental Quality Assurance Cell, Department of Bioengineering, Integral University, Lucknow

## RESEARCH INTEREST:

- **Sustainable Food Science and Technology:**
  - Evaluation of the potential of underutilized fruits for food applications.
  - Development of food products enriched with fiber and calcium-rich fruit powder.
  - Sustainable utilization of food by-products (e.g., citrus peel) for obtaining pectin, protein etc.
- **Artificial Intelligence and Modeling:**
  - Application of artificial intelligence, machine learning, and modeling techniques in various research areas.
- **Biotechnology:**
  - Extraction and optimization methods for enhancing protein yield from plant materials.
  - Use of artificial intelligence and optimization techniques in bioprocess engineering in improving enzyme production.

### SUMMARY OF RESEARCH ACCOMPLISHMENT:

- Successfully **authored 31 papers and 3 book chapters** in reputed journals.
- **Edited 2 book**, published **1 patent** and **guided undergraduate and postgraduate students** on various research projects.

### PROFESSIONAL MEMBERSHIP:

- Lifetime member of the Indian Society of Agricultural Engineers (**ISAE**)
- Lifetime member of the Association of Food Scientists & Technologists of India (**AFSTI**)

### COURSE TAUGHT:

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#### B.Tech

- Principle of Biochemical Reaction Engineering
- Mass Transfer Operations
- Thermodynamics
- Fermentation Technology

#### M.Tech

- Advanced Bioprocess Engineering
- Bioreactor Engineering
- Fermentation Technology

### ADMINISTRATIVE/DEPARTMENTAL RESPONSIBILITY

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- **Worked as** a coordinator for 5 undergraduate programs running in the Department of Bioengineering.
- Departmental in charge of criteria **7 of NAAC**.
- **Worked as the** departmental timetable coordinator
- **Member** of Academic Council, Integral University, Lucknow
- **Deputy Chairperson**, Departmental Quality Assurance Cell, Department of Bioengineering, Integral University, Lucknow

### STUDENTS SUPERVISION

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#### Doctoral Students

- **Hina Siddiqui** (Enroll no. 2001091), Extraction of Dietary Fiber from Under-utilized *Neolamarckia cadamba*: A Valorization Approach. **Awarded in 2024**
- **Maboodurrahman** (Enroll no. 2201035), The effects of plant protein on the physicochemical and shelf-life of high-protein bars. (Undergoing)
- **Saba Firdous** (Enroll no. 2201123), Optimization, Production and Characterization of Exopolysaccharides from Cyanobacteria for the Production of Edible Film. (Undergoing)
- **Bobby Shekarau Luka** (Enroll no. 2400106401) Frameworks for Simulating the Drying Dynamics of Cold Plasma-Treated Carrot for Energy Efficient Drying and its Quality Attributes. (Undergoing)
- **Daggash Muhammad Lawan** (Enroll no. 2400106246) Exploration of Baobab (*Adansonia digitata*) Fruit Shell Lignocellulose as a Reinforcement for Sustainable Bio composites: Extraction, Characterization, and Manual Fabrication. (Undergoing)
- **Ishana Khan** (Enroll no. 1800101340) Extraction and Characterization of Dietary Fiber from Indian Water Chestnut (*Trapa natans*) Peel. (Undergoing)

#### Postgraduate Students Guided

- **Mohsin** (Enroll no. 21011361007), Extraction of Soluble and Insoluble dietary fibre from *Neolamarckia cadamba* fruit. 2023
- **Alweera Ashfaq** (Enroll no. 2101207002), Preparation, characterization and application of sodium alginate and mustard protein-based emulsion gels. (Co-supervised by Dr. Kaiser Younis) 2023
- **Zayeema Anjum** (Enroll no. 2101207010), The application of sodium alginate and aqueous extract of kadam (*Neolamarckia cadamba*) leaf coating to extend the shelf life of cape gooseberry. (Co-supervised by Dr. Kaiser Younis) 2023
- **Alisha Ahmad** (Enroll no. 2101207001), Development and characterization of sodium alginate and lemon (*Citrus limon*) waste-based biodegradable film. (Co-supervised by Dr. Owais Yousuf) 2023
- **Priya Kumari** (Enroll. no. 17013610011), Media optimization for enhancement of C-phycocyanin in the cyanobacterial strain *Plectonema boryanum*. (Co-supervised by Dr. Alvina Farooqui) 2019

- **Tarannum Parveen** (Enroll no. 1400110060), Ultrasound-assisted osmotic dehydration of *Neolamarckia cadamba* fruits. (Co-supervised by Dr. Kaiser Younis) 2019
- **Shama Parveen** (Enroll no. 1400110052), Foam-mat drying of *Neolamarckia cadamba* fruits. (Co-supervised by Dr. Ovais Shafiq Qadri) 2019
- **Sana Fatima** (Enroll no. 1100110087), Comparison of Response Surface Methodology, Artificial Neural Network and Gaussian Process Regression for Modelling Fermentation Media: Case Study of Fermentative Production of Amylase. 2016
- **Mohd. Umar Azeem** (Enroll no 1200136008), Computational modelling and simulation of hairy root growth of *Rauvolfia serpentina*. 2014.

### Undergraduate Students Guided

- **Abu Hozaifa** (Enroll no. 2200102915) Extraction and Analytical Evaluation of *Neolamarckia cadamba* (Kadamba) Seed Oil. 2026
- **Nitendra Pratap Singh** (Enroll no. ) Optimisation of alkali extraction of dietary fibre from water chestnut peel powder. 2025
- **Mohammad Salman** (Enroll no. ) Ultrasound-assisted Extraction of Dietary Fibre from Water Chestnut Peel Powder. 2025
- **Md Faizanur Rahman** (Enroll no. 2100100601) Microwave-assisted extraction of dietary fibre from water chestnut peel powder: a comprehensive investigation. 2025
- **Saddam Hussain** (Enroll no. 1800101457) Modelling and optimization of microwave and ultrasound assisted extraction of pectin from *Citrus maxima* fruit peel: A Machine Learning Approach. 2022
- **Pravesh Chandra Yadav** (Enroll no. 1801010032) Optimization of microwave and ultrasound assisted extraction of pectin from *Citrus maxima* fruit peel using Response Surface Methodology. 2022
- **Mandvi Mishra** (Enroll no. 1400110022) Incorporation of *Neolamarckia cadamba* fruit powder in cookies. (Co-supervised by Dr. Kaiser Younis) 2018
- **Mohd. Shahid** (Enroll no. 1400110027) Engineering Properties of *Neolamarckia cadamba* fruit (Co-supervised by Dr. Kaiser Younis) 2018
- **Kavita Yadav** (Enroll no 1400110019) Pickling of *Neolamarckia cadamba* fruit (Co-supervised by Dr. Kaiser Younis) 2018
- **Arti Yadav** (Enroll no. 1100101447) Artificial Neural Network based modelling of fermentation media for protease production by *Bacillus* species. 2015
- **Arti Patel** (Enroll no. 1100100863) Statistical Modeling and Optimization of Alkaline Protease Production from a Newly Isolated *Bacillus* Species Using Response Surface Methodology and Genetic Algorithm. 2015
- **Asif Khan** (Enroll no. 1000100337) Enhancement of Protease production by *Bacillus* species in submerged cultivation by Response Surface Methodology. 2015
- **Asif Abdullah Khan** (Enroll no. 1100101353) Efficiency of neural networks in modelling of fermentation process for Glucose Isomerase production. 2015
- **Salman Ahmad** (Enroll no. 1100100906) Production of Polyhydroxy Butyrate (PHB) biopolymer from *Azohydromonas australica* using sucrose as a sole carbon source. 2015
- **Rizvan** (Enroll no. 1100100912) Production of Polyhydroxy Butyrate (PHB) biopolymer from *Azohydromonas australica* using molasses as a sole carbon source. 2015
- **Mohd. Danish** (Enroll no. 1100102568) A neural network approach for modelling of media components for maximum productivity of Amylase from newly isolated *Bacillus* species. 2015
- **Avinash Diwedi** (Enroll no. 1100101822) Modelling of culture conditions for fermentative production of ethanol by Feed forward Artificial Neural Network. (Co-supervised by Dr. Salman Akhtar) 2015
- **Mohd. Zafar** (Enroll no. 1100100915) Optimization of growth medium to produce Glucose Isomerase from *Bacillus* species using response surface methodology. (Co-supervised by Dr. Salman Akhtar) 2015
- **Prashant Singh** (Enroll no. 0900100818) Artificial Neural Network based modelling of fermentation conditions for ethanol production by *Saccharomyces cerevecea*. (Co-supervised by Dr. Aslam Yusuf) 2015
- **Prashant Yadav** (Enroll no. 1100101463) Induction and growth kinetic studies of *Rauvolfia serpentina* hairy roots in shake flasks. (Co-supervised by Dr. Haris Siddiqui) 2015
- **Naghma** (Enroll no. 1100100908) Response surface methodology for the optimization of alpha amylase production by newly isolated *Bacillus* species. (Co-supervised by Dr. Haris Siddiqui) 2015
- **Mohd. Fahad Parvez** (Enroll no. 1100100911) Comparison of Artificial Neural Network and Response Surface Methodology in fermentation media optimization: A Case study of fermentative production of glucose isomerase. (Co-supervised by Dr. Haris Siddiqui) 2015
- **Mohd. Shahbaz Khan** (Enroll no. 1100100901) Media optimization for enhanced production of glucose isomerase from *Bacillus* species. (Co-supervised by Dr. Haris Siddiqui) 2015

## PUBLISHED/GRANT PATENTS

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- Dr. Pradeep Chhawcharia, Dr. V. Venugopal Reddy, **Dr. Khwaja Osama**, Dr. Ashish, Dr. K. Dhanapal, Dr. A. Balasubramanian Microbial growth prediction device for food, **Indian Patent**, Design number: 439760-001
- Dr. Santanu Koley, Dr. Ramendra Pati Pandey, Prof. V. Samuel Raj, Dr. Anusuya Debnath, Dr. Harengiri Gosai, Dr. Sandeep Yadav, Dr. Ashish, Dr. Nalinee Kumari, **Dr. Khwaja Osama**, Vivek Raj, A process and system for enhanced biodegradation of plastic waste using genetically engineered microorganisms, **Indian Patent**, Application number: 202431089110 A
- Dr. Khan Chand, Neeraj Kumar Mehta, Asfaq Siddiqui, Dr. Ningthoujam Manda Devi, **Dr. Khwaja Osama** Gravitational Sugarcane Juice Filtration Apparatus, **UK Design Patent**, Design number: 6350909, 2024

## PUBLISHED/ACCEPTED SCI/SCOPUS RESEARCH PAPERS

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- Luka, B. S., Kar, S., Rath, S., Siddiqui, M. H., & **Osama, K.** (2026). Insight into cold plasma jet-assisted drying of carrot (*Daucus carota* L): Drying dynamics, energy analysis and quality attributes. *Journal of Food Measurement and Characterization*, <https://doi.org/10.1007/s11694-026-04488-3> **IF 3.3**
- Luka, B. S., Kar, S., Rath, S., Siddiqui, M. H., & **Osama, K.** (2026). Deep optimizer-informed empirical twin for cold plasma jet-assisted carrot drying: Towards a smarter alternative to black-box AI-based models. *Journal of Stored Products Research*, 116, 102939. <https://doi.org/10.1016/j.jspr.2025.102939> **IF 2.8**
- Tripathi, G., Dubey, P., **Osama, K.**, Ahmad, S., Irum, Singh, V., Farooqui, A., Vamanu, E., Rai, S.N., & Mishra, V. (2025). Two-stage cultivation of microalga for sustainable biofuel production. *Green Chemistry Letters and Reviews*, 18(1), 2543909. <https://doi.org/10.1080/17518253.2025.2543909> **IF 4.99**
- Khan, F., Ahmad, S., **Osama, K.**, Farooqui, A., Kumar, A., & Akhtar, S. (2025). Deoxynojirimycin derivatives as potent  $\alpha$ -glucosidase inhibitors: in silico ADMET evaluation, molecular dynamics and in vitro validation studies. *Molecular Diversity*, 1-17. <https://doi.org/10.1007/s11030-025-11307-2> **IF 3.8**
- Younis, K., Jahan, K., Qadri, O.S., **Osama, K.**, Yousuf O. (2025). Non-thermal processing techniques for sustainable food supply chains. *Sustainable Futures*, 9, 100658. <https://doi.org/10.1016/j.sfr.2025.100658> **IF 3.3**
- Ashfaq, A., **Osama, K.**, Yousuf, O., Younis, K. (2024). Protein-based emulsion hydrogels and their application in the development of sustainable food products. *Plant Foods Human Nutrition*, 79, 759–768, <https://doi.org/10.1007/s11130-024-01214-6> **IF 3.1**
- Siddiqui, H., Younis, K., Farooqui, A., & **Osama, K.** (2024). Extracting insoluble dietary fiber from Kadam fruit (*Neolamarckia cadamba*) and its characterization. *Journal of Food Measurement and Characterization*, 1-11, <https://doi.org/10.1007/s11694-024-02682-9> **IF 2.9**
- Thomas, D., Gangawane, A.K., Sayyed, R.Z., Ahmad, R.A., Khan, S., Khan, M., Singh, V., **Osama, K.**, Haque, S. (2023). Laccase production from *Bacillus* sp. BAB-4151 using artificial neural network and genetic algorithm and its application for wastewater treatment. *Biomass Conversion and Biorefinery*, <https://doi.org/10.1007/s13399-023-04815-4> **IF 4.0**
- Jahan, K., Fatima, S., **Osama, K.**, Younis, K., & Yousuf, O. (2023). Boosting protein yield from mustard (*Brassica juncea*) meal via microwave-assisted extraction and advanced optimization methods. *Biomass Conversion and Biorefinery*, 13(17), 16241-16251. <https://doi.org/10.1007/s13399-023-04662-3> **IF 4.0**
- Ashfaq, A., **Osama, K.**, Yousuf, O., & Younis, K. (2023). Sustainable Nonfarm Approaches to Achieve Zero Hunger and Its Unveiled Reality. *Journal of Agricultural and Food Chemistry*, 71(28), 10486-10499. <https://doi.org/10.1021/acs.jafc.2c09095> **IF 6.1**
- Sharma, P., **Osama, K.**, Varjani, V., Farooqi, A., Younis, K. (2023). Microwave-assisted valorization and characterization of *Citrus limetta* peel waste into pectin as a perspective food additive. *Journal of Food Science and Technology*, 60(4), 1284-1293. <https://doi.org/10.1007/s13197-023-05672-9> **IF 3.117**
- Sharma, P., **Osama, K.**, Gaur, V. K., Farooqui, A., Varjani, S., & Younis, K. (2023). Sustainable utilization of *Citrus limetta* peel for obtaining pectin and its application in cookies as a fat replacer. *Journal of Food Science and Technology*, 60(3), 975-986. <https://doi.org/10.1007/s13197-022-05424-1> **IF 3.117**
- **Osama, K.**, Siddiqui, M.H., Makroo, H.A., Younis K. (2022). Development of cookies enriched with fiber and calcium-rich *Neolamarckia cadamba* fruit powder. *Journal of Food Measurement and Characterization*, 17 765–772. <https://doi.org/10.1007/s11694-022-01656-z> **IF 3.006**
- **Osama, K.**, Mujtaba, A., Siddiqui, M. H., Qadri, O. S., & Younis, K. (2022). Optimization of vacuum drying and determination of functional properties of Kadam (*Neolamarckia cadamba*) fruit powder. *Journal of Food Processing and Preservation*, 46(8) e16751. <https://doi.org/10.1111/jfpp.16751> **IF 2.609**
- **Osama K.**, Younis K., Qadri O.S., Parveen S., & Siddiqui M.H. (2022). Development of under-utilized kadam (*Neolamarckia cadamba*) powder using foam mat drying. *LWT*, 154, 112782. <https://doi.org/10.1016/j.lwt.2021.112782> **IF 6.056**
- Khursheed, N., **Osama, K.**, Eldesoky, G. E., Wabaidur, S. M., Islam, M. A., & Younis, K. (2022). Ultrasound-assisted protein extraction from mosambi peel support vector regression and genetic algorithm-based modeling and optimization. *Journal of Food Processing and Preservation*, 46(11), e16979. <https://doi.org/10.1111/jfpp.16979> **IF 2.609**
- Younis K., Yousuf O., Qadri O.S., Jahan K., **Osama K.**, & Islam R.U. (2022). Incorporation of soluble dietary fiber in comminuted meat products: Special emphasis on changes in textural properties. *Bioactive Carbohydrates and Dietary*

Fibre, 27, 100288. <https://doi.org/10.1016/j.bcdf.2021.100288>

- O.S Qadri, **K. Osama**, A.K. Srivastava (2020). Foam mat drying of papaya using microwaves: Machine learning modeling. *Journal of Food Process Engineering*, 43(6), e13394. <https://doi.org/10.1111/jfpe.13394>. **IF 2.889**
- K. Younis, S. Ahmad, **K. Osama**, M.A. Malik (2019). Optimization of de-bittering process of mosambi (*Citrus limetta*) peel: Artificial neural network, Gaussian process regression and support vector machine modeling approach. *Journal of Food Process Engineering*, 42(6), e13185. <https://doi.org/10.1111/jfpe.13185>. **IF 2.889**
- P. Chaurasiya, K. Younis, O.S. Qadri, G. Shrivastava, **K. Osama** (2019). Comparison of Gaussian Process Regression, Artificial Neural Network and Response Surface Methodology modelling approaches for predicting drying time of mosambi (*Citrus limetta*) peel. *Journal of Food Process Engineering* 42(2), e12966. <https://doi.org/10.1111/jfpe.12966>. **IF 2.889**
- S. Sarkar, **K. Osama**, Q.M.S. Jamal, M.A. Kamal, U. Sayeed, M.K.A. Khan, M.H. Siddiqui, and S. Akhtar (2017). Advances and implications in nanotechnology for lung cancer management. *Current Drug Metabolism*, 18(1), 30-38. [10.2174/1389200218666161114142646](https://doi.org/10.2174/1389200218666161114142646) **IF 3.408**
- L. Pathak, V. Singh, R. Niwas, **K. Osama**, S. Khan, S. Haque, C. Tripathi, and B. Mishra (2015). Artificial intelligence versus statistical modeling and optimization of Cholesterol Oxidase production by using *Streptomyces* Sp. *PloS one* 10(9) e0137268. <https://doi.org/10.1371/journal.pone.0137268> **IF 3.752**
- S. Mehrotra, **K. Osama**, A. Kukreja, and L. Rahman (2012) ISSR and RAPD based evaluation of genetic stability of encapsulated micro shoots of *Glycyrrhiza glabra* following 6 months of storage. *Molecular Biotechnology*, 52(3), 262-268. <https://doi.org/10.1007/s12033-011-9491-6> **IF 2.86**

#### PUBLISHED NON-SCI-SCOPUS BUT PEER-REVIEWED RESEARCH PAPERS

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- Jouvairiya, U., Fatima Alvi, M., Ahmad Faridi, S., **Osama, K.**, & Vimal, A. (2022). Varying Effects of Iron Oxide Nanoparticles (IONPs) on the Bacterial Cells. *Nanoscience & Nanotechnology-Asia*, 12(4), 1-9. [10.2174/2210681212666220822123017](https://doi.org/10.2174/2210681212666220822123017)
- Ahmad, S., Amir, A., Zafaryab, M., **Osama, K.**, Faridi, S. A., Siddiqui, M. H., Rizvi, M., A., & Khan, M. A. (2017). Production and characterization of polyhydroxybutyrate biopolymer from *Azohydromonas australica* using sucrose as a sole carbon source. *J Microb Biochem Technol*, 9, 082-086. <https://doi.org/10.4172/1948-5948.1000348>
- **K. Osama**, M.H. Siddiqui, K. Younis (2020). Underutilized kadam (*Neolamarckia cadamba*) fruit: Determination of some engineering properties and drying kinetics. *Journal of the Saudi Society of Agricultural Sciences*, 19(6), 401-408. <https://doi.org/10.1016/j.jssas.2020.06.001>
- Husain A., Khan F., **Osama K.**, Mahfooz S, Shamim A., Ahmad S., Farooqui A. (2020) Media optimization for C-phycocyanin production in *Plectonema* sp. using response surface methodology and central composite design. *International Journal of Research in Pharmaceutical Sciences*.11(3), 3897-3904.
- S.A. Khan, M.H. Siddiqui, **K. Osama** (2018). Bioreactors for Hairy Roots Culture: A Review. *Current Biotechnology*, 7(6), 417-427. <http://dx.doi.org/10.2174/2211550108666190114143824>
- U. Bano, A.F. Khan, F. Mujeeb, N. Maurya, H. Tabassum, M.H. Siddiqui, M. Haneef, **K. Osama**, and A. Farooqui (2016). Effect of plant growth regulators on essential oil yield in aromatic plants. *Journal of Chemical and Pharmaceutical Research*, 8(7), 733-739.
- M.K.A. Khan, M.H. Siddiqui, S. Akhtar, K. Ahmad, M.H. Baig, and **K. Osama** (2015). Screening of plant-derived natural compounds as potent chemotherapeutic agents against breast cancer: An in-silico approach. *Journal of Chemical and Pharmaceutical Research*, 7(1), 519-526.
- **K. Osama**, P. Somvanshi, A.K. Pandey and B.N. Mishra (2013) Modelling of nutrient mist reactor for hairy root growth using Artificial Neural Network. *European Journal of Scientific Research*, 97(4), 516-526.

#### BOOK EDITED/ AUTHORED

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- Yousuf, O., Younis, K., **Osama, K.** (Eds.). (2026). *Meat Composition and Nutrition*. Apple Academic Press, Canada. ISBN: 9781779640529 (In production)
- Yousuf, O., Younis, K., **Osama, K.** (Eds.). (2023). *Food Processing & Supply Chain*. Elite Publishing House, India. ISBN: 9789358999372

#### BOOK CHAPTERS

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- Akhtar S., Khan M.K.A., **Osama K.** (2020) Machine Learning Approaches to Rational Drug Design. In: "Computer-Aided Drug Design". Springer, Singapore. Pp 279-306
- M. Goswami, S. Akhtar, **K. Osama** (2018). Strategies for Monitoring and Modeling the Growth of Hairy Root Cultures: An in-silico perspective. In "Hairy Root: An Effective Tool of Plant Biotechnology" Springer Nature. Pp 311-327.
- **K. Osama** B. N. Mishra, and P. Somvanshi (2015) Machine learning techniques in plant biology. In "Plant Omics: The Omics of Plant, Science" Springer India. pp 731-754.