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DEPARTMENT OF PLANT
PHYSIOLOGY, AGRICULTURAL
BIOCHEMISTRY
MEDICINAL & AROMATIC PLANTS



INDIRA GANDHI KRISHI VISHWAVIDYALAYA
RAIPUR (C.G.)



Department of Plant Physiology, Agriculture Biochemistry, Medicinal & Aromatic Plants

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FROM HEAD OF DEPARTMENT DESK

The Department of Plant Physiology at IGKV Raipur was formally established in year 2000 with the objectives of imparting undergraduate & graduate program in Plant Physiology & also to undertake research in areas related to Physiology of plants. Since from its inception there was a clear intention to keep the interest of the department focused on “plants”. Accordingly the department has strived to make its teaching and research curricula to be increasingly plant physiology centric & be of relevance to the overall science of plant productivity. Our department is driving in the past 15 year to comprehensively address the plant responses to stress with the aim to provide basic inputs that could be used in breeding crop plants for tolerance to drought & other abiotic stresses. The efforts of the department have culminated in generating tomes of information on the responses of plants to water stress, identification of germplasm tolerant to moisture stress, understanding the physiological mechanism of tolerance & developing newer approaches towards screening for abiotic stress tolerant crops. These outputs have greatly enriched the understanding of plant responses to abiotic stresses & offer a fertile field for taking up the challenging task of regarding plants for tolerance to abiotic stresses. In the process of achieving the task, the department realizes that only way to sustain this battle is to build an army of excellent human resources that will continue to address the problem of stresses at large. Thus, among the vision the department is also aggressively emphasizing on “Establishment of Advance center for abiotic stress management” to develop conceptual & experimental skills in students & young researchers. The major research focus of the department has been in the area of plant stress physiology abiotic stresses, canopy photosynthesis, physiology of water use efficiency, chemical regulation of plant growth & nutrition bio-prospecting. Agriculture biochemistry is the chemistry of living beings. At department the biochemistry supports for quality analysis of MAPs and food material and their value addition. Medicinal and aromatic plants form a numerically large group of important plants ,which provide basic raw materials for medicines, perfumes, flavor and cosmetics. Several germplasm exploration, collection and development

of agro technologies have been undertaken under AICRP on MAPs project.

The department has a good mix of senior & junior faculty that combines the richness of experience & enthusiasm. The department faces formidable challenges in the years to come, both from the increasing demand of enhancing productivity of climate smart crops & from the radical changes in the approaches to address these challenges. The department is trying to keep pace with the recent developments on these fronts.

TEACHING HIGHLIGHTS

- Eight M.Sc (Ag) final year & 4 Ph.D students are pursuing their research work out of these two Ph.D students are pursuing their research work at National Institute Pune & Soumya Sahoo at NRRI . One M.Sc (Ag) student Vrishali is also during her research from NIASM at Baramati Pune.
- Faculty members performed (Theory as well as Practical Exams)examination duties.
- Mr. Soumya Kumar Sahoo awarded **Jawaher Lal Nehru Scholarship** for Ph.D. & two students miss Aradhana Druw & Mr. Janak Netam awarded **Rajeev Gandhi fellowship for Ph.D.**
- Practical Mannual entitled “ **Principle of Plant Physiology**” was published for UG & PG students by Shri VB Kuruwanshi &Dr Arti Guhey.
- One student Ku. Vrishali is pursuing their M. Sc (Ag) research work from NIASM Baramati (M.S.)
- Two student are pursuing their Ph. D research from NRRI Cuttack and NIASM Baramati (M.S.)

Ph.D. THESIS

- Shri V.B. Kuruwanshi has submitted thesis titled “Establishment of sustainable tapping techniques for high gum production”. Major advisor: Dr. Pratibha Katiyar
- Shabnam Khan has submitted thesis titled “Impact of high temperature tolerance in rice (*Oryza sativa* L.)”. Major advisor: Dr. Arti Guhey.

NEW PROJECT SANCTIONED

1. Under AICRP on Rice one post of Scientist (Plant Physiology) sanctioned.

RESEARCH ACTIVITIES

1. **Number of experiments conducted during Rabi 2016-17**
 - AICRP on Medicinal and Aromatics Plant (13), CGCOST (2), University funded (8), MIDH Spices Calicut (01), MIDH Betel vine (01) and AICRP (Rice) (01).
2. **Research Highlights**
 - The research work has been started on Physiological evaluation for low light tolerance on rice (*Oryza sativa* L.) as Volunteer Centre under AICRP (Rice) in department of Plant Physiology.
 - Experiment were conducted in following university funded project
 - Development of abiotic stress tolerance rice varieties using carbon isotopic discrimination as tool for physiological characterization.(PHY 1)
 - Development of crop based eco-friendly nutria-hormonal formulation for vegetables crops: The transplanting of crop has done in the month of November, 2016. .(PHY 2)
 - Enhancing yield potential of rice crop under low light intensity through physiological and molecular approaches: Germplasm evaluation carried out and analysis is in progress. .(PHY 3)
 - Multiplication trial on lemongrass.(PHY 4)



Evaluation of Rice germplasm for low light stress.



Evaluation of rice for water use efficiency and radiation use efficiency .



Field experiment for the development of nutria-hormonal formulation in tomato crop.

- **AICRP on Medicinal and Aromatics Plant .**

- **Crop Improvement:** Experiments were conducted for the improvement of lemon grass, Kalmegh, Ashwagandha, Palmarosa. Two accessions of kalmegh and two accessions of lemongrass were registered for IC from NBPGR .Experiment were conducted to identified and promote best genotype of ashwagandha Existing collection of betelvine has been shifted to protected structure of COE PCPF to promote betelvine production.



Crop production: Experiments were conducted for development of agro technology for patchouli, Sarpagandha, Kalmegh, Ashwagandha, Rice-Brahmi-Bach. New programme of Rice- Buch- Brahmi and Pigeon pea- Kalmegh – patchouli intercropping system were conducted .These intercropping system may be very useful tool for doubling the farmers income in next 5 year. Dr. Y.K.Dewangan also contributed to establishment of biodiversity park on MAPs at University camps as principal investigator and involved as a monitoring scientist at Mahasamund district under BGREI programme.



EXTENTION ACTIVITIES

Active participation in “Rashtriya Kisan Mela” during 27-31 January 2017 Stall No.E-34 on Medicinal ,Aromatic and Betelvine .various marketing and processing issues of MAPs have discussed with Dr. Puja Saha,Manager Patanjali group,Haridwar.

Two days farmers training programme on Production technique, processing & marketing of Spices, medicinal and Aromatic Crops was organized at Sant Kabir College of Agriculture & Research Station, Kawardha during 03-04, Feb. 2017 under the project Centrally Sponsored Scheme on Mission for Development of Horticulture on Spices & Aromatic Plants.

Survey of medicinal and aromatic plants under wetland situations was done by Dr Yeman Kumar Dewangan, Scientist at Ratanpur on 23/1/17



Farmers Training Program at SK CARS, Kawardha



Exhibition on Rashtriya Kisan Mela on 27-31st January 2017



Visit of Dr. Jitendra Kumar, Director ,DMAPR, Anand



Visit of Instructional Herbal Garden by ADG Education **Dr M.B. Chetti, Shri Shyam Bais ji**, Chairmen ,C.G. Beej Nigam,Raipur



Farmers training on Betelvine

PUBLICATION

1. Khan, Shabnam, Guhey, Arti and Kuruwanshi, V.B. 2016. Screening of thermo tolerance rice genotypes through temperature induction response (TIR) technique. *Progressive research – An international Journal*, Vol. 11: 891-892.
2. Kuruwanshi, V.B. and Katiyar, Pratibha. 2016. Gum tapping in gum karaya (*Sterculia urens* Roxb.) for high gum production using ethephon. *Advances in Life Science*, 5 (22), 10524-10528.
3. Kuruwanshi, V.B., Khan, Shabnam and Choudhary, Anita 2016. Effect of brassinolide on physiological and yield attributes of rice (*Oryza sativa* L.) genotypes. *Progressive research – An international Journal*, Vol. 11: 197-199.
4. Nagwanshi, D. and Tirkey, A. 2016. Studies on genetic diversity in various quantitative characters in kalmegh (*Andrographis paniculata*) germplasm. *Advance research Journal Crop Improvement*, 7(1), 60-64.
5. Tandon, A., Banjare, G.P., Sahu, P., Chaudhary, P.R and Tirkey A. 2016. Effect of crop geometry on seed yield and gum quality of gaur (*Cyamopsis tetragonoloba* L. Taub) varieties under rainfed ecosystem of Chhattishgarh. . *Progressive research – An international Journal*, Vol. 11 (Special 111): 1760-1761.
6. Tandon, A., Tirkey, A., Hemelata., Banjare., G.P. and Rathore., A.L. 2016. Efferct of varieties of crop geometry on seed yield and gum content of gaur (*Cyamopsis tetragonoloba* L. Taub) under rainfed condition of Chhattisgarh. *Extended summaries. Vol.2: 4th International Agronomy Congress, New Delhi from Nov 22-26, 2016.*
7. Parganiha, D., Naik, R.K., Patel, S., Khokhar, D. and Mishra, N.K. (2016). Study on effect of moisture content of patchouli (*Pogostemon cablin*) plants on recovery percentage of essential oil. *International Journal of Engineering Research & Technology*. 5(3): 294-297.
8. Parganiha, D., Patel, S., Naik, R.K., Khokhar, D. and Mishra, N.K. (2016). Effect of shade drying on recovery of essential oil from patchouli (*Pogostemon cablin* Benth.). *Progressive Research-An International Journal*. 11(IV): 2033-2035.
9. Y.K. Dewanga, S.S. Kolhe and Priya Dewangan (2017). Effect of different weed management practices and tillage operation on soil moisture, nutrient uptake and energetics of wheat crop

AWARDS/HONOURS/RECOGNITIONS

- Dr. A.K. Geda awarded **Emeritus Scientist** for his outstanding contribution in field of Aromatic and Medicinal Plants by ICAR, New Delhi in year 2017.
- Shri V.B. Kuruwanshi awarded **Distinguished Scientist Award** for outstanding contribution in the field of Plant Physiology by Genesis Urban and Rural Development Society, IIRR, Rajendranagar, Hyderabad, (Telangana) during National Conference on ECOASPECT during September, 2016.
- Ph.D student Soumya Kumar Sahoo awarded **Jawahar Lal Nehru Fellowship** for Ph.D research work.
- Two Ph.D students Ku. Aradhana Dhruw and Shri Janak Lal Netam are awarded **Rajeev Gandhi Fellowship** for Ph.D work

Scientists Participation in conferences/Seminars/Trainings/Workshops

- Dr Yeman Dewangan, Scientist attended the workshop on Conserving Wetland wealth of Chhattisgarh ,India at Yojna Bhawan ,Naya Raipur during 2-3 February 2017
- Dr S.P.Tiwari, Assistant Professor attended the ICAR Winter School Training at AAU, Jorhat during 2nd -22th September 2016

RETIREMENT

Dr. A.K. Geda, Professor and eminent Bio-Chemistry scientist retired from University services on 31 December, 2016. He served the University in various positions, guided the students, published more 60 research paper and presented more than 65 papers in National and International symposium. He has also published many articles and technical bulletins.

EDITOR BOARD

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