

SCIENTIST PROFILE



1. Name & Designation : Dr. Padmini Swain
Principal Scientist
2. Date of Birth : 22nd August, 1960
3. Date of joining : 5th October, 1989
4. Date of joining the present post : 5th October, 2006
5. Qualification (highest degree) : Ph.D
6. Post Doctoral Research Experience/Training:
7. Area of Specialization/research interest:
 - Production Physiology-Photosynthesis and productivity
 - Stress Physiology-Drought and low light
8. Significant Contribution including products and patents (Five bullets):
 - Positive correlation of maintenance respiration with biomass production at early stages and negative correlation at post flowering stages indicated the possibility to identify cultivars having high biomass with less maintenance expenses even at high level of nitrogen supply.
 - A better adaptable water saving technique was understood by alternate cyclic wetting and drying practice which enabled decreased requirement of irrigation water (about 33%) at the cost of 14 % yield loss in dry seasons and 3.2% yield loss in wet season.
 - Foliar application of GA₃ (30 ppm) in hybrid rice was found more effective in reducing spikelet sterility (20-30%) followed by IAA (17-22%) and Brassinolide (14-21%).
 - Developed a field screening technique to enable screen large number of rice genotypes for vegetative stage drought tolerance. About 10, 000 rice germplasm have been screened till date and more than 230 genotypes are being identified as vegetative stage drought tolerant. Three land races Mahulata (AC 35186), Brahman Nakhi (AC- 35678) and Sal-kain (AC- 34992) collected from the farmers field of Sambalpur, Jagatsinghpur and Sundargarh districts of Orissa respectively, identified as a new sources of vegetative stage drought tolerance are registered in NBPGR, New Delhi.
 - Maintaining high turgidity during severe stress (RWC>70%) with higher photosynthetic rate and fast recovering efficiency on re-irrigation are the key traits for drought tolerance
9. Awards/Honours:
 - Fellow: Indian Society for Plant Physiology for the year 2000 by Indian Society for Plant Physiology, New Delhi.
10. Publications (10 best):
 - i. Kumar A, Verulkar SB, Mandal NP, Variar M, Shukla VD, Dwivedi JL, Singh BN, Singh ON, **Swain P**, Mall AK, Robin S, Chandrababu R, Jain A, Haefele SM, Piepho HP and Raman A (2012). High-yielding, drought-tolerant, stable rice genotypes for the shallow rainfed lowland drought-prone ecosystem. **Field Crops Research** 133: 37–47.
 - ii. Mall AK, **Swain P**, Das S, Singh ON and Kumar A (2011). Effect of drought on yield and drought susceptibility index for quality characters of promising rice genotypes. **Cereal Research Communications** 39: 22-31.
 - iii. Verulkar SB, Mandal NP, Dwivedi JL, Singh BN, Sinha PK, Mahato RN, Dongre P, Singh ON, Bose LK, **Swain P**, Robin S, Chandrababu R, Senthil S, Jain A, Shashidhar HE, Hittalmani S, Veracruz C, Paris T, Raman A, Haefele S, Serraj R, Atlin G and Kumar A (2010). Breeding resilient and productive genotypes adapted to drought-prone rainfed ecosystem of India. **Field Crop Research** 117: 197-208.

- iv. **Swain P**, Poonam Annie and Rao KS (2006). Relationship of physiological characters with grain yield and yield attributes of rice hybrids under irrigated transplanted conditions. **Indian Journal of Agricultural Science** 76:496-499.
- v. Ramakrishnayya G and **Swain Padmini** (2005). Effect of soil moisture stress on biomass production and grain yield in rice. **Annals of Plant and Soil Research** 7: 60-63.
- vi. **Swain P**, Baig MJ and Nayak SK (2000). Maintenance respiration of rice leaves at different growth stages as influenced by nitrogen supply. **Biologia Plantarum** 43: 587-590.
- vii. Baig MJ, **Swain P** and Murty KS (1998). The photosynthetic efficiency of some elite rice hybrids and resoters. **Photosynthetica** 35: 241-245.
- viii. **Swain P** and Murty KS (1997). Direct and indirect effect of different leaf characters on photosynthetic rate in rice. **Oryza** 34: 269-271.
- ix. **Swain P** and Nayak SK (1996). Relationship between leaf area and grain yield in rice (*Oryza sativa* L.) under low light intensity. **Indian Journal of Agricultural Science** 66: 59-61.
- x. **Swain P**, Nayak SK and Murty KS (1987). Photosynthesis and translocation of ¹⁴C photoassimilates among rice varieties. **Journal of Nuclear Agriculture and Biology** 16: 18-21.