SCIENTIST PROFILE

1. Name & Designation : Dr. Mohammad Shahid, Scientist
2. Date of Birth : 13th August, 1980
3. Date of joining ICAR : 23rd June, 2009
4. Date of joining the present post : 23rd June, 2009
5. Qualification (highest degree) : Ph.D
6. Post Doctoral Research Experience/Training:
    - Worked as Assistant Professor at College of Horticulture & Forestry, Central Agricultural University, Pasighat, Arunachal Pradesh from June 2008 to June 2009.
    - Four months FOCARS (Foundation course for Agricultural Research Scientist) training at NAARM, Hyderabad
    - Four weeks training on "Introduction to GIS & Applications" at NRSC, Hyderabad
7. Area of Specialization/research interest: Soil Science-Soil Chemistry/Fertility/Microbiology
    - Micronutrient nutrition of rice
    - Problem soils associated with rice cultivation
    - Soil quality of rice soil
    - Nutrient management for rice and rice based cropping system
8. Significant Contribution including products and patents (Five bullets):
    - Response of Zn in increasing NPK use efficiency: Inclusion of Zn in NPK fertilization schedule significantly enhanced the rice yield of different cultivars. However, omission of any major nutrient, i.e. N, P or K limits the contribution of Zn in enhancing rice yield.
    - Screening of cultivars for Fe-toxicity tolerance and studying tolerance mechanism of rice cultivars for Fe-toxicity: Based on standard evaluation system (IRRI) more than 200 cultivars were tested for tolerance to Fe toxicity. Four cultivars (two each susceptible and tolerant) were studied under different soil management options in Fe toxic soil to study the tolerance mechanism and it was observed that susceptible cultivars responded more as compared to tolerant cultivars resulting in higher percentage increase in yield over control. High yield of tolerant cultivars was mainly due to their ability to retain much of the iron in the roots and less translocation to the shoots as compared to susceptible cultivars which shows more percentage of translocation of in the shoots, although having highest content in roots.
    - Development of soil quality indices for tropical rice-rice system: By using multivariate statistics and non linear scoring curves involving the yield, physical, chemical and biological indicators of long-term rice-rice soil under different nutrient management practices, soil quality indices were developed for different nutrient management practices. This will help to assess the soil aggrading and degrading nutrient management practices in tropical rice-rice system.
    - Developed Customized Leaf Colour Chart for Nitrogen Management in Rice for Different Ecologies: A five panel customized leaf colour chart (CLCC) for N management in rice for different ecologies is developed by CRRI on the basis of spectral evaluation of leaves of hundreds of HYVs and local cultivars grown in eastern India under different levels of N applications. It is a cheap and easy to use handy tool provided with N application schedule given in the folder. By using this, farmers can adjust the N application to actual crop demand, achieve higher yields and reduce the N application by 10-20 kg/ha. The CLCC contains instructions in English, Hindi and Odia in simple language which can be easily followed by the farmers.
    - Identification of best nutrient management practices having moderate GHG emissions, sustaining rice yield and maintaining soil fertility in tropical flooded soils: Application of recommended dose of NPK along with FYM @ 5 t ha-1 was found to

be the best practice with moderate emission per unit grain yield which sustain the rice yield and maintained soil fertility.

9. Awards/Honours:
    - My biography is nominated for the inclusion in the Who's Who in the World by Marquis Who's Who, USA.
    - Best Poster Presentation, ARRW Golden jubilee International symposium, March 02-05, 2013, CRRI, Cuttack, India.
    - Best Oral Presentation, International Conference on Bio-resource and Stress Management, February 06-09, 2013, Science City, Kolkata, India
    - Senior Research Fellowship (Earth, Atmospheric, Planetary and Oceanic sciences), CSIR, New Delhi, 2007
    - Junior Research Fellowship (Earth, Atmospheric, Planetary and Oceanic sciences), CSIR, New Delhi, 2005
    - Junior Research Fellowship (Physical Science), Indian Council of Agricultural Research, New Delhi, 2002

10. Publications (10 best):
    i. **Mohammad Shahid,** Shukla AK, Nayak AK, Tripathi R, Anjani Kumar, Mohanty S, Bhattacharyya P, Raja R and Panda BB (2013). Long-term effects of fertilizer and manure applications on soil quality 1 and yields in a sub-humid tropical rice-rice system. **Soil Use and Management** (DOI: 10.1111/sum.12050).
    ii. Bhattacharyya P, Nayak AK, Mohanty S, Tripathi R, **Mohammad Shahid**, Anjani Kumar, Raja R, Panda BB, Roy KS, Neogi S, Dash PK, Shukla AK and Rao KS (2013). Greenhouse gas emission in relation to labile soil C, N pools and functional microbial diversity as influenced by 39 years long-term fertilizer management in tropical rice. **Soil and Tillage Research** 129: 93-105.
    iii. Nayak AK, Mishra VK, Sharma DK, Jha SK, Singh CS, Mohammad Shahabuddin and **Mohammad Shahid** (2013). Efficiency of phosphogypsum and mined gypsum in reclamation and productivity of rice-wheat cropping system in sodic soil. **Communications in Soil Science and Plant Analysis** 44: 1-13.
    iv. Nayak AK, Lal B, **Mohammad Shahid,** Panda BB, Tripathi R, Raja R and Mohapatra T (2013). Fertiliser Best Management Practices in Rice for Higher Productivity. **Indian Journal of Fertilisers** 9: 54-66
    v. Anjani Kumar, Nayak AK, Shukla AK, Panda BB, Raja R, **Mohammad Shahid**, Rahul Tripathi, Sangita Mohanty and Rath PC (2012). Microbial biomass and carbon mineralization in agricultural soils as affected by pesticide addition. **Bullettin of Environmental Contamination and Toxicology** 88: 538–542.
    vi. Dash D, Patro H, Tiwari RC and **Mohammad Shahid** (2010). Effect of organic and inorganic sources of nitrogen on Fe, Mn, Cu and Zn uptake and content of rice grain at harvest and straw at different stages of rice (Oryza sativa) crop growth. **Advances in Applied Science Research** 1(3): 36-49.
    vii. Dash D, Patro H, Tiwari RC and **Mohammad Shahid** (2010). Effect of organic and inorganic sources of N on yield attributes, grain yield and straw yield of rice. **Research Journal of Agronomy** 4(2): 18-23.
    viii. **Mohammad Shahid**, Bhandari DK, Singh AP and Intjar Ahmad (2009). Groundwater Quality Appraisal and Categorization in Pillu Khera Block of Jind District, Haryana. **Asian Journal of Water Environment and Pollution** 6(4): 67-71.
    ix. **Mohammad Shahid**, Bhandari DK, Intjar Ahmad, Singh AP and Raha P (2008). Study on fluoride content of groundwater in Jind District, Haryana, India. **American-Eurasian Journal of Agricultural and Environmental Science** 4(6): 670-676.
    x. **Mohammad Shahid**, Singh AP, Bhandari, DK and Intjar Ahmad (2008). Assessment of Underground Water Quality in Julana Block of Jind District, Haryana. **Journal of the Indian Society of Soil Science** 56(1): 123-125.