

## Profile of Scientist



**1. Name of the Scientist** : **Dr N. Somasekhar**  
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### 2. Personal Bio-data

**a) Position/Designation** : Principal Scientist  
**b) Joining date in ICAR** : September 14, 1993  
**c) Discipline and Specialization** : Nematology

**d) Training/advance exposure in the area of work** :  
• Pursued two years Post-Doctoral Research at Ohio State University, USA

**e) Contribution to the scientific advancement (in about five bullets)** :

- Identified nematode resistant/tolerant genotypes and associated with the development improved cultivars with high yield and nematode resistance in life sustaining crops like rice and potato.
- Screened large number of germplasm lines for resistance to root-knot, cyst and lesion nematodes in rice, potato and sugarcane respectively, and developed protocols for rapid screening for resistance and multiplication of nematode inoculum.
- Developed integrated approaches for biointensive management of nematode pests in rice, potato and sugarcane. Ecofriendly integrated nematode management methods were designed by incorporating host plant resistance, green manuring, organic soil amendments, crop rotation, nematode antagonistic bioagents and nematicides.

- Demonstrated the selective suppression of plant parasitic nematodes by application of entomopathogenic nematodes. Application of entomopathogenic nematodes was shown to suppress only plant parasitic nematodes without any adverse impact on other beneficial nematode trophic groups in agroecosystems for the first time. This is considered as a beneficial non-target effect.
- Indigenous entomopathogenic nematode isolates effective in biological control of insect pests Identified. The nematode isolates were characterized based on morphological and molecular techniques and DNA sequences were deposited in Gene bank. Laboratory protocols for mass production of Indigenous entomopathogenic nematode isolates and nematode antagonistic fungi were standardized.
- Assessed and monitored the changes in soil micro food web structure resulting from transition from conventional to newer cultivation systems like organic farming, system of rice intensification, aerobic rice, etc using biotic indices based on nematode community analyses as indicators.

### 3. Future Planning of research (in bullets) :

- Management of nematode pests of rice with emphasis on biologically based approaches.
- Development of entomopathogenic nematodes for biological suppression of insect pests of rice

### 4. Publications (best five) :

- Asif, M., Prasad, J.S., Khan, R., **Somasekhar, N.** and Tahseen Q. (2013). A revision of the genus *Metarhabditis* (Nematoda: Rhabditidae) with description of three known species, a key to the identification of congeners and discussion of their relationships. *Journal of Natural History*, 2013. <http://dx.doi.org/10.1080/00222933.2013.798702>.
- Gopalakrishnan, S., Kumar, R.M., Humayun, P., Srinivas, V., Kumari, B. R., Vijayabharathi, R., Singh, A., Surekha, K., Padmavathi, Ch., **Somasekhar, N.**, Raghuveer Rao, P., Latha, P.C., Rao, L.V. S., Babu, V.R., Viraktamath. B.C., Goud, V.V., Loganandhan, N., Gujja, B. And Rupela, O. (2014). Assessment of different methods of rice (*Oryza sativa*. L) cultivation affecting growth parameters, soil chemical, biological, and microbiological properties, water saving, and grain yield in rice–rice system. *Paddy and Water Environment*, 12 (1) 79-89., DOI 10.1007/s10333-013-0362-6.
- Bhanu Priya, D., **Somasekhar, N.**, Prasad, JS. and Kirti, PB (2011). Transgenic tobacco plants constitutively expressing Arabidopsis NPR1 show enhanced resistance to root-knot nematode, *Meloidogyne incognita*. *BMC Research Notes*, 4:231 (doi:10.1186/1756-0500-4-231).
- **Somasekhar, N.**, Grewal, P.S., DeNardo, E.A.B., and Stinner, B.R. (2002) *Non-target effects of entomopathogenic nematodes on soil nematode community*. *Journal of Applied Ecology*, 39: 735-744.

- **Somasekhar, N.**, Grewal, P.S., and Klein, M. G. (2002) Genetic variability in stress tolerance and fitness among natural populations of *Steinernema carpocapsae*. *Biological control*, 23: 303-310.
- **Somasekhar, N. and Prasad, J.S.** (2011). *Plant nematode interactions: consequences of climate change*. In: Crop stress and its management: perspectives and challenges (Eds. B. Venkateswarlu et al.), Chapter 17, pp 547-564. Springer, Netherland.
- Briar, S.S, Grewal, P.S., **Somasekhar, N.**, Stinner, D. and Miller, S.A. (2007) Soil nematode community, organic matter, microbial biomass and nitrogen dynamics in field plots transitioning from conventional to organic management. *Applied Soil Ecology*, 37: 256-266.
- Jagdale, G.B., Saeb, A.M.T, **Somasekhar, N.** and Grewal, P.S. (2006). Genetic variation and relationships between isolates and species of the entomopathogenic nematode genus *Heterorhabditis* deciphered through isozyme profiles. *Journal of Parasitology*, 92(3), 509–516.
- Richmond, D.S., Kunkel, B.A., **Somasekhar, N.**, and Grewal, P.S. (2004) Top-Down and Bottom-up regulation of herbivores: Spodoptera frugiperda turns tables on endophyte mediated plant defense and virulence of an entomopathogenic nematode. *Ecological Entomology*, 29: 353-360.
- Plant Health Management for Food Security: Issues and Approaches. (2015). Gururaj Katti, Anitha Kodaru, Nethi Somasekhar, G S Laha, B Sarath Babu, K S Varaprasad, (eds). Astral Publications.

**5. Other relevant activities of Scientist :**  
(in bullets)

- Recognized Guide for M.Sc. and Ph.D. students of PJTSAU, Osmania University & Bharathiyar University.
- Member, Standing Committee on Entomopathogenic Nematodes, Society of Nematologists, USA
- Fellow of Nematological Society of India, Plant Protection Association of India, Afro-Asian Society of Nematologists & Society for Plant Protection Sciences
- Member, Editorial Board & Reviewer for International and National Journals in the field of Nematology & Plant Protection