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Personal Information

Name **Dr. Arun Baitha**	
Designation	Principal Scientist (Agricultural Entomology)
Division/Section	Crop Protection
Research Area	1. Biological Control of Sugarcane Pests 2. Push Pull Technology/Conservation of Bio-agents 3. Mass Multiplication of Bio-agents 4.Integrated Pests Management in Sugarcane

Patent Details/Copy rights

Raj,C.,Singh,S.,Sushil,S.N.,Baitha,A.,Hasan,S.S.,Modi,R and Rathod,K.K.2022.Image Database of Sugarcane Insect, Pest and Diseases (L-117221/2022)

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External Funded Projects

Evaluation and standardization of organic farming techniques for sugarcane production system	Co-PI	10.83	UP Council of Agri. Research
Bio-efficacy testing of Chlorantraniliprole (Rynaxypyr)35% WG against top, stalk and internode borer in sugarcane	PI	10.00	DuPont India Pvt.Ltd.

Establishment of Biological Control Laboratory for Mass Production of Bio-agents against Sugarcane Insect Pests and Disease and Dissemination of Technology for Enhanced cane and Sugar Productivity in Maharashtra	Co-PI	501.82	RKVY,Govt.of Maharashtra
Efficacy of E2Y45-600Sc against major insect-pests of Sugarcane	Co-PI	15.0	FMC India Pvt.Ltd.

Publications

Research Papers

1. Baitha, A., Jaiswal, A.K. and Kumar, A.2022.Distribution pattern of protective silken discs weaved by larvae of sugarcane top borer *Scirpophaga excerptalis* (Walker). *Indian Journal of Entomology*. DoI: 5958/IJE.2021.143 (Online publication).

2. Baitha,A.Mishra,A.K.,Kurre,D.,Bareliya,P.K. and Kumar,A.2022.Record of *Isotima* sp.(Hymenoptera: Ichneumonidae) from pink borer, *Sesamia inferens* (Walker).*Insect Environment*,**25**(2):228-232.(DOI:10.55278/WWWXJ6156).

3. Baitha, A., Singh, M.R and Kumar, A.2021.Silken discs weaved by larva of sugarcane top shoot borer, *Scirpophaga excerptalis* (Walker) (Crambidae: Lepidoptera). *Ann.Pl.Protec.Sci.* **29**(2): 171-172.

4. Baitha, A**.,** Tripathi**,** G. M., Singh, M.R and Roy S.2021.Status of invasive wooly aphid management on sugarcane in India. *Hexapoda*, **28**(1&2):94--102.

5. Kumar, A., Baitha, A. and Kumar, A.2021. Response of pupal weight of stalk borer, *Chilo auricilius* Dudgeon (Crambidae: Lepidoptera) on biology of *Tetrastichus howardi* (Olliff) (Hymenoptera: Eulophidae).*Insect Environment*, **24:**63-69.

6. Kumar, A., Baitha, A**.**, Jaiswal, A.K., Roy, S., Kumar, A and Kumar, A. 2021. The impact of adult nutrition on reproductive potential of *Tetrastichus howardi* (Olliff) (Hymenoptera: Eulophidae) on pupae of sugarcane top borer. *Ann.Pl.Protec.Sci.* **29**(1):74-76.

7. Kumar, A., Baitha, A**.,** Jaiswal,A.K., Sushil, S.N and Kumar., A. 2021. Effect of adult nutrition on biological attributes of *Tetrastichus howardi* (Olliff) (Hymenoptera: Eulophidae) on pink borer, *Sesamia inferens*. *Journal o*f *Eco-friendly Agriculture*, **16**(2): 181-183.

8. Roy, S., Jaiswal, A.K., Sushil, S.N., Baitha, A., Roy, M.M.2019.Landscape-based habitat engineering for sugarcane ecosystem: A Green Technological Option for Pest Management. *Sugar Tech*, 21(2):213-226. (DOI 10.1007/s12355-019-00705-0).

9. Baitha, A**.** Kumar, A., Jaiswal, A.K., Roy, Sharmila, Singh, M.R., Kumar, A., Kumar, A. and Kajla, A.2019. A note on *Tetrastichus howardi* (Olliff) (Hymenoptera: Eulophidae) on pupa of pierid butterfly, *Catopsilia pyrenthe* (Lepidoptera: Pieridae)-A first report. *Hexapoda*, 26(1&2):44-47.

10. Baitha, A., Jaiswal, A.K., Kumar, A. and Kumar, A.2018. Observations on protective silken disc numbers in pupal chamber of sugarcane top shoot borer, *Scirpophaga*

excerptalis (Walker) (Crambidae: Lepidoptera). *Hexapoda (Insecta indica)* **25**(1&2): 1-4.

11. Baitha, A., Sushil, S.N., Kumar, A., Kumar, A and Maurya, B.L.2018. Superparasitism in natural population of *Trichogramma chilonis* Ishii (Trichogrammatidae: Hymenoptera) on eggs of sugarcane internode borer. *Hexapoda (Insecta indica)* **25**(1&2):25-11.

12. Singh,M.R.,Duttamajumder,S.K.,Pathak,A.D.,Baitha,A.,Singh,S.N.,Singh,S.R and Srivastava,N.2018.Occurrence of delphacid plant hopper.*Eoeurysa flavocapitata* Muir on sugarcane in western Uttar Pradesh.). *Indian J. Sugarcane Technol.,* **33** (02): 94-95.

13. Baitha, A and Singh, B.D.2018. Gregarious phase of Plassey borer, *Chilo tumidicostalis* in Sugarcane.*Ann.Pl.Protec.Sci.***26** (1): 219-220.

14. Kumar, A., Baitha, A and Bareliya P.K.2018.Progeny and sex allocation of *Tetrastichus howardi* on sugarcane pink borer. *Ann.Pl.Protec.Sci*.**26** (1): 213-214.

15. Kumar, A., Baitha, A., Pandey R.K and Bareliya P.K.2016.Biological attributes of *Tetrastichus howardi* (Olliff) on sugarcane top borer *Scirpophaga excerptalis* Walker under variable exposure regime. *J.Sugarcane Research,* **6**(2):127-131.

16. Baitha, A; Tripathi, G.M; Lal, R.J and Nigam R.2017. A note on parasitisation of top borer by *Isotima javensis* Rohwer (Hymenoptera: Ichneumonidae) *Int.J.Agril.Inv.***2** (1):82-84.

17. Sushil,S.N.,Joshi,D.,Tripathi,G.M.,Singh,M.R.,Baitha,A.,Rajak,D.C., Solomon, S.2017. Exploring efficacious microbial bio-agents and insecticides against white grubs in sugarcane in indo-gangetic plains. *Sugar Tech,* DOI 10.1007/s12355-017-0556-0.

18. Baitha, A., Srivastava, D.C and Singh, M.R.2017. A Note on *Telenomus dignus* (Gahan) (Scelionidae: Hymenoptera): on eggs of sugarcane internode borer, *Chilo sacchariphagus indicus* (Kapur).*Hexapoda (Insecta indica)* **24**(1&2):16-20.

19. Roy, S., Roy, M.M., Jaiswal, A.K. and Baitha, A.2018.Soil arthropods in maintaining soil health: thrust areas for sugarcane production system. *Sugar Tech* 20(4):376-391.

20. Baitha, A; Lal, R.J.; Maurya, B.L and Nigam, R.2016.Bio-intensive management of internode borer (*Chilo sachhariphagus indicus* Kapur) and stalk borer (*Chilo auricilius* Dudgeon).*Int.J.Agril.Inv.***1** (1):80-83.

21. Kumar, A and Baitha, A**.**2016.Biological parameters of *Tetrastichus howardi* influenced by ages of females on pupae of *Scirpophaga excerptalis.Ann.Pl.Protec.Sci.***24** (2):422-423.

22. Kumar, A., Baitha, A; Pandey R.K., Bareliya, P. K and Kumar A.2016.Effect of female *vs.* male pupa of *Scirpophaga excerptalis* Walker on reproductive potential of *Tetrastichus howardi* (Olliff) (Hymenoptera: Eulophidae).*Agrica* **5**:102-105.

23. Baitha, A and Varma, A.2016. Field population dynamics of *Trichogramma chilonis* on eggs of sugarcane internode borer. *Ann.Pl. Protec.Sci*. **24**(1):86-88.

24. Baitha, A and Tripathi G.M.2016.Field parasitisation of top borer larva by *Rhaconotus*

scirpophagae Wilkinson *Ann.Pl. Protec.Sci.* **24**(1):178-179.

25. Kumar, A., Baitha, A and Bareliya, P. K.2016.Some biological aspects of pupal parasitoid, *Tetrastichus howardi* (Olliff) (Hymenoptera: Eulophidae) on *Chilo auricilius* (Dudgeon) pupae. *Current Biotica* **10**(2): 70-74.

26. Baitha, A**.**, Varma, A and Srivastava, D.C.2016.Fertility life table attributes of *Trichogramma chilonis* Ishii (Hymenoptera: Trichogrammatidae) strain reared from sugarcane early shoot borer. *Current Biotica*, **10** (3): 214-219.

27. Baitha, A., Varma, A and Srivastava, D.C.2016. Growth rate pattern of wild strains of *Trichogramma chilonis* Ishii (Hymenoptera: Trichogrammatidae) from sugarcane agro ecosystem. *Hexapoda* (*Insecta indica*), **23**(1 & 2):19-25.

28. Baitha, A., Singh, M.R and Singh, B.D.2016. Biological notes on Plassey borer *Chilo tumidicostalis* Hampson (Lepidoptera: Crambidae) in sugarcane. *J.Sugarcane Research*, **6**(2):123-126.

29. Baitha, A and Varma, A.2015.Growth rate attributes of wild strain of *Trichogramma chilonis* Ishii (Hymenoptera: Trichogrammatidae) reared from sugarcane top borer. *Hexapoda* (*Insecta indica*), **22**(1 & 2):13-17.

30. Baitha, A., Varma, A., Singh, M.R and Maurya, B.L.2015.Sex ratios of gregarious *vs.* solitary parasitoid on egg of sugarcane internode borer, *Chilo sachhariphagus indicus* (Kapur).*Hexapoda* (*Insecta indica*), **22**(1 & 2):69-74.

31. Hasan,S.S.,Solomon,S.,Baitha,A.,Singh,M.R.,Sah,A.K.,Kumar,R and Shukla,S.K. 2014.CaneDes:A Web-Based Expert System for Disorder Diagnosis in Sugarcane. Sugar Tech DOI 10.1007/s12355-014-0341-2 (Online 11 October 2014).

32. Hasan, S.S., Baitha, A., Singh, M.R., Sah, A.K., Kumar,R and Shukla, S.K.2014.Diagnosis of disorders in sugarcane (*Saccharum officinarum*) with web-based expert system. *Current Advances in Agricultural Sciences* **6**(2):148-153 (December 2014)

33. Hasan, S.S., Kumar R., Shukla, S.K., Baitha, A., Sah, A.K., Singh, S.N., Kumar, S.2010.Expert System for decision support in sugarcane domain. *Indian.J.Sugarcane.Tech*. **25**(1&2): 93-96.

34. Baitha, A**.**2013. Biological observations on field collected strain of *Trichogramma chilonis* Ishii at fluctuating and constant temperatures. *Insect Environment,* **18** (3&4): 51-53.

35. Baitha, A**.**2012. Co-existence of *Trichogramma chilonis* Ishii and *Telenomus dignus* (Gahan) on egg masses of sugarcane internode borer. *Insect Environment,* **18** (1&2):41-43.

36. Baitha, A and Maurya, B.L.2012. Reproductive biology of *Tetrastichus howardi* (Olliff) (Hymenoptera: Eulophidae): a gregarious pupal parasitoid. *Indian J. Sugarcane Technol.* 27 (2): 59-61.

37. Baitha, A**.** and Varma, A.2012. Assessment of quality attributes of tropical and subtropical laboratory reared strains of *Trichogramma chilonis* Ishii). *Indian J.*

Sugarcane Technol. 27 (2): 98-99.

38. Baitha, A., Sinha, O.K., Maurya, B.L. and Rajak, D.C.2011.Age preference of females on biological attributes in *Tetrastichus howardi* (Olliff) (Eulophidae: Hymenoptera). *J.Plant Prot. & Environ.* **8**(1):45-48.

39. Baitha, A., Tripathi, G.M.and Maurya, B.L.2011.A Biological observation on *Stenobracon nicevillei* (Bingham) (Braconidae: Hymenoptera), a larval parasite of sugarcane top borer**.** *J.Plant Prot. & Environ*. **8**(2):103-105.

40. Srivastava, D.C., Baitha, A., Singh, M.R and Bajpai, P.K.2010.Natural parasitisation and incidence of sugarcane top borer, *Scirpophaga excerptalis* Walker. *International Sugar Journal***, 114** (1359):197-203.

41. Baitha, A. 2007. Spatial Distribution of *Pyrilla perpusilla* Walker and their Parasitoids. *Insect Environment***, 13** (3): 103-104.

42. Baitha**,** A. 2007. Survival and Adult Emergence of *Tetrastichus howardi* (Olliff) (Eulophidae: Hymenoptera) Under Field Conditions. *Insect Environment***, 13** (3): 108-110.

43. Baitha, A**.**2007**.**Management of insect-pests in sugarcane seed crop. *Indian.J.Sugarcane.Tech*. **22**(1&2): 56-57.

44. Baitha, A and Sinha, O.K. 2005.Intrinsic rate of natural increase of *Tetrastichus howardi* on *Chilo auricillius*. *Ann.Pl.Protec.Sci.* **13**(2): 468-470.

45. Alvarez, J.F., Naranjo, F., Grillo, H. and Baitha, A.2005.Interaction of *Lixophaga diatraeae* (Towns.) and *Tetrastichus howardi* (Olliff.) for management of *Diatraea saccharalis* (Fab.) in Cuba. *Sug.Tech.* **7**(2 &3): 5-8.

46. Srivastava, S., Singh, V., Gupta, Prasant S., Sinha, O.K and Baitha, A.2006.Nested-PCR assay for detection of sugarcane grassy shoot phytoplasma in leafhopper vector *Deltocephalus vulgaris* Dash & Viraktamath: A first report. *Plant Pathology* (UK)**, 55**:25-28.

47. Baitha, A. 2005. Growth rate differences of wild vs. laboratory-reared sugarcane adapted strains of *Trichogramma chilonis* Ishii (Hymenoptera: Trichogrammatidae). *Sug.Tech.* **7**(2 &3): 53-56.

48. Baitha, A. 2005. Effect of parasite density on longevity, fecundity and sex ratio of *Trichogrammatoidea* sp. nr. *armigera* (Hym: Trichogrammatidae) Nagaraja. *Insect Environment,* **11**(2): 68-70.

49. Singh, V., Baitha, A and Srivastava, Sangeeta. 2005. Young and fast growing plants as better feeding material for the *Deltocephalus vulgaris* a leafhopper vector of sugarcane grassy shoot phytoplasma.*Sug.Tech* .**7**(2 &3): 87-88.

50. Baitha, A., Jalali, S.K., Rabindra, R.J.Venkatesan, T. and Rao, N.S.2004.Parasitising efficiency of the pupal parasitoid, *Tetrastichus howardi* (Olliff) (Hymenoptera: Eulophidae) on *Chilo partellus* (Swinhoe) at different exposure periods.*J.Biol.Control*. **18**(1): 65-68.

51. Baitha, A**.,** Jalali, S.K., Rabindra, R.J.Venkatesan, T. Rao, N.S and Lalitha,

Y.2004.Effect of parasitoid-host ratio on some biological attributes of *Tetrastichus howardi* (Olliff) (Hymenoptera: Eulophidae), *Entomon*. **29** (2): 125-128.

52. Baitha, A. and Sinha, O.K.2004.Differential response of host pupae of sugarcane borers on the parasitization and reproduction of *Tetrastichus howardi* (Olliff.) (Hymenoptera: Eulophidae). *Indian.J.Sugarcane.Tech*, **19**(1&2): 90-91.

53. Baitha, A., Jalali, S.K., Rabindra, R.J.Venkatesan, T. and Rao, N.S.2003.Parasitising efficiency of egg parasitoid, *Trichogramma japonicum* Ashmead at four temperature regimes. *Ann. Pl. Protec.Sci*.**11** (2): 185-188.

54. Baitha, A and Varma, A.2003. Growth rate of sugarcane adapted strain of *Trichogramma chilonis* Ishii (Hymenoptera: Trichogrammatidae). *J.Biol.Control,* **17** (2): 175-178.

55. Baitha, A., Jalali, S.K., Rabindra, R.J.Venkatesan, T. and Rao, N.S.2003.Host preference of the pupal parasitoid, *Tetrastichus howardi* (Olliff) (Hymenoptera: Eulophidae). *J. ent. Res*, **27** (4): 293-296.

56. Singh, V., Baitha, A and Sinha, O.K. 2002. Transmission of grassy shoot disease of sugarcane by a leafhopper (*Deltocephalus vulgaris* Dash& Viraktamath). *Indian J. Sugarcane Technol.* **17** (1&2): 60-63.

57. Baitha, A and Sinha, O.K. 2002.Response of *Trichogramma chilonis* Ishii to different colours of trichocard. *Indian.J.Sugarcane.Technol.* **17**(1&2): 64-67.

58. Baitha, A and Atma Ram. 2001. Effect of temperature on *Trichogrammatoidea* sp. nr. *armigera* Nagaraja (Trichogrammatidae: Hymenoptera). *Ann. Pl. Protec.Sci.***9** (1): 134 –135.

59. Baitha, A., Hameed, S.F and Singh, R. 2000.Effectiveness and economics of various treatments and their impact on spider population in rice ecosystem. *Ann. Pl. Protec. Sci.* **8** (1): 13-16.

60. Baitha, A., Hameed, S.F and Singh, R.2000. Relative toxicity of neem products and insecticide against the larvae of rice leaf folder. *Indian J. Ent*. **62** (1): 66-68.

61. Baitha, A., Hameed, S.F. and Singh, R.2000. Evaluation of neem products and insecticides on the grain yield of rice. *Indian J. Ent*. **62** (2): 168-170.

62. Baitha, A and Atma Ram. 2000. Notes on sex ratio and developmental period of *Trichogrammatoidea* sp. nr. *armigera* Nagaraja.*Indian J. Ent.* **62** (2): 221-222.

63. Baitha, A and Atma Ram.2000. Studies on oviposition behaviour of *Trichogrammatoidea* sp. nr. *armigera* Nagaraja. *Indian J. Ent* .**62** (3): 270-273.

64. Baitha, A and Atma Ram. 1999. Effects of adult nutrition on longevity and fecundity of *Trichogrammatoidea* sp. nr. *armigera* Nagaraja (Trichogrammatidae: Hymenoptera). *Shashpa*, **6** (2): 185-186.

65. Baitha, A and Atma Ram. 1998. Effect of temperature and relative humidity on the biology of *Trichogrammatoidea* sp. nr. *armigera* Nagaraja (Hymenoptera: Trichogrammatidae), an egg parasitoid of *Helicoverpa armigera* (Hub.) (Noctuidae:

Lepidoptera) *Shashpa*, **5** (2): 165-170.

66. Baitha, A and Atma Ram. 1998. Life table studies on *Trichogrammatoidea* sp. nr. *armigera* Nagaraja (Trichogrammatidae: Hymenoptera), an egg parasitoid of *Helicoverpa armigera* (Hub). *Indian.J. Ent.* **60** (3): 250-257.

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68. Baitha, A and Atma Ram. 1997. Effect of cold storage on the biology of *Trichogrammatoidea* sp. nr. *armigera* Nagaraja (Trichogrammatidae: Hymenoptera). *Shashpa*, **4** (2): 169-170.

69. Baitha, A., Alam, N., Hameed, S.F and Singh, R.1994. Effectiveness of neem products (*Azadirachta indica* A.Juss) against whorl maggot, *Hydrellia philippina* Ferino. in rice field. *Oryza*, 31**:** 69-70.

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71. Baitha, A., Hameed, S.F and Singh, R. 1993.Effectiveness of neem products against rice leaf folder in rice field. *Oryza*, **30**: 334-336.

Books or Chapter Published

Books

1. Sah, Ajay Kumar, Baitha, Arun, Singh, M.R. and Pathak, A.D.2016. Sugarcane Management and Development, ICAR-Indian Institute of Sugarcane Research, Lucknow, India, 165pp.
2. Swapna,M.,Modi,R.U.,Baitha,A.,Rao,G.P.,Li,Y.R.,Shukla,Sudhir and Solomon,S.2022. Sustainability of the Sugar and Integrated Industries: Issues and Initiatives, ICAR-Indian Institute of Sugarcane Research, Lucknow, India, 311p

Book Chapters

1. Baitha, A.2004.Rearing and mass multiplication of bioagents. In: Management and Development in Sugar Mill Reserved Zone [R.L.Yadav, et. al (eds.)]: 251-256pp.

2. Sithanantham, S., Geetha, N., Baitha, A. and Jalali, S.K.2013.Utility of *Trichogramma* for biocontrol of sugarcane borers. In: Biological Control of Insect Pests Using Egg Parasitoids [S.Sithanantham, et al. (Eds)]: (271-300), DOI 10.1007/978-81-322-1181-5_12, © Springer India 2013.

3. Lal, R. J and Baitha A.2014. Bio control of Sugarcane Insect-Pests and Diseases In: Novel Genomic Tools and Breeding Approaches for Sugar Crops Improvement [S.Srivastava et al (Eds)]: 229-241pp.

4. Baitha, A**.**2014**.** Bio-agents, their conservation, multiplication and application in field for crop protection In: Integrated nutrient management for improving soil health and

enhancing nutrient use efficiency" [S.K.Shukla et al (Eds)]: 113-126pp.

5. Baitha, Arun.2015. Biological control of insect-pests of sugarcane In: Sugarcane Crop Management for high cane & sugar productivity [A.K.Sah and O.K.Sinha (Eds)]: 79-84pp.
6. Baitha, A. 2016. Bio-Control of Insect-Pests of Sugarcane *In: Sugarcane Management and Development* [Sah et al (Eds)]: 80-92pp.
7. Baitha, A**.**2017.Biological control of Insect-Pests of Sugarcane. In: Sugarcane Production Technology [Sah et al (Eds)]: 93-101pp.
8. Baitha, A.2017. Major insect-pests of sugarcane, field identification and their management In: Entrepreneurship in sugarcane based production system to double farmer's income [Sah et al (Eds)]: 80-93pp.
9. Baitha, A., Singh, M.R.Hasan, S.S and Maurya, B.L 2018. *Gann ke Pramukh Kiton ka Samavit Keet Prabhandhan In* Ganna: Satat Utpadan [Singh et al (Eds)]: 85-116 pp, Plant Research and Educational Promotion Society.
10. Baitha, A., Srivastava, S., Misra, V. 2022. Insect-Pests of Sugar Beet and Their Integrated Management. In: Sugar Beet Cultivation, Management and Processing. Springer [Misra, et al. (Eds)], Springer, Singapore. https://doi.org/10.1007/978-981-19-2730-0_31.
11. Baitha, A., Srivastava, S., Misra, V. 2022.Natural Enemies of Sugar Beet. In: Sugar Beet Cultivation, Management and Processing. Springer [Misra, et al. (Eds)], Singapore. https://doi.org/10.1007/978-981-19-2730-0_34.
12. Baitha, A., Singh, M.R., Roy, S. 2022.Identification of Insect-pests of Sugarcane and their Control Measures. In: Recent Approaches for Doubling Farmers Income in Sugarcane Based Cropping System [Shukla et al (Eds)]: 295-308pp.
13. Roy, S., Goswami,S.K.,Raj,C.,Singh,Shweta, Baitha, A., Singh, D., Sushil, S.N., Joshi, D., Yadav, A.K., Prakash, B and Singh, A. 2022.Seventy Years of Crop Protection Research Achievements at Indian Institute of Sugarcane Research. In: Seven Decades of Sugarcane Research [Pathak et al (Eds)]: 43-61pp.

Extension folder

1. Sah, A.K., Singh, M.R., Baitha, Arun and Lal, B.2019.*Ganna fasal se ras chusane bale pramukh keet evam unka prabandhan*. (2019/01).
2. Sah, A.K., Singh, M.R., Baitha, Arun, Lal, B and Prasad, Kamta.2019.Ganne *ki pramukh bedhak keeton ki pahchan evam niyantran*. (2019/02).
3. Roy,S., Sushil,S.N and Baitha,Arun.2022.Integrated management of sugarcane insect-pests

Awards

1. Fellow: Indian Meteorological Society, New Delhi :2017.

2. Fellow :Entomological Society of India, New Delhi :2021

3. Editor : Indian Journal of Sugarcane Technology (2014-2016)

4. Co-Editor: Ikshu-Rajbhasha Patrika, IISR, Lucknow (2015-2016)

5. International Best Poster Award: Development of Diagnostic Expert System in Sugarcane Using Object Oriented Knowledge Representation Technique by S.S. Hasan, S. Solomon, A. Baitha, M.R.Singh, A.K. Sah, S.K. Shukla and R.Kumar in **5th** IAPSIT International Sugar Conference (IS-2014) Green Technologies for Sustainable Growth of Sugar & Integrated Industries in Developing Countries held at Nanning, China from November 25-28, 2014.

6. Best Poster Presentation Award: In National Symposium on Ecofriendly Approaches for Plant Diseases Management: Recent Trend and Opportunities held during 29-30 December,2016 at ICAR-IIPR,Kanpur and presented the paper entitled " Diagnosis of yellow leaf disease of sugarcane from sub tropical India" by S.K.Holkar,Harshita Gupta,Atul Kumar ,Arun Baitha ,Sanjeev Kumar and J.Singh.

7. Best Poster Award: Application of artificial intelligence in crop protection: State-of-the-art technology for sustainable sugarcane production in the digital era by Raj,C.,Singh,S.,Sushil,S.N.,Baitha,A.,Hasan,S.S.Modi,R.U.,Goswami,S.K.,Joshi,R,D utta,M.K. and Pathak,A.D in 7th IAPSIT International Sugar Conference and Sugarcon 2022:Sustainability of the Sugar and Integrated Industries: Issues and Initiatives, October 16-19,2022,ICAR-Indian Institute of Sugarcane Research,Lucknow,India.