Dr. Raghuvirsinh Pravinsinh Parmar

Scientist (Precision Agriculture)

Ph.D. in Agricultural Engineering
with specialization in Farm Machinery and Power Engineering

Phone
+91 7567066762 || +91 8780237694

Email
parmarraghuvir1@gmail.com

Address
"Shreeji" Block No. 1, Near Krupanidhi Apartment; St. 16, Zanzrda Road, Junagadh, Gujarat 362001.

PROFESSIONAL EXPERIENCE (3 Years and 3 Months)

Scientist (Precision Agriculture) 05/07/2022 – Present
T & D Electronic Systems, Ludhiana, Punjab

- Lead the research, development and conduct field trials of precision agriculture machinery/sensors for the product development.
- Contributed in the development of autonomous rice transplanter in collaboration with PAU (1 research paper published, 1 in pipeline).
- Lead the product development of agriculture drone (with variable rate and spot spraying features), Intra-Row Weeder, Autonomous Ground Spray robot, Crop Health Sensor and GNSS navigation system.
- Developed Agriculture Spray Drone as per the Indian Drone Rules. Have sound knowledge of Digital Sky Platform, UAV license (UIN) and related procedure as per DGCA norms.
- THE DRONE TD1SP10 model (UIN=UA002NRS1EX) is developed under my lead and currently enlisted on Digital Sky Platform.

Senior Research Fellow 16/12/2021 - 15/06/2022
Department of Farm Machinery and Power Engineering, Punjab Agricultural University, Ludhiana

- Conducting and monitoring field experiments at Departmental Research Farm on various crops (i.e., Rice, Cotton and Wheat).
- Research and development of Precision Agriculture and Farm Machinery & Power Engineering. viz., automated section control on boom sprayer, variable rate spray technology on boom sprayer and evaluated on various crop like Rice, Wheat and Cotton.
- Conducted field trials, data collection and its analysis using drone sprayer and multispectral drone images for crop health monitoring like NDVI, NDRE, water stress, and disease detection.

Research Fellow 29/07/2019 - 15/12/2021
Department of Farm Machinery and Power Engineering, Punjab Agricultural University, Ludhiana

- Field experiments using UAV aerial spraying under Bayer Crop Science funded ad-hoc project "Efficacy study of various crop protection products when applied through drone spraying system to manage pests in various crops." in the department of FMPE, PAU, Ludhiana.

PROFILE

Scientist (Precision Agriculture) with 3+ years of research and development experience in the area of Farm Mechanization and Precision Agriculture. Majority of my work is on precision agriculture, sensors and advanced spraying machineries.

AREA OF EXPERTISE

- Conduct and monitor field trials, data collection and its analysis using drone spray technology for more than 4 years in including rice crop.
- Contributed in the development of autonomous rice transplanter.
- Demonstrated various machinery on rice mechanization to the farmer at Kisan mela, Field days at PAU, Ludhiana.
- Sound knowledge of design and development of agriculture machinery and drone for precision agriculture.
- UAV/drone spraying, aerial mapping using multispectral camera, images analysis and scientific data analysis in agriculture
- Knowledge of pest and disease identification and its management.
- Having knowledge of Drone rules and Digital Sky platform and UAV license (UIN) and related documents as per DGCA norms.
- Certified in product design and analysis.
- Sound knowledge on software like, AutoCAD, 3D Max, Creo (Pro E), Ansys workbench.

- Data collection of various agrochemicals effects on rice, wheat and cotton using UAV spraying system for 2 seasons.
- Statistical data analysis and scientific report writing of the project.
- Disease and pest identification and its management using drone sprayer.
- Contributed in organization of international conference and workshop during the tenure.
- Demonstration of farm machinery and various precision agriculture implements to the farm, national and international delegates during workshop, field days and kisan melas.

- Having sound knowledge in the area of aerial spraying and multispectral imaging using UAV/ drone and post processing of images using software like Pix4D mapper, QGIS.

ACHIEVEMENTS

- Research Papers: 16 • Book: 1 • Book Chapter: 1 • Articles: 7
- Patent filed: 1

EDUCATION (Date of Birth: 19/08/1991)

Name of University/ Institute/Board	Subject(s)/ Specialization field	Joining to Passing Year	Max. Marks	Marks Obtained/ OGPA	Percentage of marks	Division
Ph.D.						
College of Agricultural Engineering and Technology, Ludhiana. Punjab Agricultural University, Punjab	Farm Machinery and Power Engineering	01/2016 To 09/2019	10	8.29	82.90	First
M. Tech						
College of Agricultural Engineering and Technology, Junagadh. Junagadh Agricultural University, Gujarat	Farm Machinery and Power Engineering	07/2013 to 10/2015	10	7.96	79.60	First
B. Tech						
College of Agricultural Engineering and Technology, Godhra. Anand Agricultural University, Gujarat	Agricultural Engineering	07/2009 to 06/2013	10	8.18	81.80	First
10+2 or equivalent (12th HSC)						
School: Parimal Higher Secondary School Board: Gujarat Secondary and Higher Secondary Education Board	English, Mathematics, Chemistry, Physics, Computer	04/2008 to 03/2009	500	297	59.40	Second
10th (Matric)						
School: Shree Navjivan Highschool Board: Gujarat Secondary and Higher Secondary Education Board	Gujarati, English, Sanskrit, Social Science, Science and Technology, Mathematics, Computer	05/2006 to 03/2007	650	518	79.69	First

RESEARCH WORK DONE TO FULFIL THE REQUIREMNTS OF A DEGREE

Name of Degree	B. Tech	M. Tech	Ph.D.
Institute	Anand Agricultural University, COAET, Godhra	Junagadh Agricultural University, COAET, Godhra	Punjab Agricultural University, COAE&T, Ludhiana
Partly or wholly	Wholly	Wholly	Wholly
Name and address of major advisor	Dr. M. D. Vora, Assistant Professor, Deptt. of FMPE, AAU, Anand.	Dr. R. A. Gupta, Ex. Head, Deptt. of FMPE, JAU, Junagadh.	Dr. S. K. Singh, Sr. Research Engineer, Deptt. of Renewable Energy Engineering, PAU, Ludhiana.
Field of Research	Crop Harvesting	Tillage Machinery	Precision Agriculture
Title of thesis/Dissertation	Performance evaluation of different harvesting methods for paddy crop	Development of pulverizing attachment to cultivator and its performance evaluation	Development of an agricultural spraying system for unmanned aerial vehicle
Period spent	From 2009 to 2013	From 2013 to 2015	From 2016 to 2019
No. of publication based on research work * Marked in the list of publications	1	3	2 1 paper Accepted

ACADEMIC EXCELLENCE

AIEEA-JRF Qualified Overall Rank 205 conducted by ICAR in 2013.

AIEEA-SRF Qualified Overall Rank 6 conducted by ICAR in 2016.

Ph.D. Scholar Fellowship by PAU during 2016 to 2019.

COMPUTER AND SOFTWARE EXPERTISE ACQUIRED

- Three-month training in Architectural Design from Aastha Institute of Multimedia during July to September, 2011. (Software like AutoCAD, 3D Max)
- Six months training in Product Design & Analysis from CADD Centre during in October 2013 to March 2014. (Software like Creo (Pro E), Ansys Workbench)

AWARD AND RECOGGNITION

- Recognition during National Level Technical Presentation of KRITAGYA- A national level AgTech Hackathon during 14th to 16th December, 2020; team of **Raghuvir Parmar** (Leader), Santosh Kumar, Akshay Mahadik, Anoop Kumar Upadhyay.
- Award received during 39th Annual General meeting of CropLife India on 26th September 2019, New Delhi.

TRAINING UNDERTAKEN

- Shree Vivekanand Research and Training Institute (VRTI), Mandvi, Kutch (Gujarat) June -2011
    - Rural internship programs (Rural development projects)
- Central Farm Machinery Training and Testing Institute (CFM&TTI), Budni (M.P.) June – 2012
    - Operation and maintenance of tractor and agricultural machinery.
    - Study of various sub-assemblies of tractor.
    - Introduction to tractor testing activities etc.
- Raj Group, Manufacturer of Irrigation accessories, Ahmedabad (Gujarat) Feb-March, 2013
    - Drip Irrigation Production
    - Plastic Moulding
- Mother Dairy-Junagadh, A unit of MDFVPL, Junagadh (Gujarat) April-May, 2013
    - Understanding various process (Like, Pasteurization, Homogenization, etc).
    - Dairy Machineries
    - Various Dairy Products
    - Packaging
- HMT LTD., Pinjor (Haryana) July, 2014
    - Various production department

PUBLICATIONS AND SOCIAL PROFILE

Google Scholar: https://scholar.google.com/citations?user=s_LdsGgAAAAJ&hl=en
(Citation =48, h-index= 4 and i10-index=2)
ORCID: https://orcid.org/0000-0002-5096-2625
LinkedIn: Dr. Raghuvirsinh Parmar, Ph.D. - Scientist - Precision Agriculture - T & D Electronic Systems | LinkedIn

Research papers

First Author

1. **Parmar, R. P.**, & Gupta, R. A. (2016). Development and performance evaluation of powered pulverizing unit with cultivator. *Agricultural Engineering Today*, 40(2), 3-9. (NAAS 5.30)
2. **Parmar, R. P.,** & Gupta, R. A. (2016). Design and development of pulverizing attachment to cultivator. *Scientific Journal Agricultural Engineering*, 2, 71-80. (NAAS 4.01)
3. **Parmar, R.**, Karwasra, N., Verma, A. & Baldev, D. (2017). Development of program in VB to compute tractor parameters on automatic steering. *Oriental Journal of Computer Science and Technology*, 10(3), 636-643. Doi: http://dx.doi.org/10.13005/ojcst/10.03.12 (NAAS 4.79)
4. **Parmar, R. P.** & Verma, A. (2017). Computer program for energy requirement of sugarcane production. *Scientific Journal Agricultural Engineering*, 3, 29-36. (NAAS 4.01)

5. **Parmar, R.,** Verma, A., Dogra, R., & Gupta, U. (2017). Energy production from biomass -A review. *International Journal of Agricultural Engineering,* 10(2), 655-663. Doi: http://dx.doi.org/10.15740/HAS/IJAE/10.2/655-633 (NAAS 4.43)
6. **Parmar, R. P.** & Gupta, R. A. (2018). Performance evaluation of pulverizing attachment to tractor drawn cultivator on soil properties. *Agricultural Engineering Today*, 42(4), 37-41. (NAAS 5.30)
7. **Raghuvirsinh Pravinsinh Parmar**, Shashi Kumar Singh, Manjeet Singh and Aseem Verma (2021). On-farm assessment of unmanned aerial vehicle (UAV) based spraying technology in green gram. *Indian Journal of Entomology,* 43(18),1-4. (NAAS 5.89, PAU Approved Journal)
8. **R. P. Parmar**, S. K. Singh and M. Singh (2021). Bio-efficacy of Unmanned Aerial Vehicle based spraying to manage pests. *Indian Journal of Agricultural Sciences,* 91(9), 109-113. (NAAS 6.25)
9. **Raghuvirsinh Parmar,** Shashi Kumar Singh, Manjeet Singh, Mohammed Javed and Aseem Verma (2021). Effect of the Operational Parameters of UAV Spraying System on Droplet Deposition, Distribution and Control of Whitefly in Cotton Crop. Accepted in Sensors (ISSN 1424-8220) (Impact factor= 3.576, NAAS: 9.576)

Co- Author

1. Makange, N. R., **Parmar, R. P.**, & Tivari, V. K. (2015). Stress analysis on tine of cultivator using finite element method. *Trends in Biosciences*, 8(15), 3919-3923. (NAAS 3.94)
2. Vora M. D., **Parmar, R. P.**, & Gunjaria, H. (2015). Comparative performance evaluation of paddy harvesting. *Trends in Biosciences*, 8(19), 5411-5416. (NAAS 3.94)
3. Makange N. R., **Parmar, R. P.**, & Sungw, N. (2016). Design and fabrication of an animal feed mixing machine. *Advances in Life Science,* 5(9), 3710-3715. (NAAS 3.15)
4. Rajesh M. U., Ali M., **Parmar R. P.**, & Namdev S. K. (2018). Energy Audit Application for Rice-Wheat Cropping System. *Oriental Journal of Computer Science and Technology*, 11(4), 209-218. Doi: http://dx.doi.org/10.13005/ojcst11.04.06 (NAAS 4.79)
5. Aseem Verma, Manjeet Singh, **R. P. Parmar** & K. S. Bhullar (2021). Feasibility study on hexacopter UAV based sprayer for application of environment-friendly biopesticide in guava orchard. *Journal of Journal of Environmental Biology*, 43(1), 97-104. (NAAS 6.78).
6. Manjeet Singh, Tarandeep Singh, Jugminder Kaur and **Raghuvir Parmar** (2022). Mechanization for Precision Agriculture. *Indian Journal of Fertilisers,* 18 (4) : 652-664. (NAAS 4.76).
7. Shiv Kumar Lohan, Mahesh Kumar Narang, Mohd Javed, Vinay Kumar, Atin Majumder and **Parmar Raghuvirsinh** (2022). Optimization and evaluation of machine–field parameters of remotely controlled

two-wheel paddy transplanter. 1-15. DOI: http://dx.doi.org/10.1002/rob.22080 (Impact factor= 3.767, NAAS: 9.767)

Conference Abstract Publication

First Author

1. **R. P. Parmar** and R. A. Gupta. (2016) Development of Combination Tillage Tool and its Performance Evaluation. 50th Annual ISAE Convention. ISAE-2016/FMP/MTT-13.
2. **R. Parmar**, R. A. Gupta and S. Shukla. (2016) Development of a Soil Pulverizing Attachment to Cultivator. Conference on Development in Agricultural Mechanization, Ministry of Agriculture and Farmers Welfare, Govt. of India. PP152.
3. **R. P. Parmar** and A. Verma. (2017) Computer Program for Energy Requirement of Sugarcane Production. 51th Annual Convention of ISAE. ISAE-2017/REE/OT-12.
4. **R. Parmar** and R. A. Gupta. (2018) Development of Pulverizing Attachment to Cultivator and its Performance Evaluation on Soil Physical Properties. 52nd Annual Convention of ISAE. ISAE-2018/FMP/MTT-02.
5. **R. Parmar**, N. Karwasra, A. Verma and Baldev Dogra. (2018) Development of Program in VB to Compute Tractor Parameters on Automatic Steering. 52nd Annual Convention of ISAE. ISAE-2018/FMP/MTT-11.

Co- Author

1. N. R. Makange, **R. P. Parmar** and N. Sungwa. (2018) Design and development of an animal feed mixing machine. 52nd Annual Convention of ISAE. ISAE-2018/FMP/MTT-14.
2. S. Kumar, M. Singh, S. K. Singh and **R.P. Parmar** (2019) Comparative study of electrostatic and backpack type sprayer to control whitefly (bemisiatabaci) in cotton crop. 53rd Annual Convention of ISAE. ISAE-2019/FPM/PP-06.
3. S. Kumar, M. Singh, M. S. Bhullar and **P. P. Raghuvirsinh**. (2019) Suitability of unmanned aerial vehicle for effective spraying of herbicide in wheat crop. 8th Asian-Australasian Conference on Precision Agriculture. 8ACPA/166.
4. M. Singh, S. Kumar, **R. P. Parmar**, S. K. Singh, S. S. Thakur and V. Bector. (2020) Efficacy study of various pesticides using unmanned aerial vehicle in cotton and rice crop. 54th Annual Convention of ISAE. ISAE-2020/FMP/PP-20. Pp 145.

Participation in Conference/ Online Training/ Webinar/ Workshop

- Artificial Intelligence & Machine Learning Using Python during 06.07.2020 to 10.07.2020 organized by Finland Labs in association with National Social summit, IIT Roorkee 51st Annual

- Automation and Robotics in Agriculture during 22.07.2020 to 31.07.2020 Deptt. of FMPE, Punjab Agricultural University, Ludhiana.
- 51st Convention of Indian Society of Agricultural Engineers (ISAE) during 16.02.2017 to 18.02.2017 held at CoAET, CCS, HAU, Hisar
- 52nd Annual Convention of of Indian Society of Agricultural Engineers (ISAE) during 08.01.2018 to 10.01.2018 held at Anand Agricultural University, Anand
- 8th Asian-Australasian Conference on Precision Agriculture during 14.10.2019 to 17.10.2019 held at Punjab Agricultural University, Ludhiana
- Paradigm Shift in Mechanization for Futuristic Agriculture on 16.12.2020 organized by COAET, Anand Agricultural University and NAHEP-CAAST.

Book/ Chapter in book

1. M. D. Vora, **R. Parmar** and H. Gunjaria. (2016) Comparative evaluation of different paddy harvesting methods an Indian experience. LAP lambert academic publishing. Pp. 1-85. ISBN: 978-3-659-8494-9-7.
2. **Parmar, R.P.** (2021). *Decryption and Design of a Multicopter Unmanned Aerial Vehicle (UAV) for Heavy Lift Agricultural Operations*. In Agricultural Informatics: Automation Using the IoT and Machine Learning (eds A. Choudhury, A. Biswas, M. Prateek and A. Chakrabarti). Wiley and Scrivener Publishing LLC, pp 189-222. https://doi.org/10.1002/9781119769231.ch10 (ISBN: 978-1-119-76884-5)

PATENT FILLED

Application No.:	202211004923
Filing Date:	January 29, 2022
Applicant:	Punjab Agricultural University
Title of the Invention:	SENSOR BASED OPTIMAL RATE CONTROLLER FOR FOLIAR SPRAY OF NITROGENOUS FERTILIZER

Popular Articles in Magazine

1. **Parmar R. P.** (2020) *Increasing Importance of UAV in Agriculture*. Krishijagran Gujarati, 7(01):22-25. (January 2020).
2. **Parmar R. P.** (2020) *Paddy straw burning issues and solutions*. Agriculture & Environment, 1 (4). (December 2020).
3. **Parmar R. P.** (2020) *Use of artificial intelligence and robotics in agriculture.* Krushijagran Gujarati, 32-35. *(November 2020).*
4. Akshay Mahadik, **Parmar Raghuvirsinh**, Rajesh U. Modi and Dilwar Singh Parihar**.** (2021). *Potato Planting Guide and Its Recent Advancement in Mechanization Technologies*. Agriculture & Environment, 1(3):18-20. (March 2021).

5. Gurpreet Singh, **Parmar Raghuvirsingh P**. and Anchal Chaudhary. (2022). *Things You Should Know About Kissan Drone: The Future of Indian Agriculture,* 3(1)57:1-17. December 2022 (e-ISSN: 2582-8223).

6. **Parmar Raghuvirsingh** and Gurpreet Singh, P. (2022). *Kisan Drone and its Simplify Guide of the New Drone Rules 2021.* 3(04):65-69.

Popular Article in Newspapers

1. **Parmar R. P.** (2020) *Day by day increasing importance of drone in Agriculture* Sandesh Newspaper in Agrosandesh supplement, 9(26): 3. (dated: 06-01-2020)

MEMBER OF SOCIETY

- Life member of Indian Society of Agricultural Engineers. LM-11211
- Life member of Advances in Life Science Journal. 1073-TIBS-G-2015
- Member of Indian Society of Entomology. 20400

LEADERSHIP/TEAMWORK EXPERIENCE

- Training of Public Leadership by International School for Public Leadership (ISPL)

SKILLS & INTERESTS

Skills: Computer/Technical (3ds Max, Pro E /Creo, Ansys workbench, AutoCAD, Photoshop, SolidWorks, MS Office, Arc GIS, QGIS, Pix4Dmapper)
Bioinformatics (Experience with C Language, VB, HTML)
Professional in product design & analysis (March 2014), Certified in architectural design (September 2011)

Language: English, Hindi, Gujarati, Punjabi

REFERENCE

Dr. Manjeet Singh
Principal Scientist (FMPE)
Department of Farm Machinery and Power Engineering,
Punjab Agricultural University,
Ludhiana, India.
Email: manjeetsingh_03@pau.edu
Mo. +91 9417122896

Dr. S. K. Singh
Principal Scientist (REE)
Department of Renewable Energy Engineering,
Punjab Agricultural University,
Ludhiana, India.
Email: sksingh@pau.edu
Mo. +91 9888997292

DECLARATION

I hereby declare that the above-mentioned information is true to the best my knowledge.

(Dr. Raghuvirsinh P. Parmar)