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Solar Powered Pesticide Sprayer Robot

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Abstract: There has been larger development of industry and service sector as compared to that of agriculture sector. To automate agriculture some equipment has been developed. The pesticide sprayer is one among them and it is done in a traditional way by the farm workers, that is by carrying backpack sprayer, using an electric pump or using a tractor but it requires too much human effort and it is also costly. To improve the agriculture system and to reduce the human effort and problems associated with the backpack sprayer new equipment is fabricated which will be beneficial and affordable to farmers. The equipment can be powered either by solar energy or by using batteries. Installed radio-controlled transmitter and receiver on the system helps to minimize drudgery of farmers. We are focusing on making the robot fully automated. It will be able to spray the entire yard on its own. Our aim is to make use of solar energy as a main source of energy making this multifunctional sprayer device by advancing the spraying methods which will make it user friendly and which can operate in different spraying stages of farming as per process requirement.

Keywords: Pesticide Sprayer Robot, Solar power, Autonomous Robot

REFERENCES

- Adamides, G.; Katsanos, C.; Parmet, Y.; Christou, G.; Xenos, M.; Hadzilacos, T.; Edan, Y. HRI usability evaluation of interaction modes for a teleoperated agricultural robotic sprayer. Appl. Ergon. 2017, 62, 237– 246. [CrossRef] [PubMed]
- [2]. Balloni, S.; Caruso, L.; Cerruto, E.; Emma, G.; Schillaci, G. A Prototype of SelfPropelled Sprayer to Reduce Operator Exposure in Greenhouse Treatment. In Proceedings of the Ragusa SHWA International Conference: Innovation Technology to Empower Safety, Health and Welfare in Agriculture and Agro-food Systems, Ragusa, Italy, 15–17 September 2008
- [3]. Bonaccorso, F.; Muscato, G.; Baglio, S. Laser range data scan-matching algorithm for mobile robot indoor self-localization. In Proceedings of the World Automation Congress (WAC), Puerto Vallarta, Mexico, 24–28 June 2012; pp. 1–5.
- [4]. Berenstein, R.; Shahar, O.B.; Shapiro, A.; Edan, Y. Grape clusters and foliage detection algorithms for autonomous selective vineyard sprayer. Intell. Serv. Robot. 2010, 3, 233–243. [CrossRef]
- [5]. Bergerman, M.; Singh, S.; Hamner, B. Results with autonomous vehicles operating in specialty crops. Proceedings of the 2012 IEEE International Conference on Robotics and Automation (ICRA), St. Paul, MN, USA, 14–18 May 2012; pp. 1829–1835.
- [6]. Bechar, A.; Vigneault, C. Agricultural robots for field operations. Part 2: Operations and systems. Biosyst. Eng. 2016, 153, 110–128. [CrossRef]
- [7]. Bechar, A.; Vigneault, C. Agricultural robots for field operations: Concepts and components. Biosyst. Eng. 2016, 149, 94–111. [CrossRef]
- [8]. Binod Poudel, Ritesh Sapkota, Ravi Bikram Shah, Navaraj Subedi, Anantha Krishna G.L, Design and fabrication of solar powered semi-automatic pesticide sprayer.
- [9]. Cunha, M.; Carvalho, C.; Marcal, A.R.S. Assessing the ability of image processing software to analyze spray quality on water-sensitive papers used as artificial targets. Biosyst. Eng. 2012, 111, 11–23. [CrossRef]
- [10]. Damalas, C.A.; Koutroubas, S.D. Farmers' exposure to pesticides: Toxicity types and ways of prevention. Toxics 2016, 4, 1. [CrossRef] [PubMed]