World Academy of Science, Engineering and Technology
International Journal of Agricultural and Biosystems Engineering
Vol:17, No:01, 2023

The Status of Precision Agricultural Technology Adoption on Row Crop Farms vs. Specialty Crop Farms

Authors : Shirin Ghatrehsamani

Abstract : Higher efficiency and lower environmental impact are the consequence of using advanced technology in farming. They also help to decrease yield variability by diminishing weather variability impact, optimizing nutrient and pest management as well as reducing competition from weeds. A better understanding of the pros and cons of applying technology and finding the main reason for preventing the utilization of the technology has a significant impact on developing technology adoption among farmers and producers in the digital agriculture era. The results from two surveys carried out in 2019 and 2021 were used to investigate whether the crop types had an impact on the willingness to utilize technology on the farms. The main focus of the questionnaire was on utilizing precision agriculture (PA) technologies among farmers in some parts of the united states. Collected data was analyzed to determine the practical application of various technologies. The survey results showed more similarities in the main reason not to use PA between the two crop types, but the present application of using technology in specialty crops is generally five times larger than in row crops. GPS receiver applications were reported similar for both types of crops. Lack of knowledge and high cost of data handling were cited as the main problems. The most significant difference was among using variable rate technology, which was 43% for specialty crops while was reported 0% for row crops. Pest scouting and mapping were commonly used for specialty crops, while they were rarely applied for row crops. Survey respondents found yield mapping, soil sampling map, and irrigation scheduling were more valuable for specialty crops than row crops in management decisions. About 50% of the respondents would like to share the PA data in both types of crops. Almost 50 % of respondents got their PA information from retailers in both categories, and as the second source, using extension agents were more common in specialty crops than row crops.

Keywords : precision agriculture, smart farming, digital agriculture, technology adoption
Conference Title : ICBDSFA 2023 : International Conference on Big Data in Smart Farming and Agriculture
Conference Location : Dubai, United Arab Emirates
Conference Dates : January 30-31, 2023