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Future Farming with Agricultural Robots

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Agricultural mechanization involves the use of various power sources and improved farm tools and equipment, with a view to reduce the drudgery of the human beings and draught animals, enhance the cropping intensity, precision and timelines of efficiency of utilization of various crop inputs and reduce the losses at different stages of crop production. It is the miracle of soil of India that it provides food to 1.3 billion population with just an average farm size of less than 1.08 ha. Small and marginal land holdings (< 2.0 ha) contribute to 86% of total operational land holdings and cover 47% of total operated area (Department of Agriculture, Cooperation & Farmers Welfare, 2018). The share of draught animal power is decreasing in the total farm power. There is a linear relationship between availability of farm power and farm yield. Therefore, there is a need to increase the availability of farm power from 2.02 kW per ha (2016-17) to 4.0 kW per ha by the end of 2030 to cope up with increasing demand of food grains. Estimates suggest that by 2050, percentage of agricultural workers of the total work force would drop to 25.7 percent from 58.2 percent in 2001. The need for agricultural equipment caused by increasing world population is more than obvious. Current agricultural equipment has reached its optimization limits in terms of complexity and efficiency with the current technology. Furthermore improvements in the area of drive technology currently mainly mechanical or hydraulic drives are limited. Therefore the focus in the area of robotics has the potential to change the scenario. Electrification and automation of implements will use the energy judiciously. It is the need of future farming.

Biography

At present, I am Research Scholar at the Department of Farm Machinery and Power Engineering, Anand Agricultural University, Gujarat. I am currently working on the project on the Development of electric prime mover with reaper attachment. I am also serving as the Mentor at Atal Incubation Centre (AIC) set up at AIC-ADT BARAMATI FOUNDATION with the support of Atal Innovation Mission NITI Aayog for agricultural technology development. Till today I had developed total five technologies for the small and marginal farmers of our country. I had successfully developed a battery-operated multi-fruit harvesting cum pruning device that worked fabulously for mango, ber, citrus, etc. and for pruning too. I did my master's degree at Department of Farm Machinery and Power, Junagadh Agricultural University, Junagadh. That time I developed a coconut palm climbing device that can be helpful for the coconut growing farmers as well as householders to climb up on the trees. It has become popular in Saurashtra region of Gujarat.

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