

Study and Fabrication of Automatic Multipurpose Gardening Machine: A Review

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Abstract: This chapter provides a basic outlook and purpose of gardening, multipurpose functions and block diagram of Remote Control Grass Cutter with Moisture Detector and need of the project. This project was about designing a remote control grass cutter with other useful functions that eliminated the need of physical power. In completing this project, there were numerous steps that were taken; finding parts, designing of mechanical components. Throughout this report you will learn more on how we went completing this project and which various parts were used that replace the physical power that needed in moving the grass cutter. The purpose of this project is to design and build a remote controlled grass cutter with moisture detector. This would be beneficial because man power is not required in moving the lawn on those hot summer days, where you would prefer not to be out in the sun. The remote will allow the user to control the speed and direction of the grass cutter by moving the joy sticks and the soil moisture sensor measure the volumetric water content in soil so as to help the gardener to manage the irrigation system. For safety purposes, the motor of the grass cutter can be turned off via remote and also turns off automatically when there is a loss of signal.

Keywords: Remote control; Grass cutter; Moisture detector; Energy saving; Safety Purpose.

1. Introduction

Gardening is practice of growing and cultivating plants as horticultural. In gardens, ornamental plants are often grown for their flowers, foliage, or overall appearance; useful plants, such as fruits, and herbs, are grown for consumption, for use as dyes, or for medicinal or cosmetic use. Gardening is considered by many people to be a relaxing activity.

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Grass cutter machines have become very popular today. Most common machines are used for soft grass furnishing. The main parts of the Crop cutting machines are DC motor, relay switch for controlling motor, grass cutting blade and moisture detector. The motor has 1000 RPM and it is connected to the electric supply by the use of a roll of wire. The motor rpm increased by the help of gears. The tempered blades are attached in this machine. The raw materials mainly used are GI sheet, motor, switch, wheel, wire, aluminum sheets, pipe, paint, insulating material and other standard item like nuts, bolts and reverts. The machines required for manufacturing includes welding machine, grinding machine etc.

2. Literature Review

N. A. Azmir [1] HAVS questionnaire and physical observation. From the result it is observed that Chronic health surveillance for hand arm vibration is under diagnosed in agriculture sector. Ko Ying Hao [2] Imposing node technique. From the result it is observed that imposing node technique reduces the

handle vibration to the lowest value. Tengku Hanidza [3] Noise Dose Meter And physical observation. From the result it is observed that audiometric test for both ears showed some evidence of mild to moderate hearing impairment in some workers. Zulquernain Mallick [4] Motorized cutter spinning at high speed. From the result it is observed that the optimum HAVS obtained through appropriate selection of HHP and operating parameters, significantly reduces the occurrence of HAVS among the grass trimmers. Lee Xin Mei [5] Modal analysis and operating deflection shape analysis. From the result it is observed that the presence of TVA has successfully reduced the large deformations of the handle where the node was shifted nearer to the handle location. Michael Hardman [6] Ethnography and interview data. From the result it is observed that research is required to better understand the actions of those who pursue a more informal approach to urban gardening and those who seek to regulate land use activity. Dr. C. N. Sakhale, [7] Physical observation. From the result it is observed that one may perform various farming operations in less time and economically. Carolin zschippig [8] Physical observation. Derived a design guideline for the implementation of intelligent AAL Gardens, raising awareness that gardening is a leisure activity. Alejandro Augustini [9] A cognitive system that integrates artificial intelligence techniques for decision-making. From the result it is observed that AI system to make decisions about the treatment to apply. Sathiesh Kumar V [10] Extraction algorithms (Scale Invariant Feature Transform (SIFT), Speeded-Up Robust Features (SURF), Oriented FAST and Rotated BRIEF (ORB)) and neural networks, From the result it is

observed that a website and an android application are developed for monitoring and controlling the rover from a remote area. Vivek T K [11] Schmitt trigger circuit. From the result it is observed that controls the working of all the motors. Sagar S Patil [12] This paper presents the experimental study of solar powered grass cutter. From the result it is observed that motor rotates which in turn rotates the blades which does the cutting of grass. Zhou-Long Li [13] Calculating cutter work piece engagement. From the result it indicate that the ASIM is computationally efficient, accurate and robust. Ke Xu [14] Five-axis flank milling. The manufacturing of complex work pieces because of its greater productivity than that of three-axis or five-axis end milling. Charmy Shah, 2017 [15] Solar powered grass cutter. Application is more easier at reduced cost and aims in pollution control. Zijuan Chen [16] The soil moisture balance equation driven by stochastic rainfall forcing. From the result it indicate properties of space-time correlation functions and spectral densities of the model with jitter are explored analytically, and the influence of the jitter parameters, reflecting variability's of soil moisture at different spatial and temporal scales, is investigated. Tiejun Wang [17] Temporal Stability analysis. From the result it indicate mean relative difference (MRD) of soil moisture was more correlated with soil texture. M.D.Dukes [18] Experimental Analysis. Season manager subsystem from Acclima and Rain Bird were more consistent and precise in measuring soil water content. Yasin Osroosh [19] An automatic control system along with a wireless network of soil, thermal and weather sensors. From the result it indicate treatments resulted in tangible under-irrigation as leaf drop, decreased leaf

turgidity, growth reduction and abnormally small fruits were seen. A.Tarpanelli [20] The Advanced scatterometer. The Soil Moisture Active and Passive mission, the Soil Moisture and Ocean Salinity mission and backscattering observations of Rapid Scat. Hemen Kalita [21] In this paper study of Micro-sensor. From the result it is observed that simplicity of the process and use of an inexpensive material Graphene Quantum Dots make it an affordable low-cost sensing unit in comparison to existing soil moisture sensing units. M.J.Oates [22] Frequency Domain Analysis. The soil moisture measurements raising an alarm condition, or stopping unnecessary irrigation based on erroneous results from a damaged sensor. Fernández-López [23] Frequency Domain Analysis. From the result it is observed that soil temperature is seen to increase the measured capacitance, whilst electronics temperature effectively decreases the measured capacitance. Masoud Rezaei [24] In this paper study of 1.4-GHz soil moisture sensor using microstrip transmission line is presented. From the result it is observed that since the sensor has low power consumption, it can be recommended for low-power applications such as wireless sensor network. G. Luciana [25] In this paper study an open-ended waveguide spectrometer system was developed. . From the result it is observed that the non-invasive waveguide-based spectrometry together with the multivariate analysis is able to assess different moisture contents, with a high level of accuracy, both for non-layered and layered samples of soil with homogenous moisture.

Conclusion:

This eco-friendly concept is utilizing battery and DC motor. This project eliminated the physical power required in pushing the grass cutter. The grass cutter can now be controlled through a remote just by moving joysticks which would be preferred on those hot summer days. The project is also equipped with safety features, when there is a loss of signal the engine can be turned off via remote. It also help in maintaining the soil moist by using moisture detector.

Future Scope:

The related company can introduce this project and make a new benchmark in the field also this can be a new type of product in the market were machine can perform number of operation. We can also provide pesticide sprayer and water sprayer with a tank. It can be also provided with seed sowing application with small hole drilling.

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