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Design and Fabrication of Battery Motorized Weeder Machine

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ABSTRACT: Weed control is one of the most difficult tasks on an agricultural farm. Mechanical weed control is easily adopted by farmers once they get convinced of its advantages. Motorized agriculture weeding machine not only uproots the weeds between the crops rows but also keeps the soil surface loose, ensuring better soil aeration and water intake capacity. Weeding by motorized Weeder reduces the cost of labour and also saves time. In human operated Weeder, muscle power is required but motorized weeder don't need labour and so it operated for long distance for country to country operate by the weeder machine. In this Battery drive motorized weeder we use motorized system, which is powered by battery. The project is designed to allow easy use of a mobile phone to control appliances in the home. Using a mobile phone, the development of the control system will be carried out using SMS. This will communicate with another mobile phone, which in turn controls the devices attached to microcontroller modules. When the action has been carried out then a response is sent to the user. The project involves three main areas, research, development\programming, testing and the writing of the report. These devices should be controlled as well as turn on/off if required.

KEY WORDS: Weeder, motor, battery, DTMF, mobile phone.

I.INTRODUCTION

Weed is a plant that is considered undesirable in a particular situation, it is basically "a plant in the wrong place". Weeds are needed to be controlled because it reduces crop quality by contaminating the commodity. Weeds reduce farm productivity, they invade crops, smother pastures and in some cases can be harmful for the livestock. They aggressively compete for water, nutrients and sunlight, resulting in reduced crop yield and poor crop quality. So the weeds are control by the some of the weeders or herbicides. Example of weeds such us clover, purslane, nutsedge, Bermuda grass. Above the weeds are growing in the following plants. Such us Brinjal, ladies finger, sugarcane, banana tree plant, areca tree plant. So, this type of mechanical weeder used in the type of cultivable land. The objective is to develop certain automatic systems using controllers of low cost and to implement it in real life scenario. The cost of automating the whole system is too high. Therefore, instead of automating the whole system, important modules are automated. The system consists of three modules to keep the home secure and safe. The sensors act as input modules and send signal to the controller, the controller then process the input and based on the input, the output modules are actuated. It also helps in curtailing the energy consumed and makes the user more comfortable.

II.LITERATURE REVIEW

C Vengatesha Rajaperumal, PK Chidambaram, M Arputha Bibiana, G Arun (2021) "Development of dual purpose manual weeder" Grass and weeds are common difficulites faced by farmers which affect nutrition and growth rate of plants. The purpose of this project is to develop manual weed removing machine (weeder). The Development of Dual Purpose Manual weeder using chain and pedal mechanism is to remove weeds in the fields and lawn. Chain drive has been used for transmitting manual pedal power to cutter. The cutter is controlled by the connecting links which obeys non-Grashof's law to ensure double rocker mechanism. Hoe and harrow are the two types of cutters used. Weeds are hectic problem for farmers in order to remove that they need some special tools and labour as well as certain amount of time wasted on this work. To address the above stated problem the machine has to be designed and fabricated.

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Relevance to current Research

Design development and fabrication of soil tiller and weeder, a. B. Tupkar (2013)The soil tiller and weeder is one of the many farm mechanizations in promoting soil tiller and weeders especially considering the fact that the majority of farmers are having small land. It reduces human effort. Working of the project is based on engine and chain sprocket mechanism which moves the cutter or tiller. It is a great saver of time and expenses on field operations.

Relevance to current Research

Mohd Taufik Bin Ahmad (2012) "Development of an Automated Mechanical Intra Row Weeder for Vegetable Crops"Weed management is one of the tedious operations in vegetable production. Because of labor costs, time and tedium, manual weeding is unfavorable. The introduction of chemical weed control methods has alleviated these undesirable factors. However, the emergence of herbicide-resistant weeds, environmental impact and increasing demand for chemical free foods has led to investigations of alternative methods of weed control.. There was evidence of differences in weed control efficacy across travel speeds. Using least square means, the slowest travel speed of 0.8 km/h had an average reduction in weed canopy area of 58.2% with standard error of 2.7% compared with the medium travel speed of 1.6 km/h with an average reduction in weed x canopy area of 52.6% with standard error of 2.7%. The fastest travel speed of 2.4 km/h had an average reduction in weed canopy area of 42.4% with standard error of 2.7%. There was no statistical evidence of differences in power consumption across working depth, travel speed, or rotational speed. With increasing working depths, reduction in weed canopy area and power consumption tended to increase. With a revised version of the rotating tine weeding mechanism, a second field experiment was also conducted using three factors; tine shape, travel speed and rotational speeds. The results showed that there was no significant difference in reduction in weed canopy area across tine shapes. However, there was some indication that weed control efficacy decreased as travel speed increased. The fastest rotation speed, 536 rpm, had a mean power consumption of 182 W and standard error of 9.4 W. The lowest rotation speed, 350 rpm, had the lowest mean power consumption of 123.5 W and a standard error of 9.4W.

Relevance to current Research

Slaughter et al. (2008) "Automatic robotic weed control system" Indicated that hand weeding eliminated only 65 – 85% of the weeds for cotton production, mainly due to workers mistaking weeds for crop plants or missing weeds. It was also reported that manual weeding using long-handled hoes would damage the crops while also missing some of the weeds. Hoeing is also time consuming and can lead to back injuries to workers. Earlier in California, manual hoes were used primarily for weeding most vegetable crops. Farm workers complained of suffering permanent back injury due to extended periods of hoe weeding. As a result, in 1975, hoe weeding was banned by the California Industrial Safety Board.

Relevance to current Research

RJ Turner, G Davies, H Moore, AC Grundy, A Mead (2007) – "Organic weed management" Elsevier in order to address these issues the project took several approaches a review of publish and 'grey' literature relating to individual weeds and weed management. 69% of farmers emphasised mechanical weeding as a direct control measure.In organic systems, farmers, advisors, researchers, and even policy makers, often cite weeds as one of the major constraints to production. Both conventional and organic, that has been undertaken on weed management. In addition to this a large body of informal knowledge based on farmer experience also exists. In this context this paper explores farmer perspectives on organic weed management in the UK. The results presented are from semi-structured interviews with organic farmers about their attitude to weeds, their weed management strategies including information on changes in their weed flora over time and their success and failures

III.METHODOLOGY OF PROPOSED SURVEY

The mobile apps install in that particular mobiles. They datas given to the controller by DTMF. Battery power transmitted to the DTMF. Controller comments given to the motor for machine movements of forward and backword. The feeder working done on by the motor.

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These one is clear weeding of our farming land. The weal is rotating done with the use of battery power and the battery fully charged by the solar panel. These type of weeder differ from another weeder type. Because the operating distance long than other. A weeding tool, which was a rotating wheel oriented perpendicular to the crop row, was located at the rear of the machine. The tool was lowered using a pneumatic cylinder when gap between crop plants was detected and provided some tilling action in the inter-crop plant area. At a speed of 0.2 m/s, the crop detection color camera successfully detected crops with using image segmentation techniques to classify weeds and crops using color and shape features. This is done by the 2 mobiles for connecting the calls. But other weeder working upon the operator face.the size of the mechanical weeder is 2 feet height ,2 feet width and 2.5 feet length.

This circuit detects the dial tone from a telephone line and decodes the keypad pressed on the remote telephone. The dial tone we heard when we pick up the phone set is call DTMF. The DTMF tone is a form of one-way communication between the dialer and the telephone exchange.

A complete communication consists of the tone generator and the tone decoder. In this article, we are use the IC MT8870DE, the main component to decode the input dial tone to 5 digital output. These digital bits can be interface to a computer or microcontroller for further application (eg. remote control, phone line transfer operation, etc...).The weeds are gauged by the feeder. The 30 to 40 cent weeds gauged within 1 hr at the time 70-80 % weeds removed.

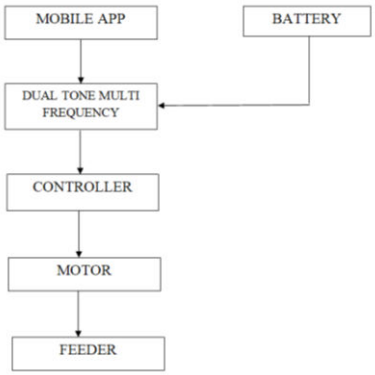

Figure.1 Flow Chart of Mechanical Weeder

IV.RESULT AND DISCUSSION

Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub-assemblies, assemblies and/or a finished product It is the process of exercising software with the intent of ensuring that the Software system meets its requirements and user expectations and does not fail in an unacceptable manner.

The Weed removal machine is built to be compact and efficient to cut the weeds. The machine was tested on a field to check its weeding capability and efficiency. The test results were successful as the machine performed flawlessly. It can be concluded that the machine is comparatively compact and easy to handle. This machine is able to run of field effortlessly and the efforts of farmers are reduced. In general, the weed control performance of mechanical weeders ranges from 60 – 80% reduction in number of plants. The depth used for current non-automated mechanical intra-row weeding devices ranges from 1 to 2 cm (0.4 to 0.8 in.). he forward speed during non-automated mechanical intra-row weed control is from 0.7 km/h to 9.7 km/h.

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Figure.2Complete assemble of DTMF based Weeder Machine

V.CONCLUSION AND FUTURE WORK

Alive Human Being Detector is an autonomous robot for detecting alive humans in destructed environments. This Alive human body detection system uses mobile phone, PIC microcontroller to transmit and analyze conditions of human body. The task of identifying human being in rescue operations is difficult for the human agent but it is simple for the robotic agent. In order to detect a human body, an autonomous robot must be equipped with a specific set of sensors that provide information about the presence of a person in the environment around. This system uses a in order to detect the existence of living humans. This approach requires a relatively small number of data to be acquired and processed during the rescue operation. This way, the real-time cost of processing and data transmission is considerably reduced. This system has the potential to achieve high performance in detecting alive humans in devastated environments relatively quickly and cost-effectively.

The future work would be to improve detection using more reliable sensors and to modify its shape to pass through complex environments or to climb some obstacles. To have a better quality of human detection, it would be a good solution to add a long distance sensor. Finally, the most challenging part would be to maximize the autonomy of the robot to limit user attention to it.

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