

Solar Powered Fertilized Ovule Collector System

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Abstract: This project commences the concept for seed cutting system of Glorisa Superba (Glory lily). Harvesting is the important stage in agriculture field. Currently in India farmer used Conventional method for cutting the seed (i.e.) manual cutting. It needs more labors. The Unique advantage of the project is to do the task with safety and systematically. This helps the farmers to reduce the cost. GLORY LILY is a state flower of Tamil Nadu. It is a herbaceous or Semi Woody Climber with V-Shaped tubers. The Plant is highly valued for its medical properties, more importantly for the treatment of cancer related diseases, arthritis, gout, rheumatism. Colchicine act as an anti-mitotic agent by inhibiting mitotic cell division. This colchicine creates some strain to farmers while picking the seed. Farmers are in need to ease the way for collecting the seed. This project is typically focused to initiate the seed picker machine. The important goal is to develop the automatic machine and pave the way for farmers. In a plant a seed is positioned in various angles and different height. A rack and Pinion gear setup along with the motor is to cut the seed can cut place itself. Atmel 8051 controller associated with the motor through relays. Solar panel is utilized here to offer the power to proposed system. In this proposed project is utilized in field whenever the battery is drain it charged using solar panel it avoid the use of electricity. It is coherently utilize for energy saving. The main motto is to make friendly equipment for our farmers, because it reduces the stress handled by the farmers and reduces the cost.

Keywords: Colchicine, solar panel, energy saving, friendly

1 INTRODUCTION

India's record of progress in agriculture over the past four decades has been quite impressive. The agriculture sector has been successful in keeping pace with the rising demand of seed. These need in agriculture attributes to take a series of steps. Agricultural application has made over thousand years, and the entire processes dependent to people, the dependency increases the labour time of the process and as well as cost of the product. To overcome this problem, the automated systems on the agricultural processes are needed in the place of humans. The major source of agriculture growth during this period are the usage of modern techniques. Intensification of input use and instrument leading to expansion in the irrigated area, new technologies are need to push out yield frontiers, utilize inputs more efficiently and diversity to make suitable for higher value of seed cutting. In India two types of crop cutting like as manual method (conventional method) and mechanized type of cutter. Harvesting is the important stage in agriculture filed. Currently Indian farmer used convectional method for crop cutting i.e. cutting crop manually using labour but this method is very lengthy and time consuming.To design and analysis the Seed cutting machine which is help to the Indian farmer in ruler side and small farm. It will reduce the cost of seed cutting in field. It will help to increase economical standard in Indian former.

1.1 Glorisa Superba Statistics

The data get about the seed through the Dhina thanthi newspaper . In newspaper, it briefly explain about the importance of Glorisa Superba, economical value of that plant and the medicinal uses. It mostly cultivated in Dindigul district.

1.2 Major Constituents

Colchicine (0.5-0.7%) and colchicosido uses-cures gout, anti, inflammatory, anticancer.

1.3 Varieties

No Released Varieties are found. Singaleri selection possesses 0.25% colchicine.

1.4 Soil and Climate

Well drained red loamy soils are suited for cultivation. The ideal PH should be 6.0- 7.0.This can be cultivated up to 600m from mean sea level with an annual rainfall of 70cm.Gloria lily is cultivated in Tamil Nadu mainly In the western parts via, Mulanur, Dharapuram, of Tirupur district, Oddanachatram and Ambilikai of Dindigul district, Markumapathy and Aravakunchi of Karur district, Attur, jeyankondam of Salem district in an area of 2000 ha

1.5 Seed and Seed Rate

Glorisa is propagated through tubers 2000kg tubers are required for planting one hectare .tubers are treated with 0.1% carbendazim for half an hour for controlling tuber root

1.6 Season

Planting is distributed from June-July

1.7 Planting

Filed is ploughed 2-3 times and incorporated 10 Tonnes of FYM during last ploughing. Trenches of 30 cm depth are formed and tubers are planted at 30-45cm spacing. The vines are trained over support plants, permanent structures with G.I Wires can also be formed for growing the vines.

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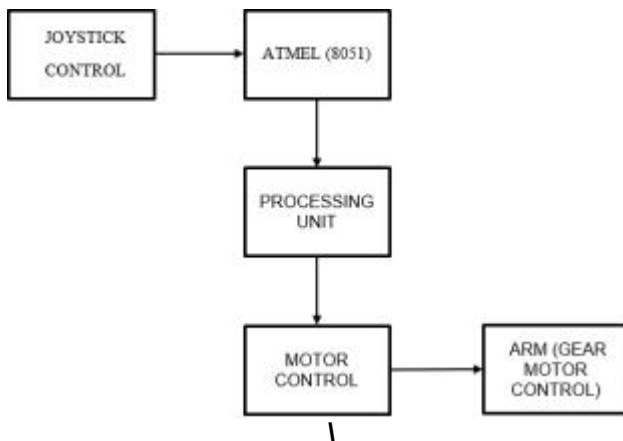


Fig 1., Block Diagram Of Proposed System

2 LITERATURE SURVEY

Prof. Dr. Abdulkadir Erden et al (2013), "Conceptual design of a Rose harvesting robot for Greenhouses", here it mainly explained about the modern harvesting techniques used for rose plant. It helps to understand specifically about the wiper motor usages. The torque utilized by the motor and ranges needed. Bryan Jones C. Calzon et al (2018), "Automatic Fruit harvesting with machine vision", here it mainly explained about the fruit harvesting and pinion gear set up and it used to learn about the various height adjustment along with the various angles. Daviana Font et al (2014), "A proposal for automatic fruit harvesting by combining a low cost stereovision camera and stereovision principle", here it mainly explained about the automatic machine operation and the techniques of image processing and stereovision camera principles. Stereovision is the process of extracting 3D information from multiple 2D views of a seen.

Fig 2., Glory Lily Seed



Mr. R. A. Ghumaderal, Mr V. H. Bankar (2016), "Design and analysis of crop cutter", here it mainly explained explain

about the cutter working principle and the different type of cutter usages. Helps to Understanding about the torque of the wiper motor used for different type of cutters. S. Padmapriya (2015) , "Glory Lily (Gloriasuperba) -A Review", here it mainly explained about the seed importance, advantages and the toxic content segregated in the seed, it helps to know about the seed cultivation process and the techniques handled Dr. P. K Sharma et al (2012) – "Review paper on crop harvesting machine", here it mainly explained about the motor usages especially gear motor.

2.1 Observation In Literature Review

From the observation of literature reviews, various indepth of ideas and knowledge about the specific fields are analyzed. By gathering of all, enhance the knowledge based on literature review and implemented few ideas in proposed project. The structure of the machine are designed on the basis of above reviews.

2.2 Existing System

There is no specific seed collector system for Glorisa superb. But some system are existing for automatic fruit pickers and crop cutters.

2.2.1 Manual Picking

Manual picking is the conventional method of picking. From the olden days, Farmers used to pick the seed manually. Glorisa Superba is the seed used for medicine purpose. Usually while the early stage of seed, it gets pollinated. After that it comes to the stage of cultivation. In that time farmers struggled to collect the seeds for whole hectare.so this machine used to cut the seed easily. The people required to pick the seed for the whole field are more. The manual wages are more. It results farmer get less profit. While picking the seed, the colchicine in the plant creates some odd effects. So this machine is designed on the basis of people health.

- Farmers facing difficulties and had stress while collecting the seed for whole hectares
- The manual wages are more
- Colchicine content in seed creates some odd effects

2.2.2 Drawbacks Of Existing System

- Because of no specific collector system, farmers facing difficulties while collecting the seed for whole hectare
- If machine is huge it damages the crops
- The profit of the farmer is less because of manual wages
- The fuel cost needs for the machine connected to the tractor is high

3 PROPOSED METHODOLOGY

3.1 Hardware Description

The battery gets charged using solar panel. The Atmel 8051 controller controls the motor through relay. The supply to the motor is given through the Emf relay.

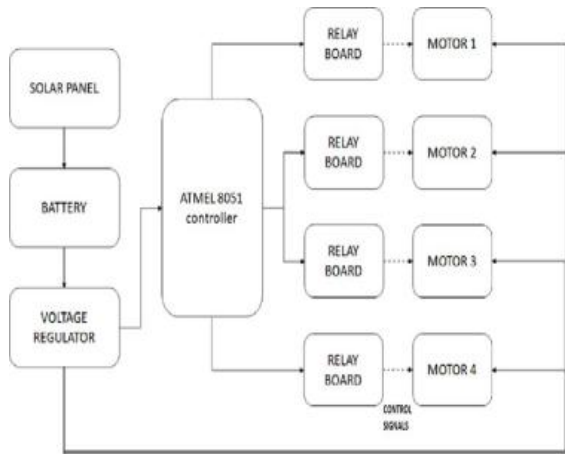


Fig 3., Block Diagram Of Hardware Description

3.2 Motor Description

The 4 motors used here for different actions. Based on the torque usage, motors are selected with various ranges. The motor is controlled by the Atmel 8051 Microcontroller. The 5 volt supply is given to the Atmel supply pin. The output of the Atmel 8051 is given to the base of the transistor in relay circuit.

Table 1., Motor Actions

S.NO	SWITCH1	SWITCH2	OPERATION
M1	1	0	LEFT
	0	1	RIGHT
M2	1	0	UP
	0	1	DOWN
M3	1	0	FORWARD
	0	1	BACKWARD
M4	1	0	CLOCKWISE
	0	1	ANTICLOCKWISE

3.3 Software Description

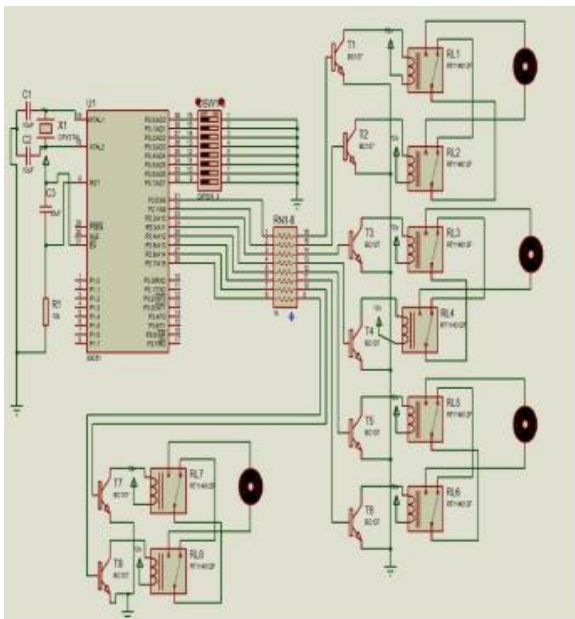


Fig 5., Circuit Diagram

We get input from user and check the condition if the condition becomes true then yes block will be executed otherwise no block will be executed.

3.4 Operation

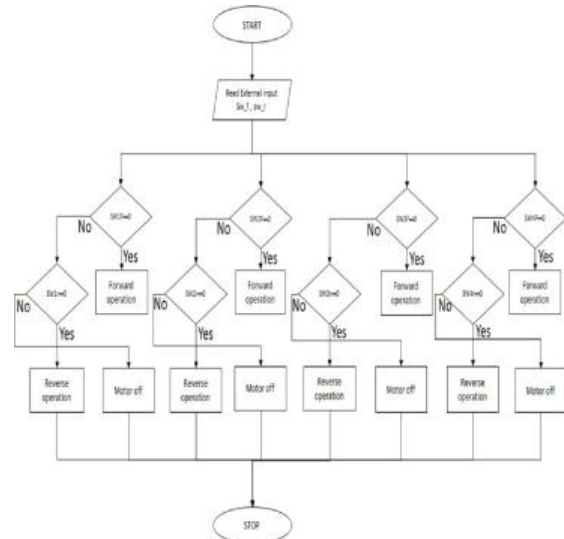


Fig 4., Flow Chart Of Software Description

The machine contains mechanical and electrical setup. The mechanical setup controlled using electrical setup. The electrical parts consists of voltage regulator, battery and controller relays. The mechanical part consists of rack and pinion, gear motor and wiper motor. The mechanical hardware designed using drilling and welding mechanisms. The switches used to control the motors operates like joystick. The battery is charged through Solar panel. The supply of 5 volt is given to the 8051 Microcontroller and 12 volt is given to the relay, the output of the Microcontroller is given to the base of the transistor in relay circuit. In transistor, the emitter is connected to the LED. LED is turn on when the relay acts. The collector of the transistor is connected to the relay. Normally open and Normally close pins of 4 relays are connected together respectively. The common pin of the relay is connected to the motor then the motor acts based on the switch action.

3.5 Switch Setup

The switches are operate as joystick. By using 1, it does the one action and by using 0 it reverses the action.

Table 2 ., Switching Sequence Of Proposed System

S.NO	SWITCH1	SWITCH2	OPERATION
M1	1	0	LEFT
	0	1	RIGHT
M2	1	0	UP
	0	1	DOWN
M3	1	0	FORWARD
	0	1	BACKWARD
M4	1	0	CLOCKWISE
	0	1	ANTICLOCKWISE

**Fig 7., Controller Circuit Of Proposed System**

3 HARDWARE DESCRIPTION

4.1 Mechanical Part

This figure shows the mechanical structure of Proposed system .It consists of four motors.

**Fig 6., Mechanical Setup Of Proposed System**

4.2 Controller Part

The major components includes three wiper motors (15 to 20 Watts) for the movement and rotation. This includes both the horizontal and vertical movement and also the rotation of 360 degree and one gear motor (10 to 15 Watts) which is fixed for the purpose of trimming. For all the motors the battery ratings (capacity) of 12V & 7.2A is used. ATMEGA 8051 Controller used to control the motor which is interfaced by relay circuit. Totally eight relays are used on the basis of each motor works with two relays for clockwise and anticlockwise direction. Eight switches are connected parallel to the controller. Two regulators of 12V for the supply of relay and 5V for the controller kit.

**Fig 7., Real Time Operation Of Proposed System**

5 CONCLUSION

Solar powered ovule collector system comprises the usage of solar powered battery along with ovule collecting system of Glorisa Superba. This utilizes the major protection to agriculturists by eliminating the need of shielding equipment while harvesting the seeds of Glorisa Superba. Thus the project had analysed the purpose and need of precise in the angle of 360 degree measurement while trimming. This also shows that the prototype model has specified the vertical movement of about 1.5 feet with horizontal movement of about 1.2 feet. The cutter which cuts the pedicel (stem) of thickness about 1 to 2 mm. The concise and precise measurement for trimming the Glorisa Superba had done by manually and scope of image processing has to be work on latter phase.

6 FUTURE SCOPE

This project is only the prototype model, thus it have further idea to develop our kit into wireless control. By making it as wireless, need to fix the camera on front of the arm. By doing this, this project has use in the place of precarious areas where it can't touched by the humans. For nearby location it can be used by IR remote control techniques. By using Bluetooth it can transmit data up to 800Kbits/s. Its frequency ranges about 2.4 GHz. cost is low but can operate it from 10 to 33 feet. For long distance control it can either use the RF remote control techniques along with the communication devices. This project is also make as automated by fixing analog image processing sensors. By using analog image processing it can identify only image of an object .In this it get an accurate growth of orgasms of living beings. In analog image processing it can remove the noise and signal distortion while processing. By using image processing can acquire a fast image acquisition and early vision processing. The analog VLSI image processing has the advantages of remarkably low-power, small, and fast operation.

7 REFERENCES

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