

# Automatic Sugarcane Bud Detection and Cutting Mechanism

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**Abstract** - In today's world, the entire requirements are being fulfilled through automatic system. The demand for reducing the wastage of sugarcane. So the search of automatic system is completed by this project. One alternative to reduce the mass and improve the quality of seed for sugarcane would be to plant excised axillaries buds of cane stalk, popularly known as bud detector. This bud detector we can fit in bud chip to detect the bud. These bud detector are less bulky, easily portable and more economical material. The bud detector technology holds great promise in rapid multiplication of new sugarcane varieties. The problem of establishment and initial growth could be addressed by application of appropriate plant growth regulators and essential nutrients.

## 1. INTRODUCTION

Agriculture is one of the most significant sectors of the Indian Economy. Agriculture is the only means of living for almost two thirds of the workers in India. The agriculture sector of India has occupied 43% of India's geographical area, and is contributing 16.1% of India's GDP (Gross Domestic Product). There are number of crops grown by farmers. These include different food crops, commercial crops, oil seeds etc. sugarcane is one of the sugarcane is grown primarily in the tropical and sub-tropical zones of the southern hemisphere. Sugarcane is the raw material for the production of white sugar. It is also used for chewing and extraction of juice for beverage purpose. About 7.5% of the rural population, covering about 45 million sugarcane farmers, their dependents and a large number of agricultural labors are involved in sugarcane cultivation, harvesting and ancillary activities.



Fig no. 1 Sugarcane Bud

## 2. RELATED WORK \ LITERATURE REVIEW

We visited to Agriculture field in Sangli and we understood the various problems of farmers such as stem cutting is a fault in which buds of sugarcane gets cut due to some human mistakes also the risk of injury is too high. This problem overcome by the project. Digital Image Processing deals with manipulation and analysis of images by using computer algorithm, so as to improve pictorial information for better understanding and analysis. Now a day's sugarcane planting machines are used to reduce the human force and time. However, these machines do not have control on cutting location. This ultimately results into more population of sugarcane stalk which affect the yield. Sometimes, cut may appear on the bud as well, which results into no germinate on of the bud and we lose the seed. Also, it has no facility to identify diseased node, so planting of diseased nodes affects the yield and quality of the sugarcane. To overcome these problems image processing algorithm is developed and implemented for identification of node location on sugarcane stalk.

## 3. POPOSED METHODOLOGY

Change manual method in a automatic - by using appropriate capacity of single phase motor, gearbox which will reduce wastage and increase productivity as it will reduce strain on hands of worker and more on safety of operator. The research work in this domain was studied and new methods were developed to achieve desired goal.

### 3.1 BLCOK DIAGRAM

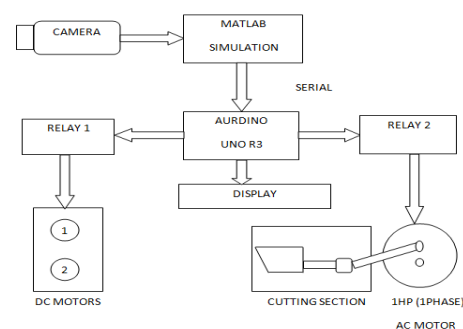


Fig no. 2 -Block diagram

A camera is an optical instrument for recording or capturing images, which may be stored locally, transmitted to another location, or both. The camera is a remote

sensing device as it senses subjects without physical contact. A relay is an electrically operated switch. The Arduino Uno R3 is an open source microcontroller board based on the ATmega328 chip. A DC motor is any of a class of electrical machines that converts direct current electrical power into mechanical power.

### 3.2 FLOW CHART

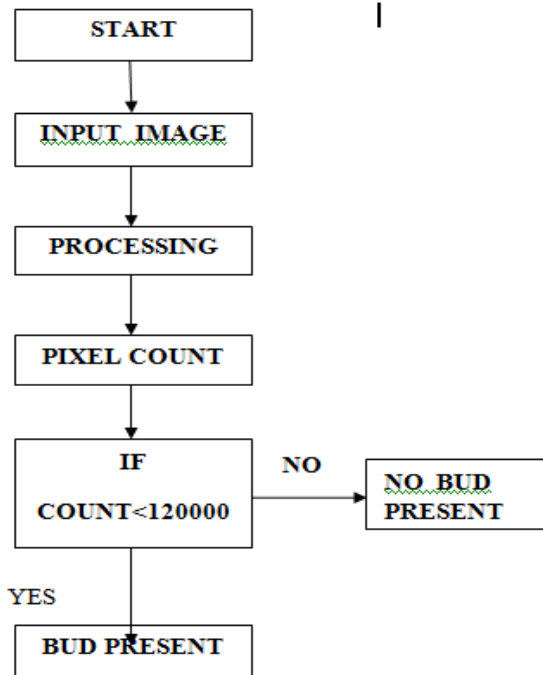


Fig 3: -Flow char

We have captured the images by camera and collecting number of database of good and bad qualities. Here we take input sugar cane bud image from captured database. After capturing image that is RGB image is given to preprocessing. Then RGB image is converted into HSV in this process masking is take place. After masking, we get the pixel count of Bud image then this count is compared and differentiate the Bud or ring is either present or not. HSV has three components of hue, saturation, and value. We go to our favorite colour wheel website and grab the upper and lower bounds of the colour we would like to detect. In this case, we choose the values completely red. We create a array containing these values.

### 4. SIGNIFICANCE AND SCOPE

The system can fully Automatic and also utilize maximum of the technology and to do everything smartly and efficiently in order to reduce both energy and time consumption. It has vast scope in various industries because it saves time & Manpower.

In our project to improve the success of process is needed small improvements at each stage. Differentiate sugarcane color of image under study also the bud detection time be reduced in future.

In future we can also directly plants the buds on sugar cane planting tray in nursery. Also the machine structure is made as capable to mount on tractors for directly planting buds in farms. Machine is also made run on solar power in future

### 5.RESULT



Fig 4: Project module

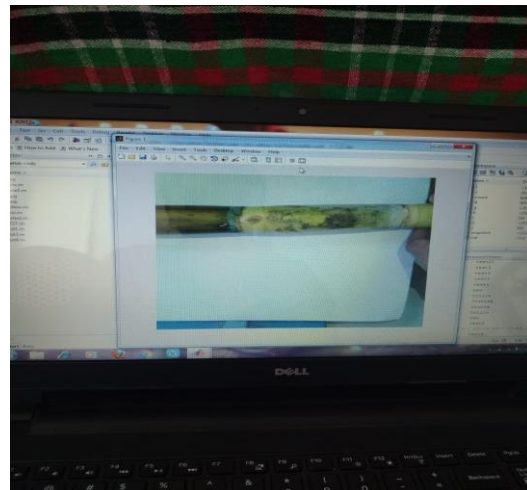
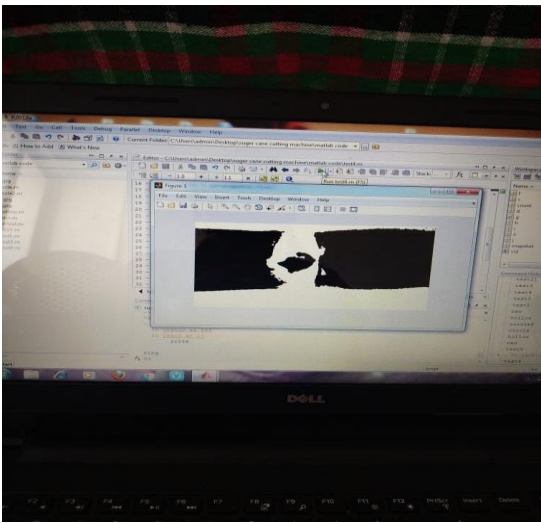


Fig 5 Capturing image



**Fig no.6** Image of detected sugarcane bud

## 6. CONCLUSIONS

In today's world, Sugarcane automation has got importance in agricultural field. In most countries where agriculture is a main occupation automatic sugarcane bud cutting has played very significant role. The reason for choosing this project is to solve problem of farmer. To reduce man force & make their work easy by developing a new design also to reduce hard work. Our project is developing a device with user interface & with great looks & feel. The automation of sugarcane bud detection provides simplicity & convince to user. This project help to provide large amount of sugarcane bud in less period of time with little man power. In today's world our project will stand in for sugarcane plantation in agricultural field.

## 7. REFERENCES

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