

Modern Methodology for the Detection and Removal of Herbicides

G. Thamarai Selvi, M. Shanmuganathan, A. Sivabharath, S. Syed Irfan

Abstract--- It is known that the technical advancements are increasing at a faster pace. But the utilization of technologies in various sectors are very low. We commonly know that nowadays, the fruits are highly infected with herbicides. But we consume those fruits in our day-to-day lives. But because of their harmful effects, few people get highly affected, babies in particular. So we propose a system to effectively remove the herbicides present on the fruit/vegetable. Also we provide pest removal based on the amount of herbicide present on the fruit.

Keywords--- Herbicide, Removal, Detection, Pic-Microcontroller, Neural Electrode.

I. INTRODUCTION

In today's modern world, herbicide has become unavoidable product for farmers to grow fruits and vegetables without being affected by the pests. But those herbicides which are used to kill the pest also affects the human being who consumes it. Person who undertakes the fruit or vegetable which is sprayed with the harmful herbicides will be affected from various diseases such as digestive problems, vomiting headache, etc.. In some cases may lead to cancer. Hence we have to provide the present and future generations an herbicide-free food products. Glyphosate is a commonly used herbicide which carries some risks of Eco toxicity and has been shown.

II. EXISTING SYSTEM

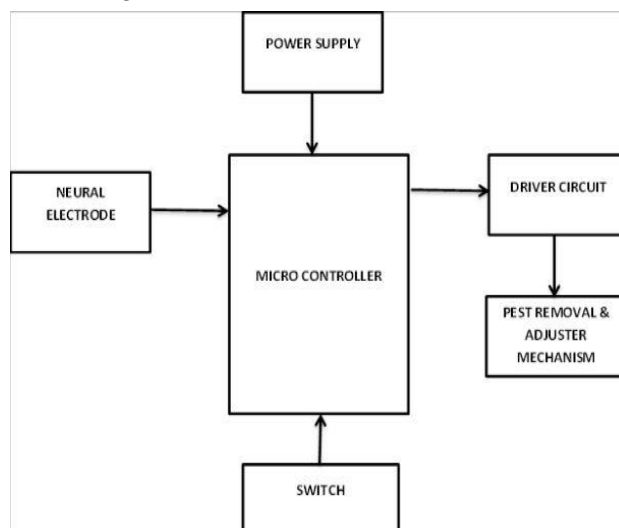
In this system, they are just viewing the amount of pest available on the fruits. But this only provides an indication about the amount of pest present on the fruit. But the removal is done physically. This causes a drawback of this system.

III. PROPOSED SYSTEM

In the proposed system, we are overcoming the major drawback from the existing system. In our system we are using the neural electrode to detect the amount of pest in the fruit and the details will be sent to the microcontroller. And if the pest presence is identified then the microcontroller will give the command to the pest removal and adjuster mechanism to eliminate the pest present in the fruit all the

details are sent to the microcontroller. Now by this mechanism we are able to detect and eliminate the presence of pest from the fruit.

Block Diagram



Microcontroller

The term PIC, or Peripheral Interface Controller, is the name given by Microchip Technologies to its single – chip microcontrollers.

PIC micros have grown to become the most widely used microcontrollers in the 8-bit microcontroller segment.

The PIC16F877A CMOS FLASH-based 8-bit microcontroller is upward compatible with the PIC16C5x, PIC12Cxxx and PIC16C7x devices.

It features 200 ns instruction execution, 256 bytes of EEPROM data memory, self programming, an ICD, 2 Comparators, 8 channels of 10-bit Analog-to-Digital (A/D) converter, 2 capture/compare/PWM functions, a synchronous serial port that can be configured as either 3-wire SPI or 2-wire I2C bus, a USART, and a Parallel Slave Port.

Special Microcontroller Features

- Flash Memory: 14.3 Kbytes (8192 words)
- Data SRAM: 368 bytes
- Data EEPROM: 256 bytes
- Self-reprogrammable under software control
- In-Circuit Serial Programming via two pins (5V)

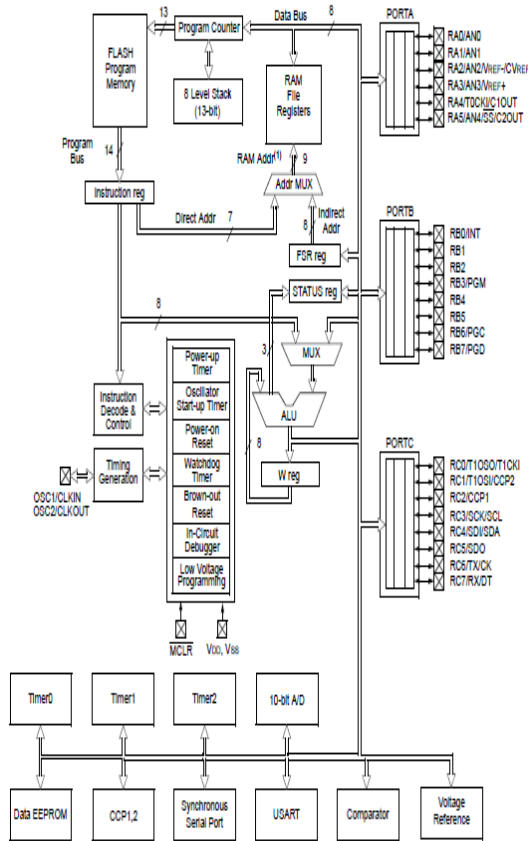
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The internal block diagram of PIC16F877 is shown in the figure. It contains 4-banks of register files such as Bank 0, Bank 1, Bank 2 and Bank 3 from 00h-07h, 80h-FFh, 100h-17Fh and 180h-1FFh respectively. And it is also having program FLASH memory, Data memory and Data EEPROM of 8K, 368 and 256 Bytes respectively. A PIC is made of several “ports.” Each port is designated with a letter, RB0-RB7 are a port. RC0-RC7 and RD0-RD7 are a port as well. RA0-RA5 and RE0-RE2 are also ports, but with fewer pins. Some of these pins have special purposes, but most can be used as basic input/output pins.

For example, you can set pin RB0 to be either an input pin, or an output pin. As an input pin, the digital voltage on the pin can be read in. For example, if RB0 is connected to ground (0v), then you would read a digital 0. If RB0 was connected to power (5v), then you would read a digital 1.

On the other hand, if you wanted to set RBO as an output pin, you could choose to make RB0 either be 5v, or 0v. This can be used, for example, to turn off or on a LED, or to turn off or on a motor.

Register File

The term register file in PIC terminology used to denote the locations than an instruction can access via an address. The register file consists of two components, they are

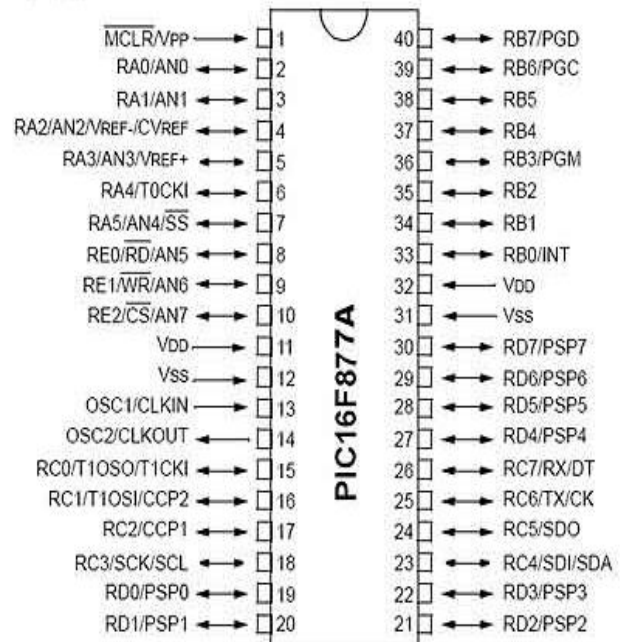
1. General purpose register file
2. Special purpose register file

General Purpose Register File

The general-purpose register file is another name for the microcontrollers RAM. Data can be written to each 8-bit location, updated and retrieved any number of times. All control registers are coming under the general purpose register file.

Special Purpose Register File

The special purpose register file contains input and output ports as well as the control registers used to establish each bit of port as either an input or output. It contains registers that provide the data input and data output to the variety of resources on the chip, such as the timers, the serial ports and the analog-to-digital converter.



Pin Configuration and Description

Neural Electrode

The Neural Electrode design is based on Implanted cardiac pacemakers since 1950 and in neural stimulation and recording. It is also used in finding the corrosion resistance of metals, polymer degradation and estimating the chemical toxicity.



Electrode Designs

- Cochlear electrode array
- Stimulation and recording
- Platinum or PtIr
- 16 electrode sites



Peripheral Features

Synchronous Serial Port with two modes:

- SPI Master
- I2C Master and Slave
- USART/SCI with 9-bit address detection
- Parallel Slave Port (PSP)
- 8 bits wide with external RD, WR and CS controls
- Brown-out detection circuitry for Brown-Out Reset

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IV. CONCLUSION

All the existing methods only detect the amount of herbicide present in the crops. But our work deals with the detection and removal of the herbicides. We are planning on developing the idea in an industrial level.

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