

Solution for Pesticide Monitoring in Food Materials

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Abstract:

The major increase in demand for firm and quality of any food material is the most obvious factor which is trending in recent years. The vital component for agriculture has become a prominent problem in the food .In the intensive production, usage of pesticide has increased rapidly more than the prescribed level. Because of this much higher content, will affect human health with short-term to chronic disease. To overcome these effects in human pesticide monitoring is an essential one. This device used for two purposes for pesticide level monitoring and to determine the condition of the food also.

Keywords — **quality, intensive production, chronic, monitoring**

I. INTRODUCTION

Over more than a decade, usage of pesticide in the productivity of agricultural products has been increased. The pesticide usage evolved to control the pests in field and to avoid the spread of diseases in crops. As there are two sides of a coin, even though the productivity of crops is increased, the excessive usage has decreased the fertility of the soil, caused effect from small infection to chronic disease. The level of the pesticide place a major role for all these effects. By monitoring the level, these causing effects can be avoided.

II. EXISTING METHOD

In major countries the existing one is a chemical experimentation of checking each chemical component level present in pesticide. There are various processing stages to find the level of each components of pesticide. Before the processing level, there are pre-treatment process to undergo.

To overcome this various discussions were made and different ideas was rejected for enormous

Reasons. Then came existence of device to determine the value of pesticide done with number of sensors as sensor based device was evolving vigorously. Minimizing the usage of pesticide was the ultimate aim of the major countries. So there came the existence of biosensors to detect the values.

A. Cons

The process is time consuming so the steps to reduce the level of usage is being delayed. It is not cost effective where the users find it inconvenient to buy. Complex method for the users to understand the process. As it is a chemical process it must be handled with care.

III. PROPOSED METHOD

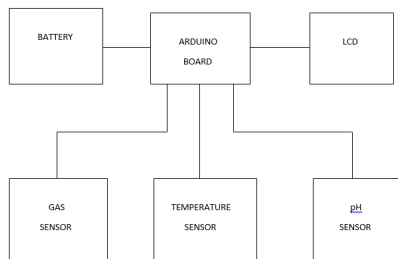
The major principle lies on the sensor only. Sensor play their role in determining certain value. Temperature of the surrounding area is calculated. The gas value is noted to know the state of the sample. pH value plays a major role in examining the concentration levels.



A. Components Required

The components needed for the device is Arduino board, gas sensor, temperature sensor, pH sensor, LCD display, jumper cables, bread board, battery.

B. Block Diagram



C. Solution Preparation

Each food material is taken separately for the preparation of solution. Consider a fresh fruit or vegetable from which solution is being extracted. Separate the solution into two samples. One for reference and another for testing purpose. Add some drops of pesticide in testing solution to note the variation.

D. Working

The solution of reference is taken first to note the value which is kept aside for later use. The testing solution is tested next and made to compare with the reference value taken in the initial stage.

Connect the components as displayed in the block diagram. Now immerse the pH sensor electrode in the solution to note the result. Repeat the same for the rest of the samples ready for testing purpose.

The gas sensor is used to detect the state of the food material by the gas emitted from food. The pH sensor estimates the level of pesticide residues in the material. Temperature of the corresponding

surrounding is being analysed by temperature sensor. The above details are collected and given to the user through Arduino board which does the major part of the device.

E. Pros

The various merits of using this device are cost efficient, simple design and easy to understand its process, time and energy consumption is less.

By using this device, level as well as the state of the food material is being monitored. Due to this detecting process there may be innovation in production, quality assurance and safety of people consuming it.

F. Application

It is mainly used for industries in packaging sites, even retailers and consumers can also use this device to know the contents present is good enough to swallow or not.

G. Discussion

During the evolution of sensor based device this device would serve its best. As there are various sensor to determine various factors it does not need any separate installation of finding these factors.

There were so many devices invented in this same domain but they all are cost effective less components for the consumers and maintenance charges would exceed.

It is a simple and handy device for checking the level and state of food material that is been consumed by us play a major role in our health monitoring also.

By using this device and knowing the result is not enough. There must be restriction for usage of pesticide in fields. Proper precautionary steps should be taken from the government side. The

innovation in agriculture should be developed to reduce the usage of excess amount of pesticide.

IV. CONCLUSIONS

The industries can build a laser scanner where the samples can be scanned to determine the level by their structure. Even more miniaturization can be done if needed to examine the level of residues present. The detection of these pesticide level will emerge an innovation in agriculture productivity, quality management and health issues of the consumers.

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