

DEVELOPING ON INNOVATIVE DEVICE FOR THE QUALITATIVE DETECTION OF PESTICIDES AND HARMFUL CHEMICALS IN FRUITS, VEGETABLES FOR ECO-SYSTEM AND HEALTH.

"Fruits which seem fresh from outside can be poisonous inside"

30%
CHANCES

having chemicals in food items
in your plate



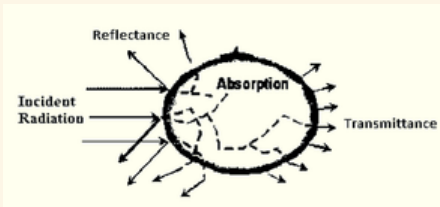
Increase consumption of pesticides and other harmful sprays in vegetables and fruits can lead to cancers, birth defects, reproductive harm immunotoxicity neurological and development toxicity and disruption of the endocrine system



A total of 16,790 samples have been analysed, out of which, 509 samples were found above maximum residue limit(MRL) as prescribed under Food Safety Standard Authority of India (FSSAI) under Ministry of Health and CODEX," the report said.

SOLUTION

The idea is to develop a portable device that helps in detecting chemical residue in fruits and vegetables in a non-destructive manner which gives results accurately and on the spot to promote ease for common people to choose vegetables and fruits that are good for them. This research focuses on determining the organic as well as inorganic components of the eatable so that the consumer may know whether the eatable is fit for consumption or not.



METHODOLOGY

• RED LED

The light from RED LED is made to incident on fruit and the reflected rays from the fruit is received by LDR

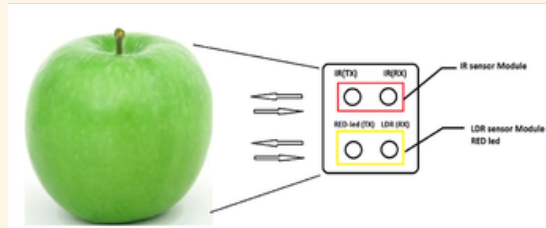
• INFRARED

The rays from transmitter are made to incident on fruit and the reflected rays from the fruit is received by receiver

• NDVI

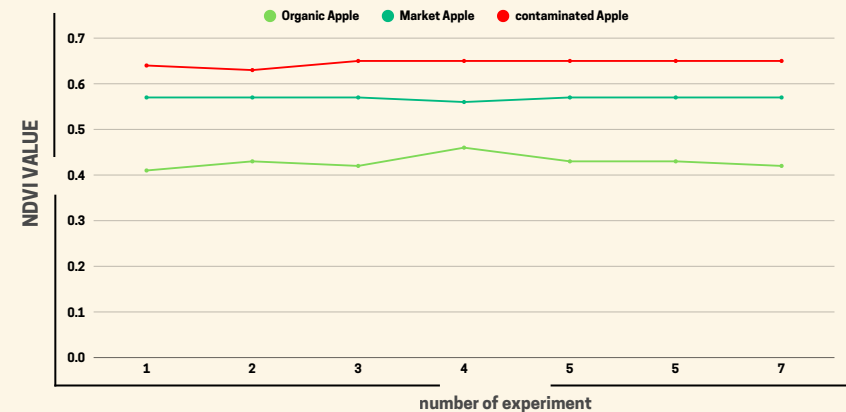
The difference between transmitted IR light by IR Receiver and RED light received by photodiode gives the ratio of organic content to inorganic content of the subject. The value is converted into NDVI by the given formula

$$NDVI = \frac{NIR - RED}{NIR + RED}$$



RESULT

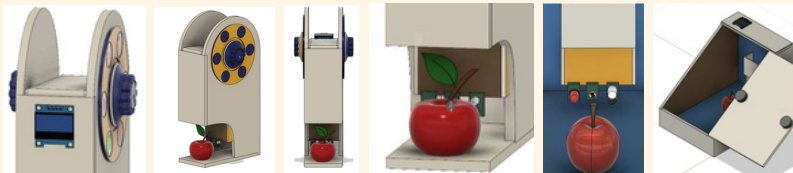
Our device can sense the fruit and indicate the level of pesticides substance in the fruit. It is user-friendly where the level of accuracy is very high. Fruits which seem fresh from outside can be decayed inside, so the inner quality of the fruits is assessed comparing the NDVI Values. Sensor Result indicate that there is a significant positive relationship between NDVI parameter and Concentration of Pesticide in Fruits and Vegetables, when tested with different samples given in below graph.



CONCLUSION

- Our Device is Cost Efficient, Easy to Use, Portable and on the spot testing with non destructive method which will then used by Consumers, Farmers, Government, and other concerned about the safety of their food supply. Additionally, it will spread awareness among the masses and help them with their day to day eatables.
- The availability of a device that can test the chemical composition of fruits and vegetables could encourage farmers to adopt safer farming practices that minimize the use of pesticides and other harmful chemicals.
- The availability of a device that can test the chemical composition of fruits and vegetables could also encourage the adoption of organic farming practices.

PROTOTYPE CAD-DESIGN



An Important Step towards maintaining a healthy life, awaring people aout the safety of the food that they consumed daily