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Malaysia has great advantages in agriculture in terms of having a good climate throughout the year. With these advantages, Malaysia stands for good opportunities to increase quality to market the produce locally and internationally.

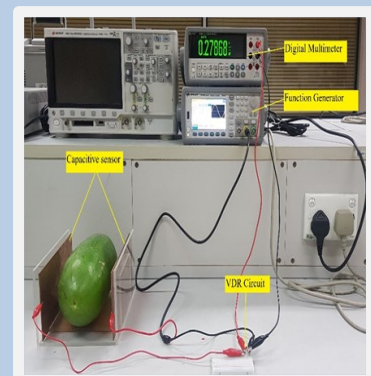
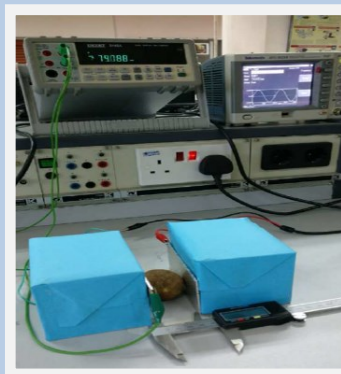
My research and innovation, named FRUITSENSE, addresses the challenge of accurately predicting fruit ripeness and sweetness using non-destructive measurement techniques in Malaysian agriculture. Traditional methods often

involve destructive sampling and subjective assessment, leading to inefficiencies in harvesting and marketing. In contrast, my approach utilises advanced methods such as spectroscopic methods like near-infrared (NIR) spectroscopy, hyperspectral imaging, and capacitive sensing techniques.

Non-destructive Techniques in Determining Malaysian Local Fruit Ripeness Level

Destructive methods in determining the Brix, pH level, firmness and water content were also carried out to correlate between destructive and non-destructive data. The results demonstrate the effectiveness of these techniques in reliably predicting fruit quality parameters without harming the fruit itself. This novel approach contributes significantly to scientific knowledge by offering a precise and efficient alternative to conventional methods. It enables farmers and distributors to make informed decisions on optimal harvest times, ensuring fruits reach consumers at peak quality, enhancing market competitiveness, and improving consumer satisfaction.

Beyond agricultural productivity, my research's societal impact includes reducing food waste and promoting sustainable agricultural practices. By minimising post-harvest losses and optimizing resource allocation, these techniques support environmental sustainability and contribute to global food security efforts. Finally, the research highlights the potential of non-destructive measurement techniques to revolutionize fruit quality assessment in agriculture, offering practical solutions with far-reaching implications for industry efficiency and sustainability.



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