

## **A Cable Shaker for Harvesting Ripe Citrus Fruit**

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### **Abstract**

The design and testing of a Tractor Powered, Fruit tree Limb Shaker (cable shaker), for the mechanical harvesting of citrus fruit is described. The design is based on a prototype developed by Aleem (1997), was not functional. Testing on orange trees containing fully mature fruit suggests that the new prototype has excellent potential for mechanical harvesting. Amplitudes ranging from 7cm to 12cm inclusive, at the standard Massey Ferguson PTO (Power Take Off) speed of 540 rpm, achieved approximately 92% fruit removal in a period of 7 to 8 seconds. For this range of amplitudes, a regression of percentage removal ( $y$ ) and stroke ( $x$ ), is represented by a quadratic relationship according to the equation:-

$$y = 173.60 - 19.77\sigma + 1.142\sigma^2$$

Optimum range of amplitude for the removal of fully mature oranges in Trinidad, was between 10.5 cm to 12.0 inclusive.