Title An automatic trimming machine for young coconut fruit

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Abstract

prototype automatic young coconut fruit trimming machine was designed, constructed, tested and evaluated. The mechanism used features a sharp inclined knife which operates in translation motion in a vertical plane to trim the fruit, which is clamped tightly and rotates about a vertical axis. Machine components include a main frame, a body-trimming station, a shoulder-trimming station, a base-cutting station, a rotary base, three fruit holders, an electrical connection slip ring, a power drive and programmable electronic control. In experiments, the untrimmed fruit was continuously fed into three separate fruit holders. These in turn conveyed the coconut through the body-trimming, shoulder-trimming and base-cutting stations. The fruit holders continuously travelled in a circle encompassing every station in sequence. Optimal settings included (a) feeding rate of 86 fruit h^{-1}, (b) 300 rpm rotation of the trimmed fruit, and (c) a shoulder knife height of 180 mm. Average loss rates were 0.35%, for the fibrous area, 2.5% for fruit damage and 14.5% for the untrimmed green area. The optimally trimmed fruit was accepted by growers and traders.