

which have been developed for manual harvest and poor farmers who cannot afford costly machines. Therefore Power tiller operated whole stick harvester prototype was designed and constructed. The designed machine consists of reversible cutting device, power transmission unit with clutch mechanism and Cane shifting device. The Maximum cutting width, Machine capacity and Traveling speed were considered as criteria for comparison of merits and demerits with existing manual method. The results showed that maximum cutting width, Machine capacity and Traveling speed were 1.2m, 0.8 ha/day and 0.75 km/hr respectively. The cost of production of the designed Sugarcane harvester was Rs.20,000.00

### 019

#### Multi-use two wheel tractor operated fertilizer applicator for Coconut cultivation

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Unfortunately, it is observed that application of comical fertilizers is low in the coconut sector partly due to high wages and scarcity of labour.

The purpose of mechanization in coconut cultivation is to produce more from existing land. Machinery is a complimentary input required to achieve higher land productivity. Additional benefits to the user may be associated with a reduction in drudgery of farm work greater leisure, or reduction of risk.

Use of manpower for the application of fertilizer is uneconomical due to high labor cost. Therefore power tiller operated fertilizer applicator for coconut cultivation was designed and constructed. This machine is not only useful to broadcast fertilizer on the soil but also to mix it with the soil close to the palm on the weeded surface.

The designed machine consists of fertilizer distribution unit and rotary unit. The Maximum spreading width in meter, Machine discharge rate in gr/min and Uniformity coefficient of spray distribution, were considered as criteria for comparison of merits and demerits. The results showed that the Maximum spreading width and Machine discharges rate were 0.7m, and 150 - 230 gr/min, respectively. The cost of production of the designed power tiller operated fertilizer applicator was Rs.10,000.00

### 020

#### Formulation of a fertilizer package for hybrid varieties of pumpkin (*Cucurbita maxima*)

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Pumpkin (*Cucurbita maxima*) is a popular low country vegetable in Sri Lanka and it has become a fundamental crop species in the farming systems of dry and intermediate zones. Introduced hybrid pumpkin varieties are becoming popular in Sri Lanka because of the higher yield. However, there is no fertilizer recommendation for hybrid pumpkin. Local farmers apply high dosages of Nitrogen(N), Phosphorus(P) and Potassium(K) levels which causes increased cost of production and reduced profit. Therefore, a field experiment was conducted to identify the effects of higher N, P and K levels on yield of hybrid pumpkin. The hybrid variety Arjuna was tested under eight different fertilizer levels where the Department of Agriculture (DOA) recommendation was taken as the control and one and half times of that was used as the higher levels of N, P and K. The experiment was arranged in a confounding design with three replicates with two blocks per each. Reproductive parameters and yield parameters viz. yield, number of fruits per vine, fruit width and diameter were recorded. The tested fertilizer levels did not show any significant effect on reproductive parameters and yield parameters of hybrid pumpkin, thus, indicating that the application of higher dosages of N, P and K is not economical. Hence, the DOA fertilizer recommendation is adequate for hybrid pumpkins though the yield is higher when compared to local pumpkin varieties.