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A Prototype Spray Lance for Tall Arecanut Palms

Spraying plant protection chemicals on the crown of tall areca palms with conventional sprayers, has an element of risk to the operator besides causing wastage of chemicals. To obtain maximum efficiency and safety to the operator, an adjustable, telescopic spray-lance which can be operated from ground for palms or tall trees up to the height of 15 meters was designed and a prototype with 4.5 meters was initially fabricated at the Research Testing and Training Centre, Vellayani, Trivandrum. The unit essentially consists of three galvanised iron pipes of 2, 1.7 and 1. 8m length having 43,35 and 22 mm diameter respectively. Pipe No. 1 (Fig. 1) fixed on wooden platform can be easily dismantled and fitted with four wheels for easy transportation. The second pipe slide into the first one and third pipe slide into the second one telescopically to adjust heights suitable for spraying at different heights. This will make the device compact for easy transportation also. The second and third pipes are pulled up with the help of three wooden pulleys, two fixed at the top of pipe No. 1 and the other on top of pipe No. 2, and 8 mm diameter nylon ropes connected to the riders I and II on pipe No. 2 and 3 respectively. In order to lift pipe No. 3 a 10 mm diameter mild steel rod was provided as the rider. Thus when the respective ropes are pulled, pipe No. 2 or 3 as required will be lifted and when the rope is released the pipes are retracted into the first pipe. For convenience, the other ends of the ropes are tied on a hook provided on the platform. There are two locking bolts to fix pipe No. 2 in position before pipe No. 3 is extended. Since the pipes are overlapping into each other, the maximum height available is only 4.5m. A 12 mm diameter hose run through the three pipes and

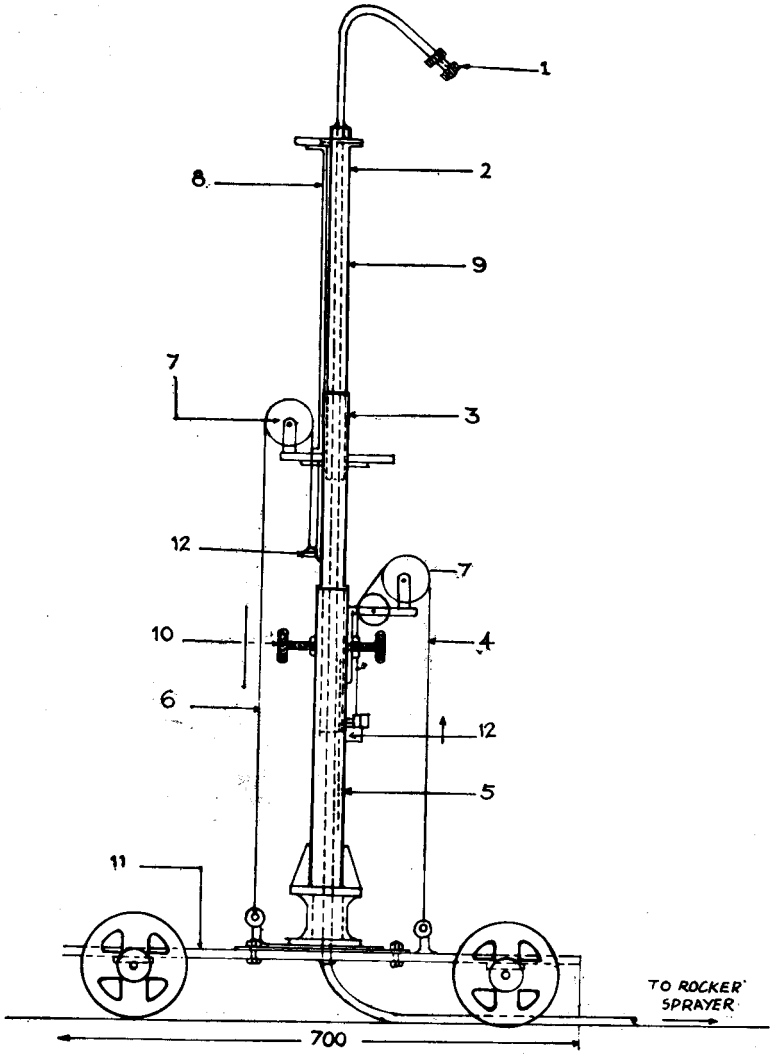

Fig. 1. Arecanut palm spraying unit (prototype)
1 Nozzle, 2 Pipe no : 3 (22∅)*, 3 Pipe no : 2 (35∅), 4 Nylon rope (8∅), 5 Pipe no 1 : (43∅), 6 Nylon rope (8∅), 7 Wooden pulley, 8 MS. rod (10∅), 9 Hose (12∅)*, 10 Locking bolt, 11 Platform, 12 Rider I & II

*Dimensions in mm.

connect on the top to a bent brass lance holding an ordinary spray nozzle (Duro Mist). The bent lance maks it possible to spray into the leaf axils of the crown directly. The other end of the hose, having a regulatory valve lever, is connected to a commonly available rocker sprayer.

The unit works on the principle of 'rope pulley system'. Force exerted by the worker can be reduced to a minimum by adopting this method. The

total weight of this device is only 32 kg which can further be reduced by using aluminium alloy pipes. Initially it is placed near the tree either by pulling the device on its wheels or by lifting it on undulated fields. By manipulating the rope, the required pipe is lifted to the desired height and the rope is tied to its hook to keep the pipe in position. The rocker pump is operated and pressure is built up in the hose and with the help of regulator lever the pesticide is sprayed into the crown. The rocker sprayer used with this unit (Chatur Rocking Sprayer, Diwane Industries, Pune) will have a capacity of 1200 ml of water per minute when tested, in accordance with ISI standard and the volumetric efficiency will be around 80%. Thus a good sprayer will maintain the pressure for a long time and continuous operation of the lever of the sprayer may not be needed.

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The unit is found suitable for spraying purpose upto a height of 4.5 meters. As wheels are provided transportation becomes easy. Only two labourers are required to operate this unit. The cost of the unit will be approximately Rs. 450/–.

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Relative Assimilation Rate (RAR) in Coconut Palms

Growth analysis is a promising experimental approach for analysing the complex character of yield for crop plants and growth characteristics are uselful indices of yield capacity (Kvet et al, 1971). While the method has been widely adopted in several crop plants (Watson, 1947; Watson and Witts, 1959; Necas, 1968; Kvet et al, 1971), such information on cultivated palms of economic importance is meagre perhaps due to large size and the resultant complexity of growth. Rees and Tinker (1963) have applied this experimental approach to determine the dry matter productivity in oil palm. Since total destructive sampling is obviously impracticable, a sub-sampling