

# IMPROVED DEVICE TO PREVENT BUCKLING OF COCONUT BUNCHES

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## ABSTRACT

The mechanical device provides effective support to coconut bunches, preventing buckling which causes drooping of the bunch and premature shedding of the nuts. The advantages, method of using the device and the economic aspects are enumerated.

## INTRODUCTION

Buckling is the partial breaking and drooping of the stalk of fruit bunch of coconut from the trunk or leaf axil. Large number and/or big sized nuts, long and less sturdy peduncle, wider angle of emergence of inflorescence and weak leaf petiole are some of the main causes for buckling of bunches. This occurs when the nuts are in the early stages of development and results in either gradual shedding of all the immature nuts or the whole bunch falling down at a time. This phenomenon is more common among the high yielding varieties and hybrids of coconut in the initial years of bearing up to 25-30 years (Fig. 1.) The loss of nuts in the hybrids TallxDwarf and Laccadive Ordinary x Gangabondam

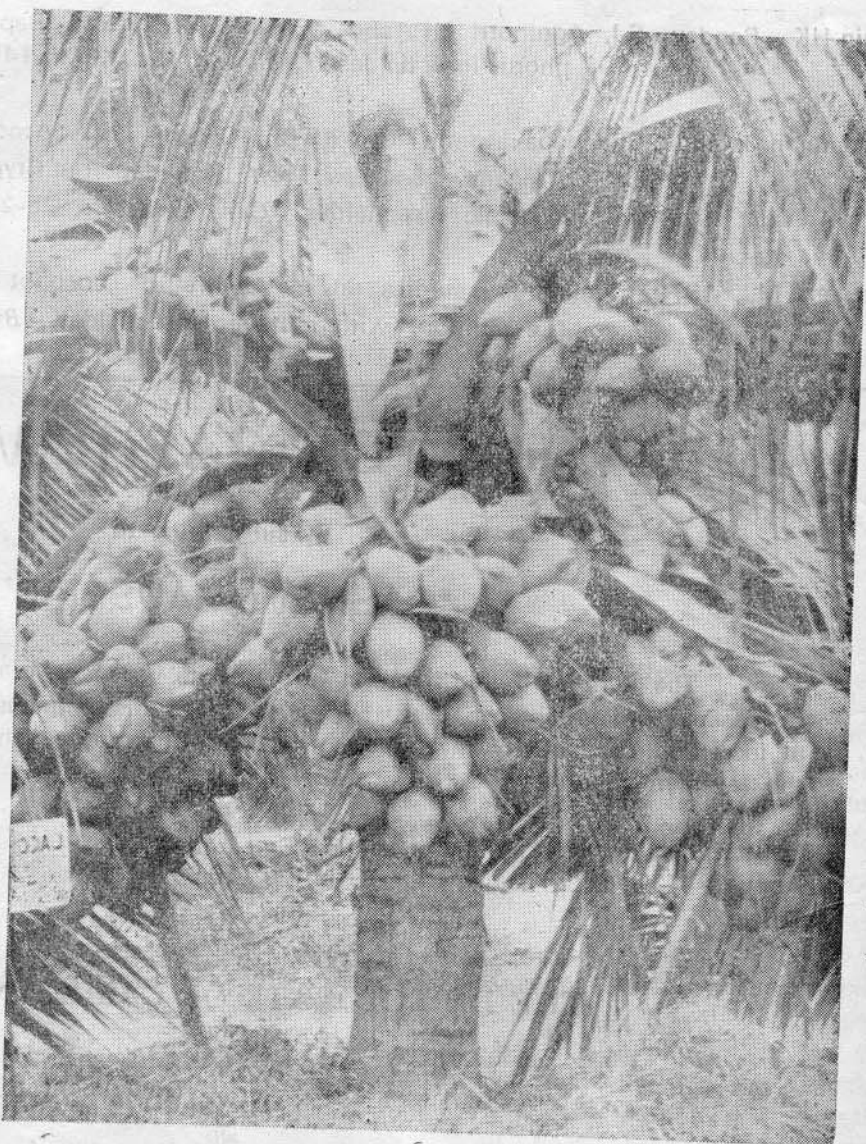


Fig. 1. Buckling of bunches in a ten year old palm (Luccadive X Gangabondam)

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Fig. 2. Conventional method of preventing buckling of coconut bunches by tying with coir rope

and the varieties like Laccadive Micro, Dwarf Orange, San Ramon etc. is quite high due to buckling.

The two traditional methods practised to prevent buckling are : [1] tying the bunch with a coir rope to the upper one or two leaf petioles (Fig.2) and [2] providing wooden/bamboo/dry leaf petiole support to the bunch from below, such that the other end of the support resting on the trunk

(Fig. 3). Tying of bunches with coir rope to upper leaf petioles may have to be repeated for a single bunch in certain cases and the operation carried out 3 to 4 times in a year on a palm to tie up all the bunches on the crown. In young palms, the leaf petioles are not strong enough to support the weight of heavy bunches resulting in bending down of these leaves and consequent

buckling of the bunches. Many a time, especially when there is strong wind, the heavy bunch falls down damaging the upper leaves to which it was tied with coir rope. For supporting the heavy bunches with wooden/bamboo/dry leaf petiole on the trunk, a notch or a small cut is made below the crown and the support is put diagonally between the trunk and the crown. Making a notch or any cut on the palm trunk especially in young age predisposes the palm to diseases and pest infestations. Sometimes the support is given without making any notch or cut on the palm trunk. In such a case slight swinging of the bunch due to wind causes the support to slip-off and the bunch buckles down ultimately resulting in premature nut fall.

#### THE DEVICE

To prevent the coconut bunches from buckling a mechanical device was developed (1) and improved later. The improved device comprises of a trunk clamp, support clamps and telescopic supporting rods.

The trunk clamp is made of 20 guage GI sheet in six different sizes viz., a) 60/65, b) 65/70, c) 70/75, d) 75/80, e) 80/85, and f) 85/90 as shown in Fig. 4A. The numbers indicate the trunk girth in cm for which the particular clamp shall be suitable in size. For example a palm having trunk girth of 60 to 65 cm just below the crown, the clamp number 60/65 can be used. The clamp is tightened to the trunk by 10 mm x 50 mm full threaded bolt and nut with the

help of a spanner. Support clamp is also made of 20 gauge GI sheet to a shape and size as shown in Fig. 4c. The support clamps can be moved to any position on the trunk clamp according to necessity. As many support rods can be fixed on trunk clamp as the number of bunches to be supported.

Telescopic supporting rods are made in two different sizes of 60/100 and 100/140 from 12.5 mm MS (mill steel) tube and 10 mm MS rod and they are painted with anticorrosion paint. The size numbers indicate minimum and maximum length of the supporting rods. For example 60/100 size supporting rod indicates that the minimum length of the rod is 60 cm and maximum 100 cm. Generally 60/100 size supporting rods meet the requirements in most of the cases but in some palms one or two bunches may be slightly higher and the supporting rod of 100/140 size may have to be used. To achieve variable heights four holes of 6 mm diameter are made 10 cm apart from each other and a 5 mm diameter pin of GI or MS wire is inserted in it for adjusting height as shown in Fig. 4B.

The device can easily be fixed on the trunk of the palm (Fig.5) either by standing on the ground (if the palm is short) or with the help of a ladder (if the palm has grown tall). After fixing trunk clamp and support clamps on the trunk, the required height of supporting rod for the bunch is adjusted. The

fork end of the supporting rod is inserted towards tail end of the bunch [about one fourth distance from the end] to support the peduncle. The rod is slightly lifted up and the other end of the rod is inserted in the support clamp hole. One man can do the whole operation.

Harvesting of matured nuts from bunches can be done without removing the supporting rod. After the nuts from a bunch are harvested the supporting rod can be taken out and used for other bunch which requires the support. As the palm grows taller the trunk clamp has to be refixed at a higher level. Before removing the trunk clamp which is already fixed another is fixed above the old clamp. The bunch already having a support is then supported with another supporting rod and support clamp fixed to the new trunk clamp. The earlier supporting rods are

transferred to the new trunk clamp, the old one can be removed and used for some other palm. This operation may be necessary only once in two years or so.

#### ECONOMIC ADVANTAGES

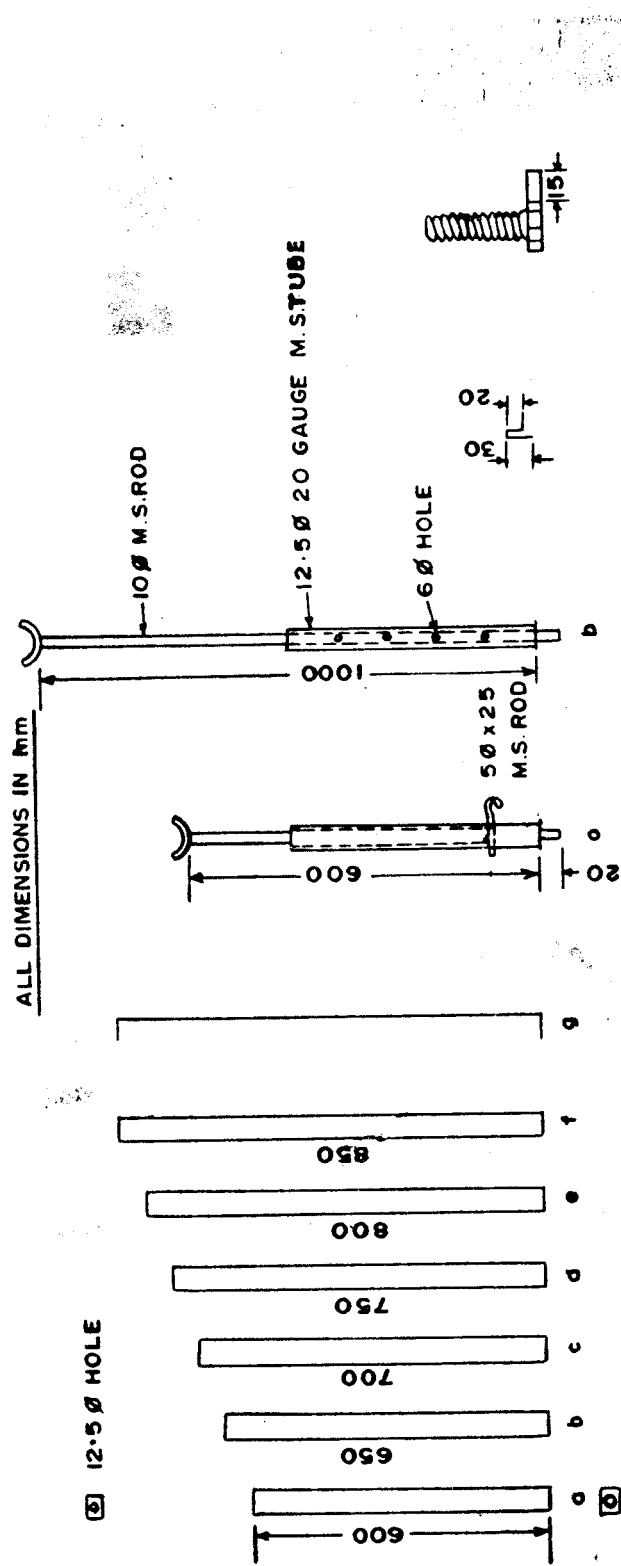
Cost of one device with four telescopic supporting rods works out to about Rs. 42/-. It can be repeatedly used for about ten years.

The device will obviate the need for frequent climbing of coconut palms for tying the bunches to prevent them from buckling. No failure had been observed during last two years of field trials on a few palms. The device is a safe and economical method of preventing buckling of coconut bunches and dropping of premature nuts from such buckled bunches. No injury is caused to the palm trunk



Fig. 3. Bamboo and dry leaf petiole supports used to prevent buckling of bunches in a 12 year old T X D palm

**FIG. 4 THE DEVICE TO PREVENT BUCKLING OF COCONUT BUNCHES**



**A. SIX SIZES OF TRUNK CLAMP**  
(20 gauge G.I. SHEET)

- a. 60/65 SIZE
- b. 65/70 "
- c. 70/75 "
- d. 75/80 "
- e. 80/85 "
- f. 85/90 "
- g. SIDE VIEW

**B. TELESCOPIC SUPPORTING ROD**

- a. 60/100 SIZE
- b. 100/140 "

**C. SUPPORT CLAMP**  
D. 10 x 63 Full threaded bolt & nut  
(20 gauge G.I. Sheet)

by making a notch or groove as required when wooden/bamboo/dry leaf petiole supports are fixed.

#### ACKNOWLEDGEMENT

The author expresses his deep sense of gratitude to Sri E. V. Nelliath Head, Division of Agronomy, Dr. N. M. Nayar, Director, Dr. R. D. Iyer, Head, Division of Genetics, Dr. E. V. V. Bhaskara Rao and Sri H. Hammed Khan, Central Plantation Crops Research Institute for their valuable suggestions about the device.



Fig. 5 The anti-buckling device supporting the bunches

#### Reference

1. Bangali Baboo. [1977] Device to prevent buckling of coconut bunches. *Invention Intelligence* 12 [11] 462-63.

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