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TOP WORKING OF UNPRODUCTIVE CASHEW TREES TO IMPROVE YIELD



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TOP WORKING OF UNPRODUCTION CASHEW TREES TO IMPROVE YIELD

Cashew, which was introduced by the Portuguese in Goa during 16th century, in order to control soil erosion, has now become an important cash crop of Goa. It is estimated that about 48,000 ha (30% of total cropped area) is under cashew plantation. The climate of Goa is ideally suited for cultivation of cashew. However the average yield of cashew per tree is as low as 1.5 kg units per annum, as against 20-30 kg nuts/tree obtained from the high yielding varieties of cashew. One of the major reasons for low yields of cashew trees in Goa is that most of the plantations have been raised from seedlings which usually are genetically heterogenous and hence variable in quality and highly erratic in yield. Raising the productivity is possible either by grubbing out the trees which are low yielding and replanting with grafts of high yielding varieties or rejuvenating the unthrifty trees by "Top working". Sentimentally, grubbing out healthy trees though it is poor yielder is not acceptable to many of the growers. Therefore "Top working" is a better solution to raise the level of productivity of cashew trees. Top working is nothing but replacing the crown of the tree with the shoots of high yielding varieties, taking advantage of the well developed root system to improve the productivity of poor yielding cashew tree which is otherwise quite healthy.

Before going for top working operation, examine critically the existing cashew trees in your plantations and mark out those trees which are poor yielders. In addition, trees yielding very small nuts and small apples may also be top worked. The trees giving less than 8 kg nuts/tree/year is a poor yielder. These trees are to be top worked. The ideal age for top working of cashew trees is below 10 years. The trees selected for top working should also be examined for stem/root borers and if found, precautionary measures should be taken to prevent death of the trees. Another important aspect is the vigour of the tree. If vigour is poor, it is to be maintained by application of fertilizers, especially nitrogen. Otherwise the sprouts coming out after coppicing will be weak and death of stumps

is more likely to occur. The high yielding trees (trees yielding more than 10 kg of nuts/tree/year) should also be marked to draw scion shoots from them for grafting. If such good yielding trees do not exist in your plantation, one should procure the scions of high yielding varieties from neighbourhood plantations or Government nurseries especially V-4 which is suitable for Goa.

Procedure :

The procedure for top working mainly include three steps.

- 1) Beheading the tree.
- 2) Grafting the shoots.
- 3) After care of top worked tree.

(I) Beheading the tree :-

After marking the trees for top working, they should be beheaded or coppiced. (See Fig. 2). Under the conditions existing in Goa, April-May are ideal months for beheading. Cut the tree at the height of 1 m with the help of axe or saw. The ideal height of beheading is 1m and if it is more than 1m, the grafted shoots are prone to wind damage and again extra care is required in removal of sprouts on the stock. Secondly, when more surface is exposed, extra protection from stem borer attack and infection is required. In case the height is less than 1.0m, the number of sprouts will be less. Hence the height of beheading should be 1.0m which is ideal.

While beheading the tree, one should see that the cut is smooth and bark does not split. Hence it is always advisable to use a saw for this purpose. All the cut limbs are likely to attract steam and root borers which is a great menace to the beheaded trees.

Soon after beheading, the cut surface should be sealed with molten wax so that the bark does not get separated from the wood stump in course of healing. It is also essential to swab the stumps with 1:2 proportion of cultar and kerosene to protect the bark from borers. Endosulfan dust (200-250 g) is also needed to be put into the soil around the stump extending to a distance of about 0.5m radius. Protection of stump is very essential to get emergence of healthy shoots from the stump. A periodic treatment at fortnightly interval

till the onset of monsoon is desirable.

(II) Grafting shoots :-

Depending upon the vigour of the stump, 20-80 new shoots emerge out from each stump within about two months period from the date of beheading. The tree beheaded in April-May will be ready for softwood grafting in July-August. Select 4-6 vigorous shoots and graft them with the scion shoots identified earlier from high yielding trees or Vengurla-4. For grafting the shoots, techniques of softwood grafting can be followed as it is quite encouraging with a success of around 90% under Goan conditions.

(III) Aftercare of Top worked trees :-

Dieback of the shoots may occur during monsoon and this can be checked by spraying either Bavistin @ 10 g/10 l. of water or Bordeaux mixture (1%) or any other fungicide at fortnightly interval. Newly emerging shoots can get damaged by insect attacks. So spraying the shoots with Nuvacron, 2ml/litre of water at tender leaf stage will help to obtain healthy normal shoots.

On securing about 5 grafts in each stump, the remaining non-grafted shoots can progressively be clipped off taking care that the bark of the stump is not exposed to the heat.

The successful grafted shoots be provided with support by tying the shoots with jute thread to avoid lodging and snapping damage by heavy winds. Care should be taken to provide shade to the stump and to prevent sunscorch either by covering with straw or by white washing with lime or Kaoline.

The trees beheaded in April-May and grafted in July-August will start yielding from next fruiting season. Grafts take two to three years to attain a sizable canopy. But the topworked trees attain a sizable canopy and start yielding in one year.

The average cost for beheading, grafting and maintaining the tree for three years comes to Rs. 60/- This includes labour charges etc. From the sale of firewood of the tree one can fetch Rs. 20/-. One can get the yield of 250g cashewnuts

during 2nd year and about 1.5 kg during third year. At the age of 10 years, the tree if grafted by high yielding variety like Vengurla-4, can give an yield of upto 20 kg nuts per tree per year, depending on canopy growth. Thus the cost of top working can be recovered during 3rd year itself with good management.

Generally, all trials have shown that trees topworked below 10 years old, have given the best results. So it is advisable to go for topworking of younger trees rather than old trees. These trees can be topworked with high yielding varieties. Forest department of Govt. of Goa has sizable area under cashew cultivation which has scope to improve the yield potential by top working. ICAR Research Complex imparts training in top working through its Krishi Vigyan Kendra. Twelve forest guards from Forest Department were trained during 1992-93 in top working technique. Forest Department has already initiated this work during 92-93 in Quepem and Sanguem taluka.

In order to popularise this technique among farmers, Krishi Vigyan Kendra conduct two demonstrations every year in farmers field. Inputs and technology are provided free to the farmers for these demonstrations.

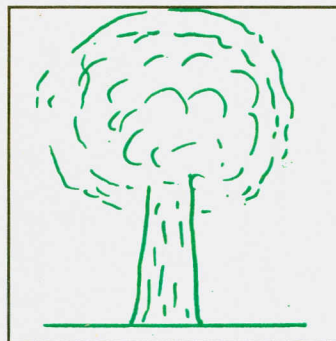
Thus there is tremendous scope for improving the yield of local cashew trees by top working. For further details about the technique, training, demonstration etc. farmers may contact or write to the Director ICAR Research Complex, Ela, Old Goa, Goa - 403 402.

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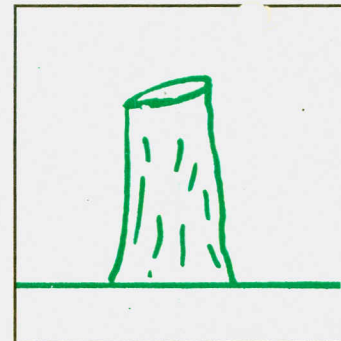
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Fig. 1



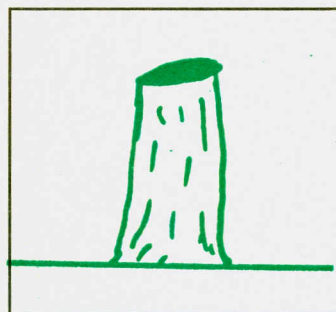
Unproductive healthy adult cashew tree.

Fig. 2



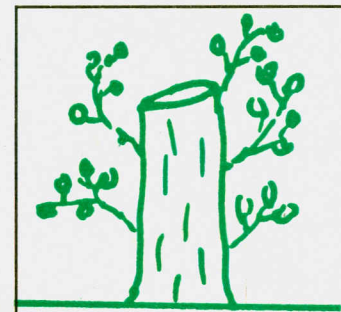
Cut the tree at the height of 1 m.

Fig. 3.



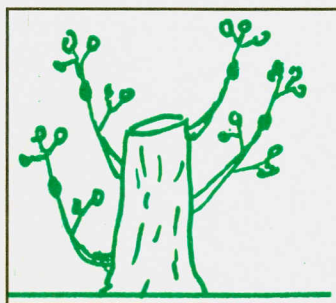
Seal the cut portion by molten wax and swab the stump with 1:2 production of coaltar & kerosene

Fig. 4



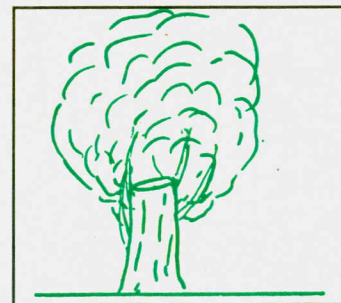
New shoots emerge within 45-60 days after stumping.

Fig. 5.



Graft 4-6 sprouts by soft wood grafting using high yielding scions.

Fig. 6



A top worked tree with high yielding canopy.