Production of Coconut *Geppe* Seedlings in Karnataka

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Coconut commonly referred to as *kalpavriksha,* the tree of heaven, occupies a major area among plantation crops in *maidan* (semi-arid) tracts of Karnataka State. Karnataka, with an area of 3.0 lakh hectares under coconut and producing 1400 million nuts, stands third both in terms of area and production in the country. The success of coconut cultivation basically depends on production and proper utilization of good quality planting material. The important steps to be followed in the production of coconut planting material in the state are the selection of seed gardens and mother palms, collection of quality seed nuts and following of recommended nursery techniques to raise quality seedlings.

The common practice in majority of the coconut growing areas in the State is to use good coconut seedlings, aged between 9 to 12 months called *molake,* as planting material. But, in the semi-arid (maidan) tracts of Karnataka, the coconut growers prefer older coconut seedlings of about three years old commonly known as *geppe* for planting in the main field. The steps involved in the production of coconut seedlings are same for both *molake* and *geppe* except for the secondary nursery technique. There is a slight variation from the common procedure in the case of raising *geppe* seedlings.

There are hardly any research findings to show the usefulness of *geppe* seedling as planting material. It is very interesting to note why coconut growers of this tract prefer three years old seedlings. The following are some of the important reasons put forth by the farmers for their preference of *geppe* seedlings over the *molake* seedlings :

(1) It is presumed that when *geppe* seedlings are used for planting, their establishment will be good in the main field. These seedlings are prone to less damage by stray animals compared to *molake* seedlings. The latter needs individual plant guard besides good fencing for the field.

(2) The *geppe* seedlings will come to bearing two years ahead of *molake* seedlings. This might be true for the simple fact that the *geppe* seedlings do complete two years of gestation period in the secondary nursery and therefore, they start bearing early in the main field.

In addition to the above advantages, there are certain negative factors to be noted in the production and use of *geppe* seedlings. While lifting the *geppe* seedlings from nursery, it has to be lifted carefully along with a ball of earth around its roots. In doing so, some good roots grown longer than half-a-foot or so are severed which hinders quick plant growth. Further, a little damage results in breakage of the ball of earth, (rhizosphere soil) which leads to the mortality of seedlings in the main field. In order to avoid this possible damage, *geppe* seedlings are generally not transported to distant places. However, if it is necessary to transport *geppe* seedlings to a long distance, then utmost care has to be taken to wrap up the ball of earth

Fig. Geppe secondary nursery

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around the seedling with a strong gunny bag so that the transit damage can be avoided to the possible extent. In high windy areas, the establishment of *geppe* seedlings is not satisfactory in spite of good staking.

Nursery Techniques for Raising Geppe Seedlings : The seed nuts are sown in a well prepared nursery bed at a depth of about 8 to 10 cms such that the husk of the seed nut is just closed below the soil surface. A spacing of about 45 cm from nut to nut and 30 cm between row to row is normally adopted. The nursery is managed properly by keeping the plot free from weeds, giving irrigation at regular intervals and timely control of pests and diseases. The nuts usually start germinating from the third month after sowing. However, only those seedlings germinated between 3rd and 5th months after sowing are marked and selected for raising secondary nursery (*Fig. 1*). When these marked seedlings attain the age of about 12 months, they are lifted from the primary nursery bed and planted in the secondary nursery. In the secondary nursery, the seedlings are planted with a plant-to-plant spacing of 3 ft in trenches of 1 foot wide and 1 foot depth. The trenches are usually 3 ft apart. The seedlings should be irrigated regularly and protected for another 24 months.

After completion of about two years in the secondary nursery, the seedlings now known as *geppe* will be ready for planting in the main field. The seedlings should be carefully lifted from the nursery along with a ball of earth of about one foot diameter so that the roots are not exposed. If it is to be transported to a considerable distance, then a gunny bag may be used to hold the soil firmly with the root system of the seedlings. The pit size for planting is usually 1x1x1 m, which is same as for *molake* seedlings. When planted in the main field, the seedlings are provided adequate support either with wooden poles or stone pillars of about 7 ft high as staking.

Cocogro : Plant Growth Hormones From Coconut Water

Cocogro is a natural product containing plant growth hormones/regulators present in coconut water or milk. It enhances and promotes plant growth and development. It also increases root proliferation, shoot development, bud formation and early flowering. Cocogro can be applied to vegetables, legumes, fruit trees, ornamental flowering plants and orchids. It is found to be more effective than synthetic growth hormones in tissue culture of orchids. Cocogro, however, is not a fertilizer substitute.

The following are the benefits gained in using cocogro :

1. Enhances plant growth and development.
2. Can replace synthetic plant growth hormones in tissue culture media;
3. Enables plants to be more efficient in nutrient uptake due to well-developed roots and rootlets;
4. Enhances water uptake due to extensive root system;
5. Increases drought resistance due to more water retention by the roots;
6. Induces early flowering; and,
7. Naturally safe and environment-friendly

How to use :

For tissue culture :
Mix 5-20 ml Cocogro per liter of tissue culture media depending on species cultivated.

For seed treatment :
Mix 10-50 ml Cocogro per liter of water depending on species of seeds. Soak seeds to swelling stage (about 5-8 hours) before planting;

For treatment of stem cuttings :
Mix 50-100 ml Cocogro per liter of water. Soak stem cutting overnight and plant in moist, sandy loam soil in misting chamber.

For spray treatment :
Mix 10 ml Cocogro per liter of water. Spray 3 times until flowering stage.

Cocogro is available at BIOTECH, UP Los Banos, Laguna, Philippines in three packages: 250 ml; 500 ml and 1 liter.

(Source : National Institute of Molecular Biology and Biotechnology, UP Los Banos, Laguna, Philippines)