

PRINCIPLES AND PRACTICES OF FERTILIZER USE IN ARECANUT

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Arecanut like any other crop requires nitrogen, phosphorus and potassium in adequate quantities and in suitable proportion for its growth and yield. Being a perennial crop, its nutrient need is continuous all over the year and also for a very long period. Unless the plant food removed by the palm from the soil is annually replenished, a decline in yield and deterioration in the nut quality are expected to occur. Soil is the natural medium of plant growth and storehouse of the nutrients. Unfortunately, most of the areca growing soils of our country are deficient either in one or more of these essential elements. This calls for a judicious fertilization of the crop with organic manures and inorganic fertilizers in order to get the optimum yield.

Fertilizers are the carriers of plant food materials. When applied to the soil they release nutrients present in them and supply the same to the standing crop. Fertilizers containing one plant nutrient are called straight carriers like ammonium sulphate, superphosphate and muriate of potash. On the other hand, sulphala and ammonium

phosphate are compound fertilizers because they carry with them more than one nutrient element. Farmers use these fertilizers with the ultimate objective of getting more return from his land.

While selecting a fertilizer, in addition to its cost and local availability, certain technical points pertaining to its reaction in the soil should not be overlooked. Ad hoc application of these synthetic carriers without any prior knowledge of the needs of the crop or the nutrient status of the soil does sometimes more harm than good. It is, therefore, desirable to get the soil examined for its physical and chemical properties on the basis of which fertilizer application should be made.

Soil test is a valuable tool in finding out the economic levels of fertilizers required by the crop to give optimum return. When a soil is deficient in nitrogen, then only there will be a crop response to the application of nitrogenous fertilizers, otherwise not. This principle holds good not only for nitrogen but also for all the nutrients. Thus, balanced fertilization of the crop is possible only

with a thorough knowledge of soil-plant relationship.

Sandy soils are poor in their ability to hold plant nutrients and so it is necessary to add nitrogenous and potassic fertilizers in split doses than in a single application. The use of nitrate carriers should be avoided in these soils and instead, ammonia containing fertilizers and urea could be used. Application of urea to soil should not be done just before rains to prevent it from leaching.

In the lateritic soils of West Coast, where areca is extensively grown, continuous application of sulphate or chloride of ammonia is not desirable since these fertilizers make the soil more acidic. It has been estimated that with the use of every 100 lb of ammonium sulphate or its chloride, 109 lb of calcium carbonate is removed from the soil. However, these two ammonia containing fertilizers could be used where liming is practised. Calcium ammonium nitrate is also an equally suitable fertilizer for these soils. The soil colloides have the capacity to retain ammonia but not the nitrate and, therefore, the latter is not suitable for open types of soils.

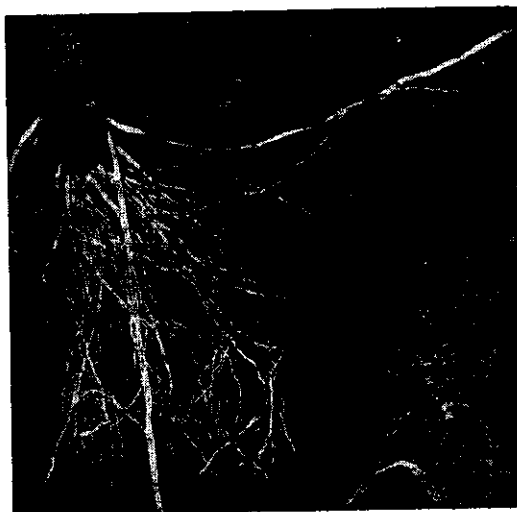
Lime is a soil amendment and it should be used with caution. Application of lime should not be made without assessing its need in the soil. Excess of lime has got some adverse effects on plant by blocking the availability of certain essential nutrients. When added in required quantities liming has a number of beneficial effects particularly in increasing the availability of phosphorus and neutralizing the toxic concentrations of certain elements in the soil. Response of lime to arecanut has been obtained from the acid soils of Malnad area. Lime also supplies the crop with calcium and magnesium which are low in

lateritic soils. For all practical purposes, liming may be practised to maintain the soil pH around 6.

Phosphorus nutrition of arecanut is a difficult task in acid lateritic soils. When water soluble phosphatic fertilizers like superphosphate and ammonium phosphate are added to the soil, the available phosphorus reverts back to unavailable form as a result of which the crop is unable to utilize it. In neutral soils there is not much problem of phosphate fixation. Where liming is not practised, rock phosphate may be used in acid soils.

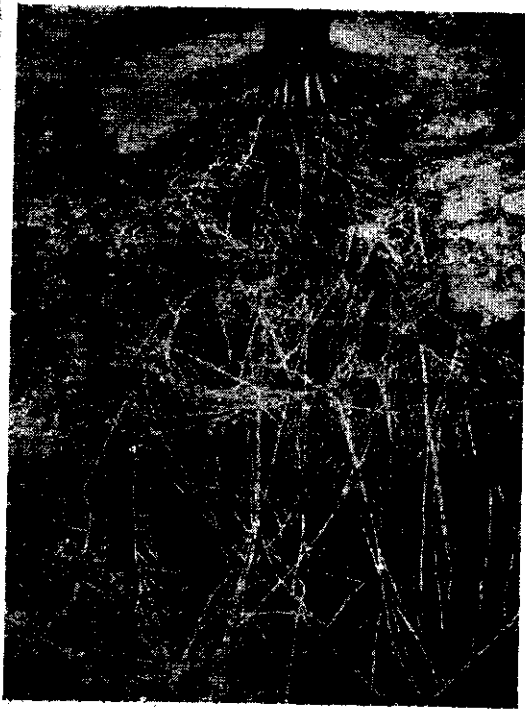
As regards the potassic fertilizers, muriate of potash is generally recommended for arecanut.

The method of fertilizer application in soil is as important as its selection. wrong placement lowers the efficiency of fertilizer



View of a sector of roots in a four year old arecanut palm

use. Basin application of fertilizers is the accepted practice in arecanut. Shallow basins are opened around the plants to which



View of a sector of roots in a 12 year old bearing arecanut palm

fertilizers and green leaf are added. It is well known that the nutrient utilization by the perennial crop is better when fertilizers

are applied to the zone of maximum root activity. Since root is the organ to absorb mineral nutrients and water, some knowledge about the rooting pattern of crop is essential. Study of areca roots and their distribution has been extensively undertaken by a number of workers of this Institute. A pre-bearing four year old plam is found to have 96 per cent of its roots spread in a zone of 50 cm. diameter around the palm. In the case of bearing palm of twelve year old, some roots travel as far as 3.5 meter from the bole and 75 per cent of the roots are confined within a radius of 100 cm. Most of the roots go as deep as 50 cm. in the soil. Based on this information it would be necessary to open basins at 50 cm. and 100 cm. radii in the case of young and yielding plams respectively to facilitate intense feeding by most of the roots. Erratic placement of fertilizers results in incomplete utilization of the nutrients applied to the soil.

Crop yield is dependent on a number of variables out of which nutrition is one. However, improper fertilization and shortage of plant nutrients in our soils are probably the foremost reasons for the present low yields of arecanut.