

Tank silt - an effective medium for enhancing coconut productivity

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Agriculture is the mainstay of the rural economy in Karnataka. Agriculture related activities support the livelihood and provide the largest share of total income to the people. Coconut is a major plantation crop in India for economic contribution and a livelihood source for millions of people. The crop is found throughout the world's tropic and subtropic areas and cultivated in around 80 countries. The crop is grown in 12.2 Million hectares of land worldwide, which constitutes about 0.7% of the world's net cropped area. Coconut palm provides food security and livelihood to large population globally, particularly in Asia Pacific Countries. India contributes about 15.46% in area and 26.3 % in terms of the production of coconut in the world. In India, coconut is cultivated in 1.97 million ha (2014-15) with a production of 20,439 million nuts with a productivity of 10,345 nuts per hectare and contributed about 15,000 crore rupees to the nation's GDP. About 12 million people of India are directly dependent on the coconut sector through cultivation, processing, and trading activities. The crop is mainly cultivated in the states of Kerala, Karnataka, Tamil Nadu and Andhra Pradesh. Among the states, Karnataka stands second in area (4.40 lakh hectares) and production (3,931 million nuts).

In Karnataka, Tumkur (32.76), Hassan (12.84), Chitradurga (11.48), Mandya (5.83), Chikkamagalur (5.22), Dakshin Kannada (4.81), Mysore (4.71), Ramnagar (4.71), Udupi (4.31) and Davangere (2.96) districts are contributing majority area of coconut cultivation. These top ten districts together contribute almost 85% among which Tumkur and Hassan districts contribute almost 45 % of the state's coconut production.

Coconut is a tropical crop and grows well in a hot climate. It adapts in almost all types of well-drained

soils, such as alluvial, red sandy loam, coastal sandy, with slightly acidic to neutral in reaction. However, soil fertility and physical properties play a significant role in coconut production. The soil parameters like drainage, soil depth, nutrients and organic carbon status are the major factors for the growth and yield of coconut in Karnataka. Root penetration and development depend mainly on soil physical properties for water uptake and fruit quality and size.

The soils in the southern dry zone of Karnataka are red gravelly mixed shallow to very deep, well-drained soils with moderate to severe erosion. Due to excess sand and fine gravels, these soils are poor in water holding capacity, organic carbon and nutrient status. Hence, soil amendments like tank silt improve the soil physical property and enhance the productivity of coconut in these regions.



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Tank silt

Tank silt is a fine soil particle transported from catchment area by surface runoff and soil erosion during the monsoon period along with crop debris and deposited as sediment in the tank water spread area. The deposited soil and crop debris will decompose over a period of time and become nutrient rich soil amendment. This silt is rich in organic matter with good physical properties. Nutrient flow in the undulated plains or watersheds; especially the leaching of soil nutrient along the water stream and accumulate in natural or manmade barriers such as tanks, ponds, ditches, lakes, and rivers well-documented phenomenon.

Many centuries ago, tanks were constructed to harvest the rain water to offset monsoons' vagaries for the irrigated agriculture. Agricultural lands form major part of the catchment areas and contribute to the tanks' rainwater storage. Intermittent and high intensity rainfall during the monsoon causes heavy surface runoff and erosion of valuable nutrient rich top soil from the surrounding agricultural lands. These soil particles along with nutrients are deposited as silt in the tanks.

Tanks serve as the most critical role of conserving the prime natural resources, like soil and water, which facilitate their multiple uses such as irrigation, flood control, groundwater recharge and other social, economic and ecosystem functions. However, the accumulation of silt in the tank adversely affect its storage capacity in the long run.

Benefits of tank silt

Application of tank silt to rainfed agricultural lands is an age-old traditional practice of South Indian farmers for filling eroded patches to sustain



land productivity. In Southern districts of Karnataka, till the recent past, it was very common that farmers maintain open compost pits in the farm and fill them alternatively with cattle yard waste and crop residues along with a layer of tank silt. The organic waste and tank silt will decompose due to alternate wetting due to rain and wind. After complete decomposition, this mixture is applied to agricultural lands before the onset of monsoon to replenish the soil nutrients, improve the soil texture and moisture retention capacity. Soil health is adversely affected by the continuous application of chemical fertilizers and the soil erosion process in dry lands. In this context renewed focus on the traditional wisdom of tank silt application and scaling up the practice will lead to better and sustained coconut production. Conservation and rehabilitation of traditional tanks by desilting is imperative for collecting and storing enough water for agriculture and the effective utilization of silt as a soil amendment in agricultural lands. The twin benefits of desiltation are augmenting water storage and improving the soil fertility of dry lands.

The efficiency of tank silt is its nutrient's potential



Improved soil physical properties

by hybridization of sandy and sandilome soils. Chemical properties indicated a decrease in soil pH and EC and increase in soil organic carbon, total and available N, P, available K and micronutrients. Higher average of crop yield and fruit quality was noticed in several part of Southern India.

Soil quality improvement through tank silt application

- Tank silt combination improves the water holding capacity of soils.
- Application of tank silt in combination with organic manure reduces the soil bulk density.
- Application of tank silt and FYM reduces the soil pH due to organic acid production during mineralization of organic materials.
- Enhancement of soil organic carbon content.
- Tank silt applied crop land is richer in soil available nitrogen, phosphorus and micro nutrients
- Application of tank silt in the soil helps retain nutrients in the soil and increases the nutrient availability to the crop.
- It is a good organic amendment for improving water-use efficiency and productivity.

Tank silt for coconut production

- Addition of tank silt to young and old coconut orchard reduce the soil erosion and increase the water infiltration rate.
- The high clay content of tank silt improves the drainage capacity of the red gravelly soils.
- Tank silt mixed with FYM, vermi compost and other



Improved the water infiltration



Enhanced yield



fertilizers ensure slow release of nutrients to the coconut.

- Tank silt, improves the soil bulk density, porosity and aeration which helps better root development of coconut tree in shallow soils.
- Improved soil texture and water holding capacity helps the coconut crop to withstand the water scarcity.
- Unavailable form phosphorus is converted to available form and easily taken up by the coconut roots.
- Clay- humus complex improve the micronutrients availability to the coconut plants and increase the nut production and quality.
- Good soil physical condition and increased biological activity improve the drought tolerances, fruiting capacity and size of coconuts.

Cost of tank silt

Cost of tank silt is only for transport, decided by distance of land from lake and fluctuation of fuel prices. The quantity of tank silt load is decided based on the number of trees or area coverage. If there are 70 trees in an acre, they may promote 70 to 100 tractor loads of tank silt and approximately spend Rs. 10000 to 15000 for each occasion. After addition of tank silt to coconut orchard, leveling and strengthening of field bund is done, which may cost another Rs. 2000 to 3000 per acre. Thus the requirement is Rs. 15000 to 18000 for one acre. Once tank silt is incorporated to main field, farmers are cultivating fodder maize, fodder sorghum, ragi and banana as coconut inter crop which is expected to improve the soil qualities and farmers livelihood.

Conclusion

Tank silt is a locally available and low-cost substitute for costly soil amendments in dry zone

IATF STARTS DISTRIBUTION OF VIRGIN COCONUT OIL TO HOSPITALS

The Inter-Agency Task Force for the Management of Emerging Infectious Diseases (IATF) has started distributing virgin coconut oil (VCO) to hospitals in the National Capital Region (NCR) to serve as an adjunct treatment for mild cases of Covid-19. Marco Reyes, president of VCO Philippines (Virgin Coconut Oil Producers and Traders Association of the Philippines) and vice-chairman of UCAP (United Coconut Association of the Philippines) has coordinated with IATF vice-chairman and Cabinet Secretary Carlo Nograles for the donation of VCO that will be distributed by the IATF to Level I hospitals in the NCR, the epicenter of Covid-19 pandemic in the country.

Reyes added that the VCO Philippines' move hopefully will be the start of the national government's strong push to promote VCO as a prophylaxis, if not an outright adjunctive cure for mild cases of Covid-19. "VCO must always be a part of every supplementation strategy for Covid-19. First, because it is completely safe. Second, because it is effective, at the least and, as of now, for mild symptoms as per DOST trials."

The DOST (Department of Science and Technology)-FNRI (Food and Nutrition Research Institute) had conducted a study which successfully showed that incorporating VCO in meals of suspected and probable Covid-19 cases in Santa Rosa City, Laguna helped in their recovery.

Meanwhile, DOST Secretary Fortunato dela Peña said the agency was still waiting for the results of the clinical trial on virgin coconut oil which it has funded. It is being done at the University of the Philippines-Philippine General Hospital (UP-PGH). "Our ongoing clinical trials for VCO for severe and moderate cases is picking up, there are more patients that have joined," dela Peña said in a recent weekly virtual Bayanihan report. He said there was a low percentage of patients that qualify to join the clinical trial because of the strict requirement for participants. "Only 28 patients passed the screening from 549 volunteers that agreed to join the clinical trial," dela Peña said.

Source: <https://www.onenews.ph>

of Karnataka. Application of tank silt is highly recommended due to its enormous benefits to the dry soils. Tank silt improve the soil texture, water holding capacity, soil organic carbon status and soil fertility in the coconut cultivated areas. Appropriate use of silt will improve the yield and quality of coconut and sustain the income of coconut farmers in the region. ■