THE DROUGHT AND SUPPORTIVE IRRIGATION FOR COCONUT

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Weather patterns in the North Western province (NWP) the home of the coconut industry, once producing high yields, has today faced a situation where a hostile climate, together with environment degradation, damage to ecosystems in the name of development and third generation coconut being taken on, have cumulatively eroded the potential of coconut as mono crop in much of this land mass amounting to around 450,0000 acres. With the changing climate, unfortunately drifting to becoming drier, the supportive input of water conservation does not appear to be able to conserve soil water to a level that would meet the coconut palms water demands which varies from 40 to 100 litres per day in the NWP. The water deficit (ie: stress) rain-free periods of 4 months or more are common, where the soil water storage in the root zone of coconut is sufficient for about 45-90 days.

Generally, a pit of 1m x 1m x 1m containing about 200 husks may store soil water for extra 30 days to meet the evaporative & transpiration demand of the coconut palm. Such increased storage of soil water could be controlled by the use of site specific agronomic practices.

It would be seen that in the context of today's weather patterns ruling for the NWP the rain-free "drought" periods of 4 months or more is becoming a regular feature. To make a difficult situation still worse the cost of all inputs, fertilizer, husk,fibre dust and labour are becoming increasingly more costly, and income from coconut fluctuates widely determined by trading conditions, supply and demand. More often than not economic pressure is catered to by the producer-holding back input which in the long run dilutes the palm's performance, and

A plantation damaged by drought

diluting the beneficial effects of expensive fertilization (50/= per palm).

Development of agronomic practices to store and conserve soil water to match the extraction by the coconut plantation and appropriate irrigation practices have to be followed in ernest or else mining of the soils water resources will take place. The use of appropriate palm densities relative to the region and a judiciously planned system of intercrops is the need of the day if maximum utilization of cultivated coconut is to be exploited for greatest productivity. it is necessary to keep coconut free of "stress" brought about by soil moisture deficiency. It is also prudent to keep intercropping from competing with coconut for soil moisture. The necessity to consider simple, cheap and appropriate drip irrigation system for coconut and intercrops have now to be considered - it would be a solution!

Although surface water does not always deliver sustainable levels of extraction, in the NWP deep ground water is available in many areas. The average yield of a deep well could be in the region of 15,000 gallons of water per day (ie. 95 1/minute), which is sufficient to drip irrigate about 15 to 20 acres of an intercropped coconut land per day at the rate of 10 gallons per palm per day.

The construction cost of a deep well of 120' to 160' deep is in the region of Rs. 60,000/= . The pumping equipment being Rs. 20,000/= and the distribution system costing Rs. 14,000/= to Rs. 16,000/= per acre, catering to the coconut stand as well as the intercropps.

The benefits from such an exercise would be 25-40% increase in coconut yield. At the current prices, on a property yielding 3000 nuts per acre the increased yield of 1200 nuts per acre is valued at Rs. 4800/=. Intercropping which increases productivity of the land could raise the income levels by 25,000/= - 40,000/= per acre - net profit depending on the choice of the intercrop. By increasing the profitability of the holding the producer could expect Rs. 45,000/= - Rs. 60,000/= as additional income per acre. Thereby the pay back period of the investment on a five acre irrigated project could be 18 months or less.

Extraction of deep water from the deep acquifers needs to be on a restorative basis. The natural under- ground fresh water is a resource that needs renewal. Over extraction for irrigation, has to be guarded against ! The coconut palm is environment friendly. The planting of intercrops need to be area specific and complementary to the coconut and the environment. The exploitation of the premium resource-the land, has to be geared to a project which will not mine the soil. The plantation will have to assure beneficial re-cycling of bio-products whilst ensuring that the soil fertility is developed and precipitation needs to be infiltrated stored, and conserved through appropriate agronomic practices.

When harsh and hostile climatic conditions are ruling, as it is today, the CRI is often blamed for not coming up with solutions to combat and protect the coconut against the devastating effects of a prolonged drought. The techniques are in place to guard against long dry spells without precipitation. Few estates practice the techniques advocated by research. the damaging effects of a prolonged drought are long-term - stretching as far as three years ahead. Appropriate technology supported by drought tolerant cultivars of coconut cannot totally overcome the crippling effects of a dry spell in excess of 90 days. Perhaps the solution is efficiently managed supplementary irrigation or could it be that the home of coconut will move southwards or into the Mahaweli command areas. If the coconut industry is to survive and be economically sound, no longer can we producers manage coconut economically if the production levels do not come up to 5000 nuts per acre per year, and over, but succumb to the devastation that comes about with prolonged dry spells. New thinking is called for and that will be coconut culture with supplementary input of irrigation in the drier and intermediate zones.

Any coconut grower requiring the guidance on the supplimentary irrigation of coconut could consult us at the Coconut Research Institute, Lunuwila (CRI), where we have developed the appropriate supplimentary irrigation systems for coconut, which are simple, efficient and suitable for agronomic and social conditions in Sri Lanka.