

# Smart Phone - Smart Irrigation

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**C**oconut palms (*Cocos nucifera*) are one of the most beautiful and useful trees with a classical appearance of tall slim trunks crowned with elegant green leaves that certainly enhance the beauty of a place. Being the livelihoods of millions of people in the developing world, through production and employment generation by associated industries, it is the most widespread and economically useful palm of the wet tropics.

The coconut palms are found throughout tropical and subtropical regions and Southern part of India's climate is more suitable for its cultivation. However for the palms to yield the best production, timely irrigation and demand-based water supply is very important. The palms require an evenly distributed rainfall of 1500-2000 mm and in areas where the water is scarce, drip irrigation is highly recommended.

In order to guarantee a sustained productivity and supplemented economic growth in the times of climatic challenges, vulnerability of soil degradation, diminishing labour force, the scenario cries out for innovation in agriculture. The economic survey of the Indian government alludes the emphasis to extract

“more crop per drop” which stress the need for contemporary technologies for obtaining maximum productivity from a single drop of water. Hence the time has come in which calls in not just an irrigation system but installation of a “smart” irrigation system.

We live in the 21<sup>st</sup> century wherein everything can be controlled and operated automatically, but there are still a few important sectors where automation hasn't been adopted in full throttle and irrigation in agriculture is one such example. Presently farmers use manually controlling measures to irrigate the land from time to time which mostly consumes more quantity of water. The modern drip irrigation system signifies the advantage of saving large quantity of water by delivering the water to the root zone or on to the soil surface through a network of valves, pipes, tubing and emitters. Hence drip irrigation is also termed as localized irrigation or micro irrigation

The “smart” irrigation system is a new technology which irrigates the palms automatically. This technology uses an android based automatic irrigation system capable of controlling irrigation electrical appliances using android application. This





uses Wi-Fi to communicate with Mobile phones. Soil moisture and temperature sensors are inserted to the farm to monitor and changes the current status of field on mobile phone. Android automatic system displays the values of the sensors continuously in an android application and on a web page and the user/farmer can control the motor pump ON/OFF from any place, while receiving an SMS alert. Irrigation scheduling could be monitored using the Android Application.

The “smart” irrigation system involves the soil moisture sensor and temperature sensor connected to a controller and the values from these sensors are sent to an android application. The variations in temperature and soil moisture are monitored and irrigation could be controlled by the system. The soil moisture sensor senses the level of moisture content present in the irrigation field and the



temperature sensor to detect the temperature of the field. Connections from the soil moisture and temperature sensor are interfaced to the system unit which receives inputs from these sensors installed in the field and generates signal for operating the water pump. The values of the soil moisture and temperature sensor will be sent to the mobile and the farmer can switch ON/OFF the motor through his mobile. A farmer on seeing the soil moisture value going below the threshold level or if the temperature exceeds the threshold level can turn on the motor through the android application installed in the mobile. This can be kept on until the levels of moisture and temperature are optimized and then turned off.

The Solar powered Smart Irrigation System with advance in Electronic and Electric Engineering is another innovation in this platform. Electricity is conserved by using cost effective solar power and grid power which can be the answer for all energy needs. It is a suitable alternative for farmers in the present state of energy crisis. It optimizes the usage of water by reducing wastage and also reduces the labour intervention for farmers.

This smart technology wipes out the over use of water in irrigation thereby reducing the water wastage especially when irrigated in large coconut farms. One of the main advantages it offers is the convenience to the farmer as the farmer can switch on/ off the system even without being physically present in the field. The system runs by itself thus saving great deal of time. The entire palms can be precisely irrigated by a single person eliminating the labour problems where the lack of labour issues is present. The irrigation can be adjusted as per the varietal need of the palms and ensure that maximum crop productivity is obtained. The weed growth in the field is reduced to an extent as this system will not irrigate unnecessarily area of the farm.

Besides the saving in monetary value of water usage, the importance for the preservation of this natural resource justifies the adoption of smart irrigation technology by coconut growers. ■