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Evaluation of soil quality under different moisture regimes in NSLBC (LBC) command and adjacent upland areas of Nalgonda district of Andhra Pradesh

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This study was conducted with an objective to identify the key indicators of soil quality and to study Soil Quality Indices (SQI) under different moisture regimes in NSLBC (LBC) of Nalgonda district of Andhra Pradesh. Soils are degrading due to several physical, chemical and biological constraints. Appropriate soil moisture regimes may help to check further soil degradation. This study was conducted in 2011 with six different soil moisture regimes of command and adjacent upland areas: command area-head reach, middle reach, tailend and upland area - having assured irrigation, protective irrigation and rainfed. Sixty soil samples, ten each from each moisture regime were collected from six different moisture regimes and were analyzed for physical, chemical and biological parameters. A standard methodology using principal component analysis (PCA) and linear scoring technique (LST) was adopted to identify the key indicators and for computation of soil quality indices. Among six moisture regimes, the soil quality index (SQI) ranged from 0.848 to0.945. The highest SQI was obtained in assured irrigation (0.945) followed by tail end (0.927) = protective irrigation (0.927), rainfed (0.897), head reach (0.889) while the lowest was under middle reach (0.848). The key indicators, which contributed considerably towards SQI, were bulk density, water holding capacity, organic carbon, dehydrogenase activity, available N, available Mn, ESP, available P, available K, pH and exchangeable Mg. On and average, the order of relative contribution of these indicators towards SQI was: bulk density (31.46%) > water holding capacity (24.96%) > available N (8.87%) > organic carbon (7.33%) > dehydrogenase activity (7.14%) > available Mn (6.98%) > pH (4.91%) > K (3.73%) > available P (3.60%) > exchangeable Mg (1.70) > ESP (1.03%).

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Extraction of bio-ethanol from apple, pineapple and banana peel: An alternative fuel source and eco-friendly

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T he conversion of corn and other food feed crops into ethanol by fermentation is a well-known and established technology. Alternative liquid fuels from various sources have been sought for many years since the cost of raw materials which can account up to 50% of the total production cost is one of the most significant factors affecting the economy. Nowadays efforts are more concentrated on using cheap and abundant raw materials such as several forms of biomass resources exist (starch or sugar crops, weeds, oils plants, agricultural, forestry and municipal wastes) but of all the commonly available household wastes, such as apple, pineapple and banana peelings, were suitable to be used as another source of producing bio-ethanol.

Bio-ethanol can be produced through several ways; saccharification, fermentation and distillation are more common. The peelings of apple, pineapple and banana were mixed with water and yeast to start the fermentation (24 hour and 48 hour) then the produced mixture went through the distillation process, where the ethanol was boiled out at 78.4/EC, to extract the ethanol out of the mixture. After the extraction of the ethanol, the amount of ethanol production was measured (%v/v) and one more method is simultaneous saccharification and fermentation for some days by co-culture of starch digesting fungus *Aspergillus niger* and non starch digesting sugar fermenter (*Saccharomyces cerevisiae*) has been found to effectively as it removes glucose, which is an inhibitor to cellulase activity, thus increasing the yield and rate of cellulose hydrolysis. So wastes from fruits that contain fermentable sugars can no longer be discarded into our environment, but should be converted to useful products like bio-ethanol that can serve as alternative energy source that is more energy-efficient and eco-friendly than the fossil fuel that is used today.

Biography

P M Jagadeesha has completed his Bachelor's degree in Horticulture from University of Horticulture Sciences Bagalkot and presently pursuing the Master's Degree in Tamil Nadu Agriculture University. Currently his research focus is on Postharvest physiology of banana fruits.

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