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WEATHER AND TEA YIELDS

Karl Nyabundi and Wyclife Agumba Oluoch

The weather during the period July to December 2015 showed little variations in rainfall and temperatures. Total rainfall in the season (1143.1mm) was slightly higher than the long term average for the same season (1071.2mm) by 6.72% (Table 2). Low soil water deficits were however recorded in July and September, as a result of the depressed rainfall during the period. Nevertheless, cumulatively, there was adequate moisture in the soil for tea cropping. Mean air temperature, soil temperature and wind speeds were well within optimum levels required for tea production. The daily sunshine hours however, were slightly limiting during the season under review with a mean of only 6.08 hours of sunshine per day. There was no frost incidents reported during the period under review, but twenty-two hail incidences with an accompanying crop loss of 153,468.19 kg made tea were reported from the West of Rift (Table 3). All counties to the East of Rift except Nyeri, recorded yield increase, compared to the same period, the previous year (Table 1). In the West of Rift, however, four out of eight counties recorded negative yields variance during the same period. Nakuru county recorded the highest decline in tea yields (-8.68%) while Tharaka Nithi county gave the highest yield increase (16.74%) compared to the same period the previous year.
EFFECTS OF DIFFERENT BAMBOO SPECIES ON SOIL PHYSICAL PROPERTIES OF A REHABILITATED WETLAND AT TIMBILIL TEA ESTATE, KERICHO, KENYA

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ABSTRACT

Wetlands are crucial ecological zones that improve water quality, wildlife habitat, capture sediments and help in nutrient cycling and floodwater storage. Bamboo is a fast growing, evergreen and perennial plant with over 1,000 species and 91 genera. A study on wetland rehabilitation using bamboo was conducted at Timbilil Tea Estate, Kericho, Kenya. A cross sectional descriptive research was conducted in a bamboo plantation comprising Bambusa vulgaris, Bambusa brandisii and Dendrocalamus hamiltonii species were used in the present study. The parameters assessed included: colony and girth diameters and their adjacent soil porosity, bulk density, infiltration and soil moisture content. Bamboo species varied significantly in culm diameter although their clump diameters were not significantly different (P < 0.05). Only porosity and the rate of infiltration were significantly (P ≤ 0.05) affected by the bamboo treatments. Further studies need to be carried out to ascertain these observations on other bamboo species.
EFFECTS OF FERTILIZER TYPES AND RATES ON NITROGEN USE EFFICIENCY, YIELD AND NITROGEN CONTENT IN TEA

Karl W. Nyabundi and Mercy C. Boiwa

ABSTRACT
Tea is a perennial cash crop providing income to farmers and employment to rural populations in many parts of the world. In Kenya, it contributes greatly to foreign exchange earnings. High levels of soil nutrients, particularly N, P, K, Ca and Mg, are requisite for sustainable tea production. NPK compound fertilizers are therefore applied to optimize production. Long term use of inorganic fertilizer in tea fields often leads to tea moribundcy. Organic manure application in tea production has been reported to be beneficial to the soil over the use of inorganic fertilizers. However, due to limited availability and inconsistency of organic manures, they are rarely used. A study was set up to investigate tea clone TRFK 6/8 response to various fertilizer types at different rates in Kangaita, Kirinyaga County. An evaluation of the nitrogen use efficiency (NUE) of a mineral compound fertilizer and a compost manure under different fertilization regimes 0, 75, 150, 225 and 300 KgN/ha/yr, was conducted. Neither fertilizer rates nor types significantly (P≤0.05) affected annual yields. However, the fertilizer types and rates interactions were significant (P≤0.05) with the compost achieving significantly higher yields than the mineral fertilizer at lower application rates. Yields tended to increase with nitrogen rates, but the NUE declined with applied nitrogen. The responses of NUE to nitrogen rates also varied with fertilizer type, with organic compost giving superior NUE result over mineral compound fertilizers. Optimal agronomic nitrogen rates will therefore depend on the fertilizer type applied. It is therefore necessary to develop fertilizer specific nitrogen use policies.
ECONOMIC EFFICIENCY OF RESOURCE USE AMONG THE SMALLHOLDER TEA PRODUCERS IN WEST OF RIFT WITH REFERENCE TO KERICHO COUNTY, KENYA

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ABSTRACT

Kenya ranks third in world tea production. Tea continues to be a major foreign exchange earner in the country with the industry employing 75% of the rural population. The sector comprise the large scale sub-sector, owned by multinationals and smallholder sub-sector, mainly owned by the local farmers. Efficiency is an important factor for productivity growth. In an economy where resources are scarce or expensive to acquire and opportunities to use new technologies are limited, there is potential possibility to raise productivity by improving efficiency without necessarily developing new technologies or increasing the resource base. The objective of this study was to investigate the economic efficiency of tea (Camellia spp.) production and identify the socio-economic determinants of economic efficiency among smallholder tea farmers in Kericho County. The study employed cross sectional data from a farm survey conducted on a sample of 200 small scale farmers. Data were analysed using descriptive statistics, stochastic frontier production and cost function models. Results indicated that the presence of economic inefficiency had effects on tea profitability. There is potential to improve economic efficiency of an average farm in the study area using existing technologies and available resource base. It is recommended that policy focuses on ways to attract and encourage young people, who are agile and aggressive, to tea farming and develop and adopt cost reduction strategies for increased farm profitability.
EVALUATION OF TEA REPLANTING METHODS
F.K.K. Kaptich\textsuperscript{1, 2}, G.K. Tuwei\textsuperscript{1} and R.H.V. Corley\textsuperscript{3}

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ABSTRACT

The two main arguments for replanting have been that replacing old seedling plantings with high-yielding modern clones would increase production without increase in land area and improve profitability, and that replanting may be considered as a method for correcting declining yields from ‘moribund’ tea. Seven different methods of replanting tea were compared. No deleterious effects of the old stand on the young tea were found. Old tea could be uprooted with a tractor winch, or removed by collar pruning; both methods gave good results, but the latter may present a disease risk. Chemical soil amendment gave no benefits, but addition of coffee pulp at the time of planting gave a significant yield increase. Progressive replanting over a 4-year period gave significantly lower yields than direct uprooting. Interplanting gave similar yields to replanting in one trial, but was significantly lower yielding in another, and therefore requires very careful management if it is to be successful. The time interval between clearing the old stand and the point when cumulative yield of the young tea overtakes that which the old stand would have given if it had been retained is critical to the financial success of replanting. This time interval was more than 10 years with the clones tested, but observations in one trial showed that it could be much less with high yielding elite clones, where current yield may exceed that of the old stand by the second year of production.
EVALUATION OF ROUNDUP WEATHER MAX FOR THE CONTROL OF WEEDS IN TEA
E. Cheramgoi, K. Nyabundi, J. Maritim and S. Tanui

ABSTRACT

Weeds may reduce yields through: competition for nutrients, moisture and light; allelopathy; acting as reservoir for pests and diseases; may taint produce lowering their quality; may impede mobility in the field reducing worker productivity; take up valuable time for their control, limiting labour for other operations. Weeds have been reported to depress tea yields by up to 21%. Roundup Weather Max (Mon 78273) is a relatively new non-selective systemic herbicide containing Potassium glyphosate salts as the active ingredients, which increases the amount of active ingredient per volume. It is reported to be effective in control of annual and perennial grasses and broadleaved weed. Trials were conducted from May 2011 to December 2014 to evaluate the herbicide Roundup WeatherMax for efficacy against weeds in tea in Timbilil Estate, Kericho County and Kangaita KTDA Farm, Kirinyaga County. WeatherMax at 1 and 2 l/ha gave significantly higher levels of weed control than the control. The performance of WeatherMax 1 l/ha was comparable to that of the two standards used. The product did not exhibit any adverse effects on growth of tea. Round Up WeatherMax can therefore be recommended for control of weeds in tea at rates of 1 l/ha using low volume applications (100 l water/ha).