INFLUENCE OF SOME TIMBER SPECIES ON GROWTH AND YEILD OF SOME CROPS IN TRADITIONAL AGROFORESTRY AT THE AHYIRESU NATURALIST CENTRE

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ABSTRACT

This study was conducted at Ahyiresu Naturalist Centre closer to Nsawam/Aburi (latitude 5°5'0'' North and longitude 0° 16' 0'' West) located within the Southern Forest Savannah Transition Zone (SSFSTZ) where conversion of original of original forest lands into agriculture especially pineapple monocrop farming is predominant.

The study conducted indicated that there were 20 field types at the Ahyiresu Naturalist Centre which were predominantly different types of Agroforests; where land preparation prior to cropping is the slash/cut and no burn (*oproka*).

Out of the 165 species encountered in the different study sites, 162 (98.2%) were found at Ahyiresu Naturalist Centre, 54 (32.1%) in the selected Pineapple Monocrop Farm and 32 (21.8%) observed in the Ahyiresu Yeboah Krom Forest (relatively Undisturbed Forest Patch). The Ahyiresu Naturalist Centre had the highest number of timber species including threatened species as compared to the relatively Undisturbed Forest Patch.

The ambient abiotic factors measured at the Ahyiresu Naturalist Ceter were comparable to that of the Undisturbed Forest Patch and were less stressful for the growth and development of crops.

On per species basis, *Laportea aestuaus* contained the highest percentage of Nitrogen Phosphorous and Potassium (NPK) followed by *Mansonia altissima* with *Terminalia ivorensis* whereas *Mallotus oppositifolius* had the least percentage NPK. However on per biomass basis, *Chromolaen odorata* had the likelihood of contributing the highest percentage of NPK compared to *Lantana camara* and *Justicia flava* which produced the least biomass.

Pineapple Monocropping eliminates all timber species as well as other flora prior to planting and have contributed immensely to devegetation and deforestation within this sensitive ecosystem.

Chemical and physical properties of soils at Ahyiresu Naturalist Centre were generally higher as compared to the Undisturbed Forest Patch except Organic Carbon within 0-15cm depth of the soil. The pineapple monocrop farm had the least soil chemical properties.

The growth parameters of crops (both vegetative and reproductive) were significantly higher as planting distance increased away from the bole of the selected tree species and may have probably been due to the high light intensity and percentage soil moisture content which increased as planting distance increased away from the bole/trunk of the tree. Crops particularly corn, pepper and egg plant did not survive in the 2m concentric ring of *Triplochiton scleroxylon* (big) and *Mansonia altissima* although there was no evidence of allelopatic effect of trees in this case. However, soil moisture content closer to the bole of these trees (*Mansonia altissima* and *Triplochiton scleroxylon* (big)) were the lowest in the 2m concentric ring and may have contributed to the non-survival of the crops closest to the trunk/bole (i.e. in the 2m concentric ring). In general, *Thieghemella heckelii* appeared to have had the most significant promontory influence on the vegetative and reproductive growth on all the crops especially on corn and cassava except cocoyam. The likely reason may be due to the high light intensity and high percentage moisture content which showed no significant variations irrespective of distance from its bole/trunk most probably because of its relative small and porous leaves.

Low light intensity appeared conducive for the growth and development of plantain and cocoyam; and it appeared it enhance the concentrations of chlorophyll and carotenoids in cocoyam leaves which could be used as leafy vegetables.

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