Indigenous soil knowledge for agricultural resilience in the Fly River delta, Papua New Guinea

Claire Docherty[1], Dr Richard Doyle[1], Ms Ire Olewale[1]
[1]*Australian Centre for International Agricultural Research*

The Fly River delta region in south-west Papua New Guinea (PNG) is home to around 17,000 people, mainly from the Kiwai language group, and is the epicentre of PNG's multiple drug resistant (MDR) Tuberculosis (TB) emergence. A plethora of factors contribute to the spread of MDR TB. Robust agricultural and food systems leading to nutritious diets are one of the key aspects to treating MDR TB. We completed preliminary research into traditional management of soil resources along with real and perceived changes in local landforms at seven Kiwai villages in the delta region. In conjunction with the traditional soil knowledge, over 100 soil samples from 15 soil profiles were collected from food gardens and landforms predicted to be experiencing changes effecting livelihoods, e.g. sedimentation and ground water incursion. Initial chemical analysis indicates a wide variation in nutrient exchangeable cations, low copper and low but variable zinc levels. The low salinity and sandy nature of the soils show they are prone to organic matter decline and nutrient ion leaching. Preliminary results show that traditional practices such as garden rotation may no longer be sufficient to address the increased temporal and spatial rate of soil degradation. The question of whether traditional systems hold the resilience needed for future food security requires further study. Over the past two decades, population increases, land use changes, and political influences have impacted on regional food security. Environmental degradation associated with river erosion and sedimentation, mine contamination and rising sea levels, have placed further stress upon the once prominent marine-based food systems and put increased pressure on limited soil based agriculture. We present interdisciplinary evidence establishing a framework for agricultural decision making based upon multiple understandings of landscapes and landscape connections in pacific communities effected by environmental change.