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Temporal Yield Stability of Coconuts to Extreme Weather Events – A Case Study

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Abstract

Climate change related weather aberrations result extreme weather events all over Sri Lanka threatening agricultural production of the country. Coconut palms are also negatively affected by changing climatic parameters on different degrees. This study provides evidence for temporal instability of coconut yield by observing the increase of coefficient of variability between palms. Study proves that climate change in low country dry intermediate zone, especially changes in first inter monsoon and south west monsoon seasonal weather parameters are influential to fluctuations of coconut production in the area. Study identified that changes in the precipitation, dry days, maximum temperature and their cumulative effect (dryness) during FIM and SWM determines the 90% of the annual yield variability. Study further identified different performers among coconut palms and quantified how far the potential yield of them can be shifted by extreme weather events. Accordingly, a severe drought can cause 70-80% yield reduction compared to the most favorable years in the same estate (the most frequent best per palm yield). Overall, our findings show that a drier climate will have a detrimental effect on coconut production. This study further illustrates the potential of data mining techniques to generate site-specific information on coconut palm response to climatic factors by adding value to existing observations. The observations made by the study support son-farm management decisions for adaptation strategies to withstand climate change.

Keywords: Climate Change, Coconut, Extreme Weather