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From Excess to Inadequate Water: some Implications of a Major El Nino Drought Developing in Papua New Guinea

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Abstract

Papua New Guinea (PNG) experiences high rainfall, with annual means from 1000 to over 9000 $^{mm}/_{year}$. The agriculture for most rural villagers takes place in locations where the rainfall is between 1800 and 3500 $^{mm}/_{year}$. The most important staple food crop is sweet potato (*Ipomoea batatas*), a crop intolerant of excessive soil moisture, particularly as tubers are initiated soon after planting. Hence many agricultural practices in PNG are orientated at removing soil moisture rather than conserving it. Occasionally there is a really major drought, of which there have been four in recorded history since the 1880s. These are associated with El Nino conditions. Another major drought and associated severe frost damage at high altitudes (2000–2800 m) has been developing since mid-2015. All indications are that this event could be as devastating as the worst of the biggest drought in recorded history, the 1997 event.

This paper gives a summary of the developing drought situation in PNG, together with its impact on crop production. Excessively dry soil conditions are reducing tuber bulking and yield, which has been exacerbated by excessive soil moisture conditions early in this El Nino year. Damage to production is being compounded by infestation with sweet potato weevil. The paper outlines the likely impact on food production and villagers' health, together with their responses to this crisis. Return of normal rainfall is usually accompanied by a flush of soil nutrients. This results in higher than normal yields for most crops, but for the staple food crop sweet potato, it may lead to yield reduction as excessive nitrogen is detrimental to optimum tuber yield. The outlook for food security in coming months is grim for many rural people in PNG, but early intervention can mitigate this prognosis.

Keywords: Drought, El Nino, food security, Papua New Guinea

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