
Studies of the Ecoclimatological Optimum of the African Migratory Locust, *Locusta migratoria migratorioides* [Abstract Only and Discussion]

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Phil. Trans. R. Soc. Lond. B 1979 **287**, 357
doi: 10.1098/rstb.1979.0067

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Studies of the ecoclimatological optimum of the African Migratory Locust, *Locusta migratoria migratorioides*

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[Abstract only]

The environment of African Migratory Locusts is a system with many feedback mechanisms, and in which many meteorological parameters are necessary to explain the population dynamics.

The desired strategy of insect control in the early stages of development (eggs, larvae) leads to studies of the relevant meteorological parameters during these stages: optimal water-balance and soil temperature. These elements vary with the general atmospheric circulation and particularly with the position of the intertropical convergence zone, involving multiple relations studied first by Farrow (1972). Moisture in the upper layers of the soil has been found particularly important, affecting the locusts not only directly but also indirectly by influencing the availability of plants as food. Soil moisture has been found to be relatively easy to measure or calculate, recently with the assistance of satellite photo-interpretation. Ecological modelling for prediction seems encouraging, and a map of the risk of realization of critical values of soil-moisture (and soil temperature) has been sketched.

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Discussion

N. D. JAGO (*C.O.P.R., London*). *Locusta migratoria capito* in Madagascar, like *Oedaleus senegalensis* in Africa, is in general involved only with rains, without the complication of the flooding which is so important for *Locusta migratoria migratorioides* in Mali. Would Dr Müller like to comment further on these problems of water-balance?

W. A. MÜLLER. Water balance is certainly a simpler problem in Madagascar, without the flooding. But there are other complications besides flooding. Evaporation and transpiration rates vary with the distribution in time of the precipitation, as well as with its amount; soil quality and rainfall rate both affect soil penetration by rain. Many feedbacks, even the varying destruction of the vegetation by the insects, will affect water balance; and land use, like man's other activities, cannot be disregarded.

[109]