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ABSTRACTS

THE POTENTIAL DISTRIBUTION OF *BACTROCERA DORSALIS*: CONSIDERING PHENOLOGY AND IRRIGATION PATTERNS

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A species in the *Bactrocera dorsalis* (Hendel) complex was detected in Kenya during 2003 and classified as *Bactrocera invadens* Drew, Tsuruta & White. Having spread rapidly throughout Africa, it threatens agriculture due to crop damage, resulting in economic losses and loss of market access. Knowledge of its potential global distribution is therefore valuable to estimate the pest risk that it poses. In a recent revision of the *B. dorsalis* complex, *B. invadens* was incorporated into the species *B. dorsalis*. The potential distribution of *B. dorsalis* has been modelled previously. However, those models were based on presence data and did not incorporate information on the seasonal phenology of *B. dorsalis*, nor on the possible influence that irrigation may have on its distribution. Bucket traps, baited with methyl eugenol, were used to collect *B. dorsalis* over a range of climates in Africa. Seasonal phenology data, measured as fly abundance throughout the year, was related to each location's climate to infer parameters for climatic growth responses. These functions were used along with African distribution records and development studies to fit the niche model for *B. dorsalis*. Independent global distribution records outside Africa were used for model validation. The areas appearing at greatest risk of invasion by *B. dorsalis* are South and Central America, Mexico, the southernmost part of the USA, parts of the Mediterranean coast, parts of Southern and Eastern

Australia and the North Island of New Zealand. Under irrigation, most of Africa and Australia appear climatically suitable.

Keywords: CLIMEX, Bactrocera invadens, Bactrocera papayae, Bactrocera philippinensis, seasonal phenology, distribution, invasion, climate, Africa