

MAPPING MAIZE (*ZEA MAYS L.*) SEASONALITY FOR CAPTURING CHANGES IN STEMBORERS OCCURRENCE

E.M. Abdel-Rahman^{a,b,*}, T. Landmann^b, R. Kyalo^b

^aInternational Centre of Insect Physiology and Ecology (icipe), P.O. Box 30772, Nairobi 00100, Kenya

^bDepartment of Agronomy, Faculty of Agriculture, University of Khartoum, Khartoum North 13314, Sudan

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ABSTRACT:

The cumulative effects of climate change and land use intensification on agricultural production are currently not sufficiently understood, especially how pests and disease and climate extremes essentially affect agricultural productivity. Recently, researchers suggested that indirect climate change effects like changing life cycle of conditions for pests and diseases significantly influence the accuracy of cause and effect models in this regard. Time-and geospatial maize cycle maps can be related to in situ maize pest and disease data. The present study is therefore aimed at mapping maize cropping systems and seasonality in Kenya in order to capture changes in stemborer pest. We utilized the newly available satellite time-series data from RapidEye and Landsat 8 sensors to map maize seasonality, cycle and acreage. Random forest classification approach was implemented to classify the images. Despite the small maize field size, the result showed that maize seasonality and cropping system can be accurately mapped and estimated (overall accuracy was about 80%). Maize fields with two cycles in a year have more stemborer infestation rate. On the other hand, fields surrounded by grass habitats that host stemborer had less stemborer infestation rate. The results of the current study could help in formulating any informed decision regarding controlling maize stemborer using various integrated pest management (IPM) protocols.

* Corresponding author. Tel: +254701215292; fax: +254208632001; E-mail: elfatihabdelrahman@gmail.com; eabdelrahman@icipe.org