Program to evaluate crop yield loss to biotic stressors and management decision rules in variable environments

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http://www.k-state.edu/pdecology/index.html

Program permanent URL: http://hdl.handle.net/2097/13786
Any updates in the future will be posted at this address.

This R program was applied in the following paper, and the conceptual framework implemented in this program was developed by this author team:

Garrett, K. A., A. Dobson, J. Kroschel, B. Natarajan, S. Orlandini, H. E. Z. Tonnang, and C. Valdivia. 2012. The effects of climate variability and the color of weather time series on agricultural diseases and pests, and decision making for their management. Agricultural and Forest Meteorology, *in press*.

If you find this code useful in your research, please use the Garrett et al. 2012 citation.

Abstract. This R program evaluates simulations of yield loss to biotic stressors. The rate of yield loss is determined by an autoregressive process with flexible parameters, so that different levels of mean rate, variation in rate, and autocorrelation in rate can be evaluated. The second part of the program evaluates the success rate of decisions for management based on observations of yield loss in past seasons or in the middle of the current season.

The program produces three figures summarizing model results by default, and includes options that can produce additional types of summaries

Files

The R script: RScriptFileCYL1.txt
This file, if in the working directory, can be read into R using the command
source('RScriptFileCYL1.txt')
This produces all the default output and may take an hour or so to run.
The functions included in the script can be run individually with different parameter values as input to explore the outcomes for different scenarios.

Information about default summary figures
This file gives more information for interpreting the default summaries

Examples of program output figures: fig1, fig2, fig3
Note that because of the stochastic components of the models, the results will be slightly different each time

Garrett et al 2012 AFM preprint
This paper gives additional information about models, model assumptions, and interpretation