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AquaCrop-OS: A tool for resilient management of land and water resources in agriculture

Timothy Foster (1), Nicholas Brozovic (2), Adrian P. Butler (3), Christopher M.U. Neale (2), Dirk Raes (4), Pasquale Steduto (5), Elias Fereres (6), and Theodore C. Hsiao (7)

(1) University of Manchester, School of Mechanical, Aerospace and Civil Engineering, Manchester, United Kingdom (timothy.foster@manchester.ac.uk), (2) Robert B. Daugherty Water for Food Global Institute, University of Nebraska, Lincoln, NE 68508, United States, (3) Department of Civil & Environmental Engineering, Imperial College, London SW7 2AZ, United Kingdom, (4) Division of Soil & Water Management, Department of Earth & Environmental Sciences, KU Leuven, Celestijnenlaan 200E, BE-3001 Heverlee, Belgium, (5) Land and Water Division, FAO, United Nations, Rome, Italy, (6) IAS-CSIC and University of Cordoba, Apartado 4084, 14080 Cordoba, Spain, (7) University of California, Davis, One Shields Avenue, Davis, CA 95616, USA

Water managers, researchers, and other decision makers worldwide are faced with the challenge of increasing food production under population growth, drought, and rising water scarcity. Crop simulation models are valuable tools in this effort, and, importantly, provide a means of quantifying rapidly crop yield response to water, climate, and field management practices. Here, we introduce a new open-source crop modelling tool called AquaCrop-OS (Foster et al., 2017), which extends the functionality of the globally used FAO AquaCrop model. Through case studies focused on groundwater-fed irrigation in the High Plains and Central Valley of California in the United States, we demonstrate how AquaCrop-OS can be used to understand the local biophysical, behavioural, and institutional drivers of water risks in agricultural production. Furthermore, we also illustrate how AquaCrop-OS can be combined effectively with hydrologic and economic models to support drought risk mitigation and decision-making around water resource management at a range of spatial and temporal scales, and highlight future plans for model development and training.

T. Foster, et al. (2017) AquaCrop-OS: An open source version of FAO's crop water productivity model. Agricultural Water Management. 181: 18-22. http://dx.doi.org/10.1016/j.agwat.2016.11.015.