

**Article title:** Effects of climate change and adaptation options on winter wheat yield under rainfed Mediterranean conditions in southern Portugal

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**Authors:** C. Yang\*, H. Fraga, W. V. Ieperen, H. Trindade and J. A. Santos

**Affiliation:** \*Centre for the Research and Technology of Agro-environmental and Biological Sciences, CITAB, Universidade de Trás-os-Montes e Alto Douro, UTAD, 5000-801, Vila Real, Portugal

**Email address of the corresponding author:** cyang@utad.pt

Online Resource 1. Characterization of physical and chemical properties of dominant soil type (Vertisol) at Beja

| Depth (cm)       | Soil texture | Sand (%) | Silt (%) | Clay (%) | $q0$ (mm) estimated by sand or clay content (Brisson et al. 2008) | Bulk density (g/cm <sup>3</sup> ) | Organic carbon (%) | Calcium Carbonate (%) | pH (H <sub>2</sub> O) | Soil hydraulic properties |                       |                   |                | $Ruisolnu$ (%) estimated by slope classes (Brisson et al. 2008) |
|------------------|--------------|----------|----------|----------|-------------------------------------------------------------------|-----------------------------------|--------------------|-----------------------|-----------------------|---------------------------|-----------------------|-------------------|----------------|-----------------------------------------------------------------|
|                  |              |          |          |          |                                                                   |                                   |                    |                       |                       | $\theta_{FC}$ (% vol)     | $\theta_{WT}$ (% vol) | $TAW_{soil}$ (mm) | $SHC$ (cm/day) |                                                                 |
| Top soil (0-30)  | Clay         | 29       | 23       | 48       | 8.1                                                               | 1.56                              | 1.2                | 0.2                   | 7.3                   | 33                        | 18                    | 122               | 3.7            | 0                                                               |
| Subsoil (30-100) |              | 27       | 28       | 45       |                                                                   | 1.60                              | 0.6                | -                     |                       | 32                        | 21                    |                   | 3.4            |                                                                 |

Note:  $q0$  is the daily evaporation threshold.  $\theta_{FC}$ ,  $\theta_{WT}$ ,  $TAW_{soil}$ ,  $SHC$  respectively denote soil water content at field capacity and wilting point, soil total available water and saturated hydraulic conductivity. Surface slope degree is estimated using GTOPO30 digital elevation model developed by U.S. Geologic Survey.  $Ruisolnu$  is a STICS parameter describing Hortonian component of runoff, derived from USDA Runoff Curve number method.