

## Description of Additional Supplementary Files

**File Name:** Supplementary Movie 1

**Description:** **Crop-specific maps of the optimal distribution of croplands shown in Fig. 1c,d.** Individual maps, and numerical crop production and area data, are available on the Open Science Framework repository (see Data Availability Statement).

**File Name:** Supplementary Movie 2

**Description:** **Agro-ecologically attainable yields of the 25 crops considered here, assuming rainfed water supply and high-input management, for current and RCP-specific future climate.** Individual maps are available on the Open Science Framework repository (see Data Availability Statement).

**File Name:** Supplementary Movie 3

**Description:** **Crop-specific maps of the optimal distribution of croplands shown in Fig. 2.** Individual maps, and numerical crop production and area data, are available on the Open Science Framework (see Data Availability Statement).