The impact of drought on the water-food nexus at the global scale

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The demand for farmland products is increasing worldwide, causing unprecedented stress on the global agricultural system and, consequently, on water resources. Here we analyse the impact of drought events on rainfed agriculture, a topical issue given the prolonged and severe drought events currently occurring around the world and thus including highly productive areas. We investigate the agricultural yields of key crops that represent 61% of the world’s production of proteins for human consumption (i.e. corn, wheat, rice, and soybeans). Our analysis spans from the early 1900s to 2022, allowing us to assess the total agricultural area under drought stress per year and the most vulnerable types of crops. We identify significant trends in the extent of agricultural land under stress, considering both historical and recent periods. This comprehensive analysis enables us to estimate the frequency of occurrences of crop-specific cultivated areas under stress over time, unravelling the pattern of drought impact on global agriculture.