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## Improving crop water use in West Africa in the context of climate change

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Africa's population is growing fast and is expected to double by 2050, meaning the food production must follow the cadence in order to meet the demand. However, one of the major challenges of agriculture in Africa is productivity (World Bank, 2009; IFRI, 2016). For instance, more than 40 million hectares of farmland were dedicated to maize in Africa in 2017 (approx. 20% of world total maize farms), but only 7.4% of the total world maize production came from the African continent (FAO, 2017). This shows the poor productivity which has its causes rooted in lack of good climate and weather information, slow technology uptake and financial support for farmers. In West Africa, where more than 70% of crop production is rain-fed, millions of farmers depend on rainfall, yet the region is one of the most vulnerable and least monitored in terms of climate change and rainfall variability. With a high uncertainty of future climate conditions in the region, one must foresee the big challenges ahead: farmers will be exposed to a lot of damages and losses leading to food insecurity resulting in famine and poverty if measures are not put in place to improve productivity. This study aims at addressing low productivity in agriculture by providing farmers with the right moment to start farming in order to improve efficiency and productivity of crop water use. By analyzing yield response to water availability of specific crops using AquaCrop, the Food and Agriculture Organization crop growth model, we investigate the crop water productivity variability throughout the rainy season and come up with recommendations that help optimize rainfall water use and maximize crop yield.