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Discrepancies between objective and subjective changes in agricultural drought. accurate agricultural drought change perception and its determinants: cross-country evidence in Kyrgyzstan, Uzbekistan, and Mongolia

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Abstract

Agricultural drought is a major threat to farmers in semi-arid and arid regions under the global warming of 1.5 °C and 2.0 °C. Meanwhile, international experience shows that individual perceptions about climate change might fundamentally deviate from objective measures. So far, little attention has been paid in the literature to understanding farmers’ accurate perceptions of agricultural drought changes and its actual changes. Insights also into the determinants of accurate perceptions of changes in agricultural drought can help policymakers pursue more targeted rural development policies. The purpose of this article is to fill this gap by analysing the discrepancy between farmers’ subjective perceptions of agricultural drought changes and actual changes, as well as the main factors influencing farmers’ accurate perceptions of agricultural drought changes.

The analysis was based on a cross-sectional dataset of 2830 observations collected in Kyrgyzstan, Uzbekistan, and Mongolia in 2021, areas in which the incidence of drought has intensified over the recent decades. The data is analysed using the NDVI index for agricultural drought changes assessment and probit model to identify its determinants. The results of the NDVI-based assessment showed that 66 percent in Kyrgyzstan, 46 percent in Uzbekistan, and 50 percent in Mongolia accurately perceived changes in agricultural drought. The results of the probit model indicated that the type of irrigation and advisory services affect the accurate agricultural drought changes perceptions in Kyrgyzstan, Uzbekistan, and Mongolia. Policymakers should consider irrigation systems in Kyrgyzstan and Uzbekistan, as well as the provision of advisory services to farmers in all countries studied.

Keywords: Agricultural drought, Kyrgyzstan, Mongolia, NDVI, risk determinants, risk perception, Uzbekistan