



A numerical analysis of the effects of Sprayable Biodegradable Polymer Membrane technology on the soil water and thermal dynamics

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A newly Sprayable Biodegradable Polymer Membrane (SBPM) technology has been developed to replace plastic films that are widely used in agriculture. The SBPM technology will increase crop productivity by conserving soil water and modifying soil temperature. Unlike plastic film, the SBPM technology is environmentally friendly. Because of the unique properties of the SBPM, measurement-backed numerical modeling is essential to support the development and application of the SBPM technology. In this presentation, we use the new capability implemented in the HYDRUS model to better understand the effects of the SBPM on soil water and thermal environment. We demonstrate the effects of the SBPM on soil water and thermal dynamics under various scenarios and the impact of surface coverage, soil property, water regime, slope inclination and azimuth, and plant shading on the performance of the SBPM technology.