Sub-surface Drip Irrigation for Enhancing Water Productivity in Maize-based Cropping System

Maize-tomato-baby corn cropping system under sub-surface drip irrigation

Developed by

Dr. P. Panigrahi | Dr. S. Pradhan | Dr. B. Behera

RELEVANCE

- High water expanse with low yield and water productivity (WP) in upland rice based cropping system.
- Sub-surface drip irrigation (SSDI) and replacing rice with maize in *kharif* and cultivation of high values vegetable in *rabi* and summer seasons would save water and enhance yield and WP.

DESCRIPTION

- SSDI (in-line system) with 0.60 m emitter spacing, 2.0 litres per hour emitter discharge, 0.8 m lateral to lateral distance and 0.15 m depth was installed and operated at 125 kPa pressure.
- The crops (sweet corn, tomato and baby corn) were grown in sequence under SSDI.
- Irrigation was scheduled at 30% depletion of available soil moisture at 30 cm depth in different crops.

BENEFITS

- SSDI saved 11–19% and 38– 44% water compared to surface drip (SD) and surface irrigation (SI), respectively.
- Yield of the crops in SSDI increased by 6–15% and 33–34% compared to SD and SI, respectively.
- SSDI enhanced WP by 19 – 34% and 103–126% compared with SD and SI, respectively.
- The annual net return and benefit-cost ratio in maize-tomato-baby corn cropping system under SSDI were ₹568371 ha^{-1} and 3.57, respectively.