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PARTICIPATORY GRAVITY-FED WATER CONVEYANCE SYSTEM FOR IRRIGATION IN HIMALAYAN FOOT HILLS

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ABSTRACT

Increasing demand of water for industrial, domestic and power sectors necessitates urgent need for development of water saving technologies to ensure accessibility of water to every field (Har khet ko pani) through following the approach – "per drop more crop" in agriculture. Efficient water management in agriculture is the major challenge to ensure sustainable food production in India. While, the situation is more aggravating in mostly rainfed type of farming in hill and mountains. Low productivity and cropping intensity, subsistence level of farming are attributed to poor water resource development in the hilly areas. To enhance the productivity and livelihood in the Himalayan foothills, a participatory gravity-fed Irrigation System has been developed with major emphasis on the participation of beneficiary farmers in all activities, starting from surveying, planning, implementation, monitoring and operation of the system. In this endeavor, 1830 m GI pipeline (100 mm ϕ) from source to Distribution Tank (DT) as a water conveyance and 1500 m PVC pipeline (110 mm ϕ) as a water distribution are laid out in the command area (26.28 ha) in the adopted villages – Pasauli and Devthala. The conveyance efficiency was recorded > 95 % with design discharge at remotest riser in the command area. Productivity of major crops increased by 48% with enhanced cropping intensity by 29% due to the intervening crop of Toria in between Maize-Wheat sequence. Cultivation of Rabi wheat on fallow land resulted increased additional net income of Rs. 17500/- ha. Availability of fodder increased by 350% resulted in increased milk productivity by 97% due to introduction of hybrid Napier grass on field bunds and higher productivity of fodder sorghum and Berseem. This has also reduced dependency on forest for fodder by 60%. Additional regular employment generated to the tune of 65 mandays per ha per annum.