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Abstract: Soil erosion coupled with productivity decline is considered a major constraint to sustainable vegetable production in Southeast Asian steeplands, yet soil conservation technologies acceptable to vegetable growers have not been developed. Effectiveness of high-value contour hedgerows species [(Asparagus (*Asparagus officinalis* L.), pineapple (*Ananas comosus* (L.) Merr.), pigeon peas (*Cajanus cajan* (L.) Millsp.), lemon grass (*Cymbopogon flexuosus* (Nees ex Steud.) Wats.), and tea (*Camellia sinensis* (L.) O. Kuntze)] on control of steepland erosion was evaluated in a replicated researcher-managed field experiment, and 12 farmer-managed erosion-runoff plots from 1995 to 1998 across the landscape of the Manupali watershed in Mindanao, the Philippines. Annual soil loss from 42% slopes with superimposed researcher-managed high-value contour hedgerows treatment (45.4 Mg ha^{-1}) was lower by 30% compared to the conventional practice of up-and-down cultivation (65.3 Mg ha^{-1}). Annual soil loss measured in farmers' plots ranged from 1.4 Mg ha^{-1} to 52.5 Mg ha^{-1} on slopes ranging from 16 to 65%. Soil pH, organic C, total-N, and P downslope were greater by 7, 28, 13, and 10%, respectively, compared to upslope. Total-N, organic C, soil pH, Mg, and K measured at the end of the experiment in the researcher-managed contour hedgerows plots were lower by 45, 20, 30, 53, and 70%, respectively, compared to initial values. The Erosion-Productivity Impact Calculator (EPIC) model was used to assess the effects of annual cropping sequences under a contour hedgerow system on slopes ranging from 15 to 65%. The cabbage (*Brassica oleracea* var. *capitata* L.)-tomato (*Lycopersicon esculentum* Mill.)-cabbage sequence (the first crop planted in January) resulted in an average simulated annual soil loss of 28.1 Mg ha^{-1}across slope ranging from 15 to 65%, whereas tomato-cabbage-tomato resulted in an annual simulated soil loss of 98.3 Mg ha^{-1}. The cropping sequence of tomato-cabbage-tomato lost 3.0 Mg ha^{-1} more soil at 15% slope than did the cabbage-tomato-cabbage sequence, while at 65% slope, the tomato-cabbage-tomato sequence lost 181.2 Mg ha^{-1} more than the other sequence. On average, two-thirds of the total soil loss occurred during September–December. In order to reduce soil loss and increase productivity in steep sloping lands, high-value contour hedgerows with sequential cropping sequences that include either corn (*Zea mays* L.) or cabbage rather than tomato during the most erosive period of the year and variable fertility management strategies along the slope positions are suggested. The coincidence of predicted to actual soil loss from farmer-managed plots, based largely upon model development from researcher-managed plots, and the acute awareness instilled amongst farmer cooperators of the magnitude of soil loss, strengthen the argument for farmer participatory research.

Author Keywords: Soil erosion; Cropping sequences; Contour hedgerows; EPIC model; Steepland; Farmer participatory research