

Water Erosion Hazard Table for Irrigation

Version 1.2

Kw – Susceptibility of bare, cultivated soil to detach and transport by water. (Kw reflects surface soil fragments). Properties are texture, organic matter, size and stability of structural aggregates in the exposed layer, permeability and depth to a slowly permeable layer.

Soils are rated nonirrigable by slope if the sum of their Kw x slope is >2 ^{1/} and conventionally tilled or their sum of the Kw x slope is > 2.5 utilizing a no-till cropping system or perennial cover.^{2/}

Kw factor	Maximum Slope ^{3/} Conventional Tillage	Maximum Slope ^{3/} No-Till Cropping/ Perennial Cover	Texture
Kw = .15	13%	17%	S, FS, LCOS
Kw = .17	12%	15%	LS, LFS, COSL
Kw = .20	10%	13%	LVFS, FSL, SL (MOLLIC)
Kw = .24	8%	10%	LVFS, FSL, SL (NONMOLLIC) L, CL, SCL, (MOLLIC >3% OM)
Kw = .28	7%	9%	LVFS, FSL, SL (TILL) VFSL, SIL, SICL (MOLLIC>3%OM) C, SIC (MOLLIC <50%CLAY)
Kw = .32	6%	8%	L, CL, SCL, (SLOW, MOLLIC) L, CL, SCL (NONMOLLIC) VFSL, SIL, SICL (MOLLIC <3% OM) C, SIC (NONMOLLIC <50% CLAY)
Kw = .37	5%	7%	L, CL, SCL (SLOW, NONMOLLIC) VFSL, SIL, SICL (NONMOLLIC) VFSL, SIL, SICL (SLOW MOLLIC) C, SIC (>50% CLAY)

Kw factor	Maximum Slope Conventional Tillage	Maximum Slope No-Till Cropping/ Perennial Cover	Texture
Kw = .43	5%	6%	VFSL, SIL, SICL (SLOW NONMOLLIC)

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- ^{1/} Kw x slope >2 formula is used for calculating water erosion hazards in published soil surveys. Currently, the calculation resides in a NASIS report and is being used by several states including North Dakota and Montana.
- ^{2/} Where tillage or polymeric compounds are proven effective technologies used to reduce erosion, irrigation of slopes greater than those shown in the table for conventional tillage could potentially be irrigated.
- ^{3/} Soils with slopes greater than the water erosion hazard table allows should not exceed 20% of the irrigated area. If these soils exceed 20% of the irrigated area, a qualified Soil Scientist should be consulted.