SUITABILITY OF WATER FOR IRRIGATION

Quality of irrigation water

The suitability of irrigation water is mainly depends on the amounts and type of salts present in water. The main soluble constituents are calcium, magnesium, sodium as cations and chloride, sulphate, biocarbonate as anions. The other ions are present in minute quantities are boron, selenium, molybdenum and fluorine which are harmful to animals fed on plants grown with excess concentration of these ions.

Quality of irrigation is judged with three parameters:

Total salt concentration

1. Sodium Adsorption ratio water
2. Boron content

Total salt concentration

Salt concentration of irrigation water is measured as electrical conductivity (EC). Conventionally, water containing total dissolved salts to the extent of more than 1.5 m mhos/cm has been classified as saline. Saline waters are those which have sodium chloride as the predominant salt.

Classification of irrigation water based on total salt content

Class	EC (ds/m)	Quality characterisation	Soils for which suitable
C1	<1.5	Normal waters	All soils
C2	1.5 – 3	Low salinity waters	Light and medium textured soils
C3	3 – 5	Medium salinity waters	Light and medium textured soils for semi – tolerant crops
C4	5 – 10	Saline waters	Light and medium textured soils for tolerant crops
C5	> 10	High salinity waters	Not suitable

Sodium Adsorption ratio

Sodium Adsorption ratio (SAR) and residual sodium carbonate (RSC) are also the main criterion to determine the quality of irrigation water.

Boron content

Irrigation water which contains more than 3 ppm boron is harmful to crops, especially on light soils.

Classification of irrigation water based on boron content

Class	Boron (ppm)	Characterisation	Soils suitable
B1	3	Normal waters	All soils
B2	3 – 4	Low boron waters	Clay soils and medium textured soils
B3	4 – 5	Medium boron waters	Heavy textured soils
B4	5 – 10	Boron waters	Heavy textured soils
B5	> 10	High boron waters	Not suitable

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