Part 5

Leaching Volumes and the Water Balance

IN this article, ANTHONY FOX and JEANETTE CHAPMAN outline how leaching volumes are estimated and incorporated into the water balance.

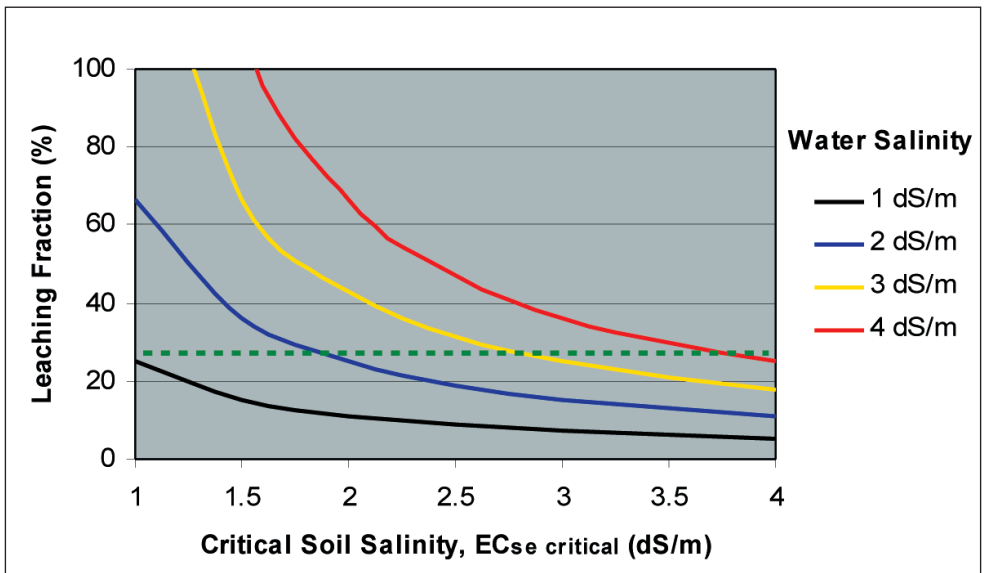

Figure 1: Leaching fraction for different critical crop root zone salinity and water salinity. **Source: ICMS, Rural Solutions SA.**

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The Alliance for Sustainable Horticulture
The HortEx Alliance builds partnerships between private enterprise, government and grower associations for skills development in production, business management and marketing.

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Estimating MLV

Good drainage is essential, especially when a higher leaching volume is needed.

SOIL salinity will concentrate with increasing depth down crop root zones in reasonably predictable ways if irrigation depths and water salinity are constant throughout the season. For a given source of water, the leaching requirement to maintain a desired crop yield is estimated from the average water salinity and the critical crop soil salinity, as follows:

$$LR = \frac{EC_{AW}}{[(5 \times EC_{e\ critical}) - EC_{AW}]}$$

Where: LR = leaching requirement (no units)
EC_{AW} = average salinity of applied water (dS/m)
$EC_{e\ critical}$ = critical salinity tolerance of the crop (dS/m)

Smaller leaching requirements occur at low-water salinity and high-crop threshold tolerance level of root zone salinity.

If the salinity of the applied irrigation water is higher than the crop threshold tolerance level, root zone salinity will be limited by water quality and some crop damage is likely.

Leaching requirement of at least 25 per cent is needed to maintain root zone salinity around that of the irrigation water salinity (shown by the green dotted line Figure 1).

This level of leaching is uneconomic.