

Water for Profit

ENSURING AN ACCEPTABLE LEVEL OF SALTS IN THE CROP ROOT ZONE



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All water contains some salts. When water is taken up by crops, much of the salt is left behind in the root zone. If this salt is not removed, then the salt concentration in the root zone will build up and affect crop growth and production.

Introduction

To prevent crop damage, the salt in the root zone must be removed by leaching (i.e. flushing) with either natural rainfall or irrigation. During periods of little rainfall, or in farming systems where infiltration from rainfall is excluded (e.g. under plastic mulch), additional irrigation may be needed to maintain the soil salinity below a salt level which impacts on the crop. In these cases, the amount of additional irrigation needed can be estimated if the irrigation water quality is known.

Effect of irrigation water quality

In high rainfall areas or where low salt irrigation water is used, rainfall is often sufficient to ensure that salts do not build up to toxic levels in the crop root zone. However, in low rainfall areas or where high salt water is used for irrigation, there is a need to periodically leach salts built-up in the root zone using additional irrigation water. In general, the higher the concentration of salts in the irrigation, the more water that needs to be applied to leach the excess salt out of the root zone. This additional water is called the leaching requirement.

Identifying the additional water required for leaching

Step 1: For your crop, identify the tolerance EC_{se} level required in the crop root zone before the salts start to affect yields (Figure 1).

Step 2: Measure the electrical conductivity of your irrigation water (EC_w). If there is no effective rainfall during the growing season use this value, otherwise calculate the weighted EC based on the effective rainfall and the total irrigation water applied during the season.

Step 3: For your crop tolerance threshold and EC_w values, use Figure 1 to identify the additional water required to ensure adequate leaching.

The additional water will reduce your efficiency of irrigation application but can be applied either with each irrigation event or as larger applications routinely applied throughout the season.

For example: if you were growing capsicums using water with an EC_w of 1.25 dS/m, you would need to apply approximately 10-15 per cent more water on average than the crop requirements to ensure that the salt in the root zone did not build up to a level which would affect the crop growth and production.

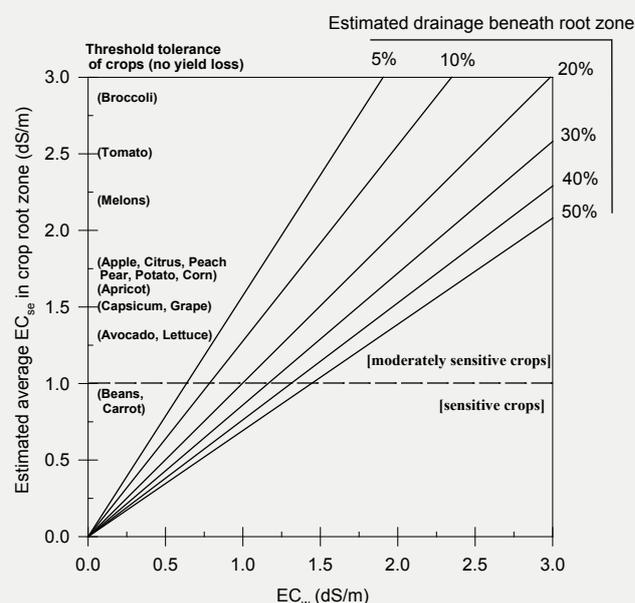


Figure 1: Additional water needed to ensure that salts do not build up in root zone

Note: This information is provided only as a general guide. Growers using poor quality irrigation water should ensure that they routinely monitor salt levels within their crop root zone to ensure that adequate leaching is occurring and seek professional advice.

For more details contact Growcom on 07 3620 3844.

Disclaimer: This information is provided as a reference tool only. Seek professional advice for irrigation specifics.

A Growcom project conducted in collaboration with the Queensland Department of Agriculture, Fisheries and Forestry and the National Centre for Engineering in Agriculture with funding provided by the Queensland Government's Rural Water Use Efficiency Initiative.



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