

WATER EFFICIENCY

Terry Heiler, Ceo, Inz

There are few regional plans that do not propose standards for “irrigation efficiency” that will be applied to resource applications for irrigation water use. Unfortunately, the authors of the regional plans are often confused about what they actually mean, and more importantly, what this means at the farm level.

The term is important however, and can be used to clarify common understandings in debates over sustainable water use.

This session will describe useful resource use and irrigation efficiency terms that are useful in the New Zealand context.

Water Resource Utilization Efficiency is seldom seen in the debates, but it is important. It describes the efficiency with which the available and allocable water resource can be captured for use by various development scenarios – very relevant given the Canterbury Water Management proposals.

Water Resource Capture Efficiency describes the efficiency of capture at point of take. This allows technical arrangements to be compared and puts the fish screening requirements into perspective.

Conveyance Efficiency allows different methods of getting water from source to site to be compared – for example pipes versus open channels. It opens up the opportunity to consider investments in water savings, as recently undertaken in the Ashburton Lyndhurst Scheme.

The regional council definitions are pretty narrow – their definition of irrigation efficiency is applied to the method of getting the water into the root zone from the well source or farm gate – unfortunately, there are many on farm factors that cannot be ignored in setting efficiency standards, the biggest being the method of applying the water. Recent modelling allows system type to be objectively considered.

Often ignored is the surface Distribution Pattern Efficiency, which has a dramatic effect on system operation to current soil moisture deficits. This efficiency is now routinely measured during irrigation audits.

With longer centre pivots we are seeing poor Subsurface Water Uniformity Efficiency, even with good Distribution Pattern Efficiencies.

Notes:

This SIDE session will clearly describe these efficiencies, and relate them to current water resource issues and on farm decisions about irrigation system type and operation.