

B-86: Half recovery time: an indicator for well water availability

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The use of shallow ground water for cultivation in the dry and intermediate zones has been given more attention in recent years. Availability of water in shallow dug wells varies in a wide range according to the relative location, existence of surface water bodies, aquifer characteristics, seasonal rainfall, rate of ground water extraction and watershed characteristics. In such a complex situation, farmers as newcomers to this type of farming are hardly aware of the water reserve available for their cultivation. Thus, a study was carried out to identify a simple indicator to reflect the recharging ability of a shallow dug well in an aquifer.

An index termed as "Half Recovery Time" ($T_{1/2}$) could be derived from basic relationships of well hydrology. It is defined as the time taken to recover half the depth pumped out from a well. The index was found to be independent of the initial depth of water, the considered time gap during the period of recuperation and the depth of water extraction, but it only varies with the aquifer characteristics and well diameter. The Half Recovery Time (h) can be given by :

$$T_{1/2} = \frac{0.54 D^2}{K}$$

where D = well diameter K = specific yield

Field investigations showed that the $T_{1/2}$ index can be used to produce the recuperation curve for any depth of water and to determine the specific yield of unconfined, uniform, shallow aquifers. Such information is of relevance in planning agro-well construction programmes.