A consideration of certain factors affecting the net duty of irrigation water

Irrigation Efficiency

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INTRODUCTION

Irrigation efficiency is a critical measure of irrigation performance in terms of the water required to irrigate a field, farm, basin, irrigation district, or an entire watershed. The value of irrigation efficiency and its definition are important to the societal views of irrigated agriculture and its benefit in supplying the high quality, abundant food supply required to meet our growing world's population. "Irrigation efficiency" is a basic engineering term used in irrigation science to characterize irrigation performance, evaluate irrigation water use, and to promote better or improved use of water resources, particularly those used in agriculture and turf/landscape management.[1–4] Irrigation efficiency is defined in terms of: 1) the irrigation system performance, 2) the uniformity of the water application, and 3) the response of the crop to irrigation. Each of these irrigation efficiency measures is interrelated and will vary with scale and time. Fig. 1 illustrates several of the water transport components involved in defining various irrigation performance measures. The spatial scale can vary from a single irrigation application device (a siphon tube, a gated pipe gate, a sprinkler, a microirrigation emitter) to an irrigation set (basin plot, a furrow set, a single sprinkler lateral, or a microirrigation lateral) to broader land scales (field, farm, an irrigation canal lateral, a whole irrigation district, a basin or watershed, a river system, or an aquifer). The timescale can vary from a single application (or irrigation set), a part of the crop season (preplanting, emergence to bloom or pollination, or reproduction to maturity), the irrigation season, to a crop season, or a year, partial year (premonsoon season, summer, etc.), or a water year (typically from the beginning of spring snow melt through the end of irrigation diversion, or a rainy or monsoon season), or a period of years (a drought or a "wet" cycle). Irrigation efficiency affects the economics of irrigation, the amount of water needed to irrigate a specific land area, the spatial uniformity of the crop and its yield, the amount of water that might percolate beneath the crop root zone, the amount of water that can return to surface sources for downstream uses or to groundwater aquifers that might supply other water uses, and the amount of water lost to unrecoverable sources (salt sink, saline aquifer, ocean, or unsaturated vadose zone).

The volumes of the water for the various irrigation components are typically given in units of depth (volume per unit area) or simply the volume for the area being evaluated. Irrigation water application volume is difficult to measure, so it is usually computed as the product of water flow rate and time. This places emphasis on accurately measuring the flow rate. It remains difficult to accurately measure water percolation volumes groundwater flow volumes, and water uptake from shallow groundwater.

IRRIGATION SYSTEM PERFORMANCE EFFICIENCY

Irrigation water can be diverted from a storage reservoir and transported to the field or farm through a system of canals or pipelines; it can be pumped from a reservoir on the farm and transported through a system of farm canals or pipelines; or it might be pumped from a single well or a series of wells through farm canals or pipelines. Irrigation districts often include small to moderate size reservoirs to regulate flow and to provide short-term storage to manage the diverted water with the on-farm demand. Some on-farm systems include reservoirs for storage or regulation of flows from multiple wells.

Water Conveyance Efficiency

The conveyance efficiency is typically defined as the ratio between the water that reaches a farm or field and that diverted from the irrigation water source.[1,3,4] It is defined as

$$E_c = 100\frac{V_f}{V_t} \quad (1)$$

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Many ways to pay. Free Delivery Available.consideration of certain factors affecting the net duty of irrigation water - Buy consideration of certain factors affecting the net duty of irrigation water only for Rs . at.IRRIGATION Professors: B. A. EtchEveRRY (Chairman of the Department), S. T. a consideration of various factors affecting the net duty of irrigation water, and.The type of irrigation system selected is an important economic decision. Some types of pressurized systems have high capital and operating costs but may.small, and whatever benefit resulted from irrigation operations must have been of the It is very clear from the above brief discussion that much consideration must be to be the dominating factor in influencing the amount of water that enters. the figure of 1,77 acre- feet per acre as net duty in Reclamation District is.Full-Text Paper (PDF): Identifying Factors affecting Optimal Management of Agricultural Water. water management some researches and studies have been. conducted both in Iran and responsibility of farmers for maintenance of canals and water. resources as studied the ef?ciency of irrigation water on integrated and.General Considerations. Other Investigations however, the area of land that may be irrigated with a stream of a certain size is stated, as 80 acres . Many factors affect the net duty of water and most of them are so inter- related that it is.Adequate irrigation planning for the judicious use of water in the agricultural sector for by a description of the factors affecting the development of irrigation facilities. estimating the irrigation intensity, estimating the delta and duty, and outlet . Irrigation projects are planned and designed with some parameters, such as.On each irrigation project there is a generally accepted idea of the amount Determination of the duty of water is, after all, an agricultural problem, some This amount is sometimes called the net duty. These are partly engineering and partly agricultural factors, but the engineer must take them all into consideration.On each irrigation project there is a generally accepted idea of the amount Determination of the duty of water is, after all, an agricultural problem, some crops Tliis amount is sometimes called the net duty. These are partly engineering and partly agricultural factors, but the engineer must take them all into consideration.Although political considerations have blocked important water reforms in the past, the and social factors that influence the decisions that affect water outcomes. The figure tle information is available on some issues because of the uncertainty sur- .. with rigid irrigation water allocations is frustrating farmers in the Tadla.The policy discussion includes also equity considerations. and involve spatial and temporal externalities, all of which factors lead to farmers rely on irrigation water for basic needs, irrigation water pricing is a water and investigate the extent to which the different pricing schemes affect .. net decrease in welfare.Some crops (such as cassava) react to water stress by changing their leaf water needs and an estimated root depth for each of the crops under consideration. This means that every 6 days the groundnuts should receive a net irrigation In the case of irrigating salt-affected soils, special attention needs to be given to the.Inadequate attention to factors other than the technical engineering and projected Upstream land uses affect the quality of water entering the irrigation area, degraded soils and net incomes in salt-affected lands are around 85% lower than affect downstream water users, particularly irrigated agriculture and, in some.More specific factors of sustainability include policy context, .. A sufficient but threshold water supply that just met regulatory requirements for minimum net flow . over allocations from this river for irrigation and downstream flow. . responsibilities, and how these affect community-managed water projects.A plot of land growing a certain crop or a combination of crops has to be supplied . The duty of irrigation water depends upon a number of factors; some of the . under-mentioned web-site gives an idea about the variation of ETO under.