



# Role of Supplemental Irrigation in Increasing Yields of Rainfed Crops

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## DESCRIPTION

Land and water are two significant resources whose effective management is essential for economic growth and development. The Andaman and Nicobar Islands, a collection of 572 islands in the Bay of Bengal, are part of Agro-ecological Region 20. (hot humid to per-humid Island eco-region). Around 90 percent of the geographical area of 8249 km<sup>2</sup> is covered by forest, including considered forest, while farmland amounts for around 6% of the entire area, or 50 000 hectares. 12 000 hectares (flat land) are farmed for paddy and other field crops, while 38000 hectares (hilly land) are under plantation and other crop production.

Supplemental irrigation, which involves harvesting rainfall and storing it in dug or embanked reservoirs, or a mix of dry land farming and restricted irrigation, is an excellent option for increasing crop yields in this region. This technique is extremely useful for delivering water when rainfall is inadequate to give the necessary soil moisture for a successful harvest. Water scheduling in such systems isn't meant to cover all of the plant's water needs. Rather, the systems' key relevance lies in their ability to bridge dry times and, as a result, lower risks in rainfed agriculture. Water harvesting can be utilized in rainfed regions to collect runoff and store it in modest storage buildings (100-1000 m<sup>3</sup>) for use as additional irrigation for agricultural purposes.

Water is the primary limiting issue in rain-fed agriculture in semi-arid and arid environments. This necessitates the use of other water sources in the event of a shortage of rainfall. Irrigation systems can assist fix the problem, but what if irrigation water supplies are scarce? Wheat crops, in general, do not require much moisture in their early phases of development (November to January). This is owing to the seedling's poor rate of water intake while it is young. As a result, during the early phases of crop growth during the winter months, there is more water available from rainfall than the crop requires. During the final phases of growth (drier months), there is generally less water available than the crop's growth and inflorescence would require. Irrigation might supply supplemental or additional water to rain-fed agriculture by adapting a method and

technology to maintain uniform soil moisture levels and balance the shortage of soil moisture in later development phases. Supplemental irrigation is the name given to this method (SI). Small amounts of water are applied during important periods to increase and maintain yields, conserve water, and balance limited water availability with a sustainable production level. Supplemental Irrigation (SI) is very successful in extremely dry years, and it has been proven that even little quantities of irrigation water may treble productivity.

Supplemental irrigation is defined by three factors (SI):

1. Water is provided to a rainfed crop that would typically generate a yield even if it were not irrigated.
2. Because rainfall is the primary supply of water for rainfed crops, SI is only used when rainfall is insufficient to deliver the necessary moisture for increased and steady output.
3. The quantity and timing of SI is planned not to offer moisture-free conditions throughout the growing season, but to guarantee that a minimum amount of water is accessible during the key periods of crop growth, allowing for optimal rather than maximal yields.

During or before certain growth phases, the crop is given more water in precise amounts. There are stages that are more prone to water shortages and stages that are less susceptible to water shortages. As a result, it's critical to know how much additional irrigation water to use and at what stage of crop development. Between late March and early May, one to three additional irrigation treatments of little more than 100 mm each are recommended. When there isn't enough water available for complete supplemental irrigation, the International Center for Agriculture Research in the Dry Areas (ICARDA) recommends using deficit supplementary irrigation. Farmers' fields yielded much more crop in response to the application of relatively little amounts of irrigation water, according to harvest findings. This growth applies to both low and high yearly rainfall locations. The area of wheat under SI in northern and western Syria (where annual rainfall exceeds 300 mm) has expanded by 470 percent, from 74,000 hectares in 1980 to 418,000 ha in 2000.

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