

DERIVATION OF LOCATION-SPECIFIC INTENSITY-DEPTH-DURATION CURVES FOR VARIED FREQUENCIES OF RAINFALL IN CENTRAL GUJARAT

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ABSTRACT

This paper highlights the critical role of monsoon rainfall in Indian agriculture, impacting crop yields and food production. Farmers face challenges due to variable monsoon patterns, leading to droughts or floods. Traditional rainfed agriculture and water conservation techniques are used, alongside modern technologies and climate-smart practices to achieve sustainability. Understanding rainfall patterns is essential for informed decision-making, enabling efficient water management and erosion control. IDF curves are indispensable tools for agriculture and engineering, aiding in water management and infrastructure design. Utilizing 20 years rainfall records, region-specific IDF curves were derived, providing valuable information on rainfall aspects in 3 districts of middle Gujarat. The IDF curve is vital in hydrology and water resources engineering, assisting in rainfall intensity estimation for different durations and return periods, with applications in drainage design, flood management, and risk assessment. The study highlights the significance of rainfall knowledge for food security and sustainable development in India.

KEYWORDS: Rainfall Analysis , IDF curves, Gamble IDF, Middle Gujarat, location specific rainfall curves.