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Agro-climatic sugarcane yield model for Surat district, India

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Estimation of crop yield is a difficult task due to its dependency over many factors. Crop models are considered to be an important tool for gaining a theoretical understanding of a crop production system. It is considered that effective crop modeling must combine a scientific approach to increase understanding with an applications orientation to retain an attention on prediction and problem-solving. In practice Miami, Thornthwaite and many such models are available and widely used for prediction of crop yield. Agro-climatic crop-yield modeling refers to a technique which can be used to scale the effect of climate on yields. A crop model makes our insights into the physiological and ecological processes that govern crop growth into mathematical equations. Here, agro-climatic sugarcane yield model is developed using dimensional analysis approach in which it is tried to include most significant parameters from the climate, soil and agricultural domain which plays key role in its yield prediction. Developed agro-climatic sugarcane yield model is different from the existing models due to consideration of above predominant parameters all together which made it more sensitive towards climatic changes. Estimated sugarcane yield using developed model is compared with the actual yield for its validation which shows good agreement. Also, the statistical performance of the model shows its fitness. Model comparison with the established models shows better performance.

Biography

Nitin N Bharadiya is pursuing his PhD from S V National Institute of Technology, Surat, India. He completed his BTech in Agriculture Engineering from Junagadh Agriculture University and MTech in Civil Engineering (WRE) from S V National Institute of Technology, Surat.

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