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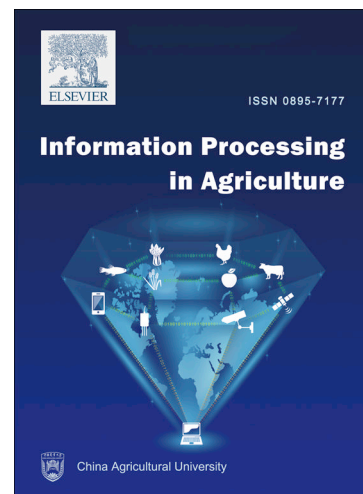
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Climatic factors and cotton production

## **Climatic variables: evaporation, sunshine, relative humidity, soil and air temperature and its adverse effects on cotton production**

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**Abstract:** Cotton yield is a function of growth rates, flower production rates, and flower and boll retention during the fruiting period. Information on the relationship between climatic factors and the cotton plant's ability to produce and sustain flower buds, flowers, and bolls will allow one to model plant responses to conditions that frequently occur in the field and to predict developmental rate or the formation of these organs. This study investigates the statistical relationship between various climatic factors and overall flower and boll production. Also, the relationship between climatic factors and production of flowers and bolls obtained during the development periods of the flowering and boll stage. Further, predicting effects of climatic factors during different convenient intervals (in days) on cotton flower and boll production compared with daily observations. Evaporation, sunshine duration, relative humidity, surface soil temperature at 1800 h, and maximum air temperature, are the important climatic factors that significantly affect flower and boll production. The five-day interval was found to be more adequately and sensibly related to yield parameters. Evaporation; minimum humidity and sunshine duration were the most effective climatic factors during preceding and succeeding periods on boll production and retention. There was a negative correlation between flower and boll production and either evaporation or sunshine duration, while that correlation with minimum relative humidity was positive.

**Keywords:** cotton flower and boll production, evaporation, relative humidity, sunshine duration, temperature

### **1. Introduction**

The cotton (*Gossypium spp.*) plant prematurely shed its leaves and flowering structures in response to climatic stresses, particularly those of extremes of temperature and water availability. Understanding the impacts of climatic factors on cotton production may help physiologists to determine the control mechanisms of boll retention in cotton. However, weather affects crop growth interactively, sometimes resulting in unexpected responses to prevailing conditions. The balance between vegetative and reproductive development can be

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