

## 基于COSIM模型的棉花冷害预测研究

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### Forecasting Cotton Chilling Damage Based on COSIM

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摘要

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**摘要** 为了防御和减轻新疆地区棉花低温冷害, 对冷害发生进行可行性预测, 本文运用COSIM棉花模型逐年模拟石河子地区乌兰乌苏1961—2005年、喀什地区莎车1961—2009年的棉花生长状况, 对模拟结果进行统计学分析。结果表明, 棉花吐絮日期和7月1日、8月1日、9月1日等关键日期的生物量与冷害是否发生具有显著的相关关系; 运用模型预测的准确率、漏报率、空报率对冷害预报因子进行优度评价, 认为吐絮日期、7月1日的发育期指数、8月1日的叶质量占总干物质质量比例和9月1日的生殖器官质量均可以作为冷害预报的要素指标, 在新疆棉区应用取得较好的结果, 其中用于南疆棉区的冷害预测结果符合度达到97%以上。这说明基于作物模型进行冷害预测是可行的。

**关键词:** 棉花 COSIM模型 指标 冷害 预测

**Abstract:** Forecasting cotton chilling damage in Xinjiang Province, China, helps to defend against damage and mitigate its influence. Cotton growth in Shihezi, Xinjiang Province, 1961 to 2005, and in Kashi, Xinjiang Province, 1961 to 2009, was simulated using the cotton growth model COSIM. Statistical methods were applied to analyze the simulation. Boll opening date and cotton biomass on July 1st, August 1st, and September 1st were positively linearly correlated with cotton chilling damage. Priority degree evaluation of chilling damage indexes were carried out based on the ratio of correct forecasts, the ratio of missing forecasts, and the ratio of wrong forecasts. Evaluation indicated that the boll opening date, the growth index on July 1st, the proportion of leaf weight on August 1st in total dry weight, and the weight of reproductive organs on September 1st could be used as indexes for cotton chilling damage forecasting in Xinjiang Province.

**Keywords:** cotton COSIM model index chilling damage forecast

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