北京地区典型日光温室直射光环境的模拟与分析——设施农业光环境模拟分析研究之四

Simulation and Analysis of Direct Solar Radiation in Greenhouses in Beijing Area——The Fourth Part of Serial Studies on Simulation of Light Environment of Farming under Structure

投稿时间：1993-4-12

稿件编号：19930208

中文关键词：温室;光模拟;温室结构;温室环境

英文关键词：Greenhouse Light simulation Greenhouse structure Greenhouse environment

基金项目：国家自然科学基金

作者	单位
孙忠富	中国农业科学院农业气象研究所
李佑祥	中国农业科学院农业气象研究所
吴毅明	中国农业科学院农业气象研究所
曹永华	中国农业科学院农业气象研究所

中文摘要：

在对日光温室采光结构优化研究的基础上,针对北京地区几种典型日光温室的太阳直射光环境,主要从采光量及光分布特征两个方面,进行了模拟和分析。研究结果表明:结构不同的日光温室,采光量及光分布特征均有不同程度的差异,仅以采光总量为例,获得最多采光量与最少采光量者相差高达41.4%,但在地面上的采光量,二者仅相差3.7%,因此对优化的日光温室结构来说,不仅要对日光温室的采光总量做出评价,其分布特征也是不可忽略的重要指标。本研究的结果可对北京地区日光温室结构的进一步优化与改进提供科学依据和参考,对其它地区日光温室结构的优化与改进也有一定的参考价值。

英文摘要：

Solar greenhouses are prevailing agricultural installations in China at the present time, but their shapes differ greatly in different areas. Because little research has been conducted on the changes of light environment with greenhouse shapes, no enough information has been given to estimate which kind of greenhouse shape is better. In this paper, on the basis of previous studies, the authors simulated several typical solar greenhouses in Beijing area according to the characteristics of daily light integral and light distribution. The simulating results show that the shape of greenhouse greatly affects the light environment of greenhouse, not only in daily integral but also in distribution. Take an example, the maximum difference of daily light integral among those greenhouses reaches 41. 4%, but on the part of ground level, only 6. 7%. Therefore, both light integral and light distribution are factors of the same imporfance when trying to estimate and optimize the greenhouse shape. The results also provide a scientific reference to funher improve the shape or structure of the solar greenhouses in Beijing area as well as in other areas in China.

查看全文 关闭 下载PDF阅读器