

## 用LI-2000冠层分析仪确定作物群体外活动面高度

### Determination of the height of active surfaces of the crop colonies using Li-2000 Canopy Analyzer

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中文摘要:

该文研究定量确定作物群体外活动面的方法。使用美国产LI-2000型冠层分析仪, 实测高秆作物(玉米为代表)和矮秆作物(小麦为代表)的群体, 从冠层顶向群体内部逐层累积叶面积系数(LAI), 并分析其变化趋势。分别使用雷蒙德皮尔模型和龚珀兹模型模拟其变化。两种模型模拟LAI值与实测LAI值相关系数均大于0.95。方差分析表明, 矮秆的小麦冠层, 雷蒙德皮尔模型模拟优于龚珀兹模型模拟结果。高秆的玉米冠层, 龚珀兹模型模拟相关系数达0.994, 相关极为显著。小麦的活动面高度, 与小麦2/3株高差异较大。平展型玉米冠层和直立型玉米冠层活动面高度, 与其2/3株高相差仅11~17 cm。用2/3株高来估计活动面高度较为合理, 而对小麦冠层来讲则误差较大。

英文摘要:

Using Li-cor's plant canopy analyzer, taking the corn and wheat as examples, the accumulated LAI from the top of the canopy to the different levels of the colony were measured and analyzed to determine the height of the active surface of crop colonies. The data of measured LAI were simulated according to the models given by Raymond Pearl (1870-1940) and Gompertz. The results show that the two models are suitable for the simulation of the LAI in the crop colony and the correlation coefficients are above 0.95. Raymond Pearl's model is better than Gompertz's for the wheat colony, while the latter is more suitable for the corn canopy and the correlation coefficient is up to 0.99. The height of active surface of wheat colony is quite different from 2/3 of the plant height, which is used to determine the active surface roughly. Meanwhile the height of active surface in the corn colony is similar to the 2/3 plant height, the difference between them is only 11 to 17 cm. So using the 2/3 of the plant height to estimate the active surface height is rational but is likely to produce obvious errors to the wheat canopy.

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