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新疆杂交棉育苗移栽稀植群体冠层结构特征及与产量关系的研究

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Study on the Canopy Structure Characteristics and Its Correlation with Yield of Hybrid Cotton under Transplanting with Low-density in Xinjiang

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摘要 在北疆气候生态条件下，以杂交棉品种新陆早43号和鲁棉研24号为材料，采用育苗移栽稀植，研究杂交棉稀植条件下冠层结构、光合特性及与产量的关系。结果表明：与直播棉相比，移栽稀植条件下叶面积指数较低、冠层开度和透光率偏高，群体漏光损失严重，群体光合速率和干物质质量显著降低，但叶枝成铃的比例显著增加，且棉株生育进程有所提前，霜前花率提高20%。育苗移栽3.0万株 · hm^{-2}与4.5万株 · hm^{-2}条件下皮棉产量可达到2900 kg · hm^{-2}高产水平，但3.0万株 · hm-2处理的用苗量比4.5万株 · hm^{-2}处理少33.3%。品种间，直播条件下新陆早43号的皮棉产量低于鲁棉研24号，育苗移栽稀植条件下高于鲁棉研24号。因此，在播种出苗期自然灾害较多的北疆地区选用适宜的杂交棉品种，采用育苗移栽稀植可实现稳产增产。

关键词： 杂交棉 移栽 稀植 冠层结构 光合特性 产量

Abstract： Selected two hybrid cotton cultivars(Xinluzao 43 and Lumianyan 24) as experimental materials, canopy architecture and its correlation with yield characteristics of transplanted hybrid cotton at low planting densities were studied in North of Xinjiang. The results showed that compared with direct-seeded cultivation, transplanted hybrid cotton at low planting densities had decreased leaf area index and canopy photosynthetic rate and dry-matter accumulation, but increased canopy openness and light transmittance rate. Furthermore, the flowers before frost of transplanted hybrid cotton increased by 20% and the boll number of monopodium also significantly improved. The lint yield could achieve 2900 kg · hm^{-2} when transplanted hybrid cotton planting densities were 30000 and 45000 plants · hm^{-2}, but it could save seedlings by 33.3% at the density of 30000 plants · hm^{-2}. Lint yield of Xinluzao 43 was lower in direct-seeded cultivation than that of Lumianyan 24, however, under transplanted hybrid cotton at low planting densities Xinluzao 43 was significantly higher than Lumianyan 24. Therefore, it will be of great importance to select the suitable hybrid cotton varieties under the condition of transplanted at low planting density for achieving stable production in North of Xinjiang.

Keywords： hybrid cotton transplanted cotton low planting density canopy structure photosynthetic characteristics yield

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