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### 机插杂交粳稻超高产形成群体特征

## Population characteristics of super high yield formation of mechanical transplanted japonica hybrid rice

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中文摘要:

在研究不同机插水稻群体产量及其结构、群体茎蘖动态、叶面积动态与组成、光合势、干物质积累、群体生长速率等差异的基础上,初步阐明机插杂交粳稻超高产形成的群体特征:1)以足量的穗数与较大的穗型协调产出足够的群体总颖花量(50?000万/hm<sup>2</sup>以上),并保持正常的结实率与千粒质量(结实率85%以上,千粒质量27 g左右)。2)在合理的茎蘖动态(群体于有效分蘖临界叶龄期左右够苗,高峰苗适宜,一般为预期穗数的1.3倍)与叶面积指数(LAI)动态(孕穗期LAI达7.8~8.0,抽穗后LAI下降平缓,成熟期仍能保持3.0左右。)基础上提高成穗率(75%以上)与有效叶面积、高效叶面积比例(抽穗期有效叶面积率达95%,高效叶面积率达75%以上),以保证实现不同生育阶段目标生产力。3)以合理增加拔节-抽穗期物质生产与积累(群体生长速率22.5 g/(m<sup>2</sup>·d),干物质积累量9 000 kg/hm<sup>2</sup>以上,占总干物质量的45%左右)为重点,有效增强抽穗-成熟期群体物质生产与积累(群体生长速率13.5 g/(m<sup>2</sup>·d)左右,干物质积累量8 000 kg/hm<sup>2</sup>以上,占总干物质量的40%左右),以提高最终生物学产量(20 400 kg/hm<sup>2</sup>以上)。机插杂交粳稻生产过程中遵循以上规律可获得超高产。

英文摘要:

By studying the differences of rice yield and its components, development of culm and tiller number, development of leaf area and its composition, photosynthetic potential, dry matter accumulation and crop growth rate in super high yield population and high yield population, the population characteristics of super high yield formation of mechanical transplanted japonica hybrid rice were illustrated as follows: 1) The enough number of total spikelets in the population (more than 50 000 × 10<sup>4</sup>/hm<sup>2</sup>) was resulted from enough panicle number and large panicle size, meanwhile the seed setting and the 1?000-grain weight should be normal (the seed setting was above 85%; the 1?000-grain weight was about 27 g). 2) The percentage of productive tiller (more than 75%) and the ratio of effective and high effective leaf area (The ratio of effective leaf area was about 95% and the ratio of high effective leaf area was more than 75% at heading stage) were increased on the basis of proper development of culm and tiller number (The expected number of panicle was achieved at critical leaf-age for productive tillers, and the max number of stems and tillers was appropriate, about 1.3 times as much as expected number of panicle) and the leaf area index (The LAI was 7.8-8.0 in booting stage and then decreased smoothly after heading. At maturity, the LAI remained 3.0) in order to achieve the target productivity at different growth stages. (3) The dry matter weight at maturity stage (more than 20?400 kg/hm<sup>2</sup>) was increased with focus on increasing the dry matter production and accumulation from jointing to heading (the crop growth rate was about 22.5 g/(m<sup>2</sup>·d) and the accumulation of dry matter was more than 9?000 kg/hm<sup>2</sup> accounting for 45% of the total weigh of dry matter) and with increasing the dry matter production and accumulation from heading to maturity effectively (the crop growth rate was about 13.5 g/(m<sup>2</sup>·d) and the accumulation of dry matter was more than 8 000 kg/hm<sup>2</sup> accounting for 45% of the total weigh of dry matter). And the super high yield would be obtained if the rules above are followed in the production of mechanical transplanted japonica hybrid rice.

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