

吉林省1958-2005年间育成推广水稻品种部分叶片特征的变化

赵国臣^{1,2}, 姜楠¹, 徐克章^{1,*}, 凌凤楼¹, 武志海¹, 邸玉婷^{1*}

1吉林农业大学农学院, 吉林长春130118; 2吉林省农业科学院水稻研究所, 吉林长春130124

Changes of Some Leaf Characteristics in Rice (*Oryza sativa* L.) Varieties Released from 1958 to 2005 in Jilin Province

ZHAO Guo-Chen^{1,2}, JIANG Nan¹, XU Ke-Zhang^{1,*}, LING Feng-Lou¹, WU Zhi-Hai¹, DI Yu-Ting^{1*}

1 Agronomy College, Jilin Agricultural University, Changchun 130118, China; 2 Institute of Rice Research, Jilin Academy of Agricultural Sciences, Changchun 130124, China

摘要

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摘要 以吉林省1958—2005年间育成并推广的33个水稻品种为材料,研究了植株抽穗后10 d叶片数量、叶面积、光合势(LAD)、上三叶叶片的长度、宽度和叶面积以及剑叶叶绿素含量(CCI)和比叶重(SLW)的变化及其与产量的关系。结果表明,吉林省47年来水稻品种的平均产量由7 756.6 kg hm⁻²提高到12 807.3 kg hm⁻²,增加了65.11%,平均每年增加1.39%。随着水稻品种产量的提高,单株叶面积和LAD增加,并与育成年代和产量呈显著正相关。单株叶面积和LAD的增加主要是植株叶片数量和倒三叶叶面积显著增加的结果;倒二叶叶面积变化不大;剑叶长度显著变短,面积呈下降趋势,但剑叶叶绿素含量和SLW与育成年代和产量呈显著正相关。本文结果表明,吉林省水稻品种产量的遗传改良主要是通过增加抽穗后植株叶片数量和倒三叶叶面积,提高了单株叶面积和LAD。水稻抽穗后植株叶片数量、单株叶面积、LAD、CCI值和SLW可以作为高产品种的参考指标。

关键词: 水稻 产量 遗传改良 叶片

Abstract: In order to understand the changes of leaf characteristics associated with yield during the genetic improvement of rice, 33 japonica rice varieties released from 1958 to 2005 were planted under same field conditions. Some indexes related to leaf characteristics, such as leaf number, leaf area per plant, leaf area duration (LAD), length, width and area of top three leaves, chlorophyll content index (CCI) and specific leaf weight (SLW) of flag-leaf were measured at 10d after heading. The results showed that the grain yield was increased from 7 756.6 kg ha⁻¹ in 1958 to 12 807.3 kg ha⁻¹ in 2005, with the increase of 65.11% in 47 years and an annual increase rate of 1.39% according to the calculation of regression equation. The increasing of grain yield was mainly attributed to the increase of leaf number, leaf area per plant and LAD with years of release. By studying on the top three leaves of plant, our results showed that the significant decrease of flag-leaf length resulted in the decline of flag-leaf area; the changes of top second leaf area was not obvious; as the increase in the length and width of top 3rd leaf, significantly increased was found in its area with years of release. Leaf number, leaf area per plant and LAD were all positive correlated with years of release significantly. CCI and SLW of flag-leaf were positively correlated with year of release and with yield significantly. Our results showed that the increase of plant leaf area and LAD were resulted from the increase of leaf number and the area of top 3rd leaf. CCI and SLW of flag-leaf were increased with years of release. We suggested that leaf number, leaf area per plant, LAD, and CCI as well as SLW of flag-leaf at 10d after heading could be as potential indices in the future high yield rice breeding.

Keywords: Rice Yield Genetic improvement Leaf

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Corresponding Authors: 徐克章, E-mail: kzx0708@yahoo.com.cn

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