

HOME

About Journal@rchive

Journal List

Journal/
Society Search

GO

News



Science Links Japan

JST Japan Science and Technology Agency

Japanese journal of crop science

The Crop Science Society of Japan [Info](#) [Link](#)[TOP](#) > [Journal List](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

ONLINE ISSN: 1349-0990

PRINT ISSN: 0011-1848

Japanese journal of crop science

Vol.64 , No.3(1995)pp.545-555

[\[Full-text PDF \(1174K\) \]](#) [\[References \]](#)

Analysis of the Factors of High Yielding Ability for a Japonica Type Rice Line, 9004, Bred in China : I. Comparison of yielding ability with a Japanese rice variety under the same level of spikelets number per area

Yulong WANG, Yoshinori YAMAMOTO and Youji NITTA

- 1) Agricultural College, Yangzhou University
- 2) Faculty of Agriculture, Kochi University
- 3) Faculty of Agriculture, Kochi University

[Published: 1995/09/05]

[Released: 2008/02/14]

Abstract:

9004 (L9), which is a high yielding japonica type glutinous rice line developed in Jiangsu province, China, was cultivated under different combinations of nitrogen (N) application with or without phosphoric acid (P) as topdressing at the ear formation stage, to analyze the factors of high yielding ability for its line, using a Japanese non-glutinous variety with almost the same heading time, Koganemasari (KM), as a control. Both cultivars had the highest brown rice yield in the plot applied high N + P through the large number of spikelets per area based on the number of spikelets per ear, in the ranges 675-820 g m⁻² for L9 and 568-641 g m⁻² for KM, respectively. Strong positive correlations were observed between brown rice yield and the grain-straw ratio, and between the grain-straw ratio and sink capacity (spikelet number per m² × a grain weight). The yield of both cultivars was increased in the plots applied P due to the prevention of the reduction of the percentage of ripened grains that should occur as a result of the increased number of spikelets per ear. In this regard, larger increases were seen in L9 than in KM, and in high N than in low N application plots. P application with N improved leaf color and NAR compared with N application alone, and also resulted in more dry matter production during the ripening period. On the other hand, the difference of ca. 150 g m⁻² in average yield between L9 (735 g) and KM (588 g) is mainly due to the difference of 1000-grain weight (27.7 g : L9, 23.8 g : KM). A significant difference in hull weight and ripening period between L9 and KM could not be detected, but L9 showed a faster dry matter accumulation rate per grain than KM during the first half of the ripening period. The difference of 1000-grain weight between L9 and KM was based on the high sink activity of L9 due to the high moisture percentage in a grain, and because preserves a lot of storage carbohydrate in stems and leaf sheaths, and moreover its vascular bundle system from stem to ear is superior to that of KM.

Keywords:

Grain-straw ratio, High yielding ability, Nitrogen topdressing, Phosphoric acid topdressing, Rice plant, Sink capacity, 1000-grain weight, Vascular bundle

area

[[Full-text PDF \(1174K\)](#)] [[References](#)]

Copyright© Crop Science Society of Japan

[Access Policy](#)

[Privacy Policy](#)

[Link Policy](#)

[Contact](#)

[Amendment Policy](#)

Japan Science and Technology Agency

