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High-Yielding Performance of Paddy Rice Achieved in Yunnan Province, China. : II. Spikelet production of Japonica F_1 hybrid rice, Yu-Za 29

Takahisa AMANO, Chang-Jun SHI, De-Lin QIN, Makoto TSUDA and Yasuhiro MATSUMOTO

1) Faculty of Agriculture, Kyoto Prefectural University
2) Rice Research Institute, Yunnan Agricultural College
3) Rice Research Institute, Yunnan Agricultural College
4) Faculty of Bioresources, Mie University
5) Matsumoto Brewing Co. Ltd.

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Abstract:

The spikelets produced, amouting to as much as 71, 000 per m^2 in a dense-planting plot, had been attained by combining of 487 panicles per m^2 and 148.8 spikelets per panicle. The panicle number per m^2 was almost the same as the culm number per m^2 at transplanting. In a sparse-planting plot, the panicle number per m^2 did not decrease but increased in the spikelets per panicle up to 180.9, and thus 87, 700 spikelets per m^2 were obtained. The efficiency of spikelet production for Yu-Za 29 was apparently higher than Nipponbare cultivated in Kyoto. The significantly large number of spikelets per m^2 was attributed to both a more efficient use of nitorgen in producing spikelets and increases in nitrogen absorption up to heading (23.4 to 23.6 gm^{-2}) and in leaf dry weight at heading (328～333 gm^{-2}). Efficiency of nitrogen use in producing spikelets of Yu-Za 29 was higher in sparse-planting plots than in dense-planting plots. No differences in culm lengths and internode lengths lower than the 3rd one (N_3) were observed between the planting densities, but breaking resistance of N_3 and N_4 lowered in the dense planting plot. Consequently, the lodging index of N_3 (distance between fulcra is 5cm) exceeded 200. Improvement of nitrogen use efficiency in producing spikelets as well as high resistance to lodging in Yu-Za 29 are considered to be compatible with an increase in the sparsity of the planting density in comparison with the conventional dense planting cultivation in Binchuan.

Keywords:

Lodging index, Nitrogen use efficiency, Panicle number, Spikelet, Yu-Za 29

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