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## Japanese journal of crop science

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#### Growing Patterns of Rice Plant (*Oryza sativa* L. cv. Koshihikari) Corresponding to Developmental Index to Produce Different Numbers of Spikelets

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#### Abstract:

Plant length, tiller number and nitrogen content of rice plant (*Oryza sativa* L. cv. Koshihikari) having produced five different levels of spikelet numbers were computed by averaging data obtained in 39 experiments conducted from 1982 to 1988 at Toyama Agricultural Experiment Station. The growth stages were denoted with the developmental index. The plant length at every level of spikelet number increased almost linearly with increasing DVI, and the differences in plant length became greater among the spikelet number levels after the end-stage of effective tillering (DVI=0.35). The longer the plant length, the greater the spikelet number. The plant lengths at the 30, 000 ~ 35, 000 spikelets  $m^{-2}$  level were 30 cm at the end-stage of effective tillering, 51 cm at the maximum tiller number stage (DVI=0.52), 68 cm at the panicle formation stage (DVI=0.70) and 100 cm at the heading stage (DVI=1.00). The plants bearing a great number of tillers at the end-stage of effective tillering produced a large number of spikelets. The tiller numbers  $m^{-2}$  at the 30, 000 ~ 35, 000 spikelets  $m^{-2}$  level were 400 at the end-stage of effective tillering, 700 at the maximum tiller number stage, 610 at the panicle formation stage and 410 at the heading stage. The nitrogen content was always higher in plants which produced a greater number of spikelets, and this trend had been observed from the maximum tiller number stage. The parameters of nitrogen content of plant leading to production of 30, 000 ~ 35, 000 spikelets  $m^{-2}$  changed with the growth stage. The tentative criteria for each growth stage were 4.5  $g m^{-2}$  at the maximum tiller number stage, 5.8  $g m^{-2}$  at the panicle formation stage and 9.1  $g m^{-2}$  at the heading stage (DVI=1.00). If the plant length exceeded 52 cm at the maximum tiller number stage, 70 cm at the panicle formation stage and the nitrogen content was more than 5.0  $g m^{-2}$  at the maximum tiller number stage, 6.7  $g m^{-2}$  at the panicle formation stage, rice plants were liable to lodge, and nitrogen restriction would be needed to prevent this from occurring.

#### Keywords:

Developmental index, Growing patterns, Koshihikari, Nitrogen content of plant, Number of spikelets, Rice

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