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## Japanese journal of crop science

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#### Effects of Combined Practice of Nitrogen Application Regime with Sparse Planting on the Growth and Yield of Rice

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#### Abstract:

Rice cultivars Akitakomachi and Hitomebore were cultivated in the field using an on-farm developed system ; no basal dressing of nitrogen combined with sparse planting (Exp plots). Their growth and yield were analyzed as compared with rice cultivated by general practice (Cont plot) with respect to the improvement of yield. In the Exp plots, nitrogen application was omitted at basal dressing but carried out as top dressing from 8th leaf age onward. Compared with the Cont plot, leaf expansion and tillering in the Exp plots were slower, the maximum leaf area index being about 4, whereas it was about 6 in the Cont plot. In the Exp plots, the percentage of fruitful culms was relatively large, but the panicle number m<sup>2</sup> was small, which resulted in a small spikelet number, less than 30, 000. The percentage of ripened grains was significantly larger, but the yield was 5-10% lower than that of the Cont plot. The panicle number per hill of primary tillers was not largely different among the plots, but that of secondary tillers was relatively large in the Exp plots. The fruitful culms of both primary and secondary tillers appeared to develop from upper node orders in the Exp plots as compared to the Cont plot. The panicles of secondary tillers in the Exp plots were larger than those in the Cont plot with respect to panicle weight, panicle length and leaf weight per panicle. Relative light intensity in the canopy was significantly larger at both booting and middle ripening stages in the Exp plots as compared to that in the Cont plot.

#### Keywords:

Akitakomachi, Hitomebore, Nitrogen application regime, Relative light intensity, Secondary tillers, Sparse planting, Spikelet number, IN JAPANESE

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