

# **Growth characteristics and yield of tropical japonica under nitrogen levels and planting densities**

**K. S. Lee, J. K. Ko, J. K. Lee, H. T. Shin and S. Y. Cho<sup>1</sup>**

**1 National Honam Agricultural Experiment Station(NHAES)**

## **1. Objective**

To evaluate adaptability of tropical japonica in Korean environmental condition.

## **2. Materials and Methods**

Two tropical japonicas were evaluated with Dongjinbyeo as a check variety under three nitrogen levels, 110, 165 and 220kg per hectare and three planting densities, 22, 33 and 44 plant per square meter. Some physiological parameters and yield were evaluated in Korean environmental condition.

## **3. Results**

- Leaf area index and dry weight in heading stage was broader and heavier in Dongjinbyeo than tropical japonicas under the condition of large amount of nitrogen and high planting densities
- Yield performance of two tropical japonicas showed low comparing to temperate japonica due to low tillering per unit area and poor ripened grain under same amount of nitrogen and planting densities. These indicate that tropical japonica has enough yield potential, but low tillering number and poor ripened grain were the main restriction factors to increase rice yield.

Table 1. General characteristics of temperate and tropical japonicas employed in the experiment

Designation	Heading date	Culm length (cm)	Panicle length (cm)	Tillering ability	No. of spikelet /Panicle	1,000 grain weight (g)	Plant type <sup>1</sup>
Dongjinbyeo	8. 15	82	20	High(14)	81	25.1	TMJ
IR65597-29-3-2	8. 14	65	24	Low( 9)	128	25.3	TRJ
IR66154-52-1-2	8. 13	72	25	Low( 8)	198	20.2	TRJ

<sup>1</sup> TMJ : Temperate Japonica

TRJ : Tropical Japonica

Table 3. Panicle number per unit area of temperate and tropical japonicas as affected nitrogen and planting densities

Nitrogen level(kg/10a)	Variety	Number of panicle(/m <sup>2</sup> )			LSD (5%)
		30×15(cm)	30×10	15×15	
11	Dongjinbyeo	324b	333c	358c	19
	IR65597-29-3-2	184d	207fg	215e	11
	IR66154-52-1-2	169d	190g	200c	28
16.5	Dongjinbyeo	327b	370b	409b	22
	IR65597-29-3-2	209c	240e	253d	24
	IR66154-52-1-2	171d	210f	209c	20
22	Dongjinbyeo	358a	400a	462a	36
	IR65597-29-3-2	216c	263d	272d	35
	IR66154-52-1-2	176d	220f	231d	28

\* Means followed by a common letter in a column are not significantly different at the 5% level by DMRT

Table 8. Yield performance of temperate and tropical japonicas as affected nitrogen and planting densities.

Nitrogen level(kg/10a)	Variety	Milled rice yield(kg/10a)			LSD (5%)
		30×15(cm)	30×10	15×15	
11	Dongjinbyeo	566c	544b	534c	41
	IR65597-29-3-2	485e	483d	509d	31
	IR66154-52-1-2	471f	469de	487d	35
16.5	Dongjinbyeo	590b	584a	585a	33
	IR65597-29-3-2	493de	514c	536c	25
	IR66154-52-1-2	475f	506c	457e	37
22	Dongjinbyeo	615a	595a	558b	31
	IR65597-29-3-2	505d	522bc	497d	25
	IR66154-52-1-2	482ef	464c	462e	38

\* Means followed by a common letter in a column are not significantly different at the 5% level by DMRT