

비료 시용에 따른 벼 도복에 미치는 영향

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Effect of Fertilizer Management on Lodging
in Lowland Rice

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To investigate the effect of different fertilizer application level on lodging and examine the relationship between lodging resistance and specific morphological characters.

The experiment were conducted on IRRI in 1986 cropping season following a split-plot design with four replications. The varieties were main plots and fertilizer levels were the subplots. Plots measured 5x4 m with 20x20cm hill spacing. Two-thirds of N as urea and whole amount of P and K were broadcast and incorporated using a power weeder. The remaining of N was topdressed at PI.

Lodging in all test varieties increased as the level of applied N increased. However, increase in applied P and K level decreased lodging, regardless of N level and rice variety. The fertilizer treatments did not affect much the vegetative characteristics and yield components. However, High N application with low P and K decreased the number of vascular bundles and the culm thickness and diameter in all varieties. But with increased P and K, the number of vascular bundles, and culm thickness and diameter increased. Also, increased N level increased internode length.

Table . Effect of different fertilizer levels on lodging of rice varieties. IRRI, 1986 WS.

Treatment (kg NPK/ha)	Lodging (%) ^a			
	IR 36	IR 42	IR 64	IR21820-154-3-2-2-3
90-60-60	38 ab	10 bc	0 c	78 a
90-120-60	16 c	14 abc	1 c	79 a
90-60-120	29 bc	13 bc	0 c	80 a
90-120-120	19 c	4 c	0 c	73 a
180-60-60	49 a	28 a	38 a	86 a
180-120-60	43 ab	23 ab	23 b	83 a
180-60-120	40 ab	20 ab	16 b	81 a
180-120-120	41 ab	16 abc	10 bc	80 a

^a In a column, treatment means having a common letter are not significantly different at the 5% level by DMRT.

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180-120-120	41 ab	16 abc	10 bc	80 a

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Table . Interaction effects between N and variety, P and variety, and K and variety on lodging. IRRI, 1986 WS.

Fertilizer (kg/ha)	Lodging (%) ^a					
	IR 36	IR 42	IR 64	IR21820-154-3-2-2-3		
N	90	25 b	10 c	0 d	77 a	
	180	43 b	22 c	22 c	83 a	
<u>N x P x V</u> N (kg/ha)						
P	<u>90 180</u>		<u>90 180</u>		<u>90 180</u>	
	60	33 44	11 24	0 27	79	81
	120	18 42	9 19	1 16	76	74
	<u>N x K x V</u> N (kg/ha)					
K	<u>90 180</u>		<u>90 180</u>		<u>90 180</u>	
	60	27 46	12 25	1 30	78	84
	120	24 41	8 18	0 13	76	81

^a In a row, treatment means having a common letter are not significantly different at the 5% level by DMRT.