

OC4. Influence of N and Si fertilization on the quality of rice grown water-melon cultivated field

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Objectives:

This research was performed for improving the rice quality by monitoring N and Si fertilization which reducing agricultural pollution by adaptable fertilization in watermelon-rice cropping systems.

Materials and Methods:

Cropping system: Watermelon (green house)-rice cropping system.

Fertilization level: N: 0, 50, 100% of the RDA recommendation.

SiO₂: 75, 130, 170ppm.

Rice cultivar: Hwayeongbyeon; Soil texture: Sandy soil; a sandy loam (68.0% sand, 27.5 % silt, 4.5 % clay) with a pH of 5.9 (1:5, soil : water); mean bicarbonate-extractable P₂O₅, 350 mg/kg; potassium, 1.14 (me/100g); calcium, 2.6 (me/100g); Mg, 1.1 (me/100g); available SiO₂, 75 ppm; and 2.3% organic matter.

Results and Discussion:

The 50% of recommended N and 170 ppm of SiO₂ increased rice yield by 120% and the rice quality also. In greenhouse, rice cultivation may be considered with early maturing rice cultivar and N releasing pattern by different temperature, soil texture, organic matter condition and et cetra.

Table1. Grain yield and yield components affected by N and Si fertilization level (100% is the standard of RDA recommendation).

N (%)	Si (%)	Ripened grain (%)	Grain yield (kg/10a)	Rice quality
0	0	86.2	398f	80
	100	77.9	469d	94
50	0	86.1	472d	95
	100	96.1	595a	120
100	0	89.0	498cd	100
	100	81.2	550b	110

Table 2. Milled rice quality affected by N and Si fertilization level (100% is the standard of RDA recommendation).

N (%)	Si (%)	Normal (%)	Cracked (%)	Rice quality
0	0	96.0a	0.6e	69.5b
	100	94.0ab	0.99	72.4a
50	0	89.2cd	5.8b	65.2c
	100	91.6c	3.7d	72.4a
100	0	86.6d	6.9a	60.6d
	100	91.5c	4.2cd	60.7d

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