

INCREASING ROOT-MAT FORMATION BY PLANT GROWTH REGULATOR  
IN MACHINE TRANSPLANTING WITH INFANT SEEDLING OF RICE

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벼 어린모 기계이앙재배 매트형성에 미치는 생장 조절제의 영향

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Objective :

To investigate the effect of plant growth regulator (PGR) on the root-mat formation of infant seedlings in machine transplanting of rice.

Materials and Methods :

The seeds of Odaebyeo (japonica type) were soaked in the water with different concentrations of PGRs for 24 and/or 48 hours at room temperature. Seeding rate was 220 gr per seed tray (30x60x2cm). Seedling growth of rice and physical properties of root-mat were observed at 8 and/or 12 days after sowing. Metalaxyl is a fungicide.

Results and Discussion :

Tetracycle decreased root length but increased root number per seedling and root-mat formation was poor. Metalaxyl concentrations of 100 and 1,000 ppm markedly increased root length and root weight without decreasing root number thus root-mat formation was excellent. This indicates that root length is more critical than root number for better root-mat formation. There was no difference between 100 and 1,000 ppm concentrations of metalaxyl on root-mat formation. When rice seeds were sterilized by seed disinfectant (Spotak E.C.) in water, metalaxyl (100 ppm) could be used for increasing root-mat formation. Root-mats treated by metalaxyl had higher resistance and tension than those of control in terms of physical properties.

Table 1. Effect of plant growth regulators on the seedling growth and root-mat formation of infant seedling of rice (12 DAS).

Chemical	Conc. (ppm)	Seedling height (cm)	Root length (cm)	Root number (no./seedling)	Root-mat formation
Tetracycle	0.1	15.2	6.9	8.2	△
	1	14.7	6.7	8.3	△
	10	12.3	6.2	8.7	△
Metalaxyl	10	16.9	8.2	7.0	○
	100	16.7	8.9	6.9	⊙
	1000	16.8	8.8	6.6	⊙
Control		15.3	7.6	6.8	○

⊙ : Excellent, ○ : Good, △ : Poor

Table 2. Effect of metalaxyl with a seed disinfectant (Spotak) on the dry weight and root-mat formation of infant seedling of rice (12 DAS). ( ) : %

Chemical	Dry wt. (g/seed tray)		Root-mat formation
	Shoot	Root	
Control (water)	59.6	12.5 (93)	○
Seed disinfectant (S.D)	60.8	13.5 (100)	○
Metalaxyl (100 ppm)	65.6	16.5 (122)	⊙
S.D + Metalaxyl (100 ppm)	63.4	16.2 (120)	⊙

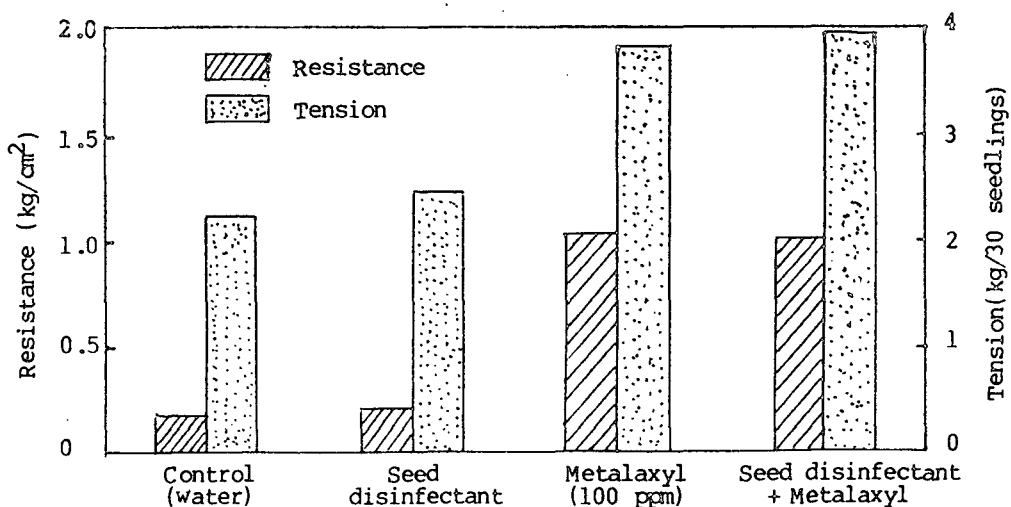


Fig. physical properties of the root-mat affected by metalaxyl in infant seedling of rice (12 DAS).