

Effect of Seeding Dates and Pesticide Treatments on Disease Infection in Soybean

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Objectives

- To evaluate the effect of the various soybean diseases on soybean yield
- To develop the environmental friendly cultural practices to manage soybean diseases

Materials and Methods

[Experiment 1]

- Varieties : One hundred soybean varieties of Korea
- Seeding dates : 30 April and 30 May, 2005
- Experimental location : an experimental farm of YARI, Mirayng, Gyeongsangnamdo
- Evaluation items : root rot, bacterial blight, purple seed staining, phomopsis seed rot, yield

[Experiment 2]

- Cultivar : cv. Daepung
- Seeding dates : 21 May, 13 June, and 30 June, 2005
- Pesticide treatments : untreated, one treatment at 10 days after pod setting, and three treatments at every 10 days after pod setting
- Treated pesticides : the mixture of ethofenprox EC, a pesticide and benoram WP, a fungicide
- Experimental location : a farmer's paddy field, Mirayng, Gyeongsangnamdo
- Evaluation items : root rot, purple seed staining, Phomopsis seed rot, and yield

Results and Discussion

Soybean root rot infection had more highly negative correlation ($r=-0.49^{**}$) with yield than any other soybean diseases according to field trials for 100 varieties. Among the evaluated soybean diseases, root rot was the most prevailing soybean disease (Fig. 1A~C) (Dorrance *et al.*, 2006; Oh, 1991).

Infection by soybean diseases, especially black root rot, were lowered when the later seeding and the more fungicide (benoram WP) treatments (Fig. 1A~C). Moreover, just one-time pesticide treatment was enough to control black root rot of soybean (cv. Daepung) when seeded at 30 June. And also, only one-time pesticide treatment (ethofenprox EC+benoram WP) at 10 days after pod setting is enough to get stable soybean yield (Fig. 1D). *Phytophthora* root rot is most effectively suppressed by avoiding the most susceptible soybean varieties and a fungicide containing metalaxyl or mefenoxam (metalaxyl-M) is the most effective one to control it (Univ. of Wisconsin-Madison Extension).

According to these studies, soybean root rot in double cropping region of southern Korea can be controlled by seeding at the last ten days of June and one-time fungicide (benoram WP) treatment after pod setting.

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Table 1. The correlation of various diseases with yield in soybean

Seeding date	Correlation coefficient with yield			
	root rot	bacterial blight	purple seed staining	phomopsis seed rot
Total	-0.49**	-0.26*	NS	-0.23*
30 April	-0.61**	-0.30**	NS	-0.30**
30 May	-0.45**	-0.24*	NS	NS

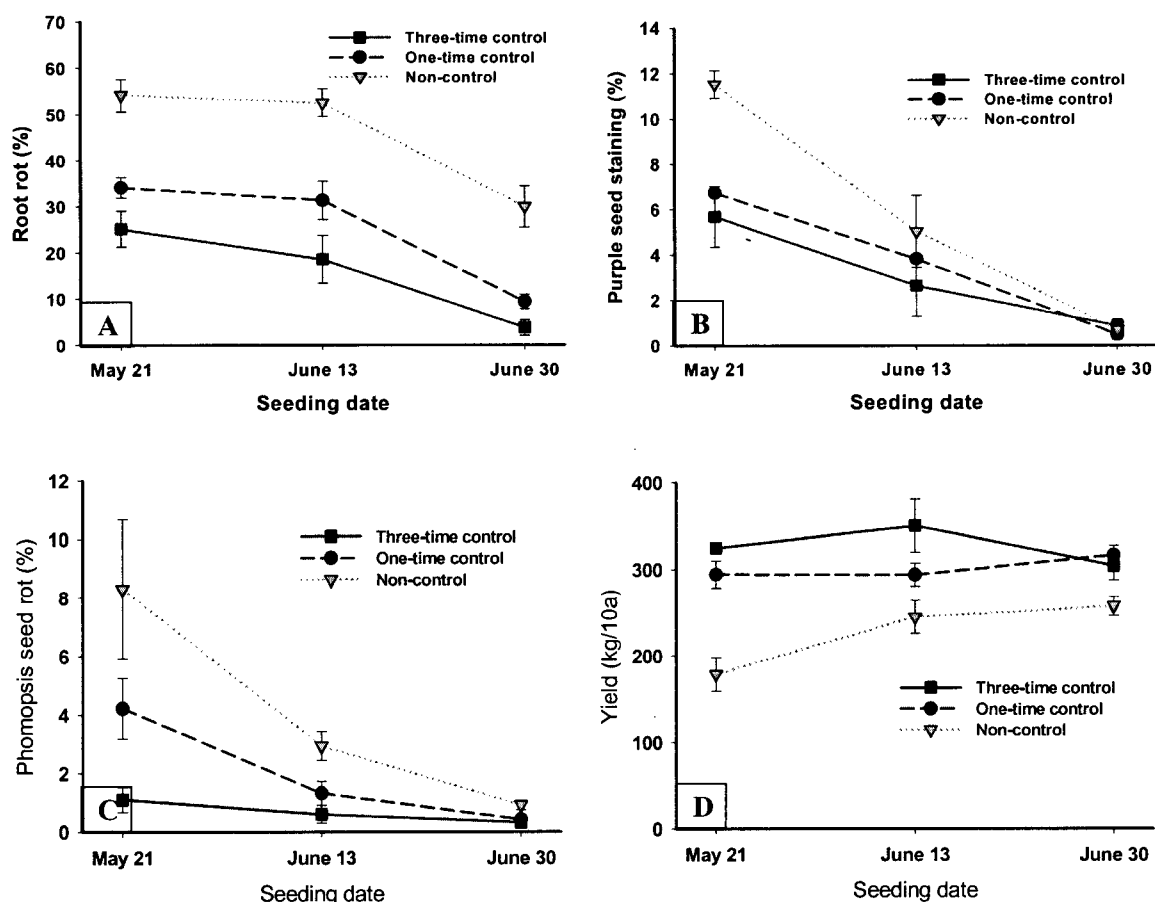


Figure 1. Effect of seeding date and pesticide treatment on root rot (A), purple seed staining (B), Phomopsis seed rot (C), and yield (D) of soybean (cv. Daepung).

Literature Cited

1. Dorrance, A.E., P.E.Lipps, and D. Mills. 2006. Phytophthora damping off and root rot of soybean (AC-17-02). Plant Pathology, Ohio State University Extension Fact Sheet (<http://ohioline.osu.edu/ac-fact/0017.html>).
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