

***Rhizoctonia solani*에 의한 인삼 본밭 모잘록병의 발생현황과 방제적기**

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Disease pattern and Controlling time of Damping-off Caused by *Rhizoctonia solani* on *Panax ginseng*

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Objectives

The experiment was conducted to determine the incidence and controlling time of damping-off caused by *Rhizoctonia solani* in ginseng fields.

Materials and Methods

Occurrence of *Rhizoctonia* damping-off in ginseng fields was surveyed in three areas, Ansong, Umsung, and Jeungpyung, from 2005 to 2006. Total 36 ginseng fields were examined for the disease incidence by the naked eyes. The causal agent was isolated and identified from diseased plant samples under microscopy. To investigate the controlling time of *Rhizoctonia* damping-off, the experiment was conducted in a 3-year-old ginseng field located at the experimental field of National Institute of Crop Science in Suwon, Korea. Two fungicides, fludioxonil (20%) and flutolanil (15%), registered for use of ginseng fields were used in this experiment. Four liters of each fungicide suspension were drenched in the soil of experimental plots according to the usage of each fungicides (6.7ml/20L for fludioxonil and 20ml/20L for flutolanil) at the time of early April, middle of April, or early May, which the application time was planned by the data of field survey in 2005. The incidence of damping-off was observed at every 7 days interval after fungicide application by naked eyes. The causal pathogen was verified with diseased plants by isolation and examination of pathogens under microscopy. There were three replicates per treatment.

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Results and Discussion

Rhizoctonia damping-off started at early May and continued to early June in all surveyed areas. The maximum incidence of damping-off showed at the season between early May and late May (Fig.1). The application of flutolanil at one time or twice on early April or middle of April revealed significantly reduced incidences of damping-off, showing 72.9% to 100% of control efficacy. However, fludioxonil was effective only when applied at early April (Fig.1).

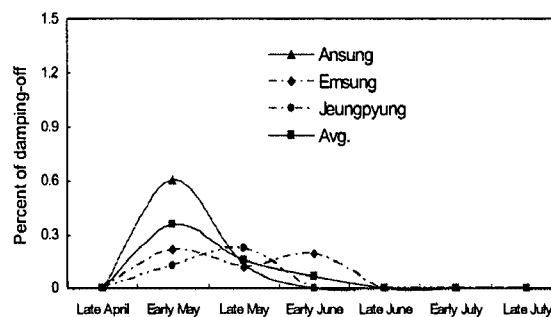


Fig. 1. Symptoms (left) and disease pattern (right) of damping-off caused by *Rhizoctonia solani*.

Table 1. Effect of tow fungicides on the control of *Rhizoctonia* damping-off in ginseng fields with one, two, or three times of application

Treatment	Application time			Disease incidence (%)				Control efficacy (%)
	Early April	Mid. April	Early May	Rep.1	Rep.2	Rep.3	Avg*	
Control	—	—	—	1.8	3.7	1.9	2.47a	—
flutolanil	○			0	2.0	0	0.67d	72.9
		○		1.8	0	0	0.60d	75.7
			○	3.6	0	1.9	1.83b	25.9
	○	○		0	0	0	0e	100
	○		○	0	0	1.7	0.58d	76.5
	○	○	○	0	0	0	0e	100
fludioxonil	○			0	1.7	0	0.56d	77.3
		○		1.9	0	1.8	1.23bc	50.2
			○	3.5	1.8	0	1.77b	28.3
	○	○		0	0	0	0e	100
	○		○	0	0	0	0e	100
	○	○	○	1.9	0	1.8	1.23bc	50.2
○	○	○	0	0	0	0e	100	

*Means followed by the same letter are not significantly different at $p=0.05$.