

Characteristics of mating type distribution and chemical response of *Phytophthora infestans* in Korea

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Abstracts

Late blight(LB) caused by *Phytophthora infestans* is one of the most serious disease affecting potatoes and continually occurred at potato fields in Korea. In order to provide the information on the potato late blight, the characteristics of isolates on mating type, and chemical response were investigated for several years. About 1,133 isolates collected from different regions were tested the mating type and the changes of distribution. Over 85% of isolates collected from 1998 to 2007 were A1 mating type and 15% of isolates were A2 mating type. With 1,169 isolates collected from various potato cultivation regions at the same periods, the response to metalaxyl was evaluated. The appearance of resistant strains against metalaxyl decreased from 1998 to 2002, but its slightly increased after 2003. Recently, the appearance of metalaxyl resistant strains was closely related with the usage and climate condition during potato cultivation season. Dimethomorph is one of fungicide to be widely used for control of late blight for several years. Among 454 isolates of *P. infestans* collected for last 10 years, 4% isolates showed the mycelial growth at 1% dimethomorph containing medium and the isolates will develop the resistance to this fungicides in near future.

Key words : Mating type, Chemical resistance

Result

Table. 1. Potato cultivation and incidence of late blight in Korea

Area	Altitude (mm)	Mean temp. (°C)	Mean Humidity (%)	Period of Cultivation	Period of LB incidence	Disease Severity*	No. of chemical spray
Pyeongchang	600~800	7~9	74~76	mid-Apr. ~early-Sep.	late-Jun. ~middle-Aug.	++++	10~15
Hongcheon	400~800	9.5~11	70~72	early-Apr. ~late-Aug.	late-Jun. ~early-Aug.	+++	10~12
Yanggu	300~600	9.5~11	70~72	early-Apr. ~late-Aug.	late-Jun. ~early-Aug.	+++	5~10
Miryang		12~14	68~70	mid-Aug. ~late-Nov.	mid-Sep. ~mid-Nov.	+	1~2
Goryeong		13~14	64~66	early-Mar. ~late-Jun.	mid-Apr. ~early-Jun.	+	1~2
Boseong	>50	13~14	72~74	mid-Feb. ~early-Jun.	early-Apr. ~early-Jun.	++	2~4
Gimje		12~13	73~75	mid-Aug. ~mid-Nov.	late-Sep. ~late-Nov.	++	2~4
Jeju	>150	15~17	70~74	late-Jan. ~mid-May	late-Mar. ~mid-May.	++	2~4

*Disease severity = - ; no incidence, +; few, ++; normal, +++; severe, ++++; very severe

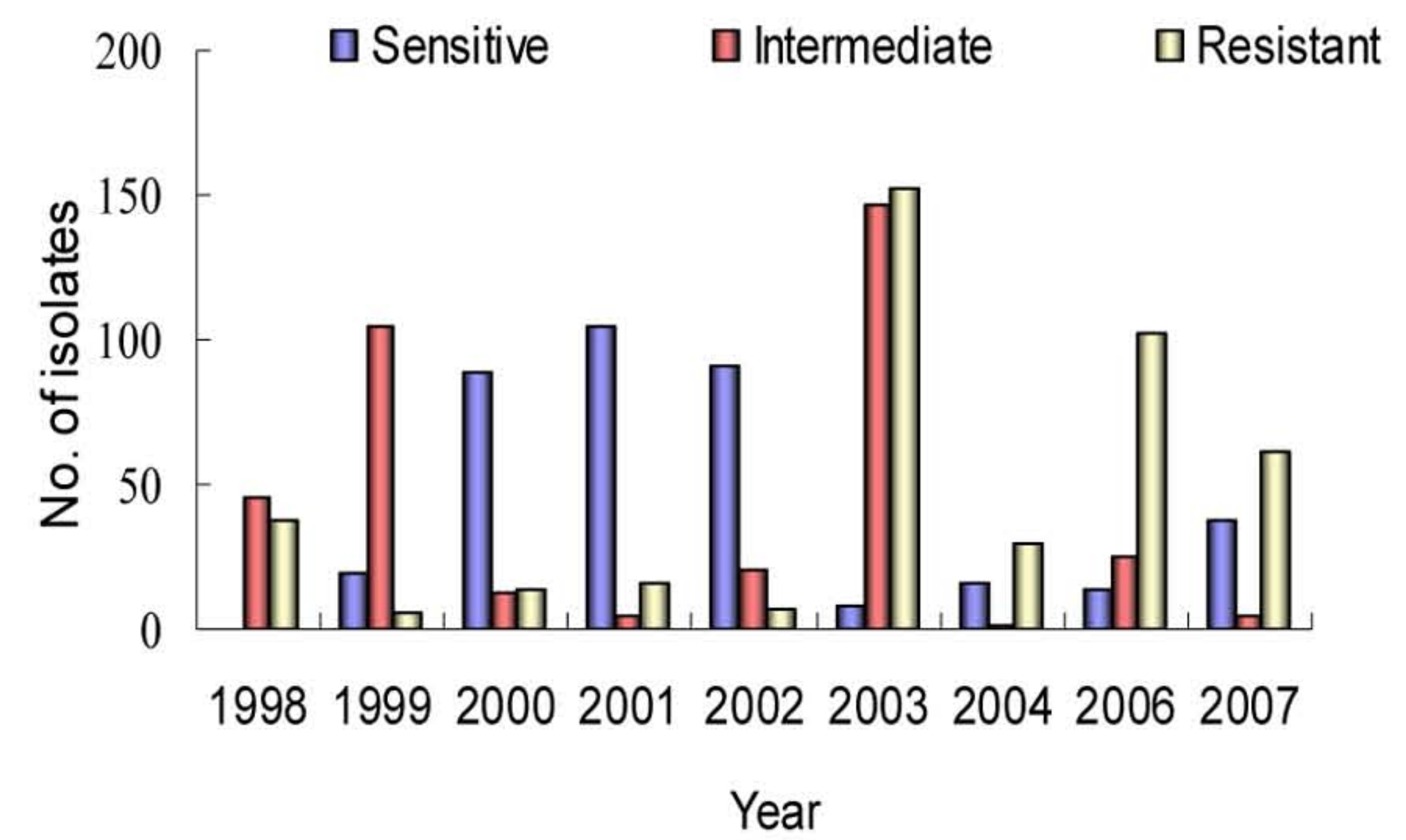


Fig 2. Change of response against metalaxyl of *Phytophthora infestans* isolates collected from 1998 to 2007 in Korea.

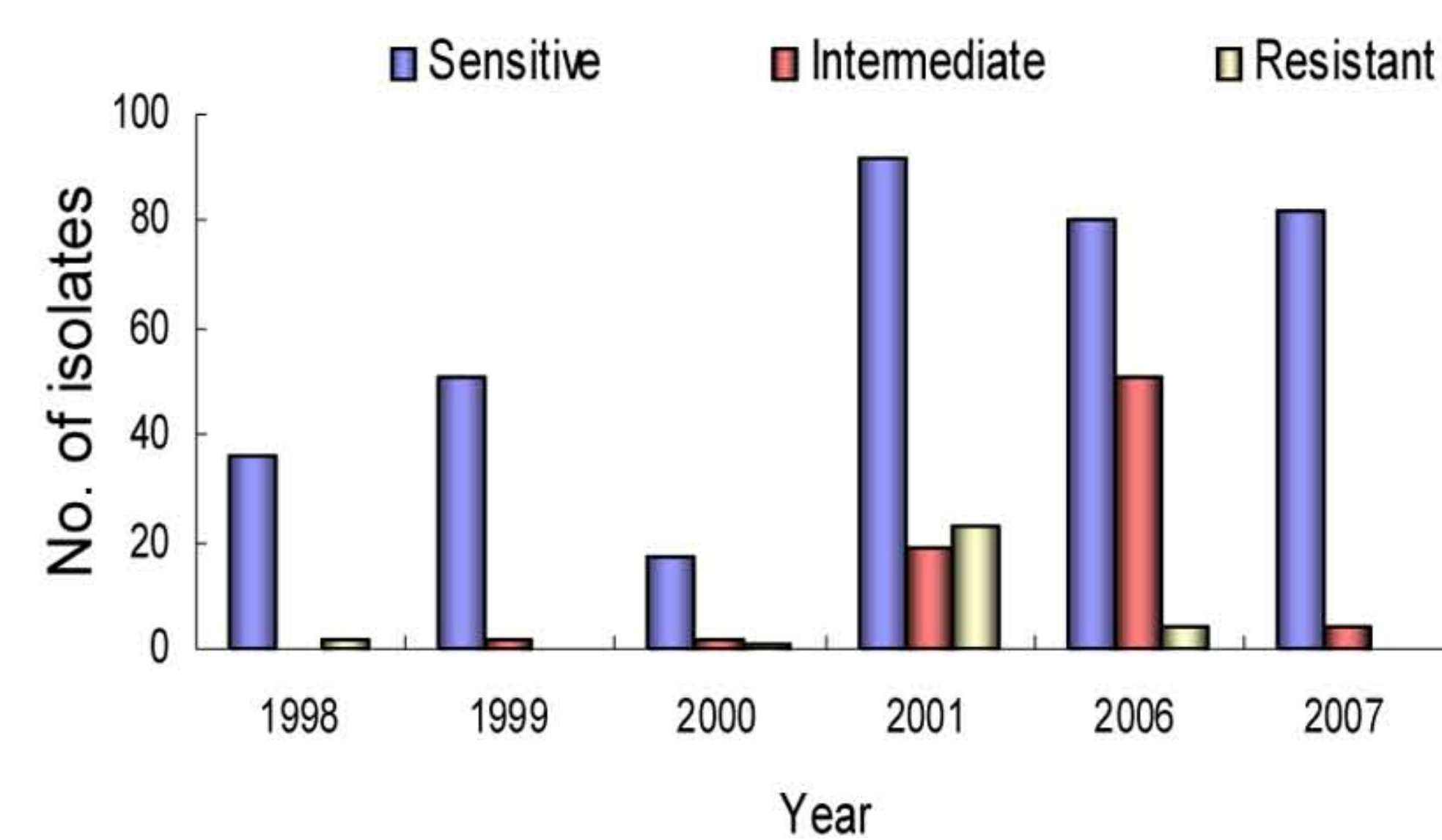


Fig 3. Change of dimethomorph response of *Phytophthora infestans* isolates collected from various area in Korea.

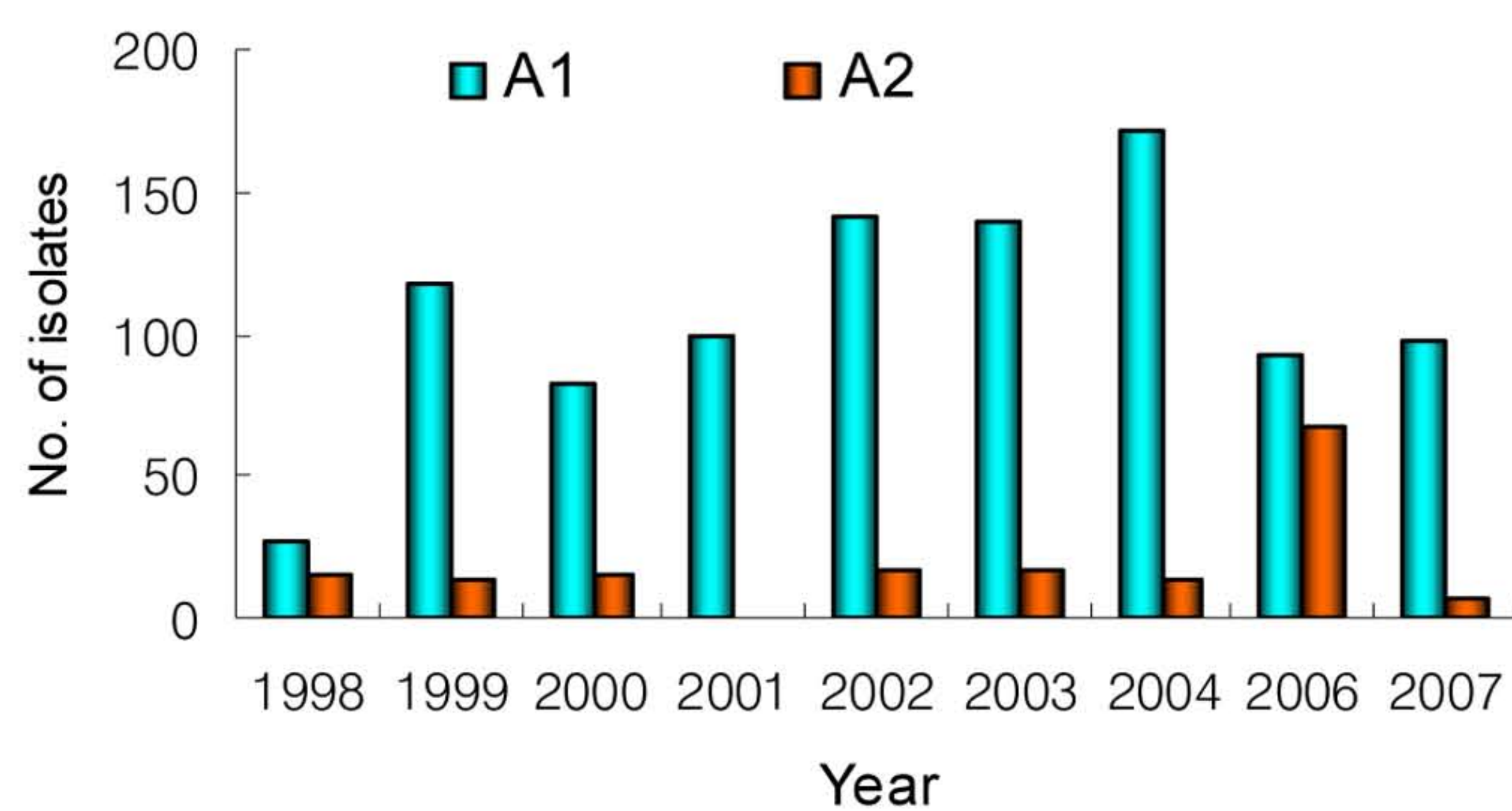


Fig. 1. Distribution of mating types of *Phytophthora infestans* for 10 years in Korea.

Discussion

- Distribution of mating types change continually in Korea.
- Recently, metalaxyl resistant strains has been increased depend on weather condition and host.

Introduction

- Potato late blight caused by *P. infestans* is one of the most important potato disease in Korea.
- This study was conducted to investigate occurrence characteristic, mating type, and chemical response of *P. infestans* in Korea.

Materials and Methods

- Isolate collecting place : Main producing areas(eight) of potato in Korea
- Investigation time : Incidence period of potato late blight with various area
- Investigated items : occurrence characteristic, mating type, chemical resistance

References

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