



A Review of Late Blight in Pakistan

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Late blight, since its first report in 1984, is a limiting factor for potato in Pakistan. Main areas of occurrence are plains of Punjab (zone 2) and the North West frontier Province (zones 4, 5, 6) and more recently, Northern Areas (zone) and Baluchistan (zone 8) (fig 1).



Fig 1: Potato production zones of Pakistan

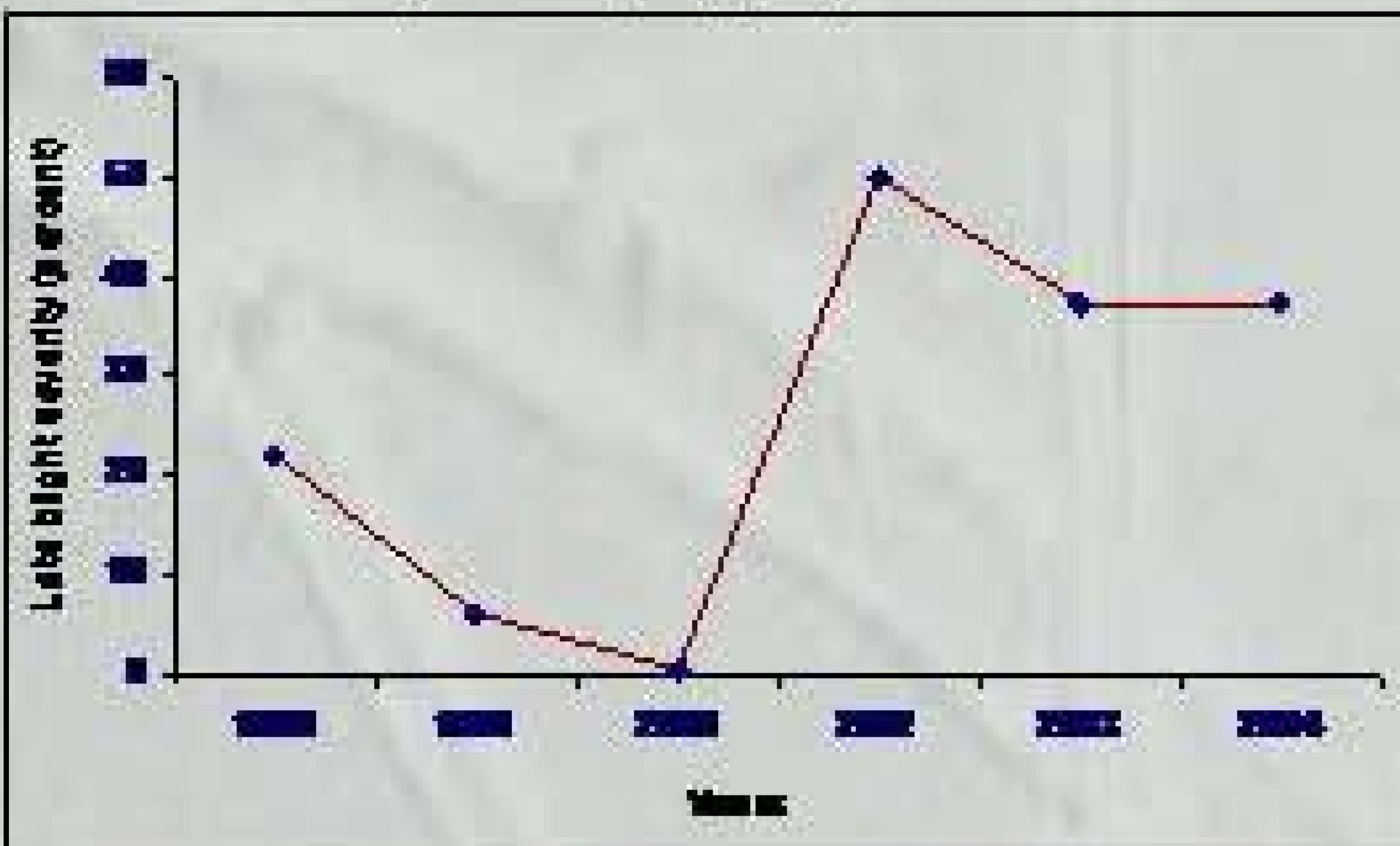


Fig 2: Severity of late blight of potato in Pakistan from 1998 to 2004.

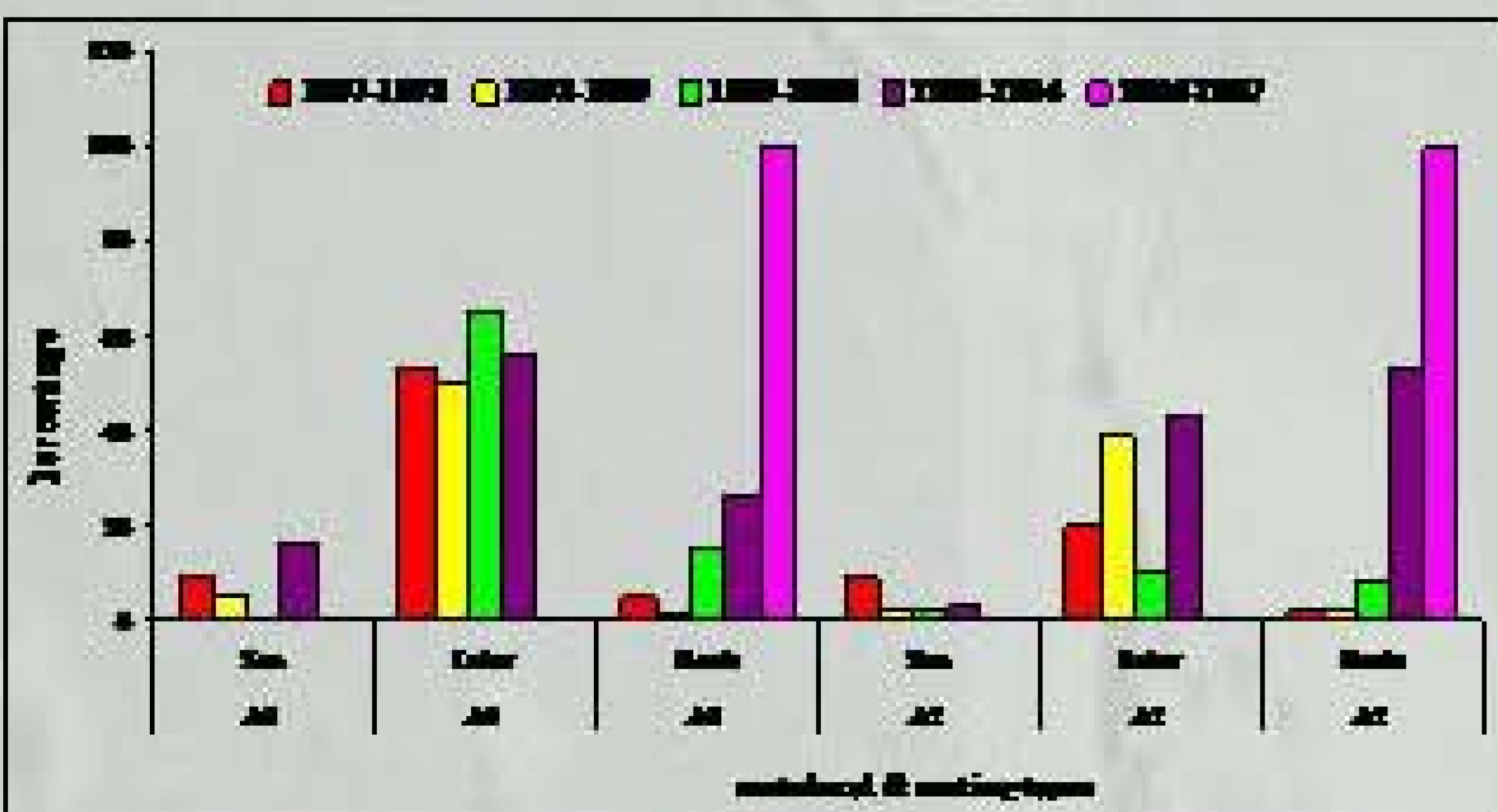


The occurrence of late blight has become more regular (fig 2) which could be due to arrival of A2 mating type. Polycyclic development of late blight is being observed in the fields, especially in the hilly areas.

The presence of A2 mating type was reported in 1995 followed by reporting of metalaxyl resistance soon after. The relative frequency of A2 mating type has increased tremendously from 1998-2007 (fig 3).



Fig 3: Frequency of A2 mating type of *P. infestans* from 1998 to 2007.



The frequency of metalaxyl resistant isolates has equally increased in both A1 & A2 mating types over time (fig 4).

Fig 4: Distribution of metalaxyl sensitivity in A1 & A2 mating type of *P. infestans* from 1997 to 2007.

Fourteen Gpi genotypes are identified in collection of *P. infestans* from different potato growing areas indicating high genetic diversity. Gpi122/122 is most frequent. RG-57 based on RFLP fingerprinting of Gpi122/122 with others Gpi show that it clusters tightly with other genotypes (fig 5).

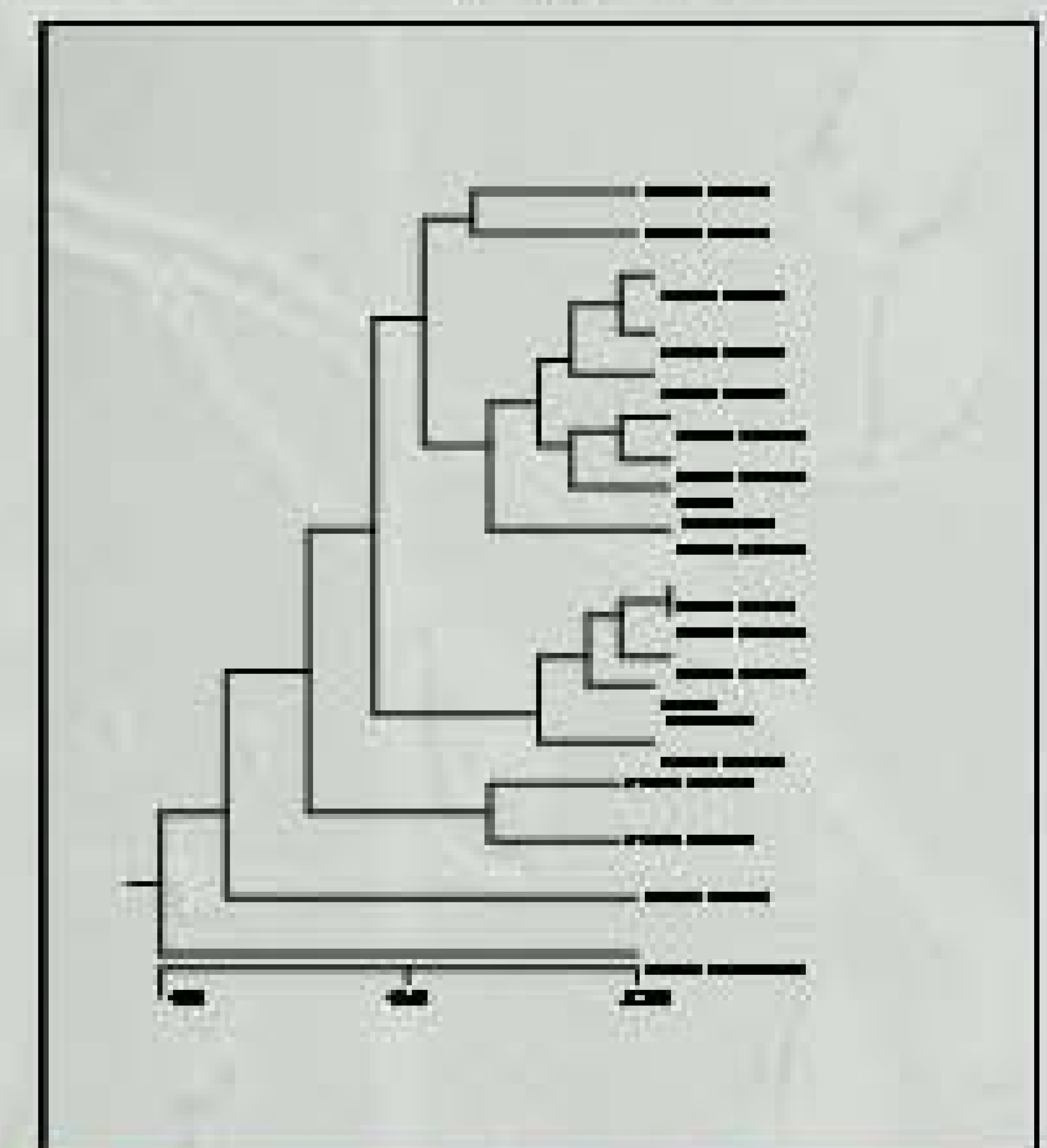


Fig 5: Genetic similarity between RFLP genotypes of *P. infestans* of Pakistan.

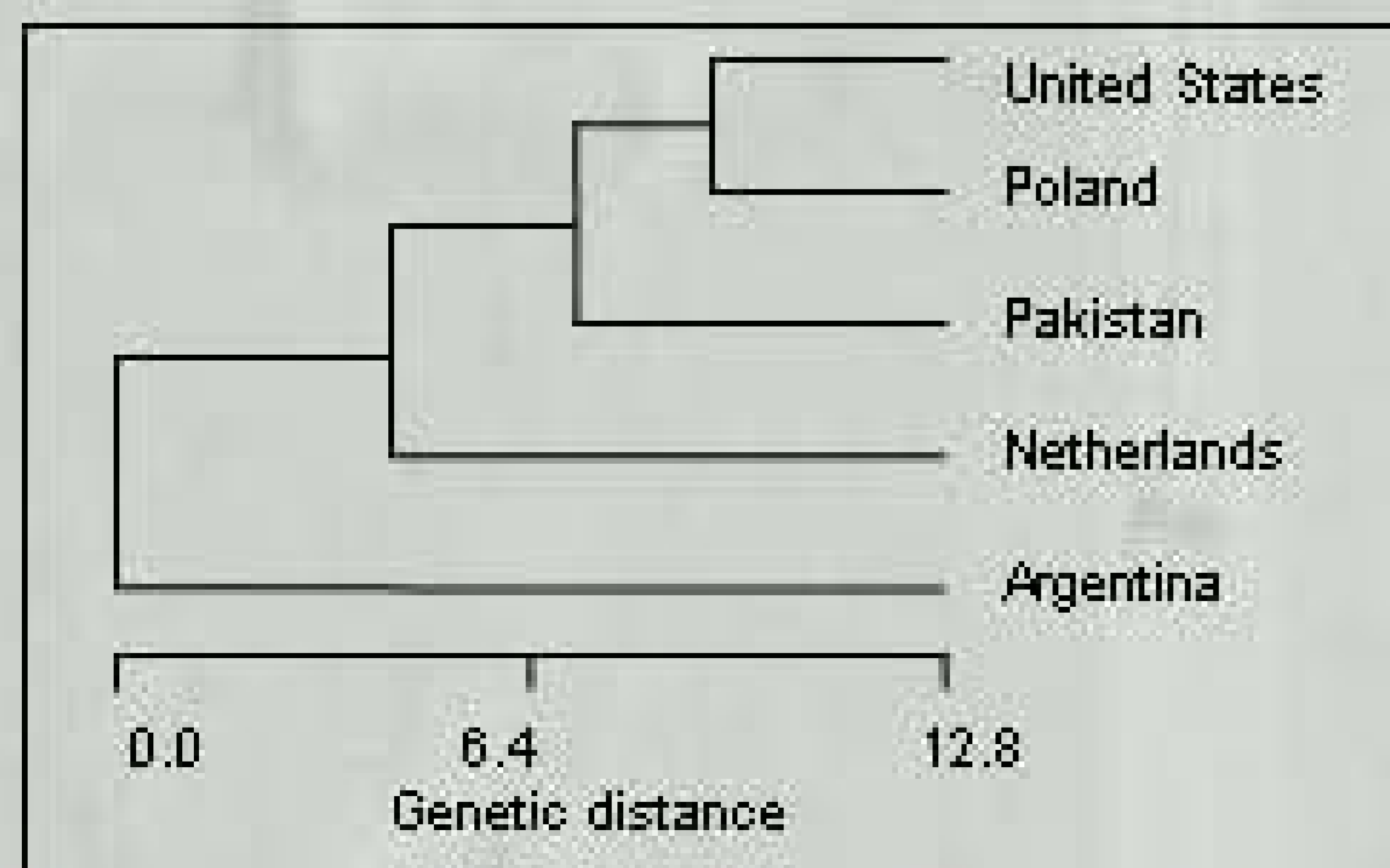


Fig 6 : Genetic relationship between *P. infestans* population Pakistan and other countries.

P. infestans population from Pakistan closely clusters with population of USA and Poland (fig 6).

Neem (based botanicals, such as neem-seed oil, are very potent under in-vitro and green house tests and hold promise, but have not found their way to the field.

All commercial varieties in use are susceptible to late blight. Four late blight resistance clones are identified from CIP material in 2006 and are being used in breeding programme.