



## Breeding for potato late blight resistance in Ecuador: Historical review

### Introduction

- Potato is one of the most important food crops in Ecuador.
- Late blight is the main disease that affects potatoes in the country.
- Breeding efforts for obtaining improved potato varieties with resistance to late blight has been conducted mainly by the Instituto Nacional de Investigaciones Agropecuarias (INIAP) soon after its creation in 1961 with the support of Central University of Ecuador (UCE).

### Material and Methods

Breeding for late blight resistance in Ecuador were developed by private breeders, Central University and National Agriculture Research Institute (INIAP)

The main breeding methods were:

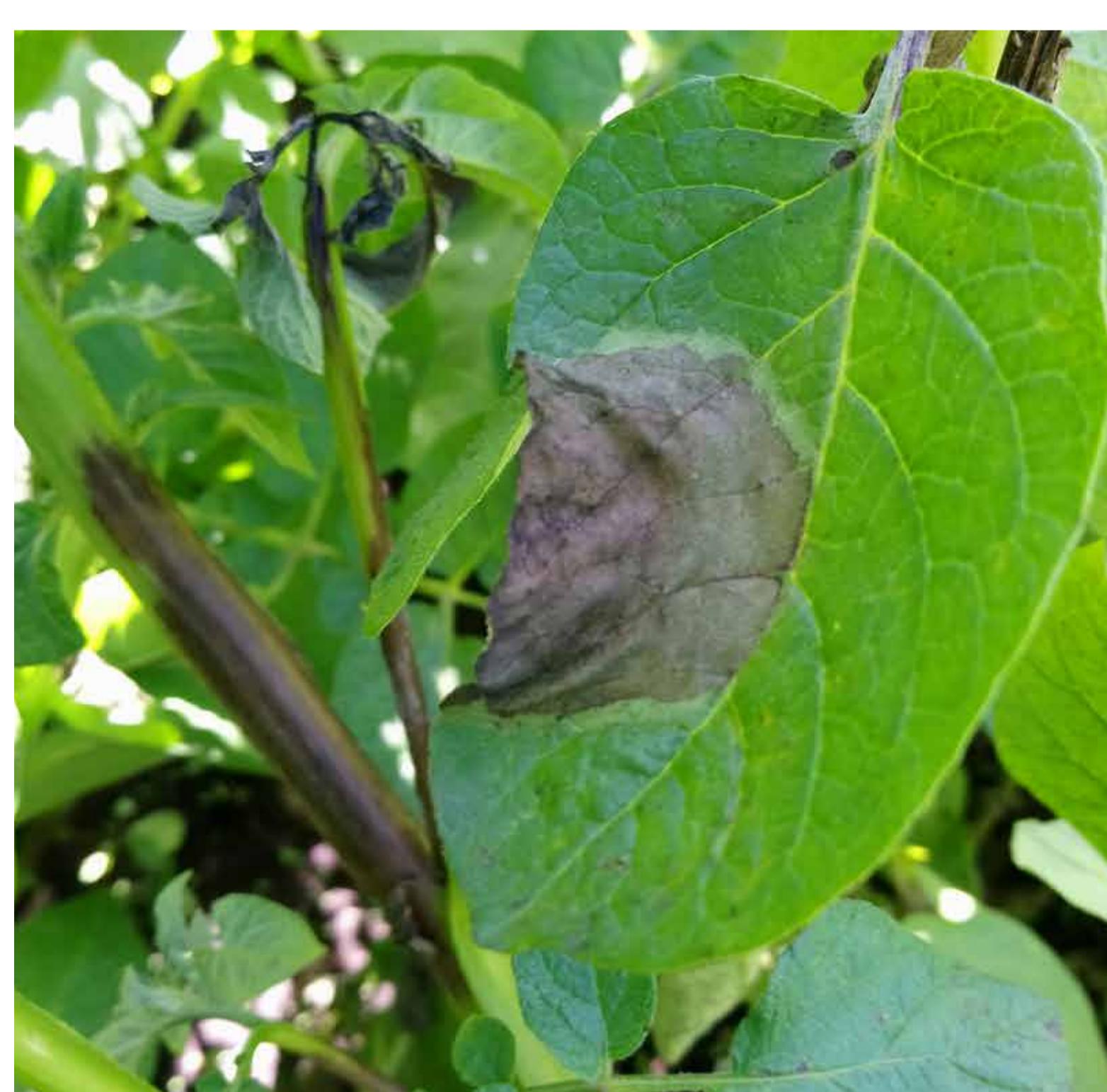
- 1) Crosses between native and introduced cultivars
- 2) Selection of advanced introduced germplasm, mainly from CIP.



### Results

Native and introduced were evaluated	Crosses among native potatoes	Ecuadorian potato collection (EPC)	EPC transferred to INIAP from UCE	Crosses (local x introduced)	Recurrent selection	Recurrent selection	Crosses natives	CIP origin	CIP origin	CIP origin	Crosses (wild x improved x natives)	Crosses (improved x natives)	CIP- Origin	MAS
1910	1930	1958	1961	1965	1982	1983	1984	1995	1999	2000	2007	2011	2015	2020
Quinta Normal de Agricultura	M.Bastidas Curipamba	Guillermo Albornoz	Guillermo Albornoz	INIAP-Sta. Catalina	INIAP-Gabriela	INIAP-Esperanza	G. Bastidas Superchola	INIAP-Fripapa INIAP-Rosita	INIAP-Suprema	INIAP-Papapan	INIAP-Natividad INIAP-Estela	INIAP-Pucashungo	INIAP-Libertad	New variety

Figure 1. Highlight events of breeding for late blight resistance in Ecuador



### Discussions

Traditional breeding has been the main method used by INIAP to get new improved varieties with resistance to diseases (late blight), high yield, earliness and quality. But, due to the large number of traits required to get the ideal potato and the polygenic nature of most of these characters, the probability of success is low. However, the large genotypic variation that exists in the EPC it is an invaluable source of genes for breeding.

Molecular marker technology might support the development of new potato varieties with required characteristics.

The inclusion of other potato genotypes with better characteristics is necessary to get the “ideotype” required. Advanced progenitors from CIP may be alternatives to include in the breeding scheme for late blight resistance

### References

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Hugo X. Cuesta<sup>1,3</sup>, Jorge E. Rivadeneira<sup>1</sup>, Héctor J. Andrade<sup>2</sup>

<sup>1</sup>Instituto Nacional de Investigaciones Agropecuarias(INIAP), Panamericana Sur Km 1 Quito, Ecuador

<sup>2</sup>Universidad Central del Ecuador, Facultad de Ciencias Agrícolas, J. Leitón s/n Quito, Ecuador.

<sup>3</sup>Corresponding author. X. Cuesta, email: xavier.cuesta@iniap.gob.ec