

YIELD AND ECONOMIC LOSSES CAUSED BY POTATO LATE BLIGHT IN CENTRAL KENYA



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ABSTRACT

Potato late blight caused by the oomycetes *Phytophthora infestans* is a major constraint to potato production in Kenya. There is however, paucity of information on the extent of losses caused by the disease. Yield and economic losses as a result of infection by late blight were computed using data from fungicide evaluation trials in on-station and on-farm trials over a 17 year period starting from 1991 to 2007. Tuber yields from the highest yielding treatment in each trial were compared with those from the unsprayed plots. Gross revenue was calculated based on the prevailing price of ware potatoes at the time of harvest. Results showed that yield losses ranged from 22.6 to 80.9% while losses in revenue varied from Kshs 37,500 to 119,500 per hectare. The magnitude of yield loss was dependent on susceptibility of the variety planted; weather conditions and the prevailing market prices of ware potatoes.

RESULTS AND DISCUSSION

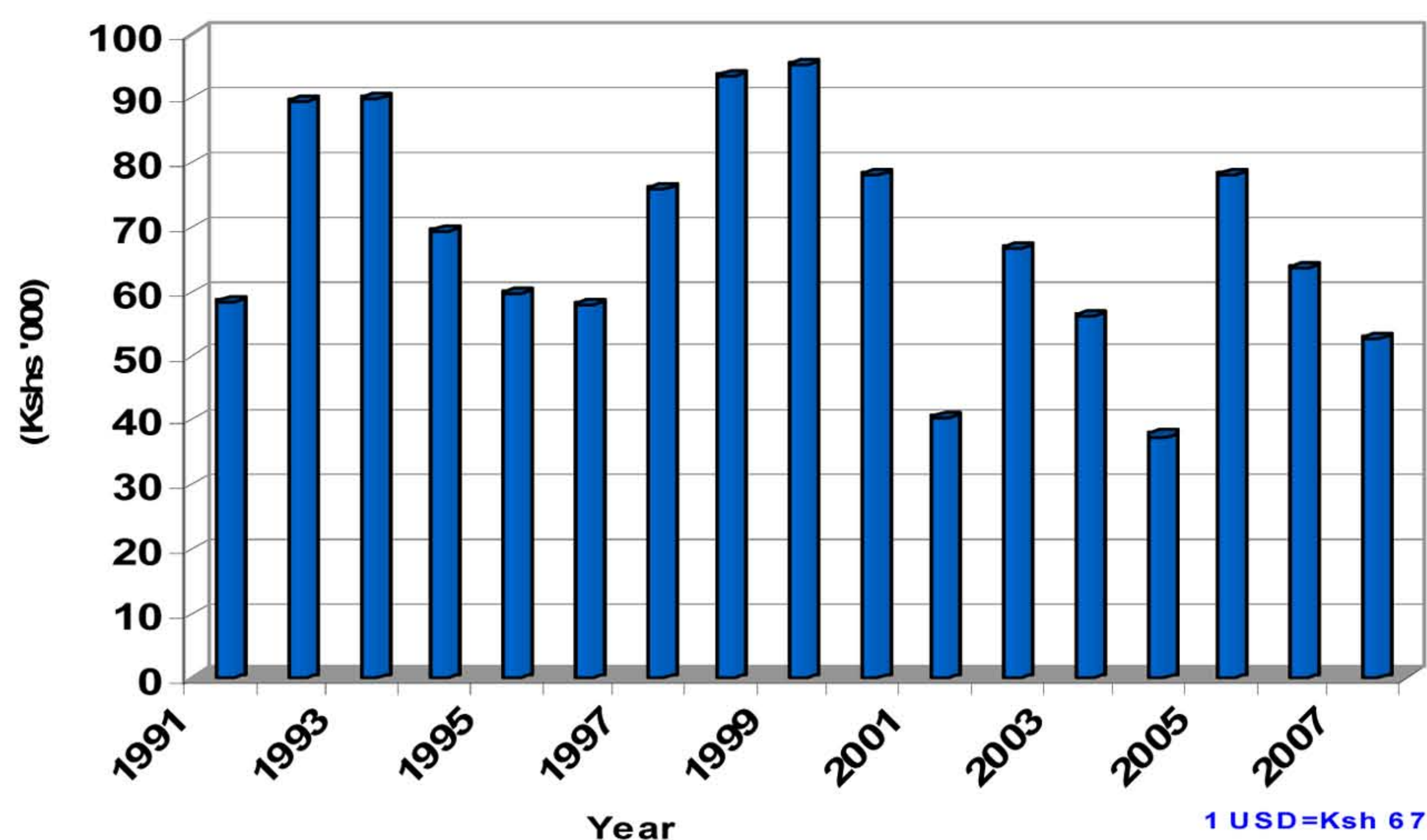
- Total tuber yields from the best yielding fungicide treatment varied from 16.6 to 37.4 t ha⁻¹ while those from the control plots ranged from 5.5 to 24.7 t ha⁻¹.
- Percent yield loss ranged from 22.6 to 80.9%
- Gross revenue per hectare from the best yielding fungicides treatments varied from Kshs 83,000 to 187,000 while the range was Kshs 27,500 to 123,500 in the unsprayed control plots. Losses in revenue due to the disease varied from Kshs 37,500 to 119,500 t ha⁻¹.
- The magnitude of yield and revenue losses was dependent on susceptibility of the variety planted, weather conditions and the prevailing market prices of ware potatoes at the time of harvest.

Table 1: Yield losses as due to late blight between 1991 and 2007

Year	Variety	Tuber yields (t ha ⁻¹)		% Yield loss
		BYT ¹	UT ²	
1991	Kerr's Pink	20.9	9.2	55.9
1992	D. Robyjn	26.4	8.2	67.8
1993	Desiree	27.3	9.3	65.9
1994	Desiree	20.1	6.2	69.2
1995	Kerr's Pink	17.4	5.5	68.4
1996	Kerr's Pink	19.7	8.1	58.9
1997	D. Robyjn	24.2	8.9	63.2
1998	Desiree	26.5	7.8	70.1
1999	Kerr's Pink	31.2	12.2	80.9
2000	Kerr's Pink	26.3	10.7	59.3
2001	Kerr's Pink	16.6	8.5	48.6
2002	D. Robyjn	31.9	18.6	41.8
2003	Nyayo	21.0	7.6	64.0
2004	Tigoni	33.1	25.6	22.6
2005	D. Robyjn	29.9	14.3	52.2
2006	Tigoni	37.4	24.7	33.9
2007	Tigoni	34.3	23.8	30.6

¹ Best yielding fungicide treatment
² Unsprayed treatment

Loss in revenue due to late blight



CONCLUSION

It is concluded that late blight remains a serious threat to potato production causing significant yield and economic losses to farmers. These results, along with similar information on other potato production constraints, can be used as a basis for setting priorities in allocating research resources.

INTRODUCTION

In Kenya, potato is grown by approximately 500,000 farmers who cultivate about 130,000 ha with an annual production of over 1 million tonnes. On average yields are less than 10 t ha⁻¹. Many factors including the disease late blight are responsible for the yield gap (Lung'aho, 1998). Unfortunately, studies that quantify the losses caused by the disease are scarce. Yet this information is necessary when addressing many policy questions that are aimed at developing strategies to manage the disease.

MATERIALS AND METHODS

Data was obtained from fungicide evaluation trials carried out at KARI-Tigoni between 1991 and 2007. Tuber yields from the highest yielding treatment in each trial were compared with those from the unsprayed plots and percent yield loss calculated as the ratio of the difference between the yield of the highest yielding fungicide treatment and the unsprayed control to the yield of highest yielding fungicide treatment expressed as a percentage.

Gross revenue was calculated using the prevailing price of ware potatoes at the time of harvest. Loss in revenue was calculated as the difference in revenue between the best yielding fungicide treatment and the unsprayed control.

REFERENCE

Lung'aho C. 1998. Current status of integrated management of late blight in Kenya. In: *Proceedings of a Regional Training Workshop on Integrated Management of Potato late blight and bacterial wilt*. November 23-27. 1998. Kabale, Uganda.