

EFFICIENCY OF SELECTED POTATO CULTIVARS UNDER VARIOUS PROTECTION PROGRAMS AGAINST PHYTOPHTHORA INFESTANS MONT DE BARY

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INTRODUCTION

Poland is one of the largest potato producers in the world and has one of the key plants in Europe food and industrial plants based on a potato. Unfortunately, yields of potato tubers are almost twice lower than those obtained in the EU countries. The late blight caused by the oomycete *Phytophthora infestans* Mont de Barry is one of the most notorious diseases to afflict solanaceous plants. The main reasons for this are: high susceptibility of genetically homogeneous varieties to *Ph. infestans* and imperfect protection of plantations against this pathogen [1-3]. Hence the goal of the research was to determine the effectiveness of comprehensive strategies (programs) for potato protection against *Ph. infestans* in the conditions of Central and Eastern Poland.

MATERIAL AND METHODS

The experiment was carried out in the Parzew (2015-2017) using the subblock method randomly selected in a dependent split-plot design, in three repetitions. The overriding factors were the strategies of protection against *Ph. infestans*, with different frequency of fungicide application (three to nine treatments) and the control object, without protection. The second-order factor consisted of four potato cultivars with different resistance to *Ph. infestans* and a mixture of these varieties. In the experiment, constant mineral fertilization was applied in the amount of 90 kg N, 42 kg P, 106 kg K.ha⁻¹, determined on the basis of the abundance of these components in the soil. The experiment was carried out with a spacing of 67.5 x 37 cm in the last decade of April each year. Propagation material was C/A grade. Nursing treatments and other protective treatments were applied in accordance with good agricultural practice. The criterion for assessing the effectiveness of the protection strategy was the rate of potato blight spreading, increase in total and marketable tuber yield, dry matter, starch, and protein. The test results were statistically calculated using ANOVA.

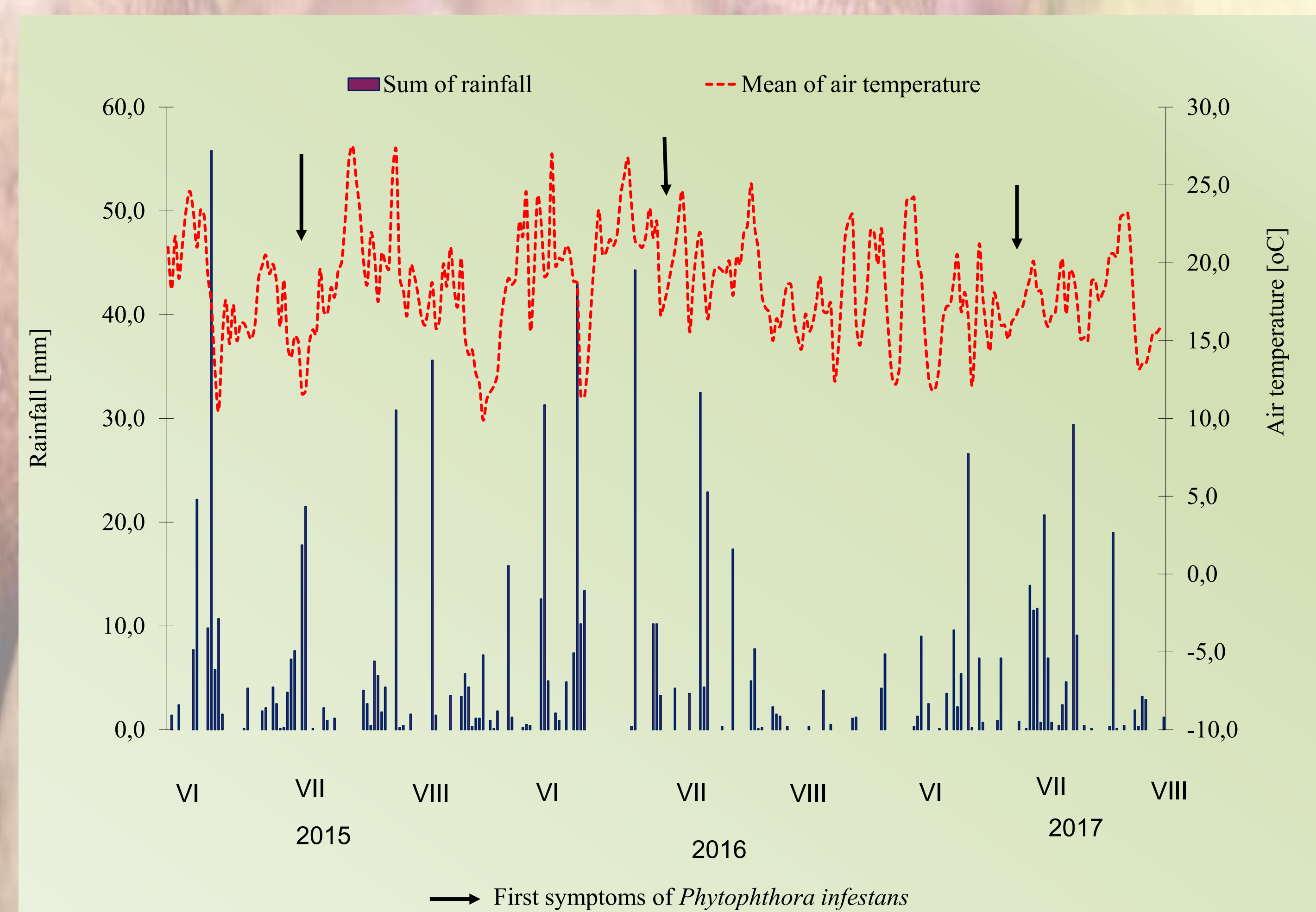
RESULTS

Table 1. Efficiency of protection against late blight expressed by yield of dry mass, starch, and specific protein (2015-2017)

Strategies of protection	Yield of dry mass		Yield of starch		Yield of specific protein	
	t·ha ⁻¹	%	t·ha ⁻¹	%	t·ha ⁻¹	%
Control object	7.2	100	5.0	100	0.50	100
Protection 3 x	8.7	121	8.2	161	0.79	158
Protection 6 x	9.1	126	7.1	139	0.86	172
Protection 9 x	8.2	114	6.6	129	0.92	184
LSD _{p0.05}	0.4		0.3		0.04	



Figure 1. Daily air temperatures and rainfall in July-August 2015-2017 in Uhnin acc. to COBORU



CONCLUSIONS

1. The strategy with sixfold protection turned out to be the most effective in terms of the overall yield of tubers, dry matter and starch, and the strategy with protection against potato blight was the most effective in terms of protein yield. Moreover, it was proved that the resistance of varieties to *Ph. infestans* was a priority factor and should primarily determine the choice of a strategy for protection against potato blight.
2. The early blight spread the fastest on the 'Danusia' variety, while the late blight – on the 'Ania' variety.
3. The impact of late blight strategies is especially valuable when plants are exposed to the stress of heat and moisture.

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