

Protection from Colorado beetle and Late blight of potatoes in the system of organic farming

Petr Dvořák, Karel Hamouz, Perla Kuchtová, Jaroslav Tomášek

Czech University of Life Science Prague, Kamýcká 129, 165 21 Prague-Suchdol, Czech Republic
(e-mail: dvorakp@af.czu.cz)

Abstract

Phytophthora infestans (Mont.) de Bary, the causal agent of late blight and Colorado potato beetle (CPB) *Leptinotarsa decemlineata* (Say), the most important defoliator of the potato crop in Europe (Ferro, 1985) are the most important pathogens of potato (*Solanum tuberosum* L.). Protective sprays with copper fungicides are currently used to control the disease in the most organic production systems. However, use of copper fungicides in organic farming has recently been restricted by the European Commission. Therefore, the development of alternative agents that can replace copper is very desirable. Mulching potatoes with straw can control CPB and increase yields at the same time.

The trial was conducted in year 2008 at Experimental station of Department of Crop Production of the Czech University of Life Science Prague-Uhřetěves. For the experiments, two varieties of early potatoes Finka and Katka were used in different type of growth structure (row spacing - 800 mm and two inter-space distances of seed tubers - 370 mm and 450 mm) and different protection mulching (grass mulch after planting, grass mulch after second hoeing and black polypropylene woven mulch).

Mulching had no significant effect on CPB migration (on grass-mulched plots by 51 % and on black-polypropylene-textile-mulched plots by 28 % higher incidence of beetle in comparison with bare soil). Higher population of beetle and larvae on black-polypropylene-nonwoven textile decreases yield of ware potatoes. For example plant extracts of *Pyrethrum parthenium* and *Syringa vulgaris* showed no significant effect on the level of incidence of CPB (by 38 % and 40 % lower incidence of CPB in comparison with non-sprayed treatment plots).

Protective sprays with copper fungicides had significant effect on increasing of ware potatoes yield. Any of the treatments (for example milk spray or plant extract from *Juglans regia*) were not as effective as copper.

Key words: organic farming, potato, Colorado potato beetle, late blight, mulch, yield, plant extracts