

DOKTORSKÝ STUDIJNÍ PROGRAM/*DOCTORAL STUDY PROGRAM*

VYPSÁNÍ TÉMATU/*LISTING OF TOPIC*

Studijní program/*Study Program*: **Agricultural Specialization**

Studijní obor/*Branch of Study*: **Agricultural and Forestry Phytopathology and Plant Protection**

Katedra/*Department of*: **Plant Protection**

Školitel, email/*Supervisor, email*: **prof. Ing. Pavel Ryšánek, CSc.**

Konzultant/*Co-supervisor*: **Ing. Jiban Kumar, Ph.D.**

Forma studia/*Form of Study*: **Full_time**

Typ tématu/*Type of Theme*: Disposable

Téma/Topic: **Sugar beet infecting poleroviruses and resistance of beet genotypes against them**

Hypotézy/Hypotheses: The incidence of virus yellows in sugar beet will increase in Czech Republic after banning of neonicotinoids. One of the viruses causing virus yellows is the *Beet chlorosis virus*. Various weeds are the source of the infection.

Anotace/Summary: The genus *Polerovirus* belongs to the family *Luteoviridae*, which consists of a single-stranded plus-sense RNA of 5.7 kb encoding six open reading frames (ORFs). The poleroviruses are transmitted by aphids in circulative persistent manner. Three poleroviruses are known to infect sugar beet and cause yellowing diseases, including *Beet mild yellowing virus* (BMV), *Beet chlorosis virus* (BChV), and *Beet western yellows virus-USA* (BWYV-USA). Yellowing diseases have been satisfactorily controlled since the early 1990s by controlling aphid vectors with neonicotinoid insecticides. As the use of neonicotinoids has been restricted recently, yellowing diseases have reemerged in Europe and other parts of the world. Therefore, it is crucial to take preventive measures and/or grow disease-resistant cultivars to minimize yield losses and ensure sustainable management of crops, including sugar beet, against yellowing diseases.

The main objective of the Ph.D. is to develop durable protection of sugar beet crops. This includes developing sensitive detection methods for early detection of the virus, monitoring viruses in sugar beets and weeds to identify virus reservoirs, and evaluating sources of resistance in sugar beets to the most prevalent viruses. The ultimate goal is to comprehensively control viral diseases in sugar beets and evaluate plant resistance to ensure yield stability and minimize pesticide use.

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Podpis/*Signature*: