

Collection pathogens of hop

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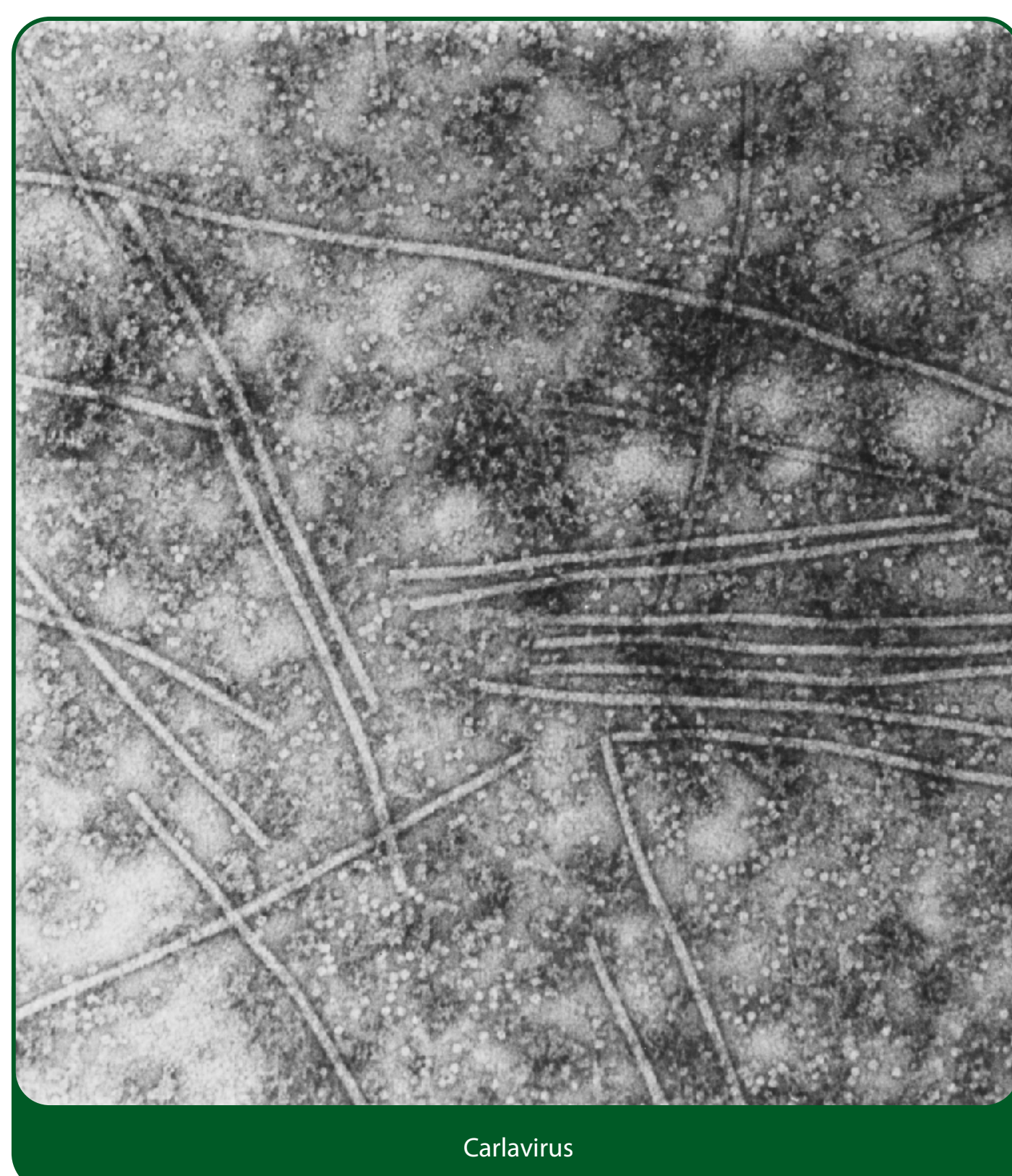
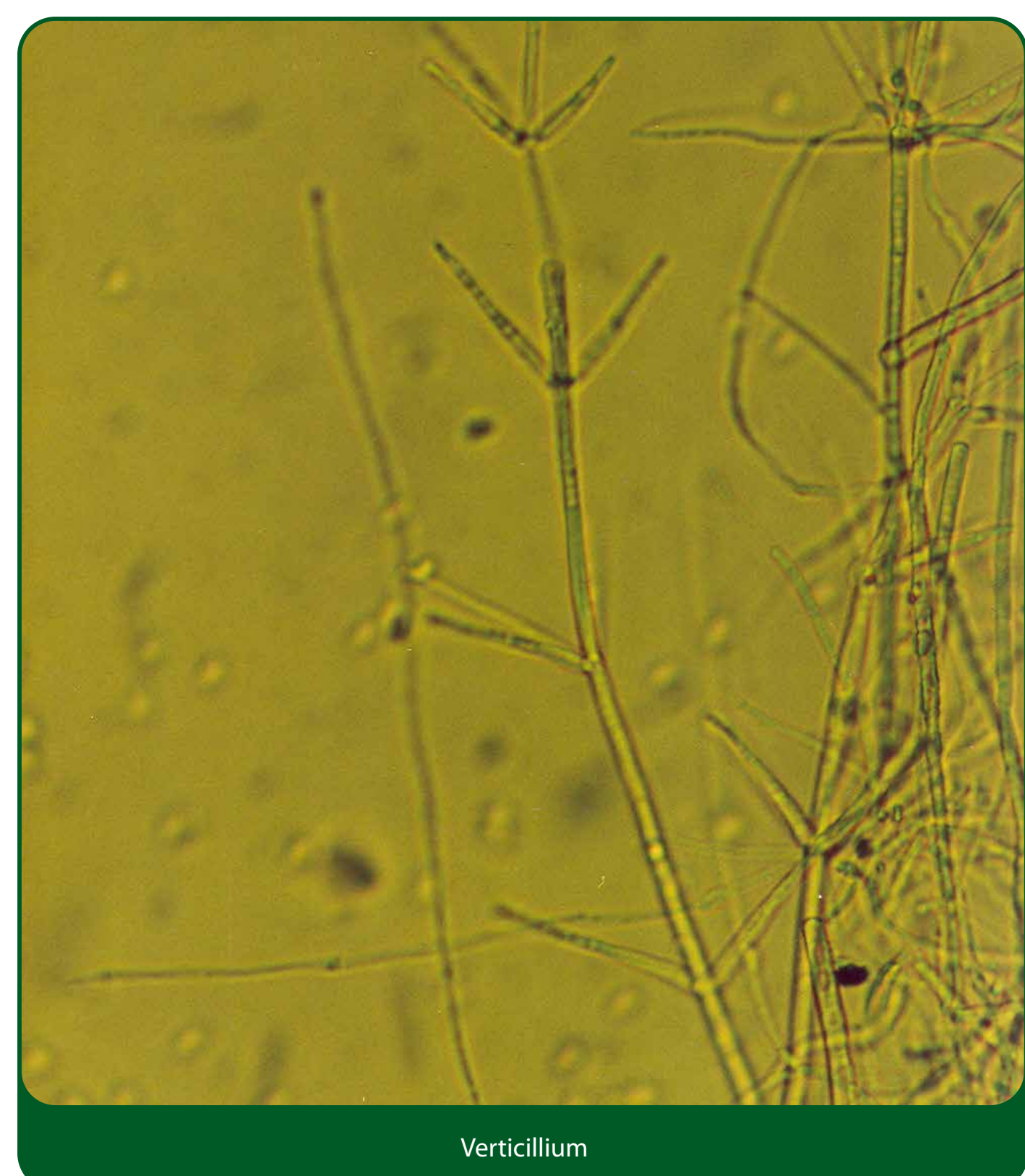
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Introduction

Dealing with genetic resources in the Czech Republic is governed by Act 148/2003. This law regulates the conditions and procedures for the protection, conservation and use of genetic resources of plants and microorganisms that are found in the Czech Republic and are important for food and agriculture for the preservation of biological and genetic diversity of the world's natural wealth and to allow their use for the needs of present and future generations. These conditions and procedures are governed by the **National Program** for the conservation and utilization of plant genetic resources and microorganisms important for Food and Agriculture. It consists of three separate National programmes:

1. The National programme on conservation and utilization of plant genetic resources and agro-biodiversity
2. The National programme on the conservation and use genetic resources of microorganisms and tiny animals important for food and agriculture
3. The National programme on protection and utilization of livestock and other animals for food and agriculture

The National programme on the conservation and use genetic resources of microorganisms and tiny animals important for food and agriculture

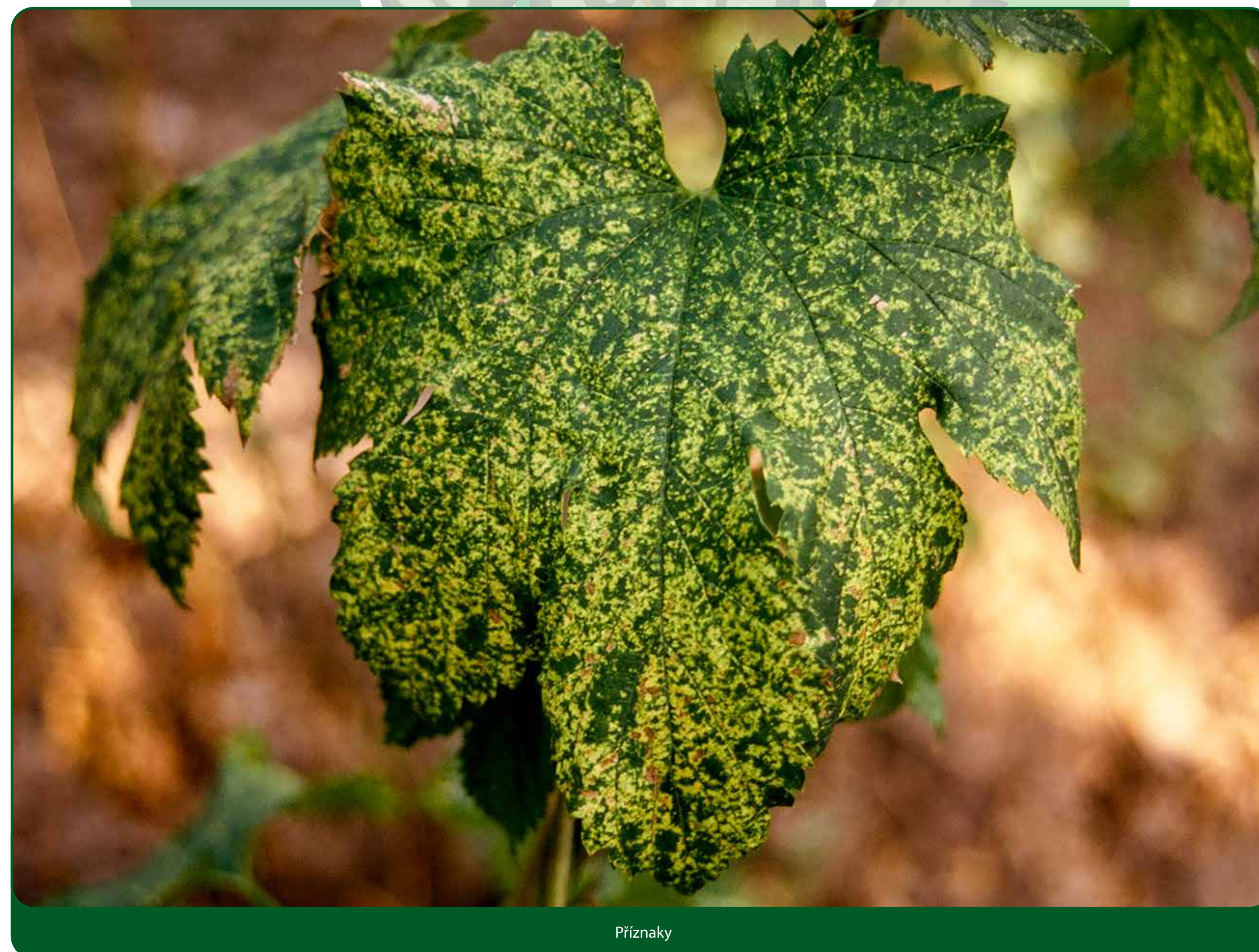


The aim

- Conservation of genetic resources of microorganism's ex situ in collection, safe maintaining of the genetic resources and protection their biodiversity
- Record keeping and documentation of genetic resources, their evaluation on molecular level and possibility of utilization for food and agriculture
- Enhancing the international cooperation, exchange of genetic resources

The programme consists of network 22 collections, specialized on either harmful organisms of animals (viruses and bacteria useful for veterinary practice) and agriculture crops (viruses, bacteria, phytoplasmas, rusts, powdery mildews, oomycetes, basidiomycetes and other fungi, insects, nematodes and mites) or utilizable microorganisms such as dairy microorganisms, brewery yeasts and rhizobia.

Collection of viruses, viroids and pathogenic fungi of hops, subsidy code 6.3.5., plays an important role in the context of biodiversity conservation of selected pathogens and also serves as a collection of positive controls for diagnostic and research activities.



Material and methods

New isolates each pathogen hops are obtained in the exploration of a wide range of vegetation hop (old hop garden, wild hops collection etc.). From the results of positive plants are collected vegetative plant parts, transferred to greenhouse conditions, and isolated after a comprehensive health assessment are prepared for inclusion in the collection. Individual items of the collection are kept under numerical designation and is led by complete documentation. The data are transmitted to a central database, which is managed by the Crop Research Institute v.v.i. in Prague <http://www.vurv.cz/mikroorganismy/>.

Results

In the isolated greenhouse, 61 hop plants containing viruses ApMV and HMV and viroids HLVD and HSVd and their mixed infections were retained in 2022. Cultivation in nutrient medium in Petri dishes is carried out by 9 isolates of *Verticillium nonalfalfae* and 3 isolates of *Verticillium dahliae*. The 170 isolates of pathogens are maintained in culture in vitro, 74 isolates are maintained in tubes over calcium chloride, 251 isolates are preserved in dried form, 190 isolates are stored by lyophilisation, see **Table 1**.

Table 1: Collection pathogens of hop in 2022

Pathogen	Form of preservation							
	Plants	<i>in vitro</i>	Chloride	Drying	Lyophilisation	Agar	Cryo	Total
Virus								
ApMV	11	31	30	88	47			207
HMV	15	114	42	130	107			408
HMV + ApMV	12	13	2	33	26			86
Total virus	38	158	74	251	180			701
Viroid								
HLVD	2				1			3
HSVd	6	12			9			27
Total viroid	8	12			10			30
Fungi								
<i>Verticillium nonalfalfae</i>						13	5	18
<i>Verticillium dahliae</i>						2	1	3
Total fungi						15	6	21
Total	46	170	74	251	190	15	6	752

References

The Act no. 148/2003 on Conservation and Utilization of Plant and Microbial Genetic Resources for Food and Agriculture.

Acknowledgement

This paper was prepared with the support of the National program for conservation and utilization of plant genetic resources, animals and microorganisms important for nutrition and agriculture, Collection of viruses, viroids and pathogenic fungi of hops, subsidy code 6.3.5.