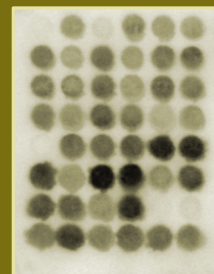
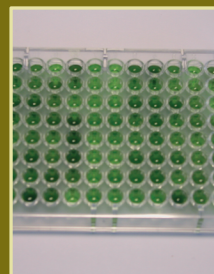
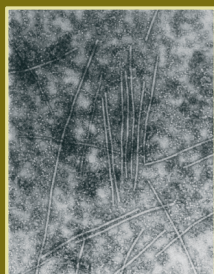


Evaluation of health state of hops in Trschitz growing region

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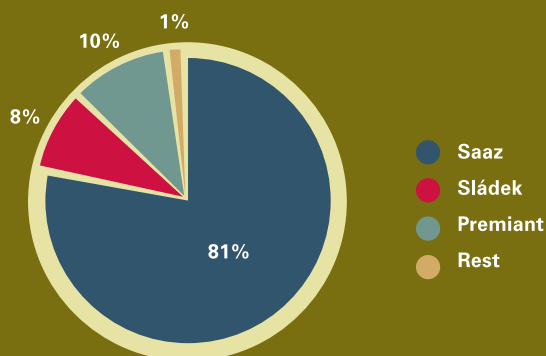
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Hop (*Humulus lupulus L.*) as a perennial crop propagated vegetatively is severely endangered by virus diseases, which cause economic damage due to decrease of alpha acid contents, i.e. ingredient very important for beer production. Of course, the yield of dry hops declines as well. Many viruses and viroid were determined in hop plants. Among the most important viruses belongs the Apple mosaic virus (ApMV) from the genus *Illavirus*, Hop mosaic virus (HpMV), Hop latent virus (HLV) from the genus *Carlavirus* and Arabis mosaic virus (ArMV) from the genus *Nepovirus*. Hop latent viroid (HLVd) from the group *Pospiviroid* is the most frequent viroid found in hops.

Table 1: Tirschitz hop growing region in 2008

Variety	Acreage (ha)	Production (t)	Average yield (t/ha)
Saaz	579	868,15	1,50
Sládek	59	176,91	3,00
Premiant	74	159,77	2,16
Rest	7	11,01	1,57
Total	702	1 215,84	1,69



State of health was evaluated with the help of double antibody sandwich enzyme - linked immunosorbent assay (DAS ELISA) test and HLVd by dot - blot method in hop gardens in Trschitz growing region. We evaluated varieties Saaz, Premiant, Magnum and Fuggles. We also checked nursery planted with rootstocks. The presence of Apple mosaic virus (ApMV) as well as Hop mosaic virus (HpMV) and Hop latent viroid (HLVd) were found out.

Results

In total 29 hop gardens were evaluated for presence of ApMV, HpMV and HLVd. The results can be found in Table 2. The evaluation contained virus free forms of Osvalds' clones 72 and 114 and varieties Premiant, Magnum and Fuggles. With regards to the fact that all the hop yards were planted with virus free plants, the positive findings of ApMV and HMV are very low and will have to be confirmed by assessment in next year. Nevertheless, HLVd infested all the hop-gardens where fresh cones were sampled.

Table 2: Evaluation of state health within hop gardens in Trschitz growing region in 2008

No.	Hop - garden	Variety	Year of planting	HLVd quantification	ELISA	
					ApMV	HMV
1	ZD Senice na Hané	Os. cl. 72 VT	2002	37,62655	3	0
2	ZD Senice na Hané	Os. cl. 114M VT	2007	27,32178	0	0
3	ZD Senice na Hané	Os. cl. 72 VT	2000	52,74291	1	1
4	ZD Senice na Hané	Os. cl. 72 VT	1996	0,200994	1	0
5	ZD Hněvotín	Os. cl. 72 VT	1995	0,010000	0	2
6	ZD Hněvotín	Os. cl. 72 VT	1998	23,22301	0	3
7	D. Zatloukalová, Bystročice	Os. cl. 72 VT	1997	48,27116	1	0
8	AGRA Velký Týnec	Os. cl. 72 VT	1995	35,49518	0	0
9	Agrospol Velká Bystřice	Os. cl. 72 VT	1995	37,63005	0	1
10	Agrospol Velká Bystřice	Os. cl. 72 VT	1996	29,71886	2	3
11	ZD Doloplazy	Os. cl. 72 VT	1998	47,85795	1	3
12	Tršická zem. a.s.	Os. cl. 114M VT	2007	32,06871	0	0
13	Tršická zem. a.s.	Os. cl. 72 VT	1996	28,14631	0	2
14	ZD Kokory	Os. cl. 114M VT	2002	-	0	0
15	ZD Kokory	Os. cl. 72 VT	1996	-	0	1
16	ZD Kokory	Os. cl. 72 VT	2007	-	0	0
17	ZD Kokory	Os. cl. 72 VT	1994	-	0	0
18	ZD Kokory	Os. cl. 72 VT	1999	-	0	1
19	Mor. zem. a.s. Prosenice	Os. cl. 72 VT	1997	-	3	0
20	Mor. zem. a.s. Prosenice	Os. cl. 72 VT	1995	-	0	0
21	Mor. zem. a.s. Prosenice	Os. cl. 72 VT	1996	-	0	1
22	AGRAS Želatovice	Os. cl. 72 VT	1998	-	0	0
23	J. Macháčkova, Domaželice	Os. cl. 72 VT	1992	-	0	0
24	MORAVA HOP Lipník n. B.	Os. cl. 114M VT	2001	-	0	1
25	MORAVA HOP Lipník n. B.	Os. cl. 72 VT	2000	-	0	0
26	MORAVA HOP Lipník n. B.	Premiant VT	2001	-	0	1
27	MORAVA HOP Lipník n. B.	Magnum	2004	-	0	0
28	MORAVA HOP Lipník n. B.	Fuggles	2006	-	0	2
29	MORAVA HOP Lipník n. B.	Fuggles	2007	-	0	1

Three nursery schools were a part of the evaluation process (Table 3). Plant material sampled from these nurseries was free from ApMV and HMV. It was planting material sampled from hop-gardens planted by virus free plants where no positive findings of the above-mentioned viruses were found out

Table 3: Evaluation of state health of rootstock in nurseries in 2008

No.	Locality	Variety	Year of planting	ELISA	
				ApMV	HMV
1	J. Macháčkova, Domaželice	Os. cl. 72 VT	2008	0	0
2	ZD Kokory	Os. cl. 72 VT	2008	0	0
3	ZD Kokory	Os. cl. 72 VT	2008	0	0

Acknowledgement

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