PROGNOSIS OF DAMSON-HOP APHID (*Phorodon humuli Schrank*) WITHIN HOP PROTECTION MANAGEMENT IN CZECH REPUBLIC

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For the monitoring of *Phorodon humuli* winged females migration from primary host plants (genus *Prunus*) we commonly use a method based on a sum of effective temperatures (SET). The principle of this method consists in counting biologically effective temperatures reaching the values over developmental threshold of *P. humuli* since that time when their number reaches the value SET, which is necessary for the development of a generation. SET for wingless females (virginoparae) that feed on the *Prunus* leaves amounts to 140 °C under the starting developmental threshold of 3 °C. This value was used as the basic one for the determination of the number of *P. humuli* generations on *Prunus*. The calculation of the expected number of generations (P_{GI}) on *Prunus sp.* as well as on hop plants to each day is carried out with the help of the following formula:

$$P_{GI} = \frac{SETo i}{SET_{GM}}$$

SET_{oi} = sum of effective temperatures for the period from the occurrence of the wingless females on *Prunus spp.* or on hop plants to each day of assessment (i) is calculated by the following formula:

$$\sum = \frac{(t_{min} - t_{max})}{2} - SPV$$

t_{min} = minimal daily temperature, t_{max} = maximal daily temperature, SPV = starting threshold of *P. humuli* development, SET_{GM} = sum of effective temperatures for the development of a wingless female generation

The first occurrence of winged damson-hop aphids is possible to observe when the SET = 345 °C, whereas the last one when the SET = 1200 – 1250.

Up-to-date information on the occurrence of damson-hop aphids and methodical recommendations on treatments against this pest are available on the following address: www.chizatec.cz. Czech Hop Grower's Association also sends them via e-mail.

Table1: The determination of migration time of the individual winged aphids (migrantes alatae) from Prunus spp. to hop plants

Number of generation on *Prunus spp.*	SET	Mean SET for development of a generation
1. generation	345 - 485	431
2. generation	486 - 625	562
3. generation	626 - 765	675
4. generation	766 - 905	851
5. generation	906 - 1200	916

REFERENCES

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• **Vostrel, J.; Klapal, I.; Kudrna T., 2008:** Methodology of hop protection against damson-hop aphid (in Czech) Hop Research Institute, Zatec, Czech Republic: 39 pp.

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Figure 1:
Hop leaf infested by winged aphids (*migrantes alatae*) and wingless females. White color is typical for nymphs, whereas green color for adults.

Figure 2:
Winged females (*migrantes alatae*) on a young hop leaf signalize the beginning of spring migration from primary host plants.

Figure 3:
Typical symptoms of damage caused by damson-hop aphid (*Phorodon humuli Schrank*) in the time before harvest.

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