Hop report

January–April 2020 (Saaz region)

1. Weather condition in 1st trimester 2020

Long term average of the air temperatures and precipitation amount in the period of 1981–2010 as measured on the meteorological station Žatec

Temperature (°C)	2020	2019	30 years average	Diff. 19-20
January	1,6	0,5	-0,7	+1,1
February	5,4	2,0	0,4	+3,4
March	5,3	7,2	4,3	-1,9
Summary 1st trimester	**12,3**	**9,7**	**4,0**	**+2,6**

Precipitation (mm)	2020	2019	30 years average	Diff. 19-20
January	8,2	12,6	21,5	-4,4
February	45,4	19,8	20,0	+25,6
March	31,8	22,6	25,9	+9,2
Summary 1st trimester	**85,4**	**55,0**	**67,4**	**+30,4**

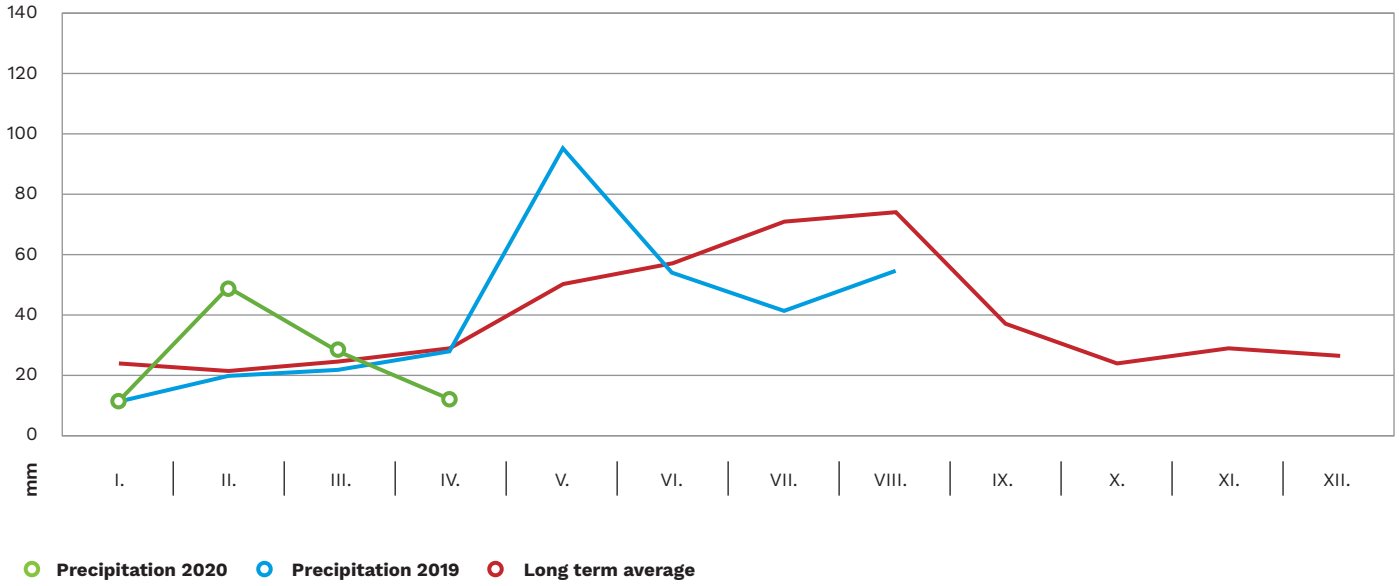
The temperatures during first two months of 2020 were higher in comparison to previous year as well as to long-term average. March 2020 was colder than the same month of 2019, but the temperature was higher than the long-term average. Paradoxically, March of this year was colder than February.

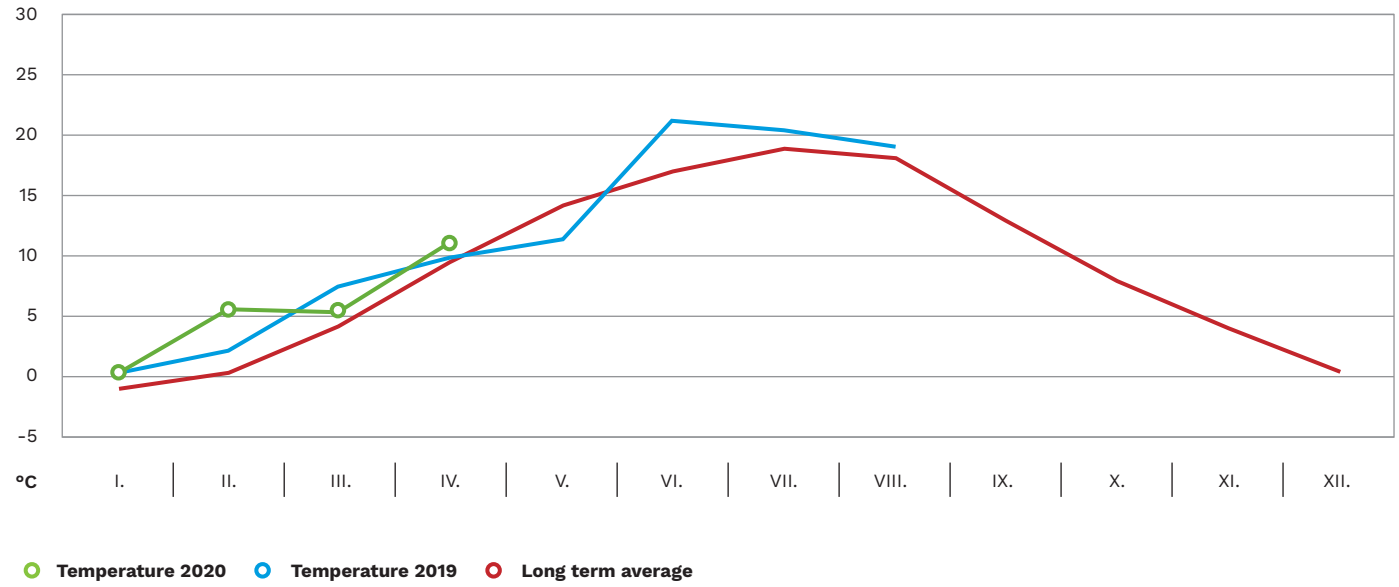
Precipitations during the first trimester of 2020 were above-average, as far as the long-term period is concerned, as well as above the results of 2019. The rainfalls increased substantially in February, when they reached 227% of the long-term average. This year´s winter was practically without snow in our region.

The weather development enabled earlier beginning of the spring field works. Similar situation was also in hop gardens – the works started already in the beginning of March above all with harrowing of the hop gardens. During the last decade of March the hop growers started to prune the hops of hybrid varieties.

2. Weather condition in April 2020

Temperature & precipitation in April	2020	2019	30 years average
Average temperature (°C)	10,7	9,6	9,1
Precipitation (mm)	12,8	30,6	30,7
Total precipitation (mm) since 1st January	98,2	85,6	98,1
Max. temperature (°C)	26,2 (16 4.)	25,7 (26. 4.)	
Min. temperature (°C)	-7,5 (1. 4.)	-4,1 (14 .4.)	
Max. precipitation (mm)	12,0 (19. 4.)	23,4 (29. 4.)	
Number of dry days	27	25	





The temperatures in April 2020 were above average. The average temperature over 10°C were monitored during 21 days, although there were relatively high differences between minimum and maximum temperatures. Fresh winds made the feeling of sensorial temperature lower and by the same time they also dried up the soil considerably. As far as the precipitations are concerned, this year´s April can be considered catastrophic. As per the Ministry of the Environment of the Czech Republic the situation is the worst in 500 years, view to the fact, that previous years were very dry and the soil moisture is very low due to that reason.

3. Spring works and growth report

The weather conditions enabled the growers to carry out the spring works in hop gardens in usual time. The pruning of hops took place in habitual time thanks to the weather without rains. The growers then could regulate their time schedule of cutting the hops according to their needs. The cutting of hops was followed fluently by the stringing and embedding of training wires.

The closing of the borders and declaration of the state of emergency have caused fear concerning the ensuring of sufficient number of temporary workers. View to the cut of the production in some industrial companies it was possible to move some free workers to the spring works in the hop gardens. At the same time we registered higher interest of the local people to work in the hop gardens. By the end of April all the spring works were done properly and in time.

View to the state of the vegetation the training of hops started with the hybrid varieties, especially with the variety Sládek, during the last decade of April. Also smaller areas of the Saaz semi-early red-bine hops were locally trained, nevertheless full training of our principal variety is expected between 4th and 6th May, 2020.

4. Health condition of hops

Downy mildew of hops (Pseudoperonospora humuli Miy et Takah.) – although the weather was not favourable for the spreading of Downy mildew of hops, the growers were recommended to use the preparation Aliette 80 WG in order to eliminate the primary infection. Provided the infection is stronger, it was recommended to repeat the treatment after 14 to 21 days. At the same time similarly as in previous year also the preparation Prolifer could be used in this year. This preparation is methodically recommended for first spring application.

Alfalfa snout weevil (Otiorrhynchus ligustrici L.) – farmers´ own monitoring of this pest was recommended in individual hop gardens according to their locations, and the treatment was carried on where the number of five beetles on 100 plants was found out. The treatment was done by the preparation Actara 25 WG, approved by Central Institute for Supervising and Testing in Agriculture (ÚKZÚZ) for limited and controlled use between 17th March, 2020 and 15th July, 2020.

Flea beetle (Psylliodes attenauta Koch) – the harmfulness threshold of flea beetle is considered when 5–10% of the leaf blade is damaged. The harmful effects of this beetle is increasing due to gradual warming. The preparation Actara 25 WG was used as well. By the spring treatment against this pest we also prevent the laying of eggs by the Flea beetles females and an occurrence of a new generation.

4. Photodocumentation

View on the hop garden

Hops row view

Top of the hop plant

Hop plant

Saaz, May 4, 2020, Ing. Jaroslav Hájek

Hop report

May 2020 (Saaz region)

1. Weather condition in May 2020

Temperature & precipitation in April	2020	2019	30 years average
Average temperature (°C)	12,9	11,6	14,2
Precipitation (mm)	37,4	96,2	52,0
Total precipitation (mm) since 1st January	135,6	181,8	150,1
Max. temperature (°C)	27,3 (8. 5.)	25,0 (27. 5.)	
Min. temperature (°C)	-0,5 (12. 5.)	-2,6 (7. 5.)	
Max. precipitation (mm)	12,0 (11. 5.)	57,6 (28. 5.)	
Number of dry days	19	14	

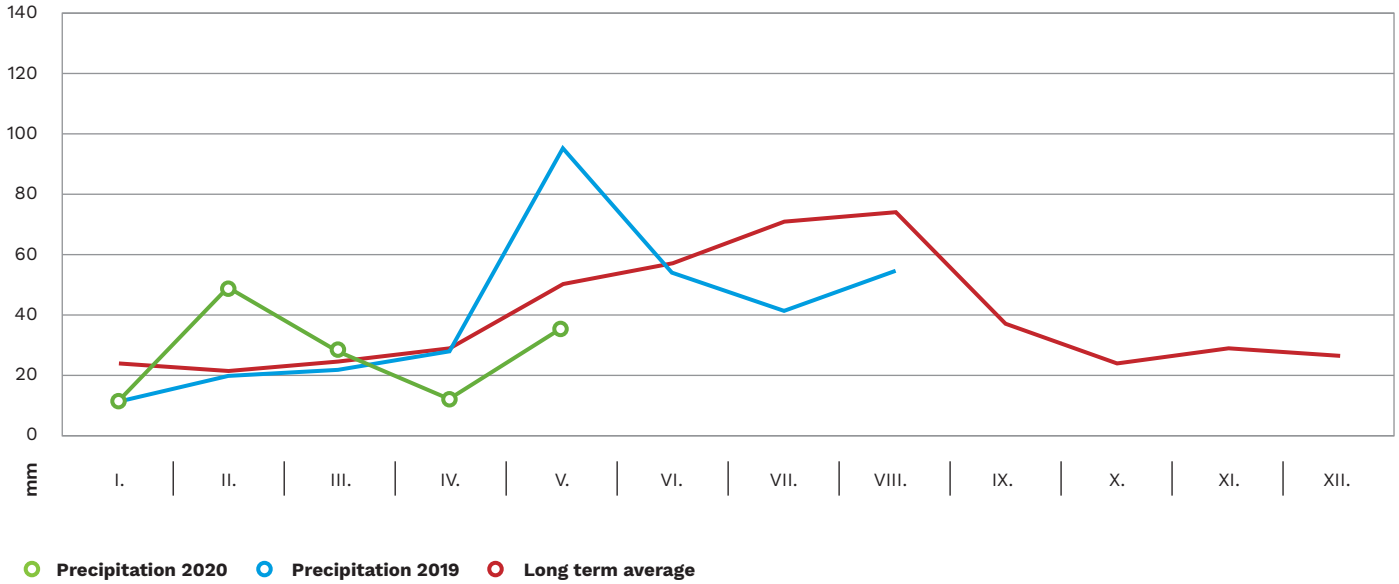
The average temperature in May was almost the same as in previous year. The coldest decade of May was the second one, when the temperature decreased three times under the freezing point. However, during this May it did not come to longer period of warmer weather. That is why the medium temperature varied below long-term average. The precipitation in May were very poor in this year – only approx. 70% of the long-term average. Although the upper layer of the soil may seem wet due to the rainfalls of the last decade of May, the deficit of the ground water unfortunately did not become better.

2. Assessment of the state of vegetation

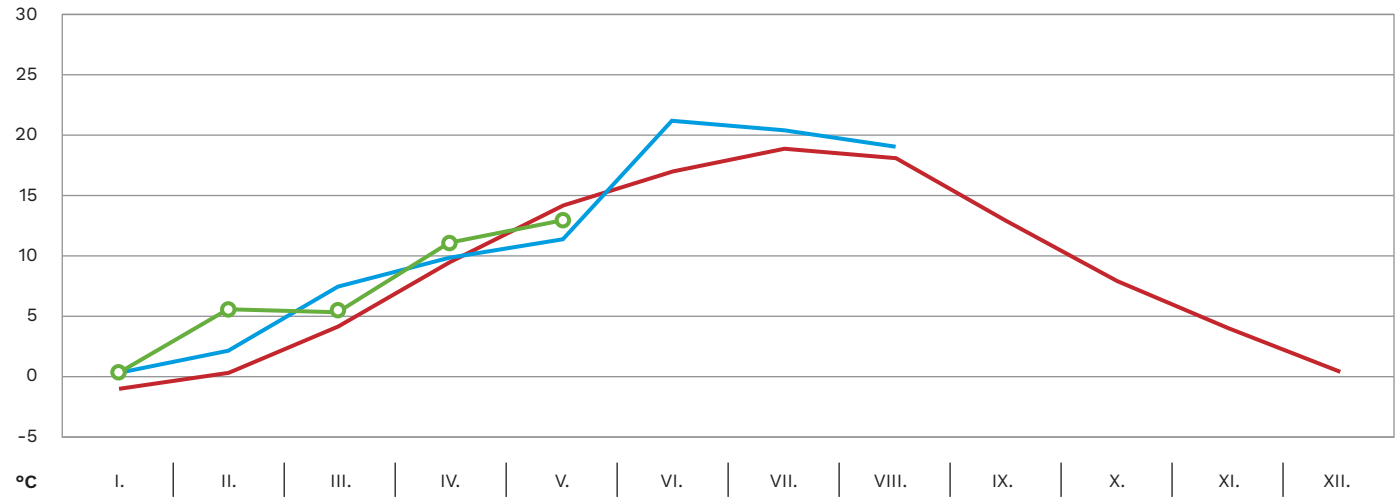
Due to cold weather the hops did not grow too fast throughout May and it did not overgrow. The training of the hops was therefore going on continuously according to the situation on individual hop gardens. Although the composition of the temporary workers differed from the situation to which the farmers are accustomed, the training of hops was completed by the end of May in relatively good quality. This year was more complicated for the growers also due to necessity to keep the health regulation related to coronavirus epidemics. In the hop gardens, where the training was finished until middle of the month, also the fertilisation and hilling were done.

3. Assessment of the health state of hops

The weather conditions of the beginning of May were adverse to the dissemination of downy mildew of hops (Pseudoperonospora humuli Miy et Takah.), what became evident also by lower occurrence of spike shoots. The change of the weather which have shown itself by the coming of rains during the third decade of May led to the increase of the infection pressure of pathogen. It was recommended to carry out the second treatment of hops by the preparation Aliette 80 WG and alternatively by the preparations Curzate K or Revus. For this purpose also the preparation Prolifer could be fully used in this year. The first occurrence of hop aphid (Phorodon humuli Schrank) was detected in the hop gardens around middle of May. The growers were recommended to carry out the treatment by the preparations Teppeki or Silvano Prime. Cold weather was also adverse for the development of red spider mite (Tetranychus urticae Koch) and it slowed down considerably the population dynamics of this pest. The preparations Nissorun 10 WP or possibly Ortus 5 SC or Vermitec 1,8 EC were recommended to be used. In some gardens it was necessary to carry out the treatment against hemp flea beetle (Psylliodes attenuata Koch). The preparation Actara was recommended.



Precipitation 2020 **Precipitation 2019** **Long term average**



Temperature 2020 **Temperature 2019** **Long term average**

4. Other information

The area of hop gardens in the Czech republic

Variety	Saaz region	Auscha region	Terschitz region	Czech republic
Saaz semi-early Red	3 302	413	486	4 201
Agnus	43	8	2	53
Bohemie	0	0	1	1
Harmonie	7	0	0	7
Kazbek	20	5	4	29
Premiant	106	36	48	190
Saaz Late	42	0	2	44
Saaz Special	42	0	0	42
Sládek	235	43	86	364
Vital	3	0	0	3
Others	13	0	0	13
Total	**3 814**	**505**	**628**	**4 947**

4. Photodocumentation

Hop field after ploughing

Hops row after ploughing

Healthy strong hop plant.

Lady bug - hop aphid predator.

Saaz, June 1, 2020, Ing. Jaroslav Hájek

Hop report

June 2020 (Saaz region)

1. Weather condition in June 2020

Temperature & precipitation in June	2020	2019	30 years average
Average temperature (°C)	18,5	21,4	17,0
Precipitation (mm)	73,6	56,2	59,1
Total precipitation (mm) since 1st January	209,2	238,0	209,2
Max. temperature (°C)	32,3 (27. 6.)	37,7 (26. 6.)	
Min. temperature (°C)	7,1 (2. 6.)	5,3 (9. 6.)	
Max. precipitation (mm)	13,6 (3. 5.)	35,0 (10. 6.)	
Number of dry days	11	21	

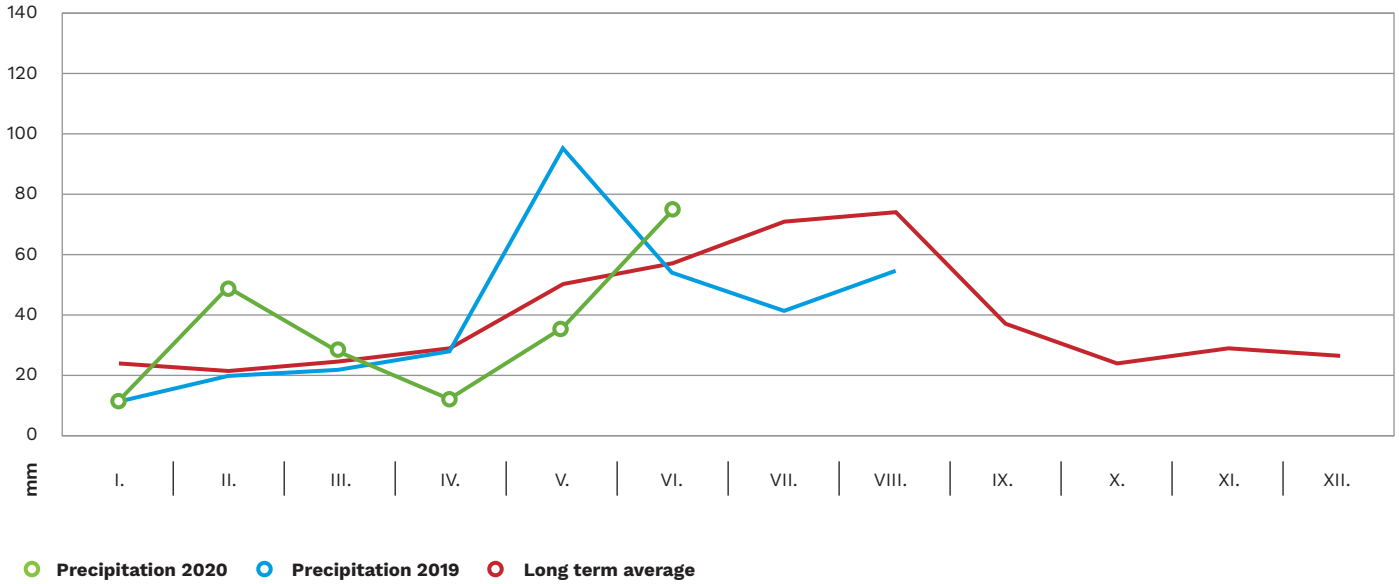
Humid and rainy weather of the last decade of May 2020 lasted practically throughout June. The precipitations were distributed equally during the month, what is proved by only eleven days without rains. The precipitations around middle of June were of stormy character – about 150 hectares of the hop gardens were damaged by hail storm. The losses were on the level of 10 to 30 %. Due to the stormy nature of the rains, the differences among individual localities, find out from the data recorded by small weather stations, were very high and in some cases they reached the limit of up to 130 mm. Also the temperatures developed quite favourably. The average temperature in June amounts to 18, 45°C and exceeded just lightly the long-term average. In this year even the feared increase of the temperatures to the tropical level in the last decade of June did not happen. The weather development in June 2020 is assessed as extraordinary good for the growth of hops over the past few years.

2. Assessment of the state of vegetation

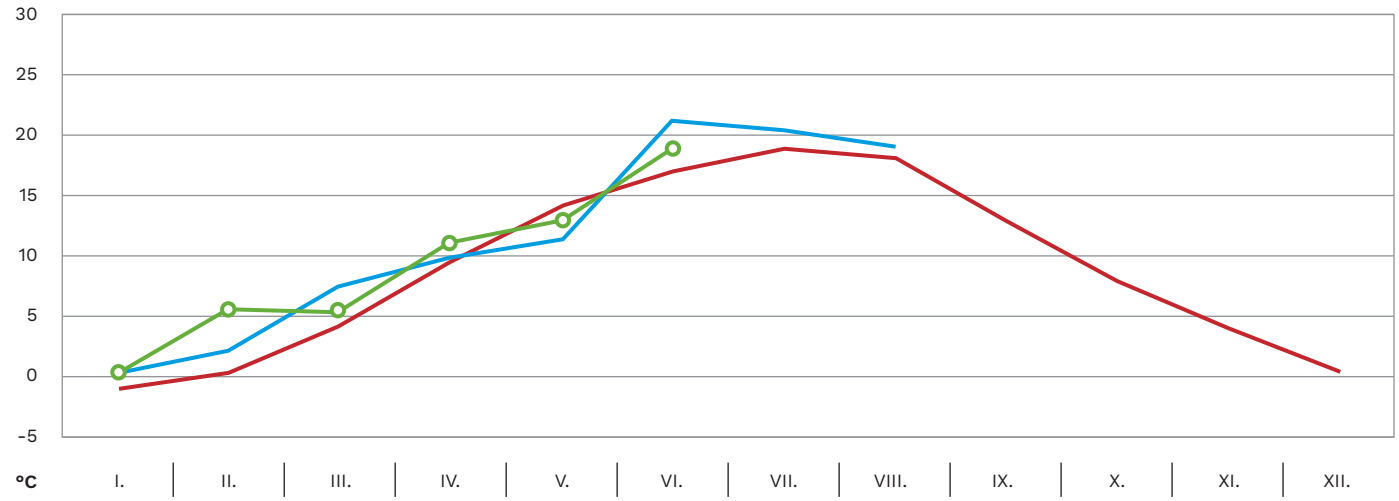
The growth and the development of hops during whole June was very good and it corresponded to the optimal development of hops. Only negligible part of hop gardens, especially those ones, which were pruned at a later date (after April 20, 2020) and where also deeper cut was done, have not reached the height of trellis for the time being. We estimate, that as of June 30, 2020, approx. 90% of the hop plants have reached the height of trellis. Given the existing climatic conditions and the state of hops it is supposed that the stretching growth will continue also in July.

3. Assessment of the health state of hops

Downy mildew of hops (Pseudoperonospora humuli Miy et Takah.): the coming of the rains during the first week of June led to enormous increase of the infectious pressure of the pathogen. That is why it was recommended to carry out the first treatment against the secondary infection before June 15, 2020. The preparations Folpan Gold, Bellis or Ortiva were available. The development of the weather during the rest of June was the cause of high to very high infectious pressure of downy mildew of hops. There was also higher incidence of primary infection in the form of spike-like shoots. The conditions for the second spraying against secondary infection using the preparations Ortiva, Bellis or Orvego were also met. In the hop gardens with higher incidence of ear spikes it was then recommended to carry out the second spraying by the fungicide Curzate K., which has curative effect. Stronger occurrence of downy mildew of hops was recorded in younger growths (up to three years). Hop aphid (Phorodon humuli Schrank): in general, this year´s intensity of the flyover of the hop aphid can be assessed as higher than in previous years and the treatment against it was therefore necessary to be carried out on majority of hop gardens. Preparations Teppeki and Sivanto Prime were available. Red spider mite (Tetranychus urticae Koch): in the second half of June the red spider mite appeared only in some hop gardens, above all in their margins, in the anchor rows and around the columns. In case of the damages of hops by this pest it was recommended to use the acaricide Nissorun10 WP or Ortus 5SC or Vertimec 1, 8 EC.



Precipitation 2020 **Precipitation 2019** **Long term average**



Temperature 2020 **Temperature 2019** **Long term average**

4. Photodocumentation

Hop field view

Hop row view

Between the hop rows

The plant comes into blossom

Saaz, July 1, 2020, Ing. Jaroslav Hájek

Hop report

July 2020 (Saaz region)

1. Weather condition in July 2020

Temperature & precipitation	2020	2019	30 years average
Average temperature (°C)	20,1	20,1	19,0
Precipitation (mm)	12,6	41,6	69,4
Total precipitation (mm) since 1st January	221,8	279,6	278,6
Max. temperature (°C)	33,2 (28. 7.)	37,2 (1. 7.)	
Min. temperature (°C)	6,6 (13. 7.)	5,5 (4. 7.)	
Max. precipitation (mm)	4,6 (16. 7.)	22,8 (21. 7.)	
Number of dry days	23	23	

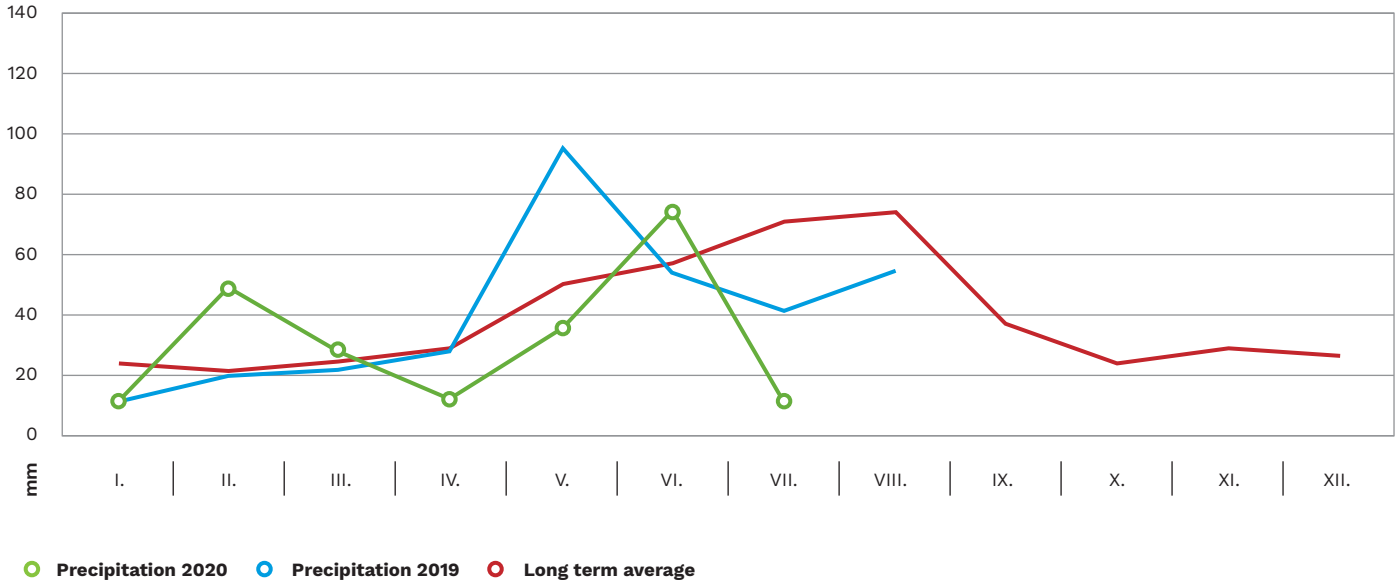
If we assessed the development of climate in June as good, then July has returned to the “old tracks” of recent years. Although the average monthly temperature of 20,11 °C corresponds approximately to the value of the long-term average, the volume of precipitation was very weak, at least in the Saaz region. The summary of precipitation for July 2020 equals to 12,60 mm, which is the lowest value in at least 20 years. Very small amount of precipitation certainly had a negative effect on the development of hops during this period, especially where growers do not have the possibility of irrigation.

2. Assessment of the state of vegetation

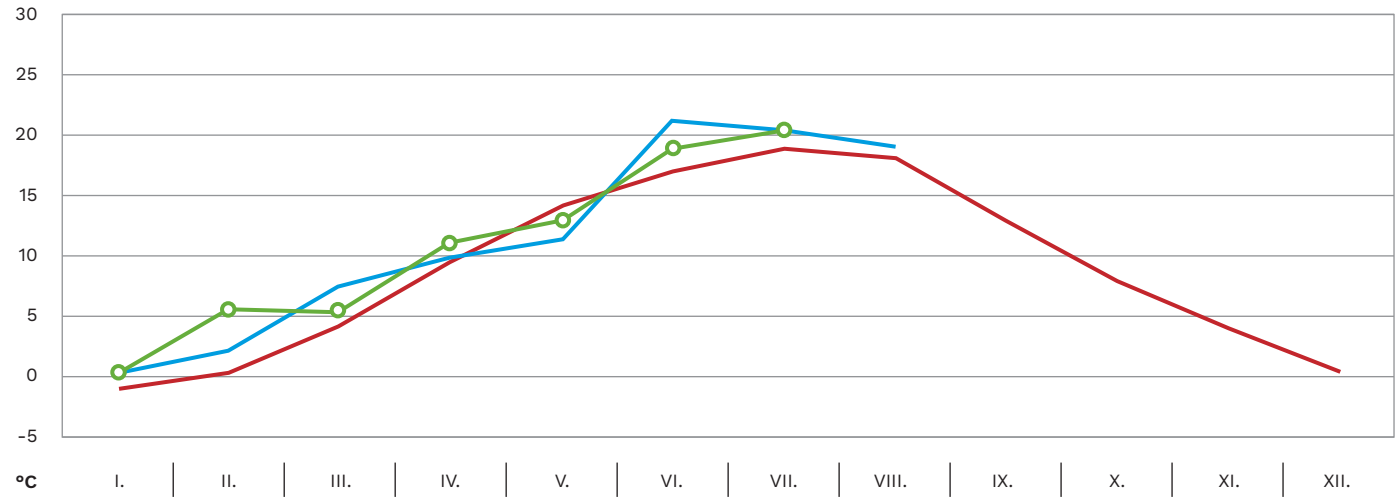
The advantage in the development of hops at the beginning of July was the elongation growth, which lasted until the middle of the month. The habitus of the plants is very nice this year, on some hop gardens even massive with long lateral shoots. Following such a development of hops, the plants began to bloom late this year, at the end of the second decade of the month. The deployment of flowers is relatively good. The creation of hop cones is still in its beginning and it varies according to the age of the hop gardens and the time of cut.

3. Assessment of the health state of hops

Although the lower frequency of precipitation in July led to a reduction in the infectious pressure of downy mildew of hops (Pseudoperonospora humuli Miy et Takah.), a fourth treatment against this disease was recommended. The preparations Ortiva, Bellis or Orvego or alternatively Revus were suggested. Animal pests, both hop aphids (Phorodon humuli Schrank) and red spider mites (Tetranychus urticae Koch), were eliminated with the preparation Movento 100 SC. However, in case of overpopulation, Acramite 480 SC can also be used. It was also recommended to monitor the symptoms of hop powdery mildew (Sphaeroteca humuli (DC) Burr.). Bellis, Ortiva and Vivando are available against this disease.



Precipitation 2020 Precipitation 2019 Long term average



Temperature 2020 Temperature 2019 Long term average

4. Photodocumentation

Hop field view

Hop row view

Blooming hops

First hop cones

Saaz, July 31, 2020, Ing. Jaroslav Hájek

Hop report

August 2020 (Saaz region)

1. Weather condition in August 2020

Temperature & precipitation	2020	2019	30 years average
Average temperature (°C)	21,2	19,7	18,3
Precipitation (mm)	78,4	54,2	70,8
Total precipitation (mm) since 1st January	300,2	328,8	349,4
Max. temperature (°C)	36,6 (21. 8.)	34,1 (29. 8.)	
Min. temperature (°C)	7,6 (28. 8.)	6,1 (15. 8.)	
Max. precipitation (mm)	22,8 (30. 8.)	16,0 (3. 8.)	
Number of dry days	18	12	

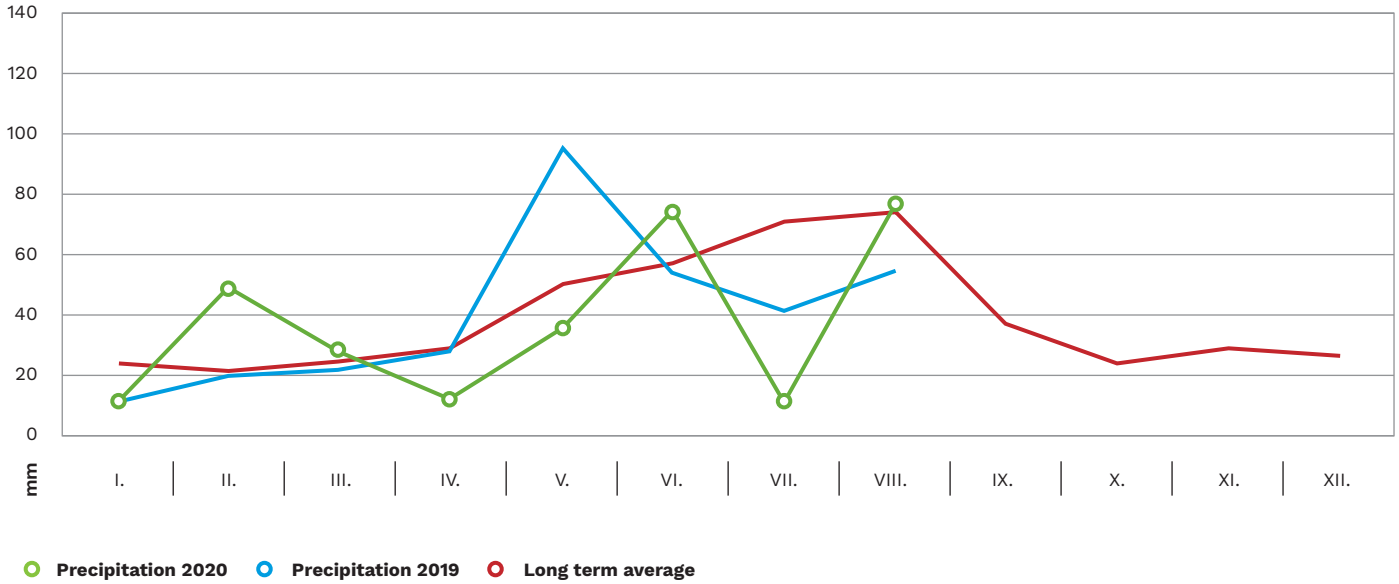
The rains in August fell practically at the end of the first decade and then at the end of the month. However, the precipitations at the end of the month did not influence the condition of the hops, but rather caused worries to growers during the harvest. The rains were mostly of the stormy nature with big differences in individual localities. Also in August of this year the average monthly temperatures exceeded the long-term normal by 2. 88 °C. The warm weather lasted practically for the first two decades of August.

2. Assessment of the state of vegetation

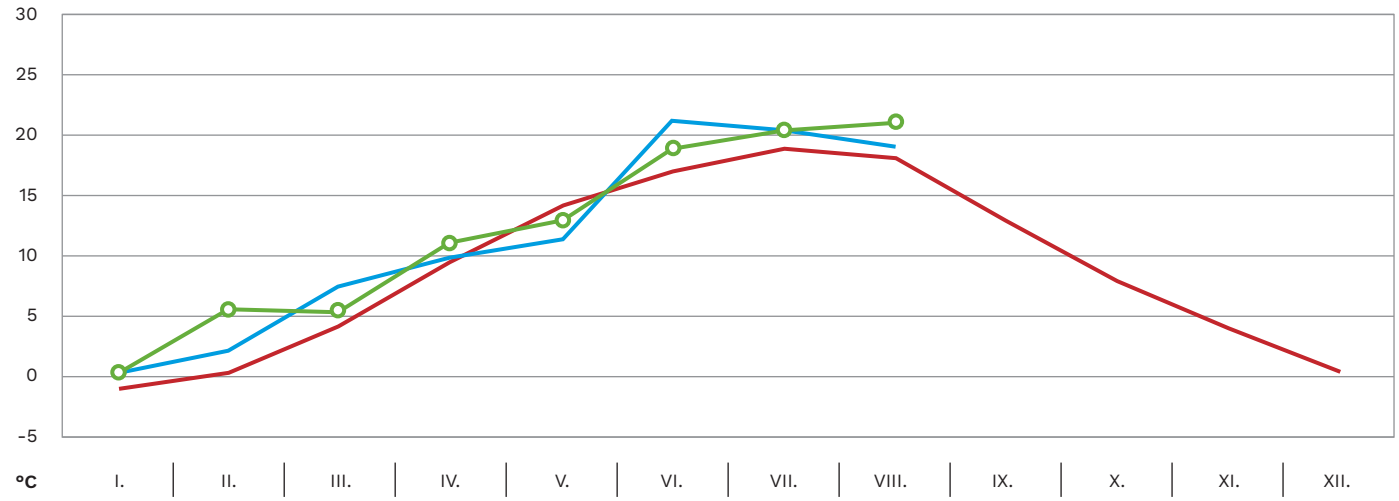
Climatic conditions in August did not improve the situation in hop gardens. The deployment of the flowers was average, but the creation of the hop cones did not reach the expected level and the cones remained relatively small. The harvest started by individual growers in the time horizon between August 16 and August 27, 2020. Due to the weak cones creation we expect only below-average harvest. The first results of the laboratory tests of the content of alpha acids show slightly above-average values. That is why we estimate better-than-average content of alpha bitter compounds in comparison with the average of previous five years, especially in the case of Saaz Semi-early Red-bine hops variety. As far as the hybrid varieties is concerned, we still do not have sufficient data for making a quality estimation.

3. Assessment of the health state of hops

The health state of hops is relatively good in this year, for the time being.



Precipitation 2020 **Precipitation 2019** **Long term average**



Temperature 2020 **Temperature 2019** **Long term average**

4. Further information

The ÚKZÚZ – Central Institute for Supervising and Testing in Agriculture in Saaz specified the hop gardens acreage to be harvested in 2020.

The area of hop gardens to be harvested up to 20. 8. 2020 (ha)

Variety	Saaz	Auscha	Terschitz	Czech republic
Saaz hops	3 320	410,6	485,5	4 216,1
Agnus	43,4	7,8	1,5	52,8
Blues	0,6	0	0	0,6
Bohemie	0,4	0	0,7	1
Boomerang	0,3	0	0	0,3
Cascade	1	0	0	1
Country	0,8	0	0	0,8
Gaia	0,3	0	0	0,3
Hallertauer trad.	0,4	0	0	0,4
Hallertauer perle	0,4	0	0	6,8
Harmonie	6,8	0	0	0,4
Kazbek	17,8	4,8	3,9	26,4
Premiant	113,0	36,6	46	195,6
Rubin	1	0	0	1
Saaz Late	42,4	0	1,7	44,1
Saaz Special	41,4	0	0	41,4
Sládek	235,2	43,5	86,3	365
Summit	0	0	0	0
Vital	3,1	0,8	0	3,9
Others	8,3	0	0	8,3
Total	**3 836,6**	**504,1**	**625,6**	**4 966,3**

4. Photodocumentation

Hop field after harvest

Saaz, September 2nd, 2020, Ing. Jaroslav Hájek