Hop report

January–April 2019 (Saaz region)

1. Weather condition in 1th trimester 2019

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)	2018	2019	30 years average	Diff. 18-19
January	3,4	0,5	-0,7	-2,9
February	-2,2	2,0	0,4	4,2
March	1,5	7,2	4,3	5,7
Summary 1st trimester	**2,1**	**9,7**	**4,0**	**7,0**

Precipitation (mm)	2018	2019	30 years average	Diff. 18-19
January	28,2	12,6	21,5	-15,6
February	4,0	19,8	20,0	15,8
March	35,6	22,6	25,9	-13,0
Summary 1st trimester	**67,8**	**55,0**	**67,4**	**-12,8**

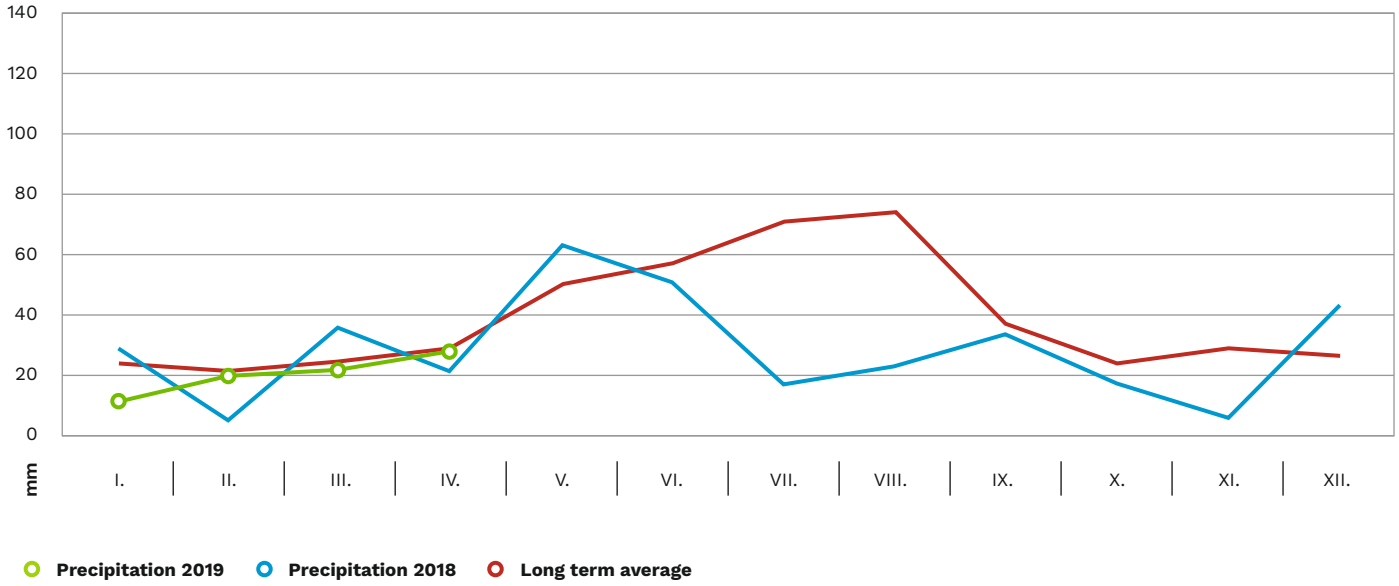
The weather of the first trimester of 2019 was characterized by the increase of average temperatures of individual months in comparison to 2018 (excluding January) as well as to the long-term average. The highest difference was monitored in March, when the average temperature was 5,7 °C higher than in March of previous year and 2,9 °C higher in comparison to the long-term average. This March was the warmest in several previous years. The highest temperature in March exceeded the limit of 20 °C, more specifically it reached 21,8 °C. Paradoxically, the night temperatures during the same period were below zero (-0,3 °C–2, 4 °C).

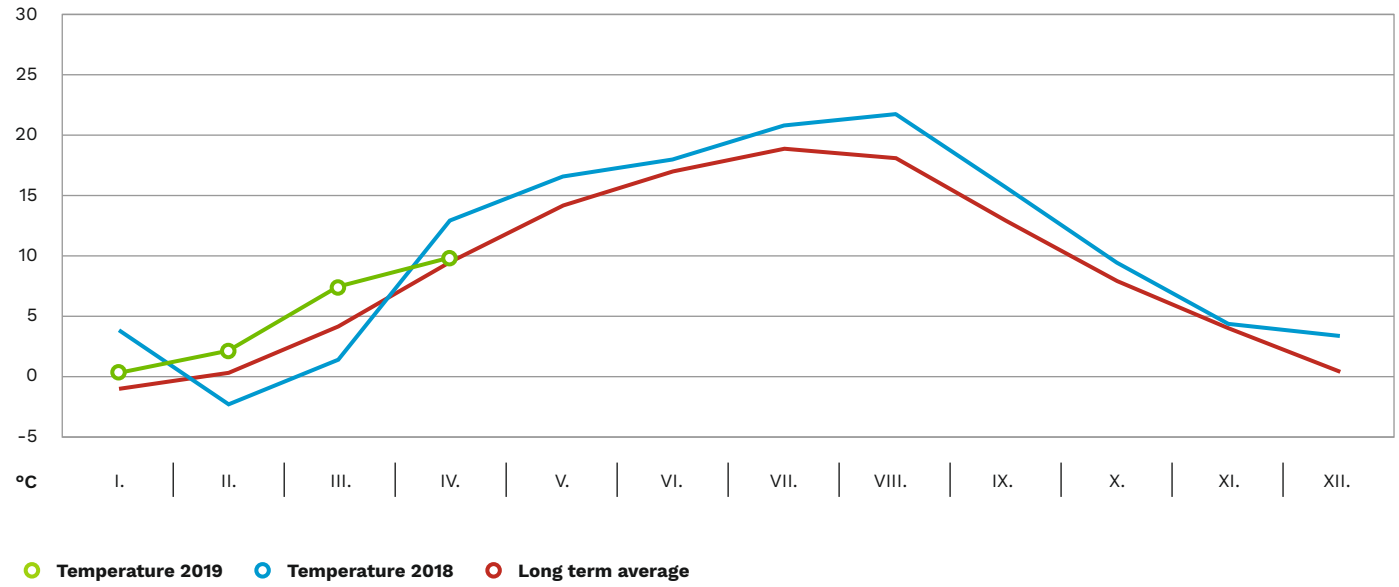
Precipitations during the first trimester of 2019 were below average as well as below the results of 2018. In individual months they were relatively balanced but poor. Compared to previous years when there was no snow in our region, this year the snowfalls reached 15 to 20 cm. The snow cover melted after one week.

The weather conditions enabled normal and in some localities even earlier beginning of field works. Similar situation was also in hop gardens. The spring works started there already in the beginning of March with harrowing of the hop gardens. During the last decade of March the growers started with the pruning of the hops of hybrid varieties.

2. Weather condition in April 2019

Temperature & precipitation in April	2018	2019	30 years average
Average temperature (°C)	12,6	9,6	9,1
Precipitation (mm)	21,6	30,6	30,7
Total precipitation (mm) since 1st January	89,4	85,6	98,1
Max. temperature (°C)	27,1 (21. 4.)	25,7 (26. 4.)	
Min. temperature (°C)	-4,4 (7. 4.)	-4,1 (14 .4.)	
Max. precipitation (mm)	14,0 (16. 4.)	23,4 (29. 4.)	
Number of dry days	21	25	





The temperatures in April 2019 were of average, although sometimes they come to the level of above 20 °C by the end of the second and during the third decade of the month. As far as the precipitations are concerned, the situation before April 26th was disastrous. The precipitations before that day amounted only 0,4 mm. The rainfalls, substantial for the vegetation, came only after that day and the situation was saved by the rainfalls, which came on April 29th, with 23,4 mm of water.

3. Spring works and growth report

The weather conditions enabled the growers to carry out the spring works in hop gardens as usual. 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 as necessary. The cutting of hops was followed fluently by the stringing and embedding of training wires. 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. The beginning of the training of our principal variety – the Saaz semi-early red-bine hops – is estimated to the 1st of May.

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 also the preparation Prolifer could be used in this year. In previous year the application of this preparation was complicated due to missing MRL for the active substance fluopicolide in Japan.

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, on March 3rd, 2019.

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

Hop plant

Leaf demaged by a flea beetle

Saaz, May 2, 2019, Ing. Jaroslav Hájek

Hop report

May 2019 (Saaz region)

1. Weather condition in May

Temperature & precipitation in April	2018	2019	30 years average
Average temperature (°C)	16,5	11,6	14,2
Precipitation (mm)	60,8	96,2	52,0
Total precipitation (mm) since 1st January	150,2	181,8	150,1
Max. temperature (°C)	28,9 (29. 5.)	25,0 (27. 5.)	
Min. temperature (°C)	1,6 (6. 5.)	-2,6 (7 .5.)	
Max. precipitation (mm)	31,4 (24. 5.)	57,6 (28. 5.)	
Number of dry days	24	14	

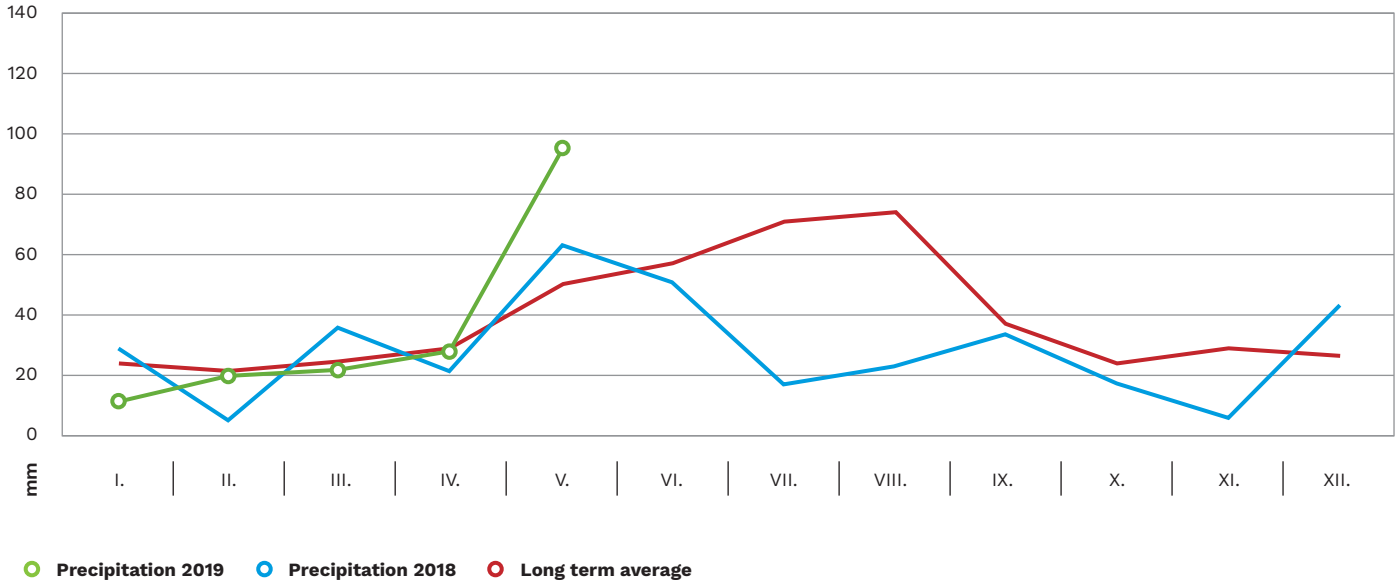
Contrary to previous year the first half of May 2019 was characterized by very low temperatures. The average temperature before May 20th was 9,9°C, it means 4,3°C below the long-term average for May. Low temperatures were promising that the old Czech proverb “cold May – Paradise in barn” would come truth. The warming came only in the third decade of May. Still, the average temperature of this May stayed below the long-term average. The state of the precipitation was positively influenced by the rainfalls between May 20th and the end of the month. The precipitations during that time amounted 82 mm, what represents 85,2% of the total monthly rainfalls. In comparison to the long-term average it makes 185%.

2. Assessment of the state of vegetation

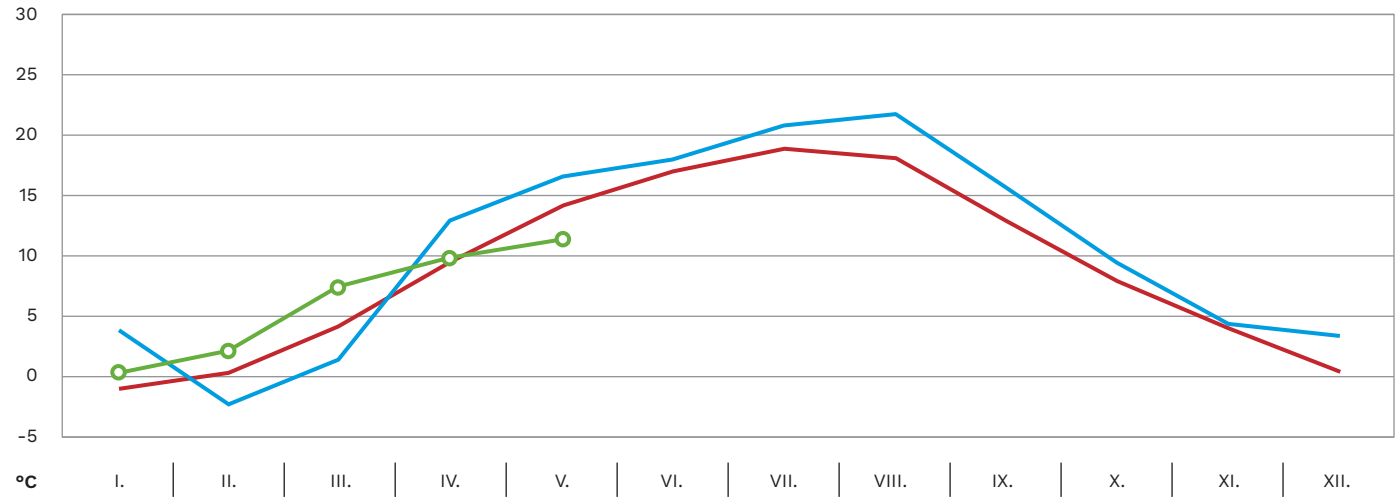
Cold weather during the first two decades of May had a negative impact on the growth of hops and therefore it influenced also one of the most important operations in hop gardens, i.e. the training of hops. This phenomenon was evident especially by the hops, which was cut around April 20th, 2019, and later. Thus, it concerned mainly growth of young hops. Slow development of hops in that period caused difficulties with the employment of the temporary workers, contracted for this operation to be done in usual time. This year the situation was diametrically different from 2018, when hops training took place already by the end of April, i.e. 2 to 3 weeks before the usual time of the hops training. The warming in the third decade then encouraged the elongating growth of hops and the hops were trained by the end of May.

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.), which became evident also by lower occurrence of spike shoots. However, the rains of the end of the second decade of the month and consequent warming made convenient prerequisites for the development of this pest. 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. Cold weather decreased the flying activity of hop aphid (Phorodon humuli Schrank). The first rare occurrence of hop aphid was detected on the beginning of the second half of month. The growers were recommended to carry out the treatment by the preparation Teppeki. Cold weather was also adverse for the development of red spider mite (Tetranychus urticae Koch). The growers were nevertheless recommended to carry out thorough monitoring of occurrence of this pest.



Precipitation 2019 **Precipitation 2018** **Long term average**



Temperature 2019 **Temperature 2018** **Long term average**

4. Other information

The ÚKZÚZ – Central Institute for Supervising and Testing in Agriculture in Saaz specified the hop gardens acreage to be harvested in 2019.

The area of hop gardens in the Czech republic

Variety	Saaz region	Newly planted	Auscha region	Newly planted	Tirsitz region	Newly planted	Czech republic	Newly planted
Saaz hops	3 360	120	429	4	475	10	4 264	134
Agnus	48	14	8	5	2	0	58	19
Bohemie	0	0	0	0	1	0	1	0
Bor	0	0	0	0	0	0	0	0
Harmonie	8	0	0	0	0	0	8	0
Kazbek	24	0	5	0	4	0	33	0
Premiant	111	28	36	4	46	8	193	40
Rubin	2	0	0	0	0	0	2	0
Saaz Late	44	0	0	0	2	0	46	0
Sládek	215	25	38	3	91	13	344	41
Vital	3	0	0	0	0	0	3	0
Others	52	7	0	0	0	0	52	7
Total	**3 867**	**194**	**516**	**16**	**621**	**31**	**5 004**	**241**

4. Photodocumentation

View on the hop garden

Hops row view

Hop plant

Trained hop plant with three equal shoots

Saaz, May 31st, 2019, Ing. Jaroslav Hájek

Hop report

June 2019 (Saaz region)

1. Weather condition in June

Temperature & precipitation	2018	2019	30 years average
Average temperature (°C)	18,2	21,4	17,0
Precipitation (mm)	52,8	56,2	59,1
Total precipitation (mm) since 1st January	203,0	238,0	209,2
Max. temperature (°C)	30,1 (21. 6.)	37,7 (26. 6.)	
Min. temperature (°C)	7,0 (22. 6.)	5,3 (9. 6.)	
Max. precipitation (mm)	20,0 (1. 6.)	35,0 (10. 6.)	
Number of dry days	19	21	

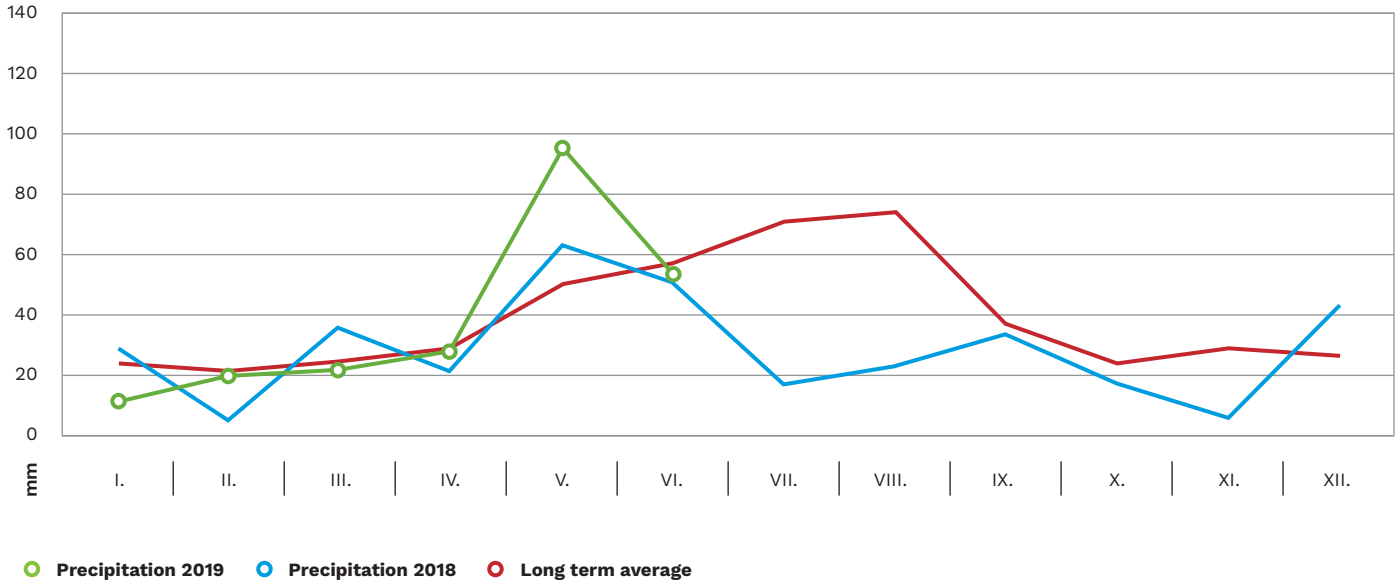
After climatically promising May the weather in June 2019 unfortunately got back into the groove of previous several years, i.e. to the dry and hot weather. A particularly adverse situation developed at the temperatures, when monthly average reached the value of 21,4 °C, exceeding the long-term average of 17 °C by 4,4 °C. Together with unevenly distributed rains, which were mostly of stormy nature, they had a very negative impact to the growth and development of hops, which seemed to be quite promising in this year. Critical situation reached the peak primarily during the second half of June (after June 17th, 2019), when the precipitations decreased to zero.

2. Growth report

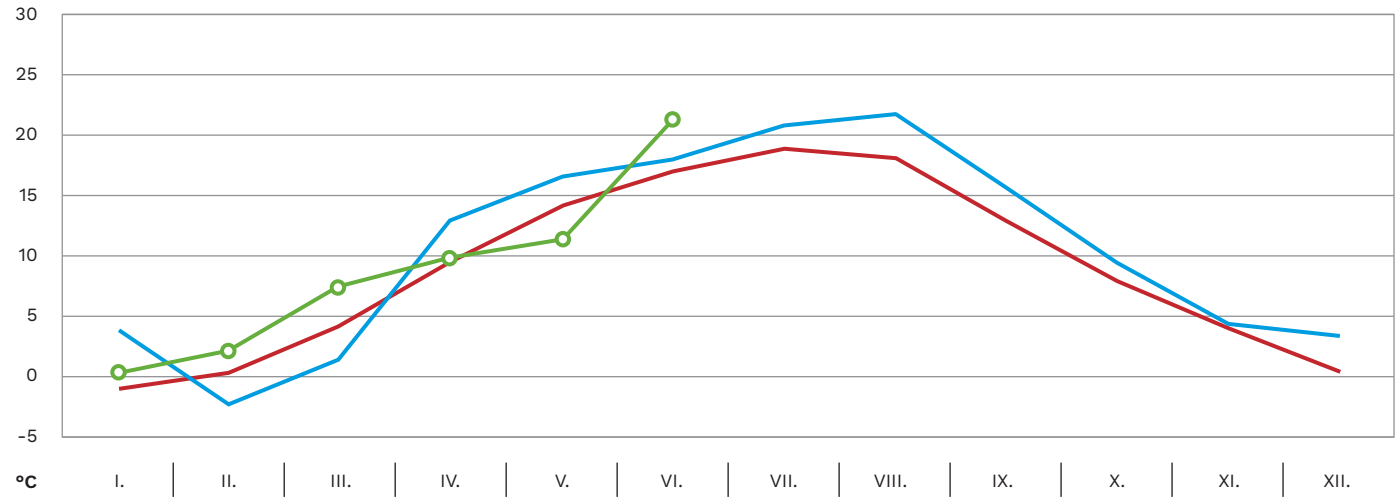
The growth and the development of hops during the first two decades of June was very good and it corresponded to the optimal development of hops in that period. In the last decade, however, due to influence of high daily temperatures, the stretching growth has slowed down. Part of the hop gardens, especially those, that were cut in later date (April 20th to April 25th, 2019), and where the deeper cut was done, did not reach the height of trellis. View to the fact, that in this year the hops in previous month did not start considerably to blossom, we suppose that the stretching growth will continue also in July. However, it will happen under the condition of a reduction in temperatures and significant precipitation in the first decade of July.

3. Health state of hops

The weather development during the last decade of May and the first half of June 2019 created convenient condition for the development and the dissemination of the downy mildew of hops (Pseudoperonospora humuli Miy et Takah.). Therefore the first treatment against the secondary infection of this disease has been carried out between June 5th and June 15th, 2019. The second treatment has been than carried out between June 21st and June 30th, 2019. For the treatment of the hop gardens the preparations in compliance with The Metodology for Hop Protection in 2019 were used, i.e. the preparations Ridomil Gold Combi Pepite, Folpan Gold, Bellis or Ortiva. The intensity of the flyover of the hop aphid (Phorodon humuli Schrank) was stronger in this year in comparison to the average of previous years. The hop gardens, where the critical number of 50 hop aphids per leaf in upper leaf floors was exceeded, were treated by the preparations Teppeki or Plenum. The nature of the weather in June was optimal also for the development of red spider mite (Tetranychus urticae Koch), which appeared relatively soon in this year. The hop gardens, endangered by this pest, were treated with the preparations Nissorun 10 WP or Ortus 5SC.



Precipitation 2019 **Precipitation 2018** **Long term average**



Temperature 2019 **Temperature 2018** **Long term average**

4. Photodocumentation

View on the hop garden

Hops row view

Plants reaching the top of the construction

Hop fields using the drip irrigation

Saaz, June 30th, 2019, Ing. Jaroslav Hájek

Hop report

July 2019 (Saaz region)

1. Weather condition in July

Temperature & precipitation	2018	2019	30 years average
Average temperature (°C)	21,0	20,1	19,0
Precipitation (mm)	17,4	41,6	69,4
Total precipitation (mm) since 1st January	217,7	279,6	278,6
Max. temperature (°C)	35,8 (31. 7.)	37,2 (1. 7.)	
Min. temperature (°C)	4,2 (2. 7.)	5,5 (4. 7.)	
Max. precipitation (mm)	3,8 (11. 7.)	22,8 (21. 7.)	
Number of dry days	23	23	

Similarly to previous month also July was not optimal as far as the development of climatic conditions are concerned. Even though the temperatures during two first decades corresponded to the long-term averages for that periods, during the third decade and especially in its first half the temperatures reached the tropical levels over 30°C. The precipitations in July were deeply below long-term average. The first rains after June 17, 2019 came only on July 12–13, 2019, moreover they were not significant – only 7,6 mm. Further rains came on July 21, 2019 – they were of stormy character and the rainfalls varied between 12 and 20 mm. Nevertheless, these rains did not compensate the moisture deficit, which is getting worse all the time and thus they did not improve the critical situation of the moisture content in the soil.

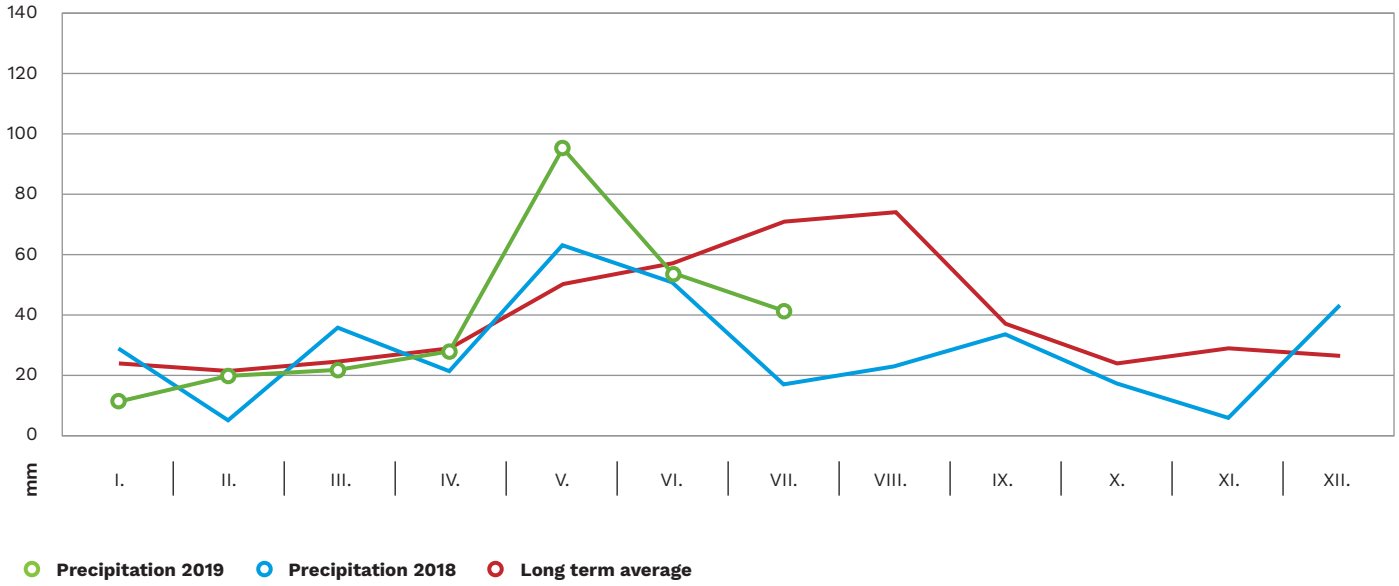
2. Growth report

The discontinuation of the elongation growth due to heats by the end of June had an impact to the situation in July. The habit of the hop plants improved, nonetheless in some areas the hops did not grow according to the expectations and a part of the plants did not reach even the height of the trellis. The hops started to blossom during the first decade of July. The starting of flowering was evaluated as good. During the second half of the month the hops began to create the cones. However, for a satisfactory formation of cones a sufficient precipitations will be necessary. View to development of hops we estimate the beginning of the harvest between August 16–18, 2019.

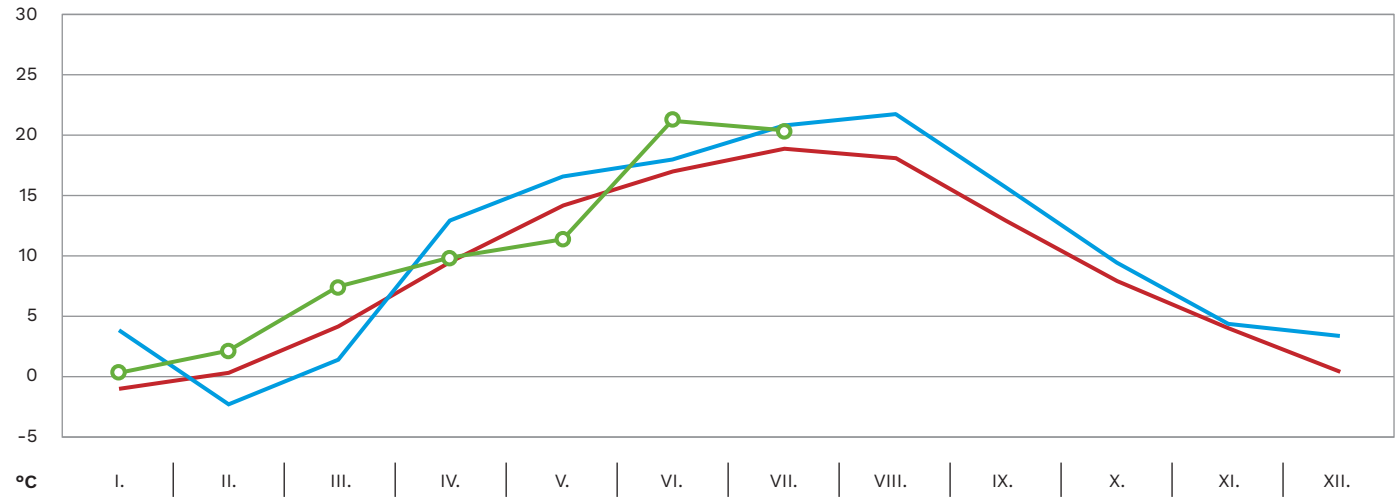
3. Health state of hops

According to short-term prognosis of downy mildew of hops (Pseudoperonospora humuli Miy et Takah.) the conditions for the third fungicide spraying were not met. However, it was recommended to follow the prognosis of the development of this disease and after exceeding of the index of downy mildew weather it was suggested to carry out the treatment of the hop gardens by the preparations Bellis, Ortiva, Revus, or Orvego. By using of the preparations Movento 150 OD or 100 SC on the beginning of the month the occurrence of hop aphid (Phorodon humuli Schrank) was practically eliminated. This preparation has also very good effectiveness as acaricide. In view of its long residua effectiveness of 4 to 6 weeks is should keep red spider mite (Tetranychus urticae Koch) below the level of economical harmfulness until the beginning of the harvest. The climatic conditions of the last decade of July were favourable to the development of this pest and therefore a careful monitoring of red spider mite was recommended. In case of the overpopulation of red spider mite it was suggested to treat respective areas by the preparation Acramite 480 SC.

Ing. Jaroslav Hájek © 2019 / Chmelařství, cooperative Žatec



Precipitation 2019 **Precipitation 2018** **Long term average**



Temperature 2019 **Temperature 2018** **Long term average**

4. Photodocumentation

View on the hop garden

Hops row view

Hop cones at the end of July

Hop cones at the end of July

Saaz, 1th August, 2019, Ing. Jaroslav Hájek

Hop report

August 2019 (Saaz region)

1. Weather condition in August

Temperature & precipitation	2018	2019	30 years average
Average temperature (°C)	21,2	19,7	18,3
Precipitation (mm)	22,0	54,2	70,8
Total precipitation (mm) since 1st January	239,7	328,8	329,4
Max. temperature (°C)	35,9 (1. 8.)	34,1 (29. 8.)	
Min. temperature (°C)	4,8 (27. 8.)	6,1 (15. 8.)	
Max. precipitation (mm)	10,6 (13. 8.)	16,0 (3. 8.)	
Number of dry days	22	12	

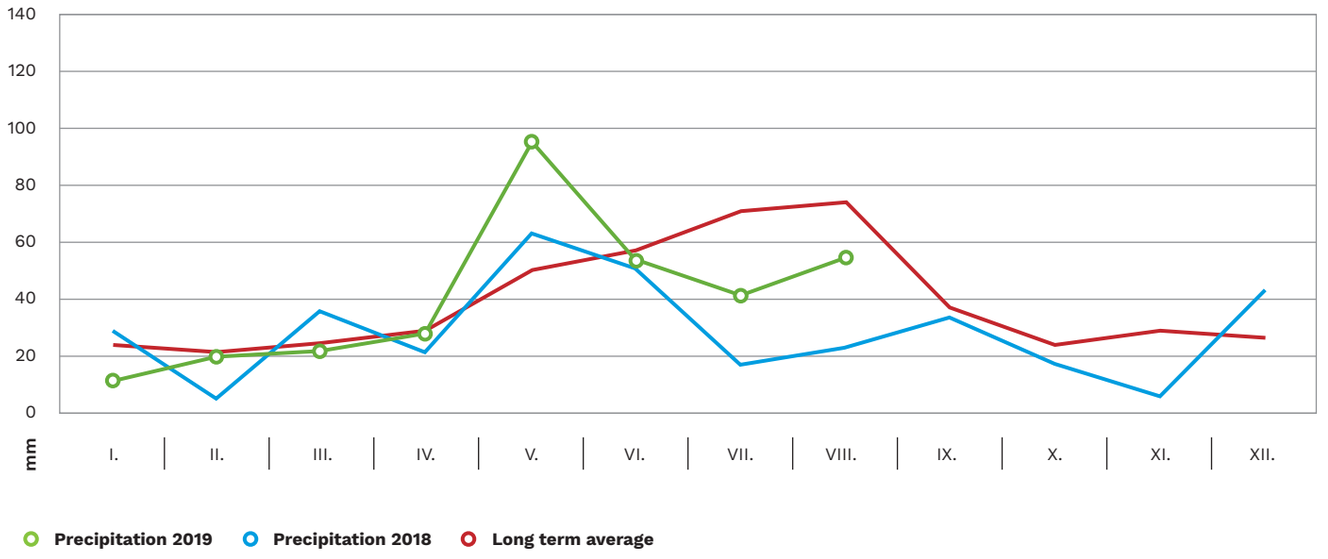
The rains in August came essentially during the first two decades of the month. These precipitations raised hopes of amelioration of the situation in hops production. The rains nevertheless were of stormy character with big differences among individual localities. Also in this year´s August the average temperature exceeded the long-term average, namely by 2, 9°C. Especially the last week of August was extraordinary warm – maximum daily temperature reached more than 30°C every day.

2. Growth report

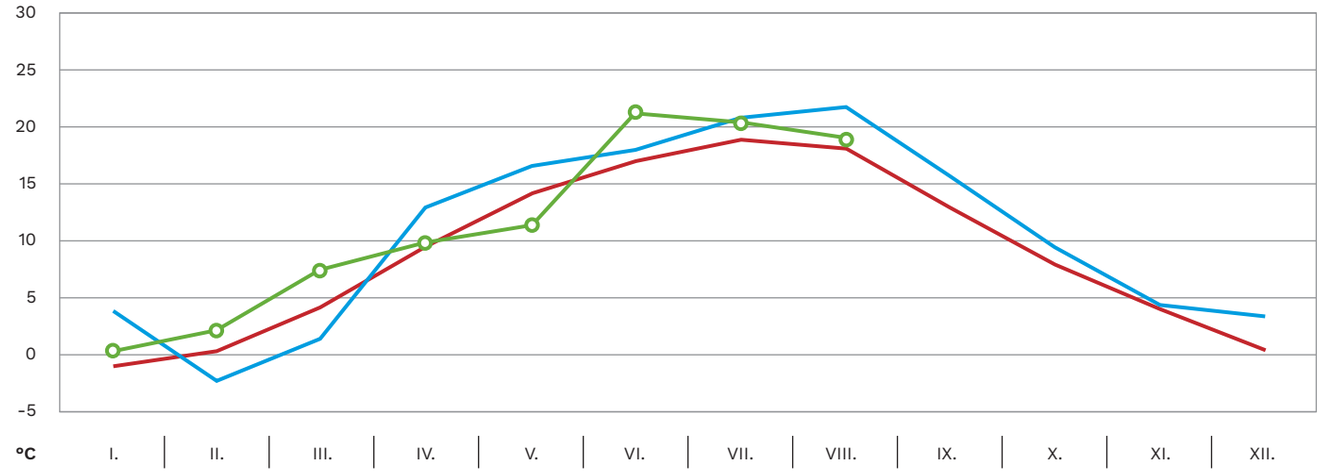
Climatic condition in August and especially the rainfalls during the first two decades of the month improved the situation of hop gardens. The deployment of the flowers was very good, however the creation of cones did not reach the expected level and the cones remained relatively small. The harvest started by individual growers in relatively wide period between August 15, 2019 and August 25, 2019. View to insufficient cone creation we expect an average crop in this year. The first results of laboratory tests of content of alpha acids show slightly above-average values. That is why we expect better-than-average content of alpha bitter compounds in comparison with the average of previous five years, especially in 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. Health state of hops

The health state of hops is very good in this year.



Precipitation 2019 Precipitation 2018 Long term average



Temperature 2019 Temperature 2018 Long term average

4. Other information

The ÚKZÚZ – Central Institute for Supervising and Testing in Agriculture in Saaz specified the hop gardens acreage to be harvested in 2019.

The area of hop gardens in the Czech republic, up to 20th August

Variety	Saaz region	Newly planted	Auscha region	Newly planted	Tirsitz region	Newly planted	Czech republic	Newly planted
Saaz hops	3 361	123	426	7	475	10	4 262	140
Agnus	48	14	8	5	2	0	58	19
Bohemie	0	0	0	0	1	0	1	0
Cascade	1	0	0	0	0	0	1	0
Harmonie	8	0	0	0	0	0	8	0
Kazbek	24	0	5	0	4	0	33	0
Premiant	111	28	36	4	46	8	193	40
Rubin	2	0	0	0	0	0	2	0
Saaz Late	45	0	0	0	2	0	47	0
Saaz Special	41	7	0	0	0	0	41	7
Sládek	215	25	38	3	91	13	344	41
Vital	3	0	0	0	0	0	3	0
Others	10	1	0	0	0	0	10	1
Total	**3 869**	**198**	**513**	**19**	**621**	**31**	**5 003**	**248**

4. Photodocumentation

Hop garden after the harvest

Hops on trailers

Hop plants in the picking line

Pressed hops ready for transport to the Chmelarstvi warehouse

Saaz, September 1th, 2019, Ing. Jaroslav Hájek