Hop report - Saaz fine aroma hops

Crop 2011 – January / April 2011 (Saaz region)

Weather condition – January / March 2011

Average temperature (°C)	2011	2010	30 years average	Diff. 11-10
January	-0,7	-4,2	-2,0	-3,5
February	-1,2	-2,3	-0,2	-1,1
March	4,0	3,6	3,6	+0,4
Summary 1st Trimester	-2,1	-2,9	1,4	-4,2

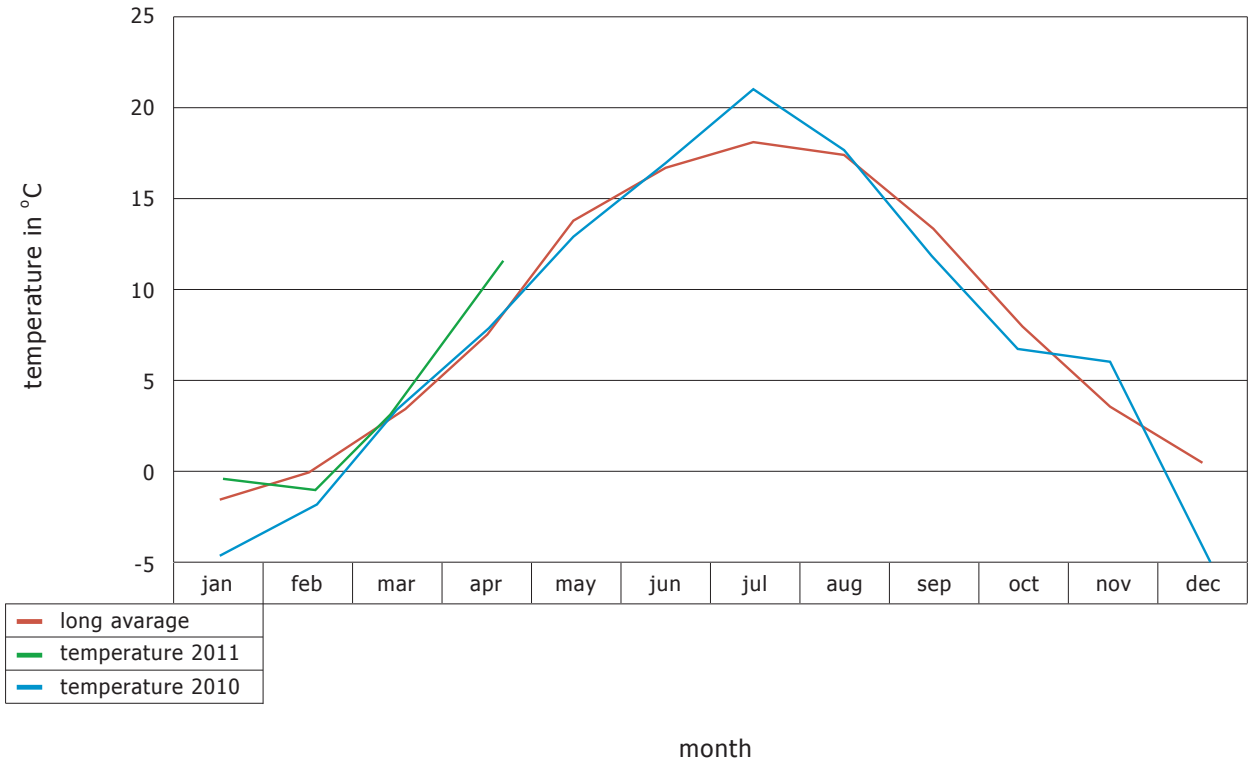
Total precipitation (mm)	2011	2010	30 years average	Diff. 11-10
January	21,0	22,6	20,0	-1,6
February	5,8	7,4	19,0	-1,6
March	26,8	23,0	23,0	+16,6
Summary 1st Trimester	53,6	40,2	62,0	+13,4

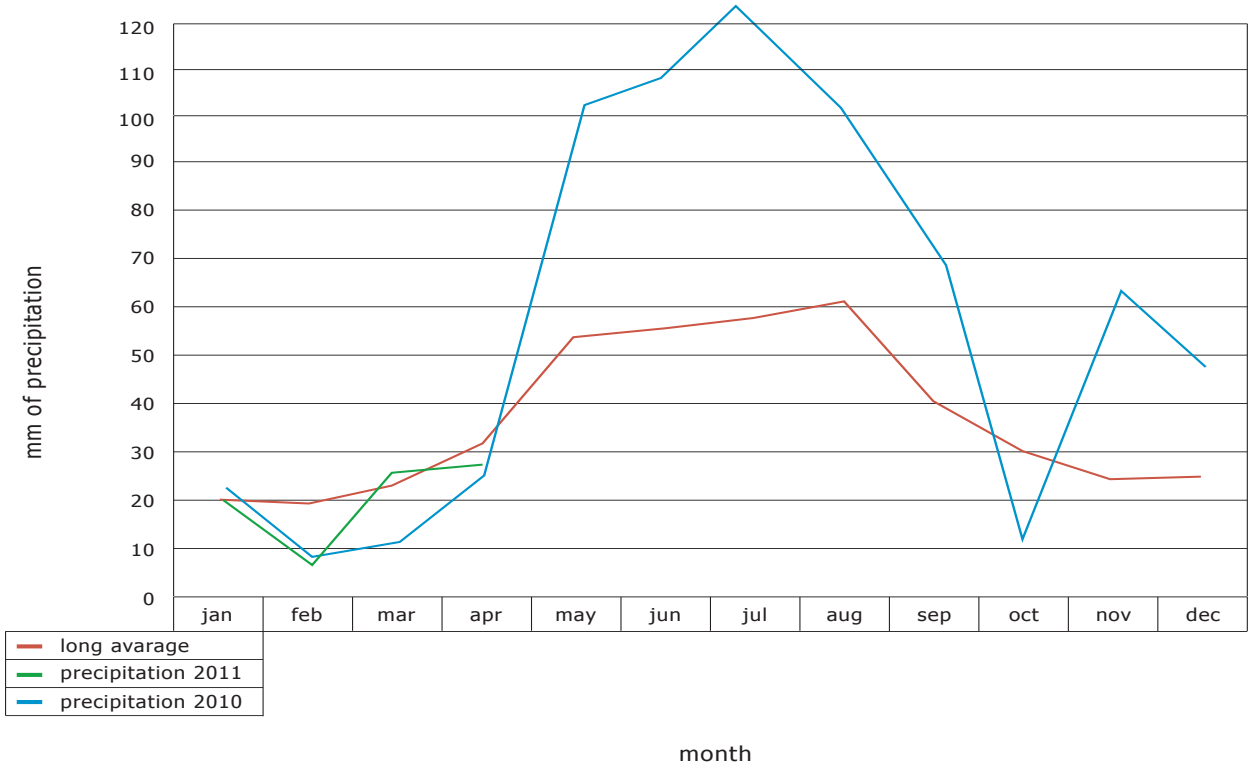
The character of weather during this year's winter and the first trimester of 2011 was similar to the weather of the same period of previous year. The thermometers have nevertheless shown higher temperatures both in comparison with previous year as well as with long term average. Precipitations then were between the levels of previous year and the average. The snow cover was again unusually high during the whole winter. The first snow fell on not fully frozen soil and due to higher temperatures it thawed earlier than last year. Majority of the water soaked into the earth. Unfortunately, in February and on the beginning of March came so called black frosts (i.e. the temperatures below zero without snow cover), which damaged above all the bait-crops. This character of weather had no influence to hop gardens.

Weather condition – April 2011

Temperature & precipitation in April	2011	2010	30 years average
Average temperature (°C)	11,3	8,5	8,5
Precipitation (mm)	28,0	24,6	32,0
Total precipitation (mm) January-April	81,6	64,8	94,0
Max. temperature (°C)	24,6 (23.4.)	25,3 (30.4.)	
Min. temperature (°C)	-1,1 (18.4.)	-3,8 (3.4.)	
Max. precipitation (mm)	14,2	12,0	
Number of dry days	22	23	

The average temperature in April exceeded the average temperature of previous April and it was also higher than long term average. Especially high temperatures were recorded during the first and the third decade of April. The frosty days were just three, all of them in the second decade of the month. As far as the precipitations are concerned, April was slightly below the level of long term average (87,5%). It is necessary to mention, that this result was markedly influenced by high rainfalls of the last day of April. Otherwise that month was very dry, in fact without precipitations.


25
20
15
10
5
0
-5
temperature in °C
jan
feb
mar
apr
may
jun
jul
aug
sep
oct
nov
dec
long avarage
temperature 2011
temperature 2010
month


120
110
100
90
80
70
60
50
40
30
20
10
0
mm of precipitation
jan
feb
mar
apr
may
jun
jul
aug
sep
oct
nov
dec
long avarage
precipitation 2011
precipitation 2010
month

Spring works and growth report

The development of climatic conditions within the first trimester and April 2010 was by a certain way similar to the character of weather of previous year. Only the temperatures were higher up to now. The precipitations were lower only in February; other months did not differ from normal. Relatively dry weather of the last decade of March and first two decades of April enabled well timed beginning of spring works in hop gardens. All the labour proceeded well and without serious problems. View to substantial decrease of the acreage of hop gardens in this year (we estimate, that it concerns several hundred hectares), caused by the reduction of the sale contracts, there were no problems to ensure sufficient number of workers for the most important works, as stretching and fastening of hop-leading wires and proper training of the hops. Thanks to warm weather the training of the hops started already by the end of April. In the beginning the hybrid varieties of hops were trained, in some places it was nevertheless necessary to start to train also Saaz semi-early red-bine hops. We estimate that the training of Saaz hops will culminate between 6th and 8th May of 2011.

With a view to the hop protection in this period (end of April) we recommend to carry out the differential treatment against alfalfa snout beetle (Otiorhynchus ligustici L.), depending upon occurrence of adult exemplars. In this year the insecticide Actara 25 WG has been registered against this pest for use within the period between 24th March and 10th May 2011. This preparation exterminates also the spring generation of hemp flea beetle (Psylliodes attenuata Koch.), whose harmfulness grows thanks to gradual climate warming. The occurrence of hop aphid (Phorodon humuli Schrank) and red spider mite (Tetranychus urticae Koch.) has not been registered up to now. Although climatic conditions of April were not optimal for appearance of downy mildew of hops (Pseudoperonospora humuli Myi et Takah.), it is recommended to treat the cultures of hybrid and virus-free varieties by fungicide Alliete 80 WP.

Saaz, May 5, 2011
Jaroslav Hájek, Irena Nováková

Chmelařstvi Cooperative Žatec

Hop report - Saaz fine aroma hops

Crop 2011 – May 2011 (Saaz region)

Weather condition – May 2011

Temperature & precipitation in May	2011	2010	30 years average
Average temperature (°C)	13,2	12,0	13,4
Total precipitation in May (mm)	59,8	102,0	54,0
Max. temperature (°C)	28,9 (26.5.)	23,2 (24.5.)	
Min. temperature (°C)	-2,8 (4.5.)	3,1 (9.5.)	
Highest precipitation in one day (mm)	17,8 (2.5.)	25,8 (2.5.)	
Total precipitation Jan - May (mm)	141,4	166,0	148,0
Number of dry days	19	10	

May 2011 does not ride up of the normal, if we consider average temperatures and precipitations. It worth noting the period between 3rd of May and 6th of May, when the morning temperatures decreased below freezing point. The hops were in the phases of start of training at that time. Due to low temperatures the hop vines were retarded, of course, nevertheless the frosts did not cause any damages. On 31st of May early evening a small part of Saaz region was affected by hail-storm. It concerned the localities Lhota u Nečemic, Nečemice, Klůček, Liběšice, Třeskonice and Sdek. According to the farmers this storm did not cause any serious losses.

Growth report

Relatively warm and dry weather in May supported fast stretching growth of hops. One of the most important operations in hop cultivation – the training of hops - was realized properly in due course. Afterwards the cultivation works including hilling of hops were done. By the end of month the hop vines reach an average height of 250 – 300 cm. The development of hops is speeded-up by 10 days at the moment. It is nevertheless difficult to say, whether existing situation in development of hops is positive or not. Should the warm weather in June continues, there is a danger that hops will get old earlier, it will start to blossom and the yields will be thus lower.

As far as the treatment against diseases and pests is concerned, nowadays the priority is given to the protection of hops from downy mildew of hops (Pseudoperonospora humuli Myi et Takah.). The first sprayings by preparative Aliette 80 WP and Aliette 80 WG were already applied. In some especially endangered localities also the preparative Ridomil Gold Combi Pepite has been used. The flyover of aphides (Phorodon humuli Schrank) was observed just sporadically up to now. Despite it, in some localities where it was necessary a chemical treatment has been already effected, in majority of cases by preparative Karate with the Zeon technology. Probably the warm weather will be also favourable to the reproduction of red spider mite (Tetranychus urticae Koch). It is therefore necessary to follow the development and to implement the treatment by Nissorun 10 WP in time.

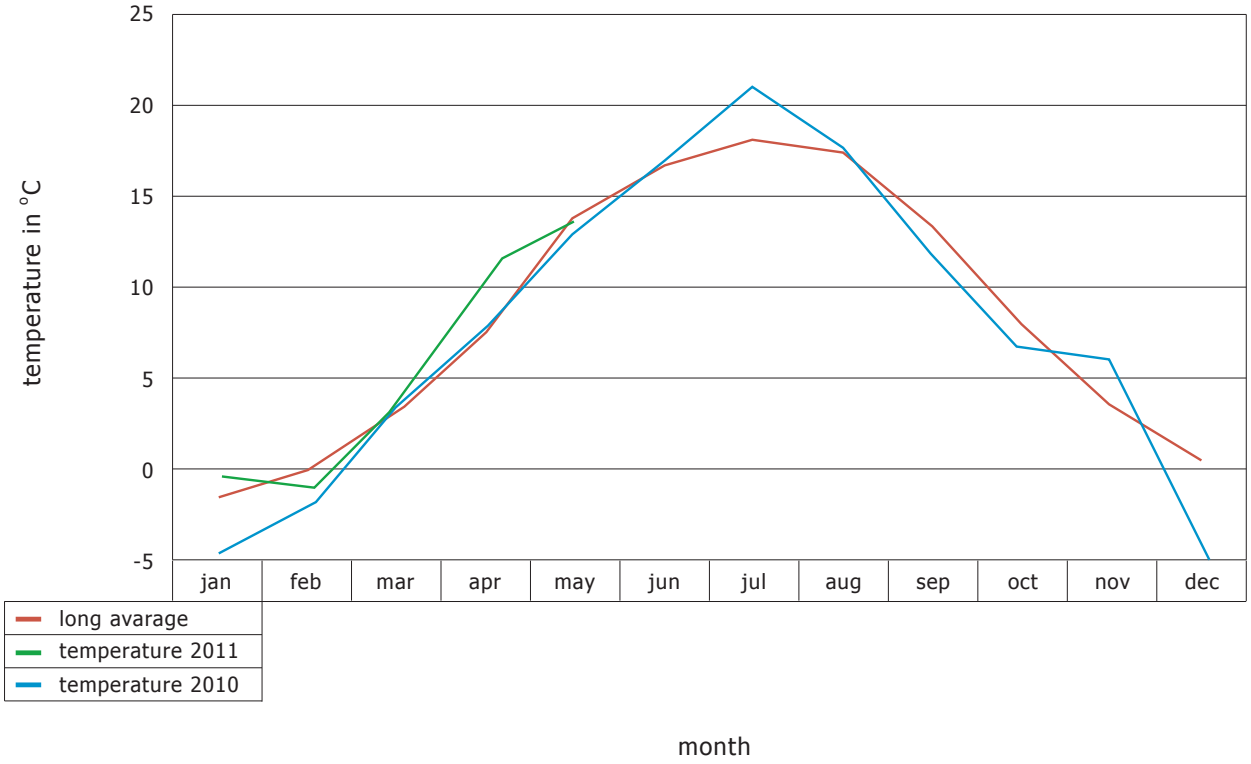
Other information - The hop garden acreage in 2011

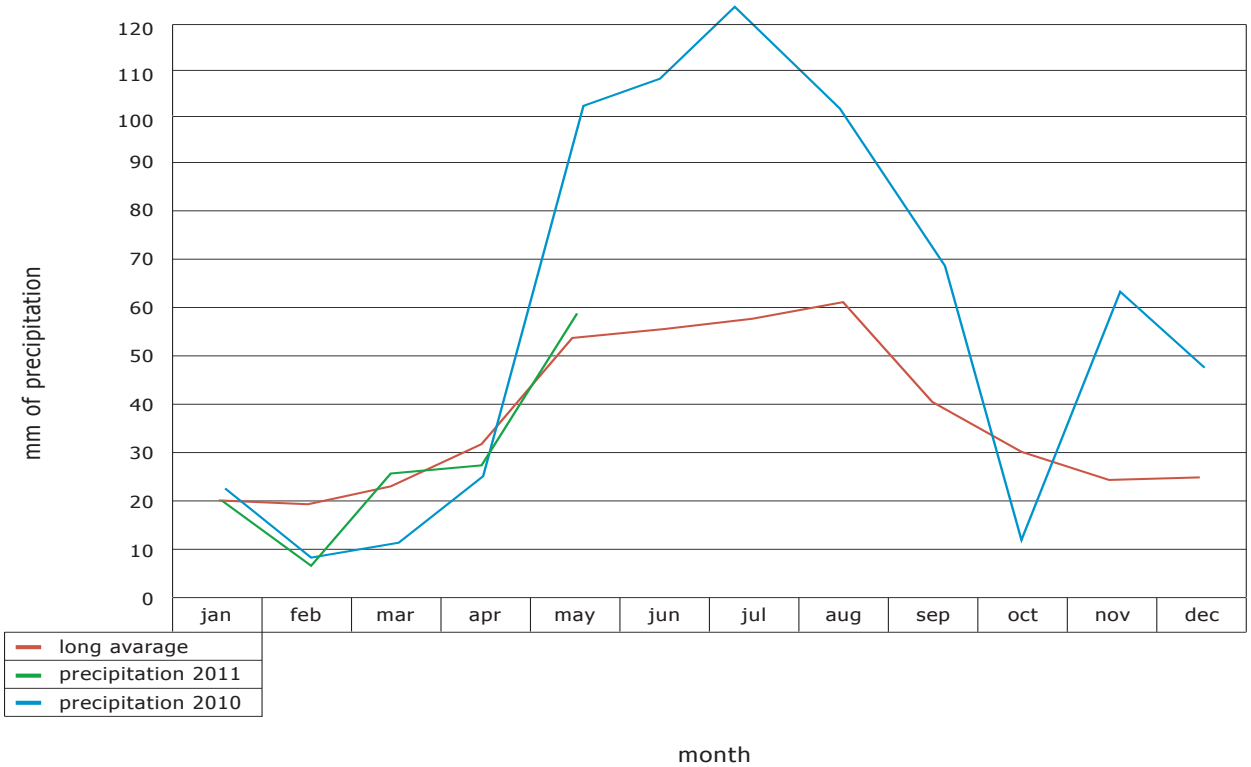
Variety	Saaz Region (ha)	Auscha Region (ha)	Trschitz Region (ha)	Czech Republic (ha)
Saaz	3 141	484	510	4 135
Agnus	49	3	0	52
Bor	3	0	0	3
Premiant	142	44	74	260
Sládek	169	19	75	263
Fuggle	0	0	5	5
Others	22	1	3	26
Total	3 526	551	667	4 744

Source: Central Institute for Supervising and Testing in Agriculture, Brno, Department of Permanent Cultures - Hop Division Zatec, ing. Vladimr Barborka, Head of Department

According to the information received from Mr. Barborka, further change in the acreage of hop gardens can be expected. The final acreage of hop gardens will be known only up to 20th August 2011.

In comparison to the acreage registered to the same day of 2010 there is the total difference of minus 494 hectares of hop gardens, out of that 424 hectares of Saaz semi early red-bine hops. The total decrease represents approximately 10%.





Healthy hop plants at the end of May

Perfect agrotechnology execution including ploughing and trimming of lower parts of plants

Saaz, June 2, 2011
Jaroslav Hájek, Irena Nováková

Chmelařstvi Cooperative Žatec

Hop report - Saaz fine aroma hops

Crop 2011 – June 2011 (Saaz region)

Weather condition – June 2011

Temperature & precipitation in June	2011	2010	30 years average
Average temperature (°C)	17,6	17,0	16,7
Total precipitation in June (mm)	70,5	109,0	56,0
Max. temperature (°C)	29,6 (29.6.)	30,4 (29.6.)	
Min. temperature (°C)	6,5 (10.6.)	4,6 (5.6.)	
Highest precipitation in one day (mm)	12,4 (6.6.)	38,2 (30.6.)	
Total precipitation Jan - June (mm)	211,9	275,8	204,0
Number of dry days	11	18	

The precipitations as well as the temperatures in June of the current year were slightly above the long-term average, likewise the climatic conditions since the beginning of 2011.

Growth report

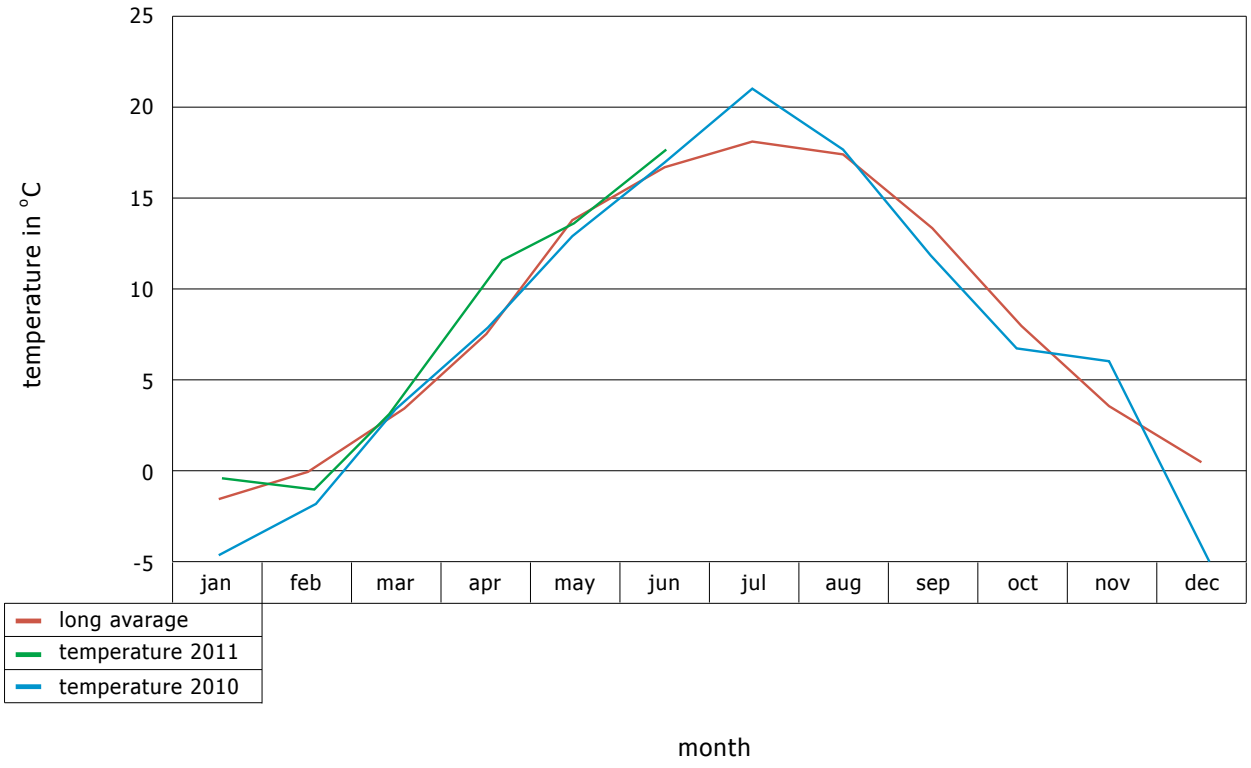
Although a fast stretching growth decelerated within the months of June compared to May, the height of hop vines reached the top of the trellis. In some cases the hops exceeded the constructions even by one meter – it concerns primarily the gardens planted with young vines. The development of hops is ahead by ten to twelve days compared to the normal. It was confirmed also by premature flowering on majority of gardens already by the end of June. The experience of previous years suggests that this situation is not optimal.

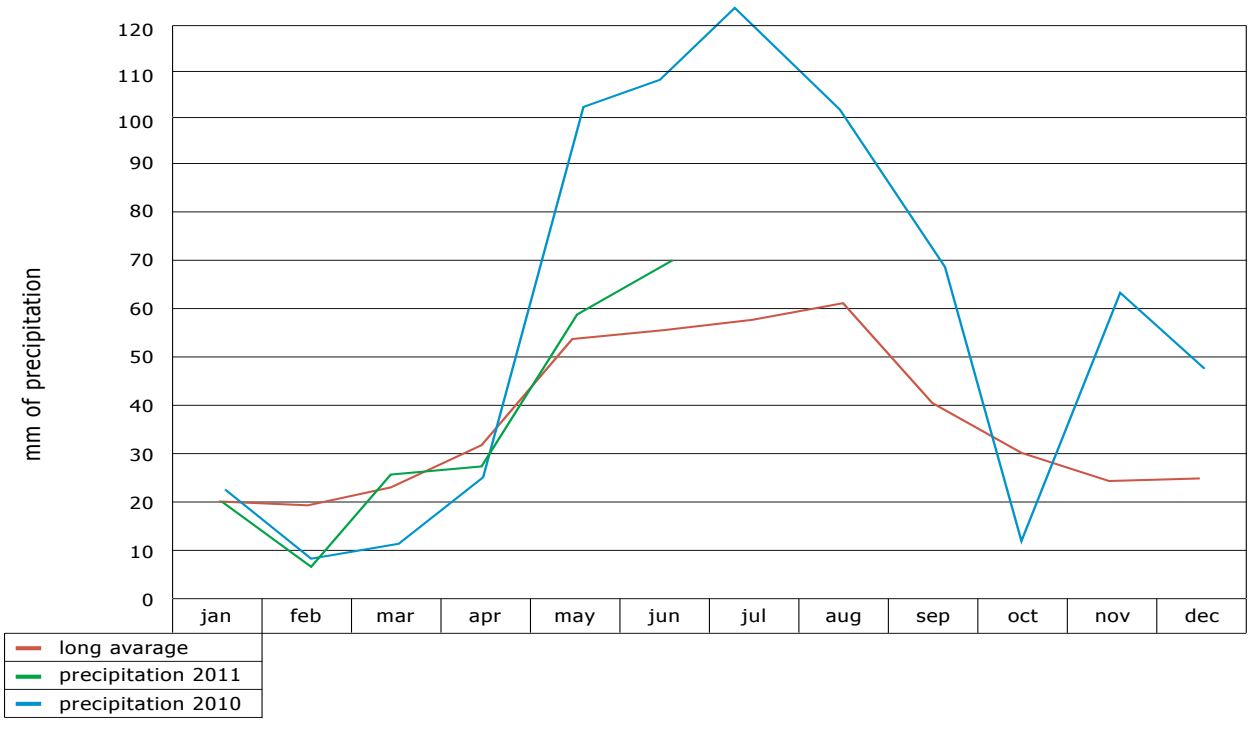
Health state of hops

Convenient condition for dispersion of downy mildew of hops (Pseudoperonospora humuli Miy et Takah.) continued also in June 2011. As per the short-term prognosis the climate comply with the conditions for growth and development of downy mildew mycelium. The spike-like sprouts appeared in many gardens. Also the manifestations of secondary infection in the form of brown spots on the leaves were evident. Farmers were therefore recommended to treat the gardens using the fungicides with systemic effect: Ridomil Gold Combi Pepite, Aliette Bordeaux and Ortiva. The incidence of hop aphid (Phorodon humuli Schrank) was assessed as weak on majority of localities. View to the state of the hop cultures and systemic effect of used aphicides it was nevertheless recommended to treat the gardens against hop aphid within the weak between 20th and 26th of June 2011. Following preparations were recommended: Confidor 70WG, Tepeki Chess 50 WG. The occurrence of red spider mite (Tetranychus urticae Koch) has been detected just in low population density. In case of need the preparation Nissorun 10 WP has been used. Also Ortus 5SP and new preparation Movento 150 OD could be used.

Other information

In our Hop Report of May 2011 we have cited the survey of the acreage of the hop gardens registered by ÚKZÚZ Žatec (Central Institute for Supervising and Testing in Agriculture, Saaz Branch). This source indicated that the acreage of hop gardens had decreased by 494 hectares compared to 2010. According to our own research based on cultivated hop gardens the difference of acreage in 2011 against 2010 will be higher, as far as the harvested acreage is concerned. We are of the opinion that the decrease will reach approximately 700 hectares.





Hop garden at the end of June

The first hop cones at the end of June

Saaz, July 1, 2011
Jaroslav Hájek, Irena Nováková

Chmelařstvi Cooperative Žatec

Hop report - Saaz fine aroma hops

Crop 2011 – July 2011 (Saaz region)

Weather condition – July 2011

Temperature & precipitation in July	2011	2010	30 years average
Average temperature (°C)	17,2	20,7	18,0
Total precipitation in July (mm)	194,2	122,4	59,0
Max. temperature (°C)	29,7 (9.7.)	35,0 (12.7.)	
Min. temperature (°C)	5,9 (1.7.)	8,5 (8.7.)	
Highest precipitation in one day (mm)	58,2 (30.7.)	42,2 (22.7.)	
Total precipitation Jan - July (mm)	406,1	398,2	263,0
Number of dry days	14	12	

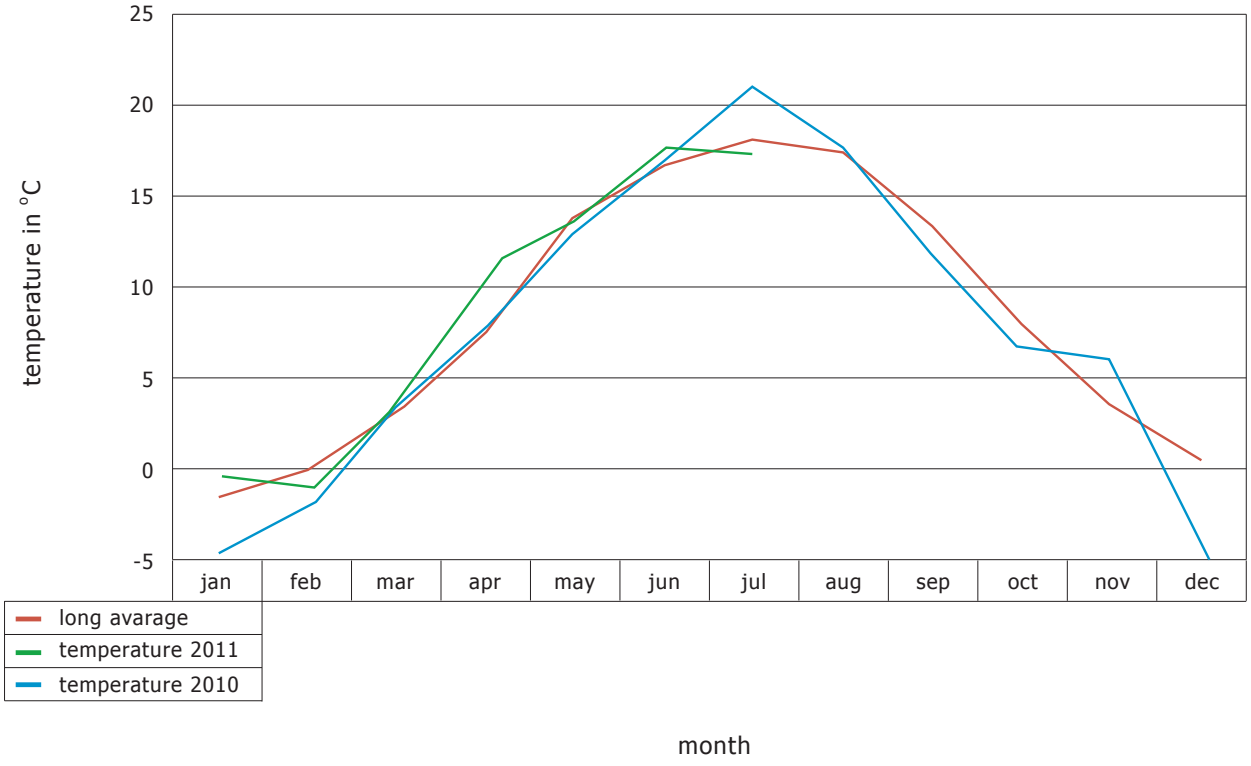
Above mentioned survey of temperatures and precipitations makes noticeable that July was subnormal month as far as the temperature is concerned (the difference amounts even 3,5°C in comparison to July 2010). The precipitations, on the other side, highly exceeded both the long-term average (by 135,2 mm) and relatively rainy July 2010 (by 71,8 mm). The rainfalls reached 329,2% of long-term average. Majority of rains fall in 30th and 31st of July, when 58,2 mm and 17,6 mm of downfalls were registered, respectively.

Growth report

The lead of the hop vines development, advised in our previous report of June, has been lost in July – nowadays we estimate that it has been reduced to 4 to 5 days, instead of original 10 – 12 days. We therefore predict, that majority of the growers will start the harvest within the period between 16th and 20th August 2011. The difference between the old and new cultures will be clearly perceptible in the yields. The old gardens (15 years and older) which have been cut as first, got older very soon, the lateral sprouts are not expressive and also the creation of cones is not optimal. On the other side, young hop gardens give very good impression. As we mentioned in our previous report, the hops started to blossom very early in this year. Around the 20th of July the hops initiated the second blossoming on majority of gardens. It was again more expressive in case of young gardens, where a good harvest can be expected.

Hop phytosanitary information

After the treatment of the hop cultures in the third decade of June by aphicide preparations (Confidor 70 WG, Teppeki, Chess 50 WG and Movento 150 OD) the hop aphid (Phorodon humuli Schrank) was eradicated basically in all hop gardens. View to already finished transfer of the hop aphid in this year (the third decade of June) this pest should not cause any economical losses on hop cones. In spite of cold and rainy weather it was necessary to take care of the presence of red spider mite (Tetranychus urticae Koch). In majority of cases the preparation Ortus 5SP has been used. If higher occurrence of red spider mite in some gardens will be registered, the application of the preparation Omite 30 W is recommended. Also in July an inflectional tendency of downy mildew of hops (Pseudoperonospora humuli Miy et Takah.) was rather strong. The cultures were treated by preparations Ridomil Gold Combi Pepite, Aliette Bordeaux and Ortiva. By the end of July it was also possible to apply the cupric preparations as Cuproxat SC or Kuprikol 250 SC. Although this year the protection of hops was not easy, we state, that the health condition of hops in all hop gardens is satisfactory.


25
20
15
10
5
0
-5
temperature in °C
jan
feb
mar
apr
may
jun
jul
aug
sep
oct
nov
dec
long avarage
temperature 2011
temperature 2010
month


120
110
100
90
80
70
60
50
40
30
20
10
0
mm of precipitation
jan
feb
mar
apr
may
jun
jul
aug
sep
oct
nov
dec
long avarage
precipitation 2011
precipitation 2010
month

Hop heading at the end of July

overview at the hop garden at the end of July

Saaz, August 1, 2011
Jaroslav Hájek, Irena Nováková

Chmelařstvi Cooperative Žatec

Research subject on hop - Crop 2011

Saaz, Semptember 12, 2011

1. The situation during the crop year and the quality

A. Development of the weather and the situation in production 2011

At the enclosure please find the monthly Hop Reports 2011, regularly published on the web sites of Bohemia Hop, a.s. Žatec - www.bohemiahop.cz. Tables No. 1 and No. 2 indicate summarized data concerning the whole vegetation period (April – July) in 2011, compared to the same period of 2010 and to the long-term average covering the period of 1961 to 1990

Table No. 1 – Temperature (°C)

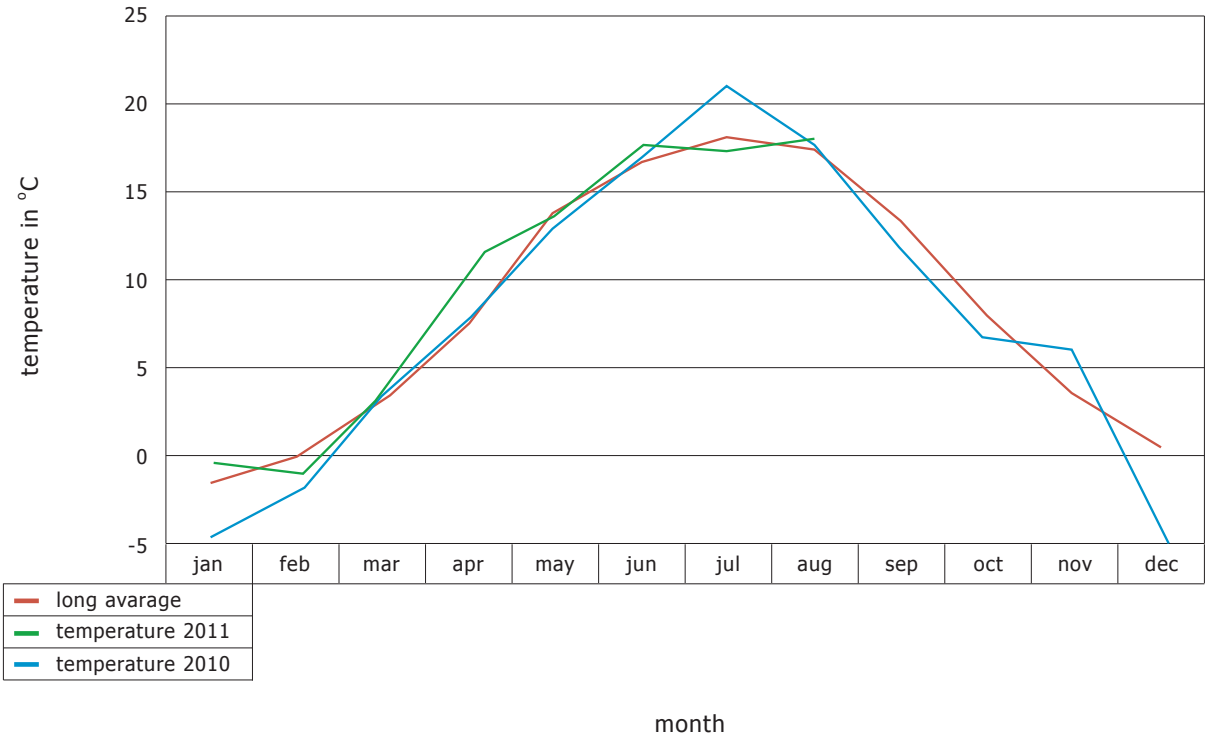
Month	average temperature °C 2010	2011	difference + -	30-years average °C	difference + -
April	8,50	11,30	+ 2,80	8,50	+ 2,80
May	12,00	13,20	+ 1,20	13,40	- 0,20
June	17,00	17,60	+ 0,60	16,70	+ 0,90
July	20,70	17,20	- 3,50	18,00	- 0,80
August	17,70	18,30	+ 0,60	17,40	+ 0,90
Total	**75,90**	**77,60**	**+ 1,70**	**74,00**	**+ 3,60**

Table No. 2 – Precipitations (mm)

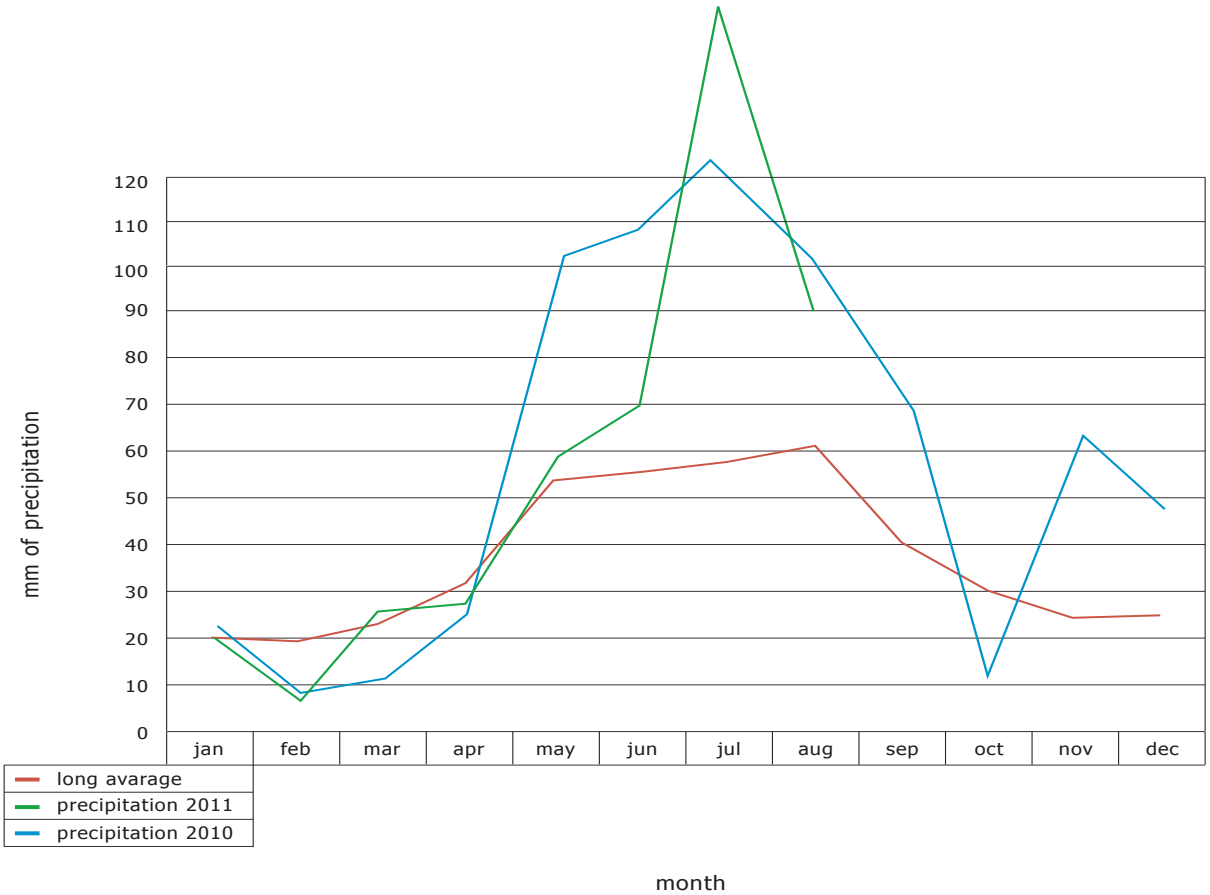
Month	Total precip. per month (mm) 2010	2011	difference + -	30-years average mm	difference + -
April	24,60	28,00	+ 3,40	32,00	- 4,00
May	102,00	59,80	- 42,20	54,00	+ 5,80
June	109,00	70,50	- 38,50	56,00	+ 14,50
July	122,40	194,20	+ 71,80	59,00	+ 135,20
August	103,40	89,60	- 13,80	62,00	+ 27,60
Total	**461,40**	**442,10**	**- 19,30**	**263,00**	**+ 179,10**

The data indicated above are accompanied by Graphs illustrating the average temperatures and the total of the precipitations per month, covering period of January to August 2011.

Graph No. 1 – Average temperatures



Graph No. 2 – Precipitations per month



From the point of view of temperature development, the first quarter of 2011 was warmer than 2010 and than long-term average. Precipitations in the first quarter were between previous year and long-term average. Similarly to previous year, the snow cover was extraordinary high in the course of the whole winter. First snow fell again to not entirely frozen soil and thanks to higher temperatures in January it melted earlier than in 2010. During thawing majority of moisture was absorbed by the soil. The level of subterranean water notably increased and by this way the moisture conditions of soil substantially improved. Unfortunately, by the end of February and on the beginning of March the black frosts came (low temperatures deeply below the freezing point, without snow cover), what damaged considerably especially the cultures of rape and winter wheat. However, it did not influence hop vines. On the contrary – the soil in hop gardens was over-frozen and in Spring months it could be worked more easily.

The temperatures in April were significantly higher than in previous year and then the long-term average. Precipitations were higher than in previous year, nevertheless still under long-term average, although the difference was negligible. However, the level of precipitations was influenced by the last April day with expressive rains. Otherwise, April can be characterized as warm and dry and in principle without rains.

May, on the other side, did not deviate from normal in any way. Only the period between 3rd and 6th of May is worthy of noting, as the morning temperatures decreased under the freezing point. The hop vines were in the phase of training at that time. Although the plants were retarded due to low temperatures, the frost did not cause any losses. On 31st of May a part of hop gardens in the Saaz region was affected by hail-storm. It did not cause any serious damages, indeed.

June of this year was slightly below long-term average, as far as precipitations and temperatures are concerned. The climatic conditions in July got absolutely out of normal in 2011. High amount of precipitations, which reached 194,20 mm, corresponded to 329,2% of normal. In comparison with July of 2010, which we characterized as very rainy, it showed the rainfalls even by 71,8 mm higher. Basically, that result was caused by the rains of 30th an 31st July, 2011, when 58,2 and 17,6 mm of water fell, respectively. First half of August was again rainy and relatively cold.

B. Quality: alpha contents in original, aroma, the appearance of the cones, the pests

Climatic conditions on the beginning of this year enabled timely beginning of spring works in the hop gardens. All the works were going on smoothly, without any serious problems. View to substantial reduction of the acreage of the hop gardens within this year, reaching 700 hectares, which was caused by a sharp and unexpected decrease of sales contracts, there were no problems in order to provide sufficient number of temporary workers for the most important operations in hop gardens, i.e. stringing up and recessing of hop black wires and proper training of the hops.

View to warm character of the weather in April, the hop vines showed good elongating growth and therefore it was necessary to proceed to training already by the end of April, also in case of Saaz hops variety. The hops in that period advanced by approximately one week in its development. As far as the protection of hops is concerned, the spraying against alfalfa snout weevil (Otiorrhynchus sulcatus F.) was performed in some locations. In this year a new preparation – Actara 25 WG – has been registered against this pest. Also the first spraying against primary infection of downy mildew of hops (Pseudoperenospora humuli Miy et Takah.) took place in those days, mostly by the preparation Aliette 80 WP. Relatively warm and dry weather in May created good conditions for fast development of hops.

The training was carried out in time and relatively in good quality. By the end of the month the hop vines reached the average height of 300 cm and its development was advanced by 10 day, at least, according to our assessment. The question, if such a state is positive or not, arose at that time. There was a danger, that rapid development of hops will continue under such a warm weather, the hop plants will get old and start blossoming too early, what is not quite optimal for the production. From the viewpoint of treatment of hops against diseases and pests in May the growers gave priority to taking care of the protection against downy mildew of hops. Besides the application of the preparations Aliette 80WP, Aliette 80WG and Aliette Bordeaux in some locations they applied also preparation Ridomil Gold Combi Pepite. The situation in development of hop aphid (Phorodon humili Schrank) and red spider mite (Tetranychus urticae Koch) did not required any chemical treatment at that time. Due to strong rains and winds about 30 ha of hop gardens have fallen in that period.

Though the elongating growth of hops somewhat slowed down in June thanks to lower temperatures, predominant majority of hops reached the height of the garden constructions. Young plantations then exceeded the constructions by one to one and half meter. The worries of premature blossoming of hops became real. The hops really started to blossom within the last decade of June and in some hop gardens located in lower altitudes also the first cones appeared. This situation, in accordance with our experience, really did not signal rich crop of hops. On the contrary, the situation in the incidence of downy mildew of hops was rapidly getting worse. According to short-term prognosis the conditions for growth and development of downy mildew mycelium were fulfilled. Spike shoots appeared in many localities during June. Also the manifestations of secondary infection in form of brown spots on the leaves were evident. Therefore it was recommended to treat all the areas by fungicides with systemic effect, as Ridomil Gold Combi Pepite, Aliette Bordeaux and Ortiva. Despite weak occurrence of hop aphid the hop gardens were treated by the preparations based on imidacloprid (Confidor 70 WD, Tepeki a Chess

50 WG) as prevention. The incidence of red spider mite was ascertained in low population density. It was nevertheless carefully monitored and preferably the preparation Nissorun 10 WP was applied where necessary.

July changed the situation substantially. Low temperatures slowed down its development, so the advance in comparison to the normal decreased to one week. Abnormal height of the precipitations caused rich creation of cones of the first blossoming, the renovation of the vegetative activities of the older plantations and the setting up of the second blossoming. The worries about the crop failure in this year nevertheless were not replaced by pleasure of good crop, but rather by concern what to do with it. The infection of the downy mildew of hops continued owing to high rainfalls. Also in that month mainly the preparations Ridomil Gold Combi Pepite, Ortiva and Alliete Bordeaux were applied. In some locations also the preparations based on copper (especially Cuproxat SC or Kuprikol 250 SC) were used.

Climatic conditions in August nevertheless were not optimal, in particular for the ensuring of corresponding level of hop protection against downy mildew of hops. Between 4th August and 6th August, 2011, further rains brought approx. 44 mm of precipitations. Relatively large part of hop gardens was waterlogged and the space between the rows was flooded. Further abundant rainfalls in Rakovník region on 24th and 25th August, 2011, caused the fall of 120 ha of hop gardens. The most affected companies were Rakochmel Kolešovice, Lupofyt Chrášťany, Družstvo Agrochmel Kněževes (co-operative) and PP SERVIS Nesuchyně. This situation made more difficult or even made impossible the protection against downy mildew of hops, and therefore a lot of plantations are damaged.

The first results of analyses to the content of alpha bitter substances carried out by the staff of Chmelařský institute (Hop Research Institute) were very good. There was a question, how intensive will be their further creation. The weekly increases of alpha bitter substances were constantly going up and therefore this year will be one of the bests not only concerning yields, but also concerning contents of alpha bitter substances. The average content of alpha bitter substances according to the first analyses varies around 4% KH in Saaz hops. The harvest started within the week of 15th August to 21st August, 2011, in case of majority of farmers. Only some producers in Terschitz region decided to start later. It is absurd, that some of the producers had such a high yields, that they were forced to stop the harvest at the moment when their contracted quantity was fulfilled and to leave hops in hop gardens. We estimate that about 250 ha of hop gardens will not be harvested by this way.

Following Table shows the results of the alpha bitter substances contents according to particular regions and varieties as per the analyses carried out by the laboratory of Chmelařství, co-operative Žatec.

Table No. 3 – Contents of KH in original material according to varieties and regions (in%)

Region	Saaz-ST	Saaz virus free	Saaz	Sládek	Premiant
Saaz	3,95	4,20	4,10	-	-
Auscha	3,80	4,00	3,92	-	-
Trschitz	3,80	3,85	3,84	-	-
Czech Rep.	**3,89**	**4,12**	**4,03**	**7,90**	**9,80**

C. Estimation of acreage and yields according to the regions

Table No. 4 – The acreage of hop gardens in the Czech Republic (ha)

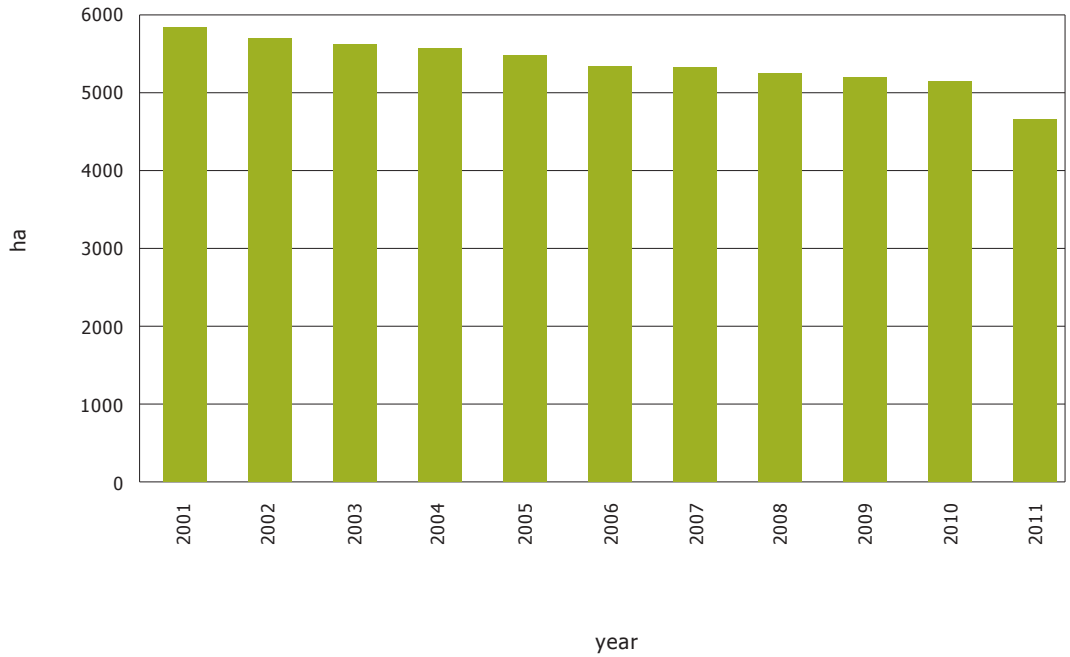
Region	up to 30.04.2010	up to 20.08.2010	up to 30.04.2011	up to 20.08.2011
Saaz	3 839	3 831	3 526	3 517
of it Saaz var.	3 405	3 410	3 141	3 132
Auscha	655	637	551	524
of it Saaz var.	572	565	484	460
Trschitz	744	742	667	591
of it Saaz var.	582	582	510	448
Czech Rep. total	**5 238**	**5 210**	**4 744**	**4 632**
of it Saaz var.	**4 559**	**4 557**	**4 135**	**4 040**

The harvested acreage in 2010 is shown in table above. The data indicated were kindly conceded by UKZUZ Žatec.

The decrease of the acreage of hop gardens against 2010 was unfortunately very dramatic. Similar decrease was perceptible perhaps only within the period of 1996 – 1998. The highest reduction affected the Saaz hops variety. This situation was evidently caused by the decrease of interest in this variety, primarily from the side of the breweries, which were bound to these hops in the past. In such a confused situation, when some of the producers did not even harvested all the hop gardens view to exceeding quantity, we cannot responsibly estimate further development of the acreage of hop gardens in our country. We expect, that the counting of hop gardens, carried out by ÚKZÚZ Žatec (Central Institute for Supervising and Testing in Agriculture, Saaz) up to 30th April, 2012, will create the basis for estimation of further development.

In order to illustrate the development of the hop gardens acreage in the Czech Republic within previous 10 years we enclose the graph of the acreage in 2001 – 2011:

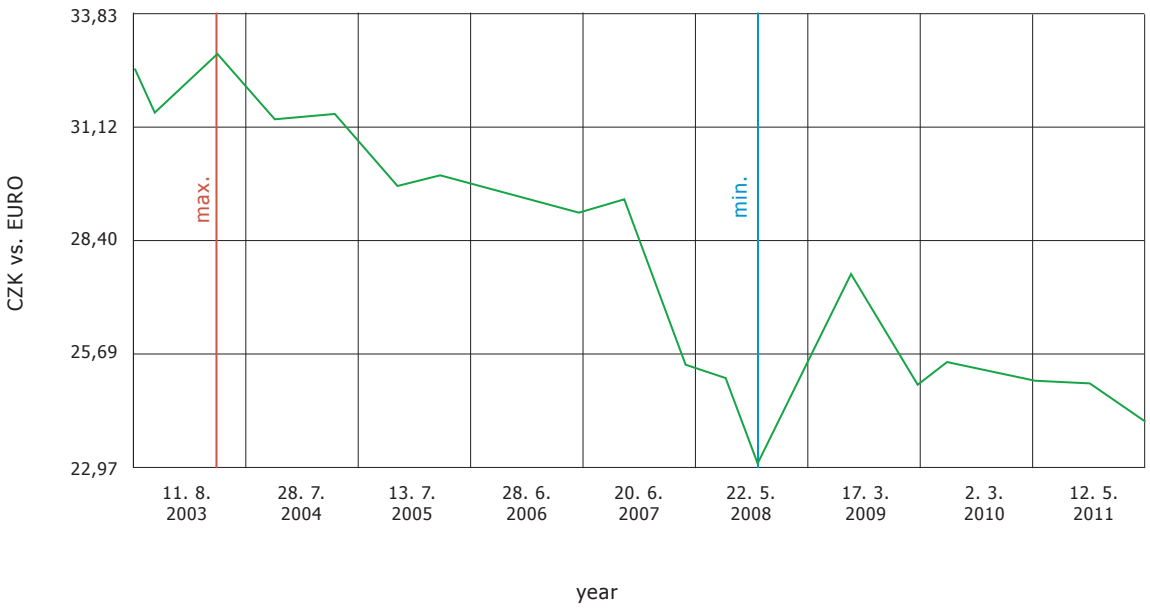
Graph No. 3: Development of the acreage of hop gardens in the Czech Republic



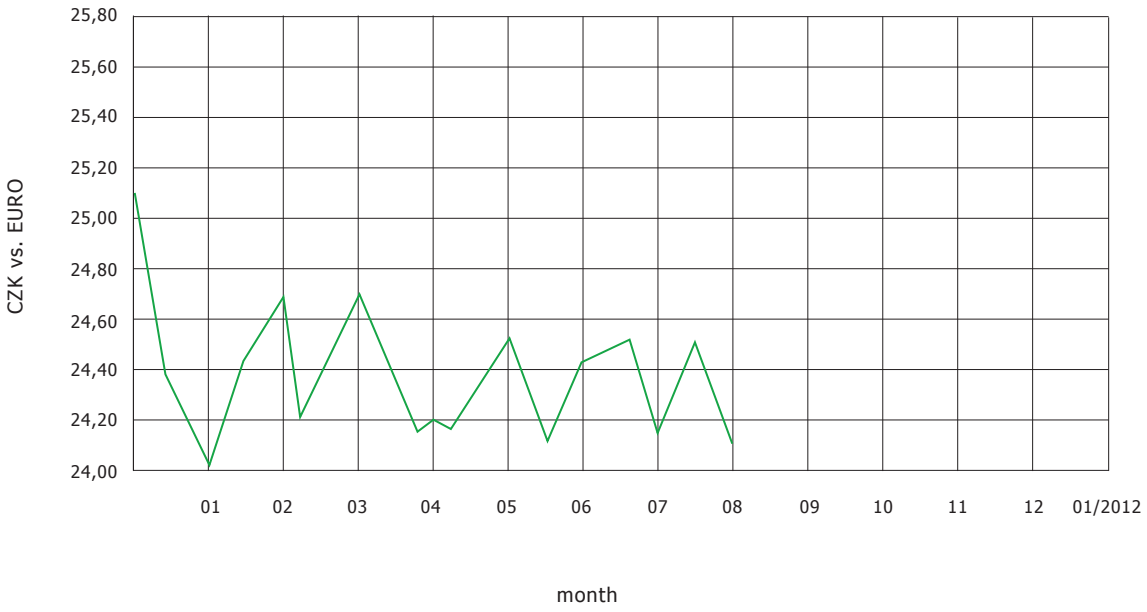
The exchange rate of the czech crown is still negative for the czech hop industry

View to the fact, that about 80% of the Czech hops are exported, the strengthening of the national currency has fundamental impact to the economical results of the whole industry.

Graph No. 4: Exchange rate of the CZK vs. EUR



Graph No. 5: Exchange rate of the CZK vs. EUR in 2010



Currrent rate (01.09.2010): 1 EUR = 24,15 CZK

The estimations of the production of hops in the Czech Republic changed very often in the course of this year. Until the end of June the situation was more or less normal, the production was expected rather slightly lower than the average. Precipitations during July nevertheless stimulated hops to produce more, especially Saaz hops variety. Nowadays it is clear, that the total production of hops in 2011 will be definitely above the level of long-term average despite the fact, that many hop gardens were not harvested. The exact results of the crop will be known only by the end of the month of November, after the summarization of individual **"Producers declaration about the number and the weight of marked packing with hops according to the cadastral territories and varieties of hops"**, by UKZUZ Žatec.

It is fundamental, that we will be able to fulfil long-term contracts concluded with our customers and by this way to assure them of our responsibility as a business partner for the future.

Table No. 5 – Estimation of the crop according to regions (total)

Region	Harvested area (ha)	Production (t)	Yield in t per ha
Saaz	3 517	4 400	1,25
of it Saaz variety	3 132	3 700	1,20
Auscha	524	880	1,68
of it Saaz variety	460	710	1,55
Trschitz	591	990	1,69
of it Saaz variety	448	670	1,50
Czech Republic Total	**4 632**	**6 270**	**1,35**
of it Saaz variety	**4 040**	**5 080**	**1,26**

2. Forecast of the production in the future (2011 - 2012)

A. Expected replacement of the varieties and hypothetic production of individual varieties

Table No. 6 – Comparison as per the variety composition in 2009 – 2011

Variety	2011(ha)	2010(ha)	Diff.(ha) 11/10	2009(ha)	Diff. (ha) 11/09	10/09
Saaz	4 040	4 557	- 517	4 627	- 587	- 70
Agnus	52	61	- 9	58	- 6	+ 3
Bor	4	4	0	13	- 9	- 9
Fuggle	5	5	0	5	0	0
Premiant	256	277	- 21	293	- 37	- 16
Sládek	249	277	- 28	277	- 28	0
Others	26	29	- 3	34	- 8	- 5
Czech Rep.	**4 632**	**5 210**	**- 578**	**5 307**	**- 675**	**- 97**

B. Expectation of the planting of new varieties and the yields:

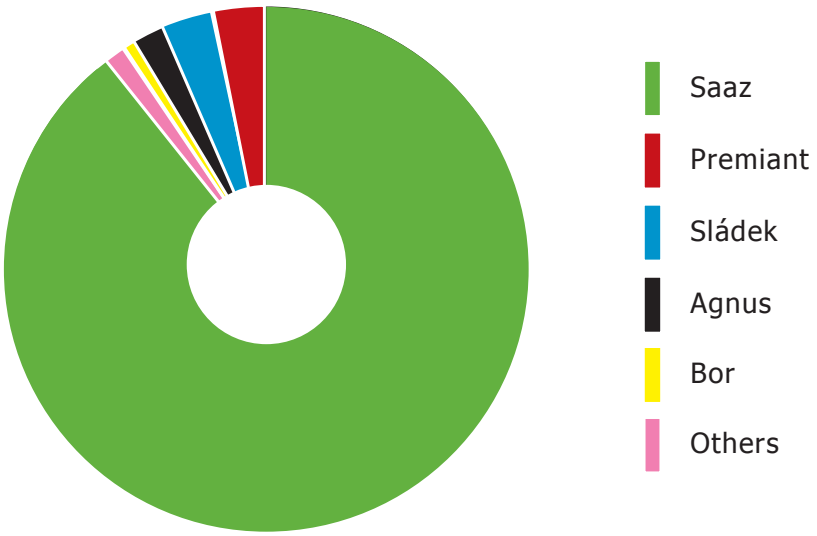
If the sales of the Czech hops will continue stagnate as in previous two years it will be very difficult to estimate the expectations of production of new varieties. It is truth, that also in 2011 two new and promising varieties entered into the Register of Varieties. These varieties were named Saaz Late and Bohemiae (originally called H2 and H8 in the phase of breeding), but their use in brewing industry is still a question. If we think over the future of the Czech hops, we must say, that view to the reduction of the acreage only the best and profitable hop gardens will be retained, so the yields per hectare should not decrease. Of course, we are aware of the fact, that we work with biological material, which is subject to climatic conditions and for sure it will be influenced by them every year.

Table No. 7 – Composition of individual varieties on harvested area in 2010 and 2011

Variety	area 2010	%	area 2011	%
Saaz	4 557	87,50	4 040	87,23
Agnus	61	1,18	52	1,12
Bor	4	0,08	4	0,08
Premiant	277	5,33	256	5,52
Sládek	277	5,33	249	5,37
Others	29	0,58	31	0,68
Czech Republic	**5 210**	**100,00**	**4 632**	**100,00**

Above table is supplemented by the Graph No. 6

Graph No. 6: Composition of individual varieties on harvested area in 2011



3. Trends on the hop market

A. The purchase movement from big buying countries

Crop 2010 was highest recorded crop in last 100 years as to yield with slighlty under average alpha acid content. Due to dramatical decrease of contracted volumes with 2 major japanese breweries and also slight decrease of volumes with other major clients Chmelarstvi cooperative opened pool where still some quantities are at disposal. Apparently certain limited inventories are still by traders.

Even if approx. 10% of hop acreage compared to 2010 was not cultivated crop 2011 seems to be once more high as to yield but also as to alpha acid content. Once more relatively high volumes will be offered on spot market. Beer industry in the world is more and more cost oriented with lower usage of natural raw materials, cheaper brewing methods and drinkability of beer is going down. The effect of such measures is that sales of beer are stagnating or decreasing. Big contrast between high quality drinkable beers produced by smaller and smallest brewery and big brewing industry is apparent.

Japan: once more dramatical decrease of contracted volumes, negative impacts on the czech hop industry is inevitable. No new contracts.
USA: US craft brewers use czech hop and are successfull on the market
Belgium: big brewers in difficulties, small traditional brewers succsessfull on the market
China: more and more important market for czech hops, sales of high and top quality brands rapidly rising
Southern Asia: stable demand
Other countries: promising russian market

B. The purchase movement of domestic breweries

Rocket increase of sales of beer in PET bottles, quality beers made by smaller breweries running well, mainstream brands in troubles. Some breweries came back to traditional brewing process and raw materials.

C. The estimated forward contract ratio

2012 crop – 60%
2013 crop – 50%
2014 crop – 50%

4. Quality Control

Change of the technology and packing material for crop 2011

Although the processing of the production of 2010 took relatively a long time, before the season 2011 following adjustments and improvements of warehouses and packing plants were achieved:

Change of wooden floors in embankment No. 120
Complete replacement of compressors for type T45 including handling
Installation of the elevator for biological admixtures
Purchase and installation of new printing machine for bags
Installation of fast moving doors to the processing hall (saving of warm) and air-conditioned warehouse for pellets
Finalisation of improvements in laboratory

5. Pesticide residua

A. Supplement to the instruction regarding affusion within previous year

Basic trends of the hop protection, as well as protection of other agriculture commodities are fully subject to the rules valid in European Union.

B. Newly used pesticides

By comparison of Methodology of the Protection of Hops for 2010 and 2011 we recorded the enlistment of new preparations:

Pest / disease	The name of preparation	effective substance
Downy mildew of hops	Folpan 80 WG	Folpet
Hop aphid	Movento 150 OD	Spirotetramat
Alfalfa snout weevil	Actara 25 WG	Thiamethoxam

C. System of control of pesticide residuas:

Chmelařský institut, s.r.o. Žatec (Hop Research Institute, s.r.o. Žatec) did not receive any instructions in order to change the control system of pesticide residua, so that it goes on in compliance with the present trends.

D. Protection of hops in the crop year 2011

The protection of hops carried out by our suppliers was subject of the Methodology of the Protection of Hops for the Year 2011 and of the List of the Preparations Approved for the Protection of Hops in 2011, issued for the companies Chmelařství, co-operative Žatec, and Bohemia Hop, a.s. Žatec. View to the fact, that we have agreed in the Contracts with the suppliers an obligatory deadline for sending of the “List” until the 31st March of the current year, we need to know eventual requirements for the adaptation of allowed chemical preparations before that day, preferably up to 28th of February of current year.

With copliments

Bohemia Hop Co., Ltd.