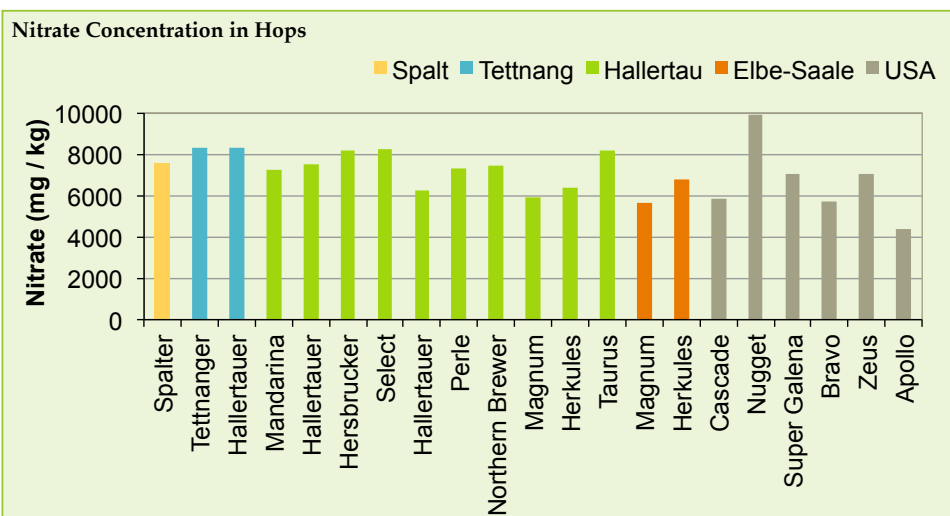# NEWSLETTER 01/2014
TECHNICAL SUPPORT

Nitrate levels in German hops and possible input to the beer

It is well known that hop is a nitrate storing plant and therefore the concentrations are rather high, as shown in the graph below with the data from crop 2013. The various colors stand for different growing regions. Yellow (Spalt), blue (Tettnang), green (Hallertau) and red (Elbe-Saale) are the German growing areas and the US hops are presented in grey. The values vary between 4410 and 9900 mg/kg.

Nitrate Concentration in Hops

In terms of nitrate levels in beer, we reported already in our newsletter 05/2013 on possible amounts reached by dry hopping.

The following example shows the effect of dry hopping on the nitrate concentration in beer:

Nitrate in green beer	10 mg/l
Nitrate in hops	9900 mg/kg
Dosage of hops	300 g/hl
Nitrate yield	75 %

Resulting in a nitrate level in beer of 32 mg/l

Based on the highest residues of nitrate we found in the hops that year, a dosage of 300 g of hops per hl and a relatively high level of nitrate in the green beer with 10 mg/l, only 32 mg of nitrate are achieved in the final beer. Even under these bad conditions the resulting nitrate concentration in beer is far below the limit for drinking water, which is 50 mg/l.

For two reasons usually less nitrate is dosed in the brew house. First of all less hops are added and secondly the average yield is only about 60 %. That means an addition of 10 g of alpha per hl, which is already rather high, corresponds to a quantity of 100 g of bitter hops (alpha 10 %) per hl and results in a nitrate concentration of approximately 6 mg/l. If you use aroma hops, like Hersbruck with an alpha concentration of 2 %, the picture is completely different and up to 30 mg of nitrate per liter might be found.

So generally there is no risk to reach too high levels of nitrate in the brew house. In case of dry hopping it might be useful to check the nitrate concentrations of the hops and to calculate the possible input. To be on the safe side, you can calculate with a yield of 100 % instead of 75 %.

If you need more detailed information, please don't hesitate to contact our Technical Support Team!

Simon H. Steiner, Hopfen, GmbH
Newsletter, January 2014

FORUM 2014

Notice the dates of the upcoming Hopsteiner **FORUM** in 2014:

7th Hopsteiner Forum: **April, 9th**
8th Hopsteiner Forum: **May, 14th**
9th Hopsteiner Forum: **June, 18th**
10th Hopsteiner Forum: **July, 23rd**
11th Hopsteiner Forum: **September, 3rd**
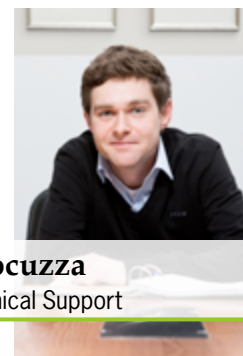12th Hopsteiner Forum: **November, 14th**

Topics will soon be available on our homepage **www.hopsteiner.de**. Do not hesitate to contact us. **info@hopsteiner.de**

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