

HOPSTEINER – NEWSLETTER  
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TECHNICAL SUPPORT



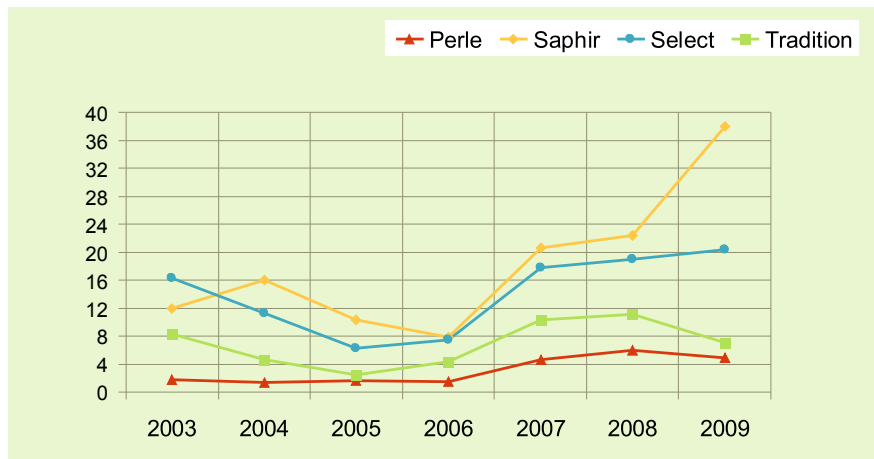
**Hopsteiner**  
COMMITTED TO THE BREWER.

## Variations in Hop Aroma Depending on Crop Year

In crop 2008 we showed the variations in the contribution of hop oils to beer depending on the crop year. As a representative hop aroma substance we have chosen Linalool, which correlates rather well with the sensory impression of a hoppy aroma in beer.

As shown last time, the alpha and Linalool concentrations are varying strongly from crop to crop. However, their tendencies can be very different. A higher alpha concentration does not mean that the Linalool concentration increases equally. Therefore we calculate the ratio Linalool (ppm) to alpha (% HPLC, EBC 7.7), which indicates how much aroma is dosed by adding the same bitterness. This is of major importance in cases of late hop addition.

### Ratio Linalool / Alpha-Acids



As can be seen in the chart above, there are big differences in some varieties compared to last year's crop. This could lead to the following changes in terms of contribution of hop aroma substances to the beer if the same amount of alpha is dosed from this crop:

Variety	relative difference
Perle	- 8 %
Tradition	- 36 %
Select	+ 7 %
Saphir	+ 69 %

The changes for Perle and Select are of minor importance. The fluctuations for Perle are generally not so great. This variety is usually not used as a late addition anyway, as it is rather weak in aroma. However, late additions of Tradition and Saphir can lead to extreme changes in the hoppy aroma of the resulting beer. This has really to be considered when starting with the new crop.

Data is of course available for all the important aroma varieties. So if you need help, just contact our experts!