Influence of Nitrogen Fertility Practices on Hop Cone Quality

Anne E. Iskra, Scott R. Lafontaine, Kristin M. Trippe, Stephen T. Massie, Claire L. Phillips, Megan C. Twomey, Thomas H. Shellhammer & David H. Gent (2019) Influence of Nitrogen Fertility Practices on Hop Cone Quality, Journal of the American Society of Brewing Chemists, 77:3, 199-209, DOI: 10.1080/03610470.2019.1616276

Abstract

A multi-year field study was conducted in Oregon and Washington to evaluate the influence of nitrogen fertilization rate and timing on cone quality and nitrate accumulation in cones. The impact of nitrogen rate on cone yield, levels of hop acids, total oil content, color, and nitrate level were year dependent. However, when data were aggregated over years and analyzed using a mixed effect model, α-acids, β-acids, and total oil volume decreased linearly with increasing nitrogen rate; while cone color, expressed as the degree of greenness of cones, and nitrate content of cones increased linearly with nitrogen rate. Yield was not improved with the highest nitrogen rate. In one of four studies, panelists used triangle tests to evaluate hop aroma of ground hop cones and detected a difference among treatments. The α- and β-acids decreased and nitrate concentration increased when nitrogen was applied after bloom. One harvest showed that fertilizer timing led to differences in the aroma of the hop cones although this difference was within the standard aroma variation for the variety. Overall, this research indicates that applying the lowest feasible nitrogen rate and ceasing nitrogen applications before or at bloom may optimize certain cone quality factors while minimizing nitrate accumulation.

Link to Article Courtesy of Taylor and Francis Group www.tandfonline.com
(https://www.tandfonline.com/doi/pdf/10.1080/03610470.2019.1616276?needAccess=true)