

Grain Bill Savings by Increased Adjunct Ratios with SIBA

The mashing process is all about finding the right temperature balance for extract formation due to starch gelatinization and the enzyme activity happening during saccharification rest. Both the **malt type and adjunct ratio will have an influence on the optimal temperature for your recipe**; however, due to the grain quality fluctuations and the absence of rapid and precise analytical methods, brewers might face a challenge for an optimal daily operation.

SIBA digitalizes the mashing process by automatically tracking the extract formation and average degree of polymerization - directly related to enzyme activity - allowing an instant adjustment of the process when necessary. **Brewers will be now in charge of the process with precise automatic data that can be used to QC and optimize the recipes on a daily basis.**

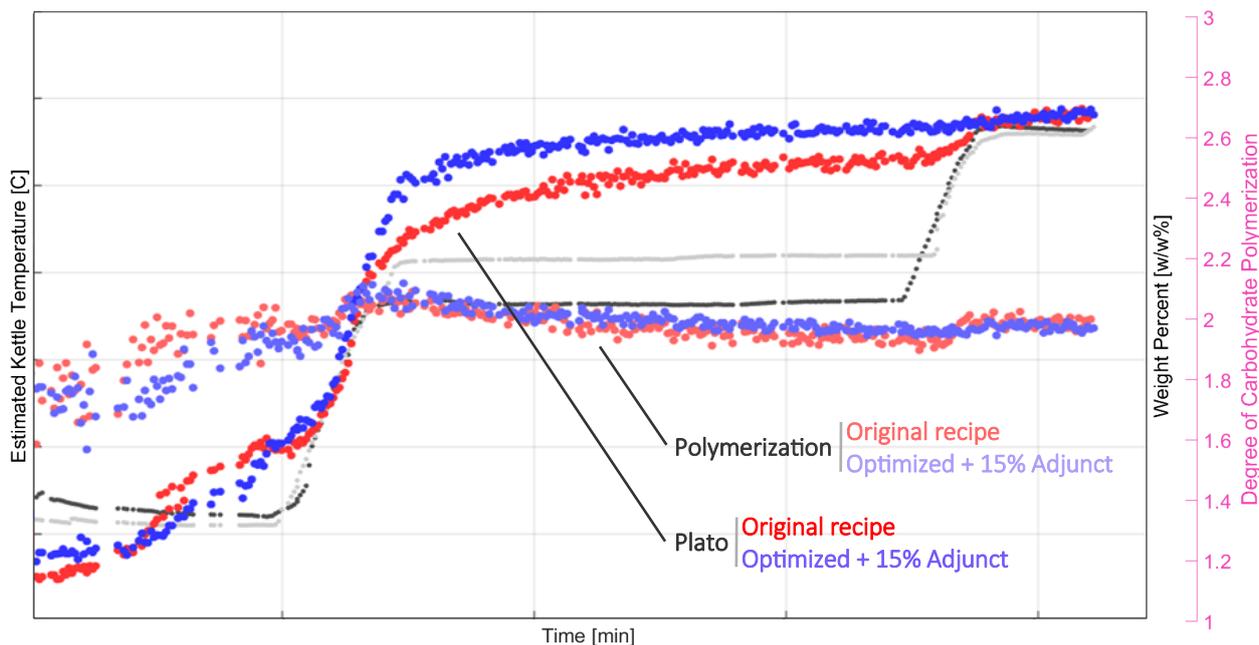


Figure 3A.I — Real case SIBA plots showing **base recipe** - red representing extract development and **pink** showing polymerization - and **optimized recipe with 15% more adjunct** - purple representing extract development and **lila** showing polymerization - (rest of SIBA data not shown).

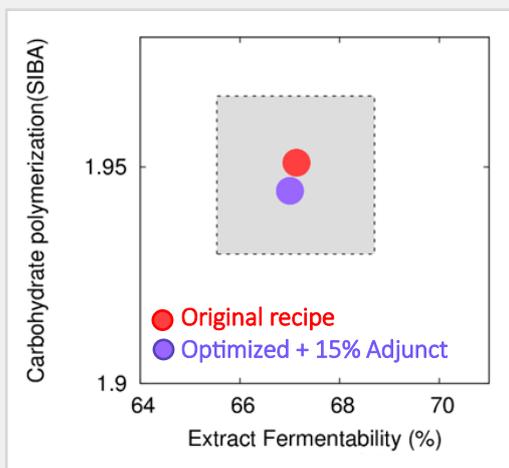


Figure 3A.II — SIBA fermentability plots showing **base recipe** - red - and **optimized recipe with 15% more adjunct** - purple. SIBA data - wort carbohydrate polymerization - has been directly related to extract fermentability values in order to predict wort RDF. The **grey box** show how both recipes fall into RDF specifications, maintaining same quality.

This optimization has shown to bring **annual savings up to 450.000€** for a 1mio hL brewery in their main brand. The **15% point increase in adjunct** on the recipe had **no negative effects** on the fermentability thanks to the SIBA technology and Specshell consulting, meaning no quality fluctuations on their brew.

WIN-WIN

In this case cost optimizations and environmental benefits goes hand-in-hand. The new recipe has reduced the CO2 emission by:

380 ton year

15% Adjunct increase