

Introduction

The application of starter culture mixtures for cocoa fermentation has been proposed as an effective way to achieve a homogeneous quality of cured cocoa beans.

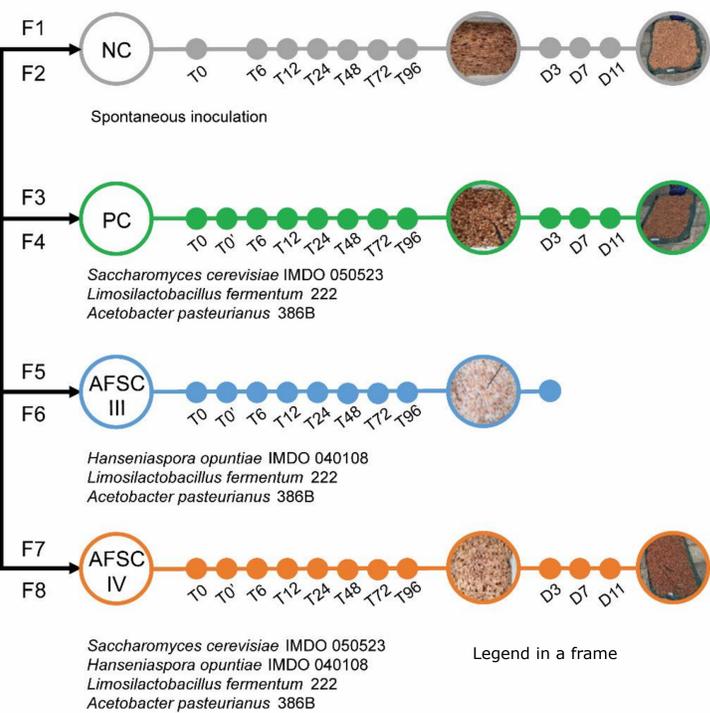
The development of a diverse range of flavour compounds during fermentation can be enhanced by applying different yeast strains.

A fine-scale monitoring of inoculated starter culture strains is needed to differentiate them from the background microbiota.

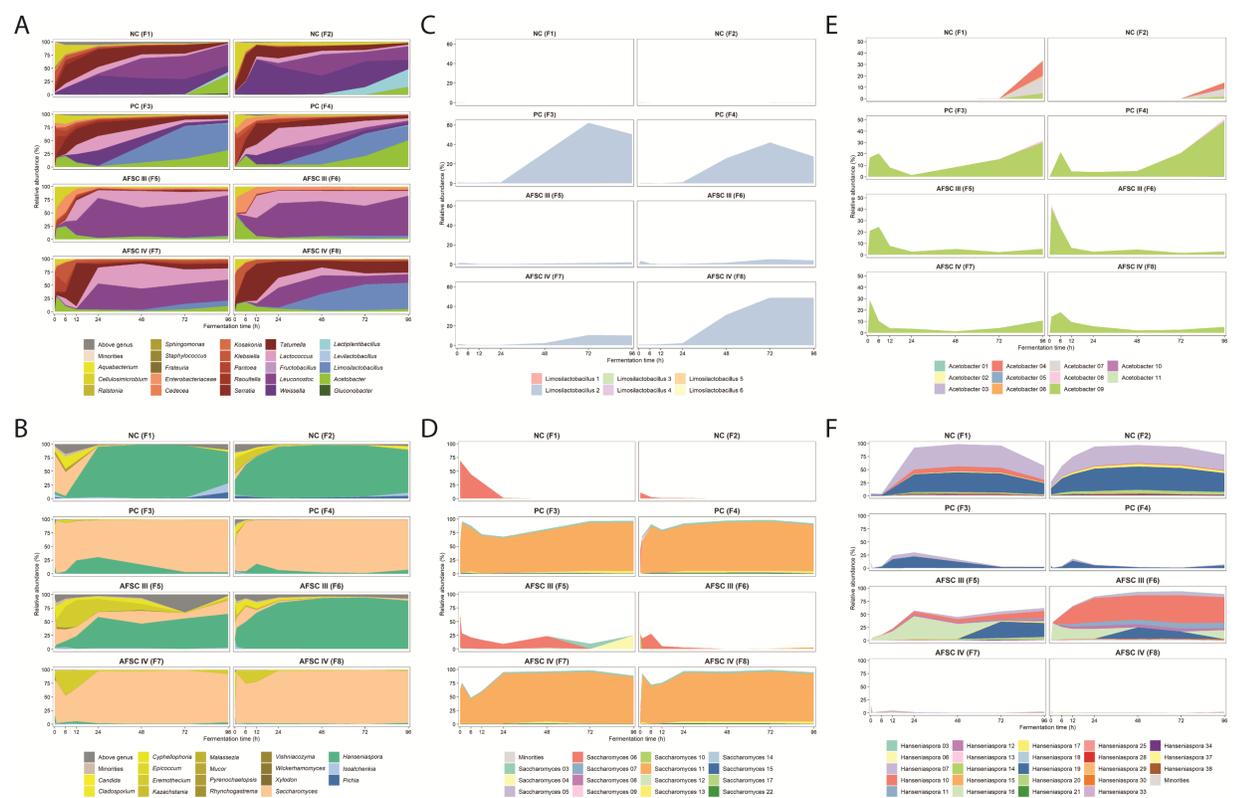
Aims

Fine-scale monitoring of the growth and prevalence of cocoa starter culture strains and evaluation of their impact on the cured cocoa beans.

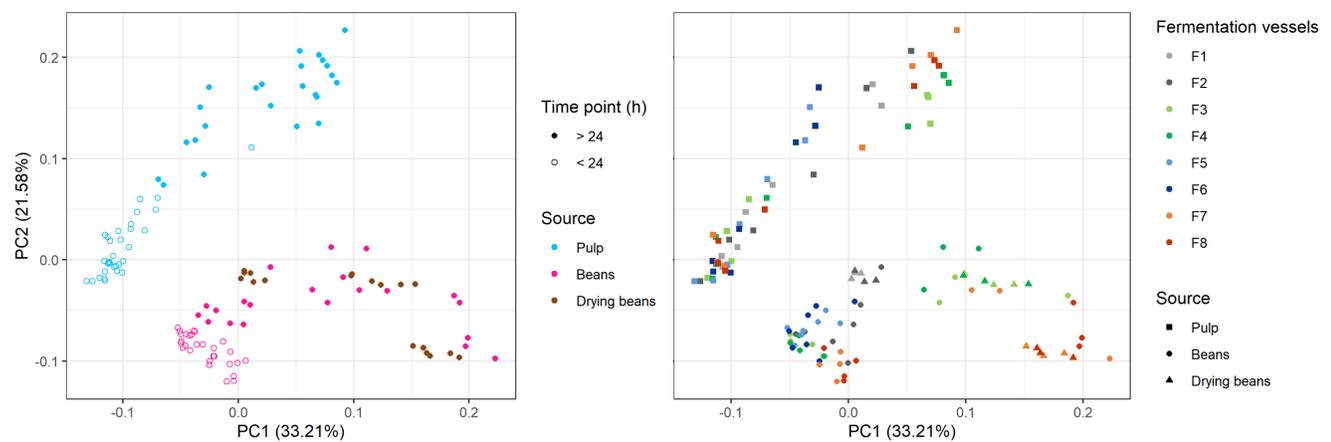
Cocoa fermentation processes



Microbial community dynamics during fermentation



Principal component analysis of metabolite concentrations



Impact of the starter cultures on the cured cocoa beans

Analysis

High-throughput sequencing of the V4 region of the 16S rRNA gene (bacteria) and the internal transcribed spacer (ITS1) region (yeasts), followed by amplicon sequence variant (ASV) inference using the DADA2 pipeline (Callahan *et al.*, 2017).

Substrate consumption and metabolite production dynamics measured by dedicated chromatography and/or mass spectrometry techniques, allowing the quantification of volatile and non-volatile organic compounds (Díaz-Muñoz *et al.*, 2021).

Conclusions / recommendations

The application of appropriate starter culture mixtures for cocoa fermentation ensures reproducible end-products of high quality with enhanced aromatic profiles.

Contamination by undesirable microorganisms that spoil the cocoa beans and/or produce off-flavours is avoided.

The use of starter cultures can speed-up cocoa fermentation processes and hence decrease the overall post-harvest processing time.



First day of sun-drying



Last day of sun-drying

SCAN ME

