

Industrial PhD in Agri-Food Sciences, Technologies and Bio-Technologies

XXXV Cycle

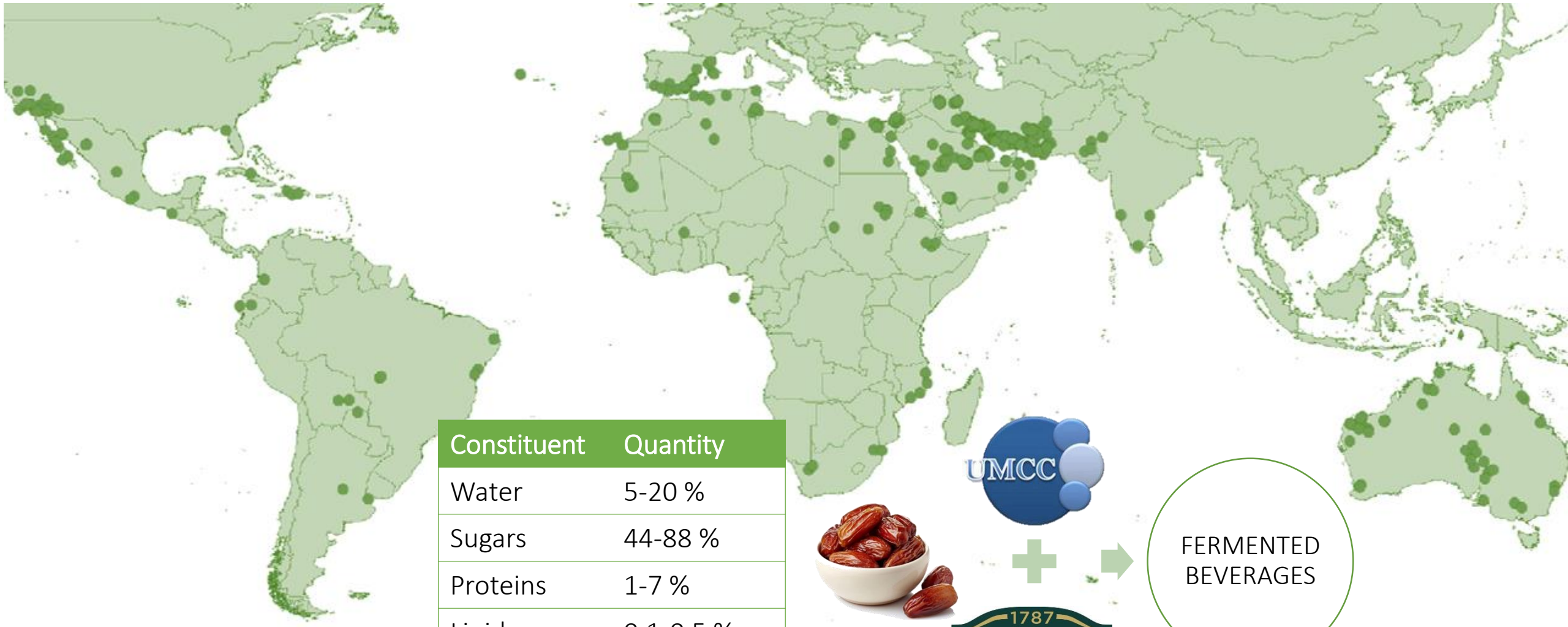
Vinegar biotechnology: new tools to support the industrial research

Student: Dr. Elsa Cantadori

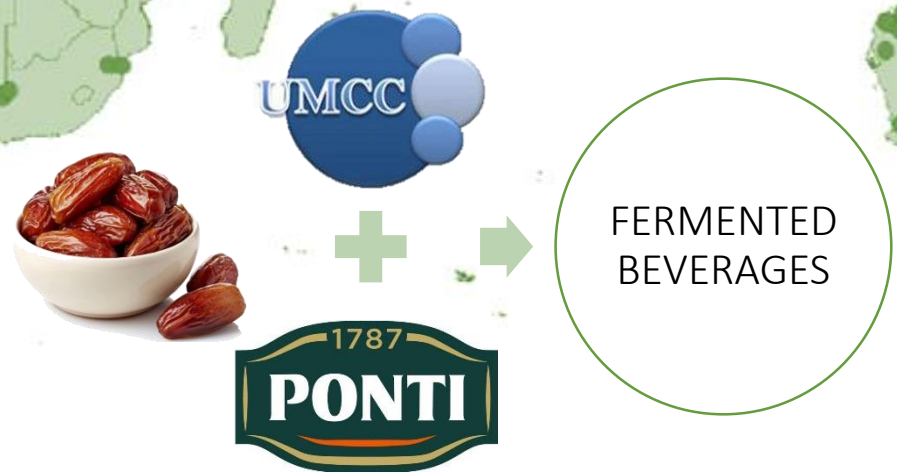
Tutor: Prof. Maria Gullo

2nd year

Fruit of date palm (*Phoenix dactylifera* L.)



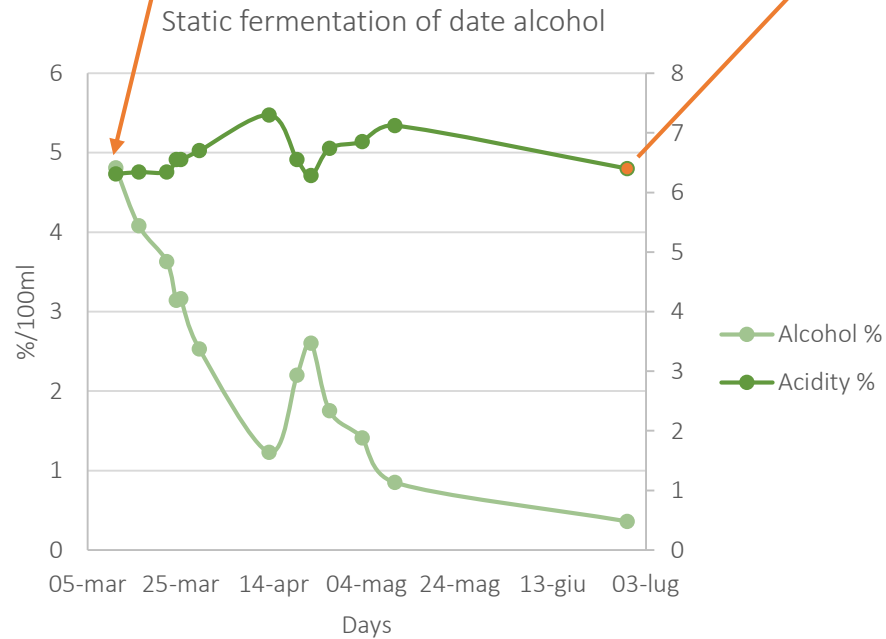
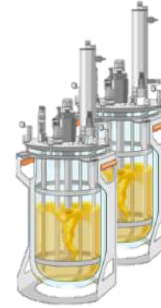
Constituent	Quantity
Water	5-20 %
Sugars	44-88 %
Proteins	1-7 %
Lipids	0,1-0,5 %
Fibers	3-18%



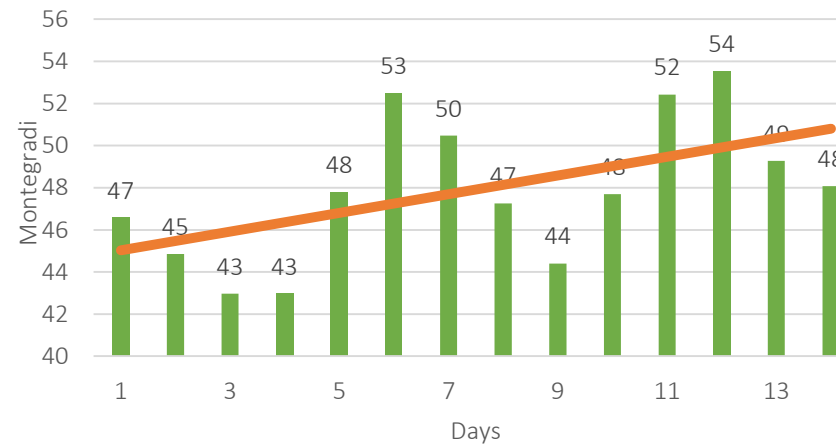
Dates: pilot fermentation at Ponti SpA

Mixed acetic acid
bacteria starter culture
Acidity 6,31%
Ethanol 4,81%

Date vinegar
Acidity 6,4%
Ethanol 0,36%



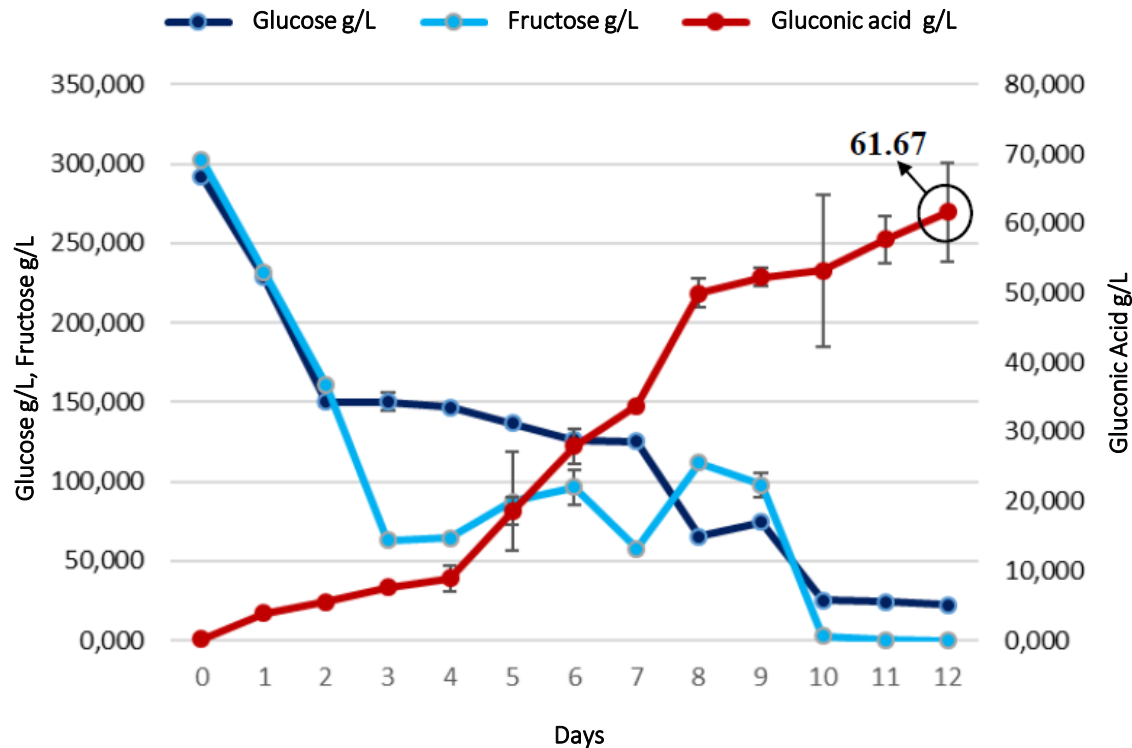
Montegradi (volume x acidity)



RESULTS:
8L of
vinegar at
6,87%
from date juice

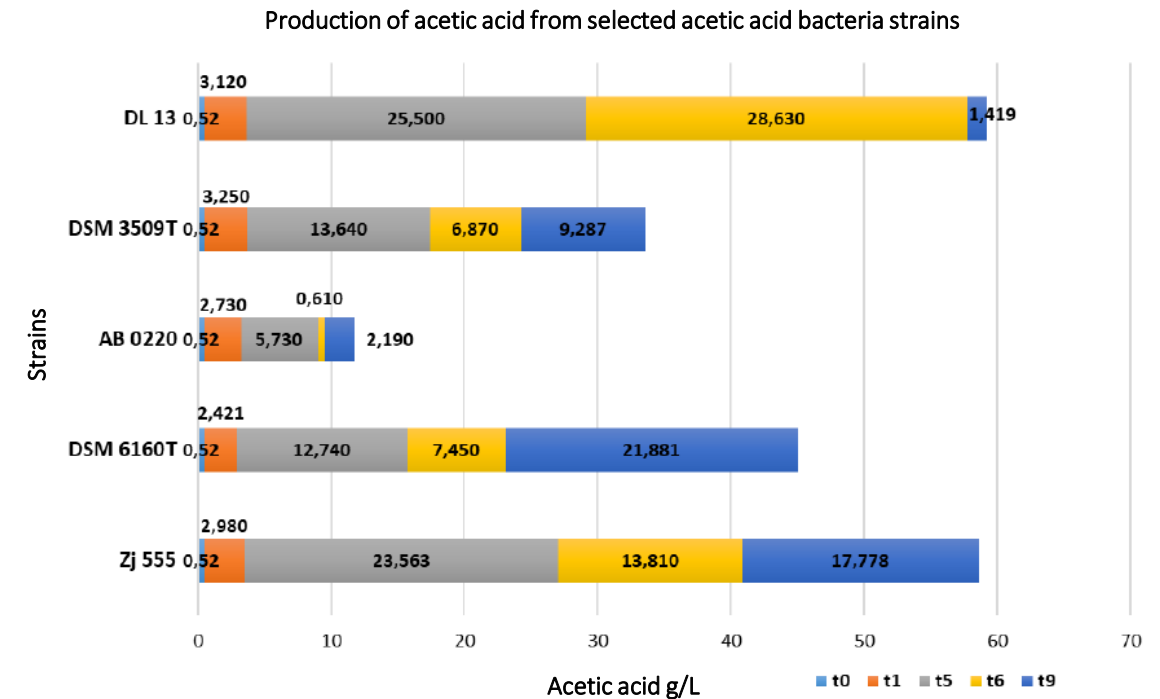
Dates: Gluconic and acetic fermentation

1) Gluconic fermentation



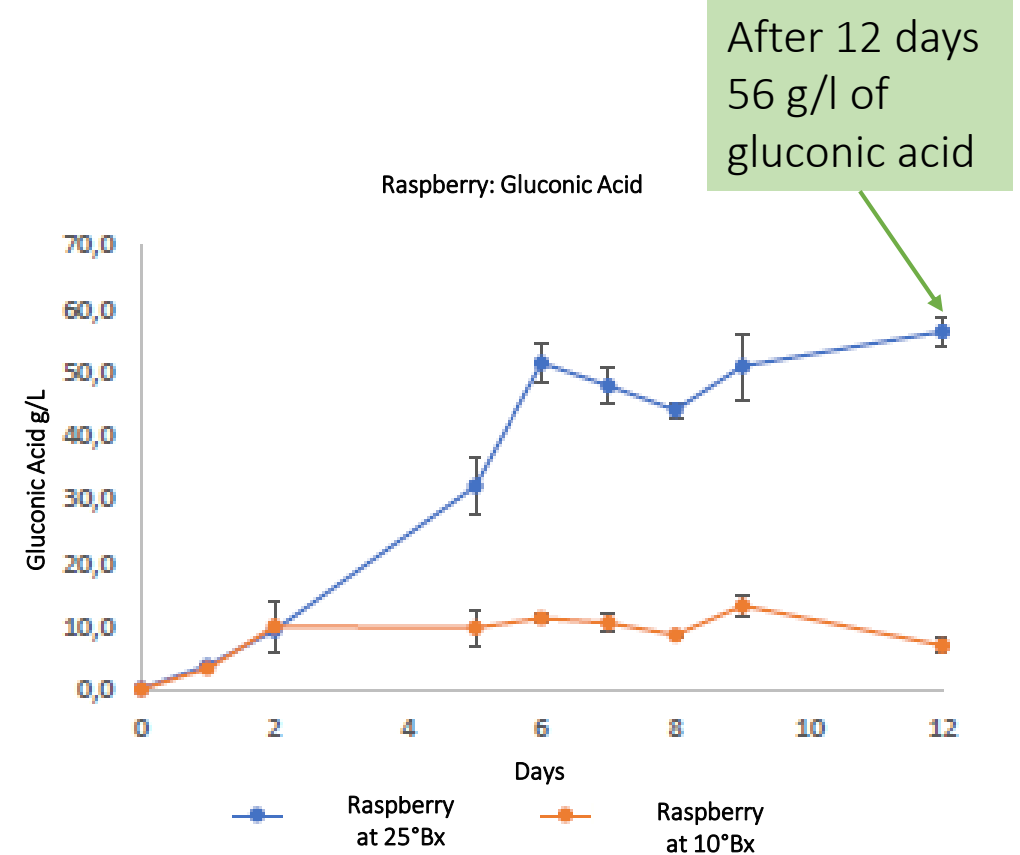
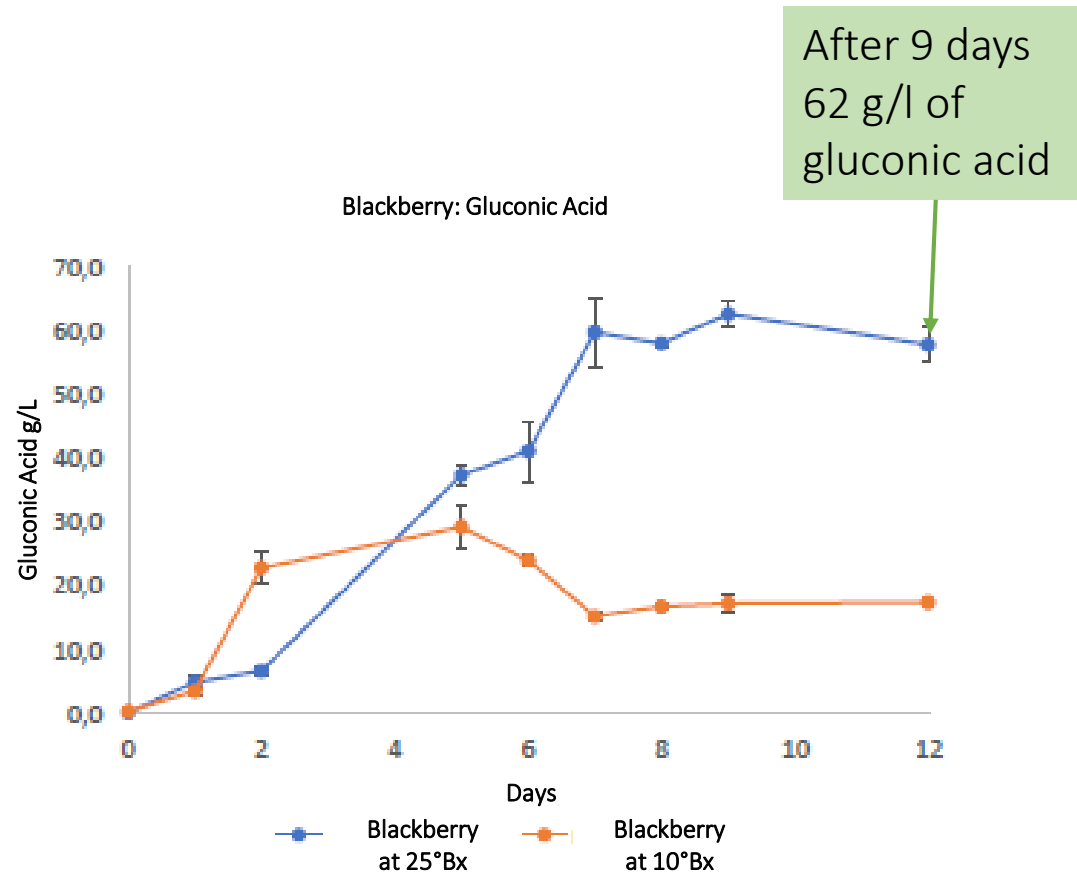
ATCC 621H is suitable for the production of gluconic acid.

2) Acetic acid fermentation



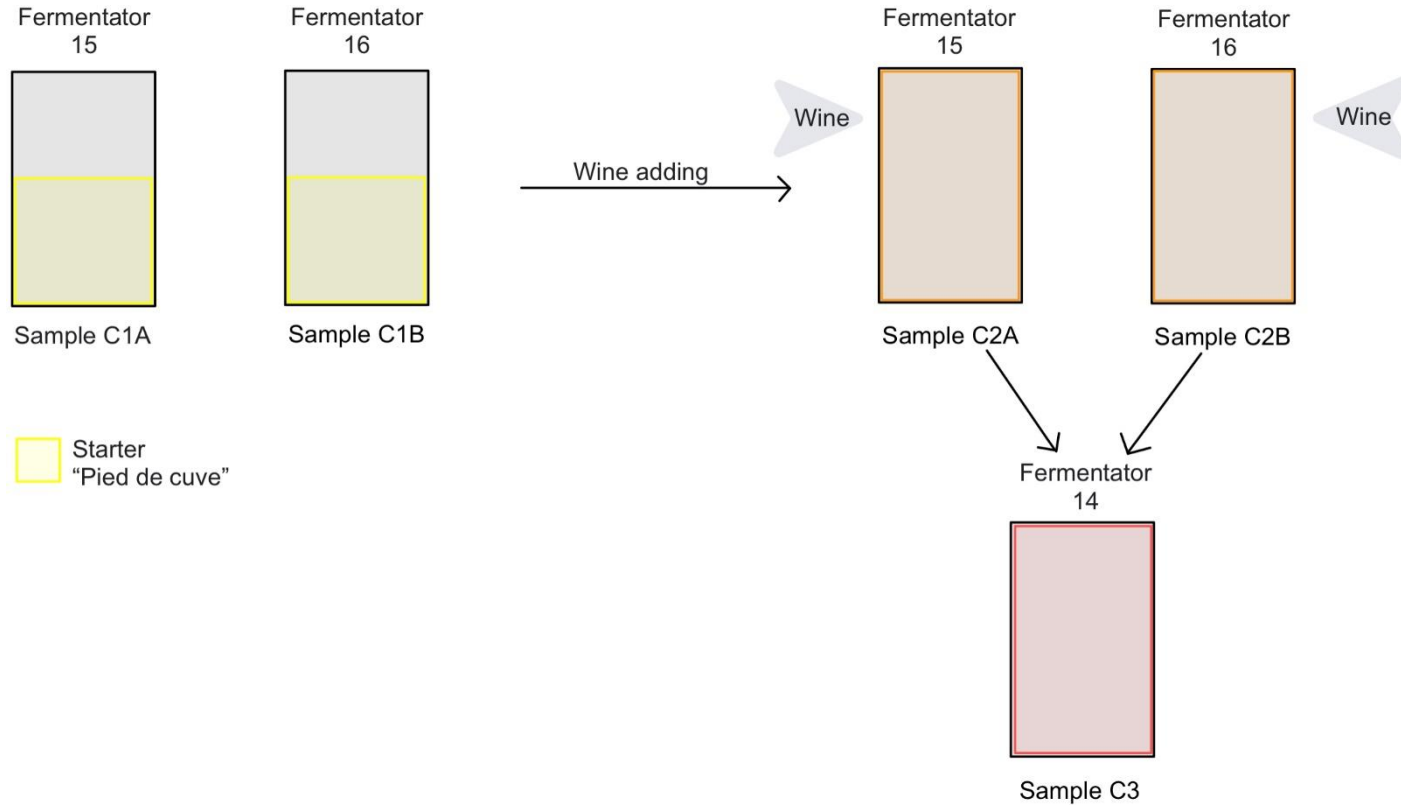
Strains used for the study were found to be suitable for production of vinegar.

Blackcurrant, blackberry and raspberry juices: Gluconic fermentation



Blackberry juice diluted at 25 ° Brix and raspberry juice at 25 ° Brix were particularly interesting for the high production of gluconic acid.

Future perspective: Metagenomics studies



Sampling point:

C1A – C1B → Starter sample
C2A – C2B → High ethanol sample
C3 → High acetic acid sample

Ongoing analysis:

- Shotgun metagenome study
- Illumina 2x150 bp paired-end sequencing
- Metagenome assembled genome (MAG) recovery and functional analysis



THANKS FOR THE ATTENTION



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