Beta

Biodiversitat, Ecologia, Tecnologia Ambiental i Alimentària

REFLOW EUROPEAN TRAINING NETWORK

FERTIMANURE

UVIC UNIVERSITAT DE VIC UNIVERSITAT CENTRAL DE CATALUNYA

GHENT UNIVERSITY

Assessing phosphorus recovery potential from ashes: incubation studies of different secondary raw materials after multiple combustion processes

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tecnio catalonia Fins a 31/12/2023 ACCIÓ Generalitat de Catalunya

00 **General Framework**

REFLOW & FERTIMANURE H2020 PROJECTS

01 **General Objective**

P Valorization opportunities from ashes

02 **Experimental Design**

Raw materials and incubation trials

03 **Main Results**

Contrasting P Release patterns

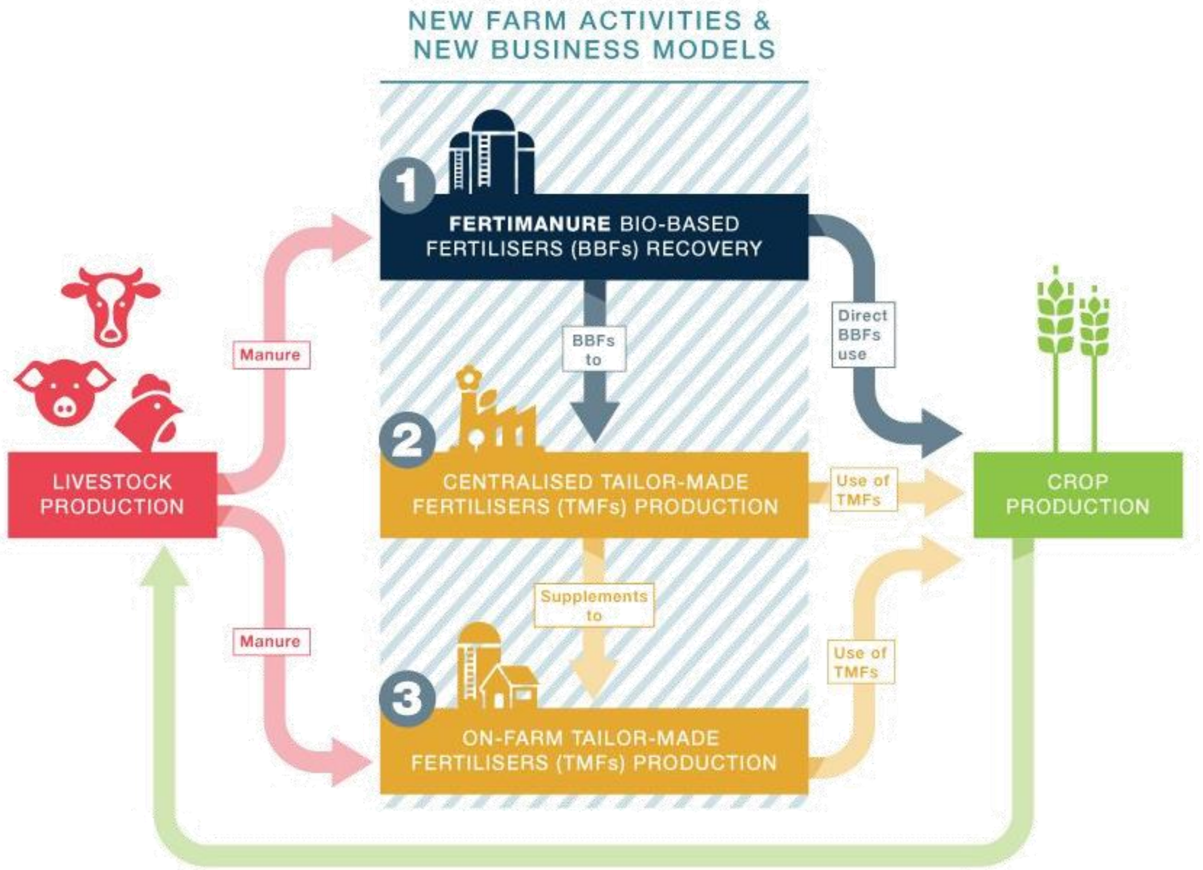
04 **Conclusions and discussion**

Strengths, gaps and ideas

General Framework

REFLOW & FERTIMANURE H2020 PROJECTS

FERTIMANURE
G.A.: 862849



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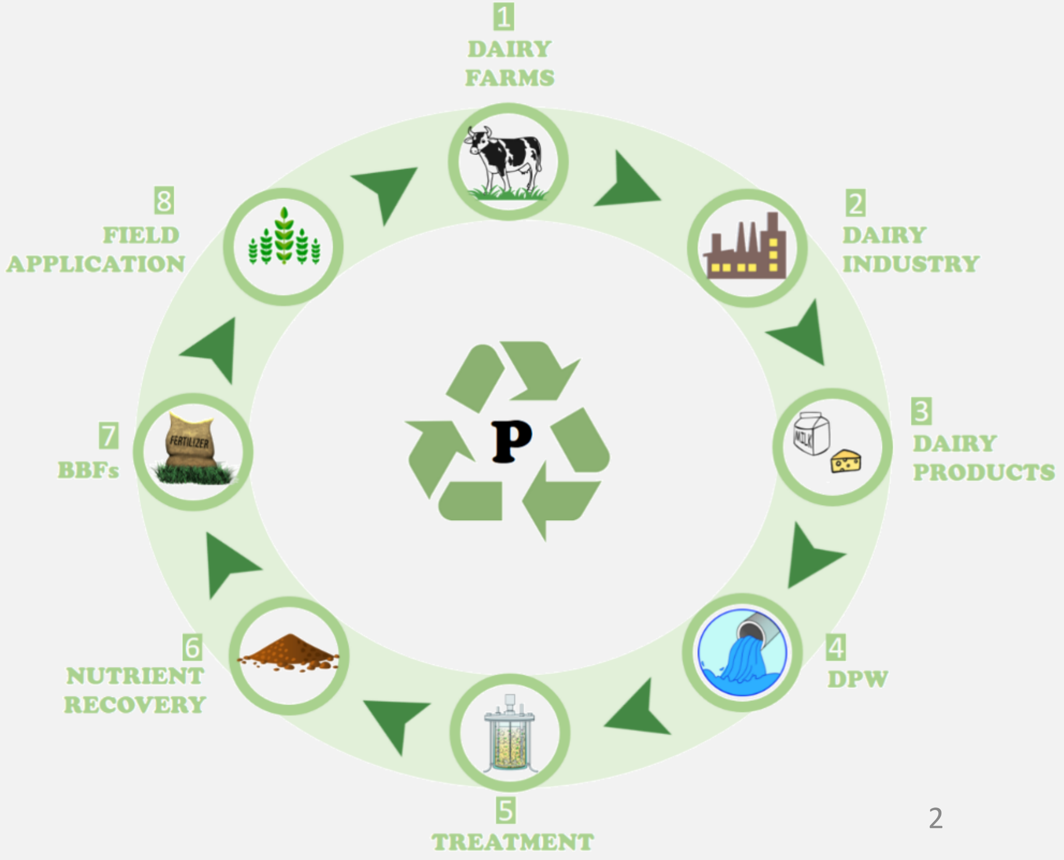
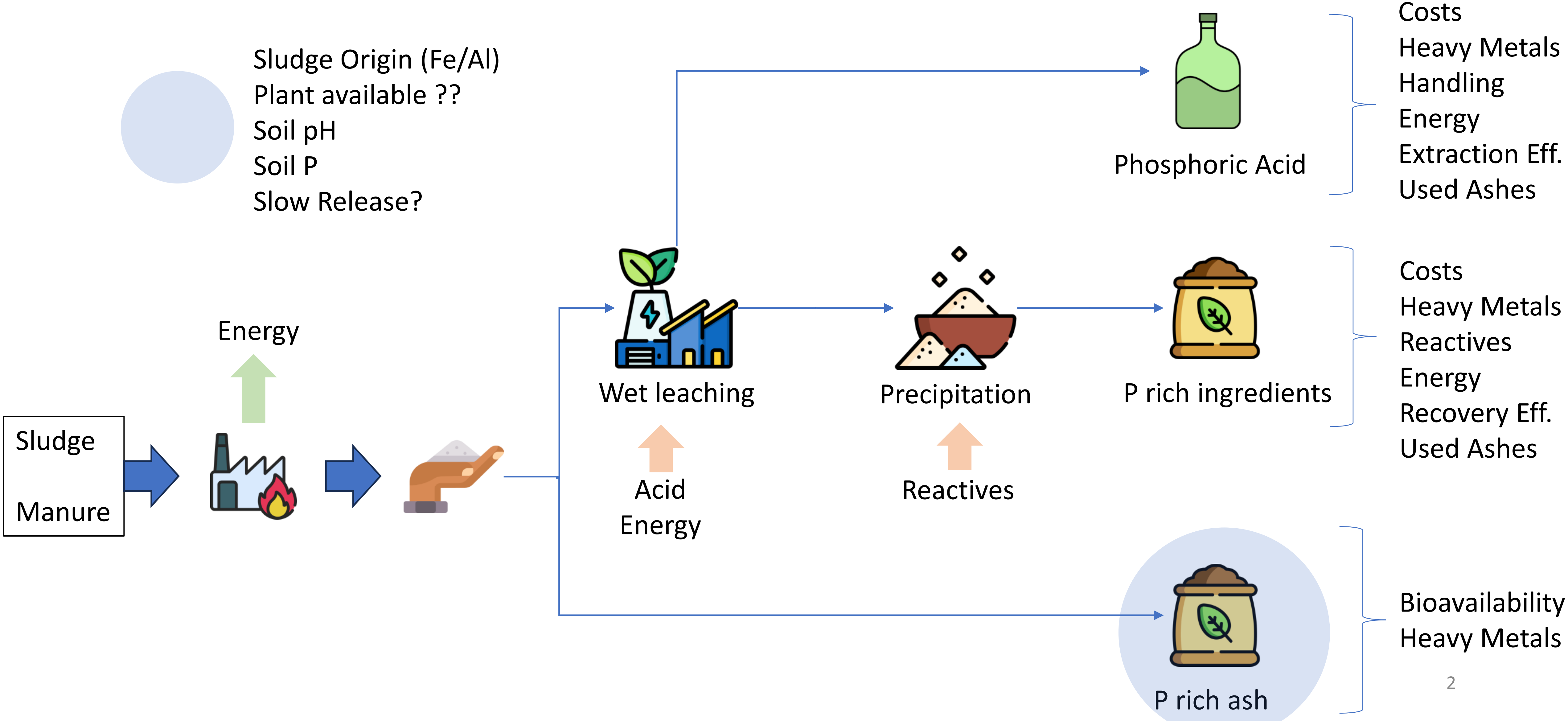


01

General Objective

P Valorization opportunities from ashes



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02

Experimental Design

Raw materials and incubation trials

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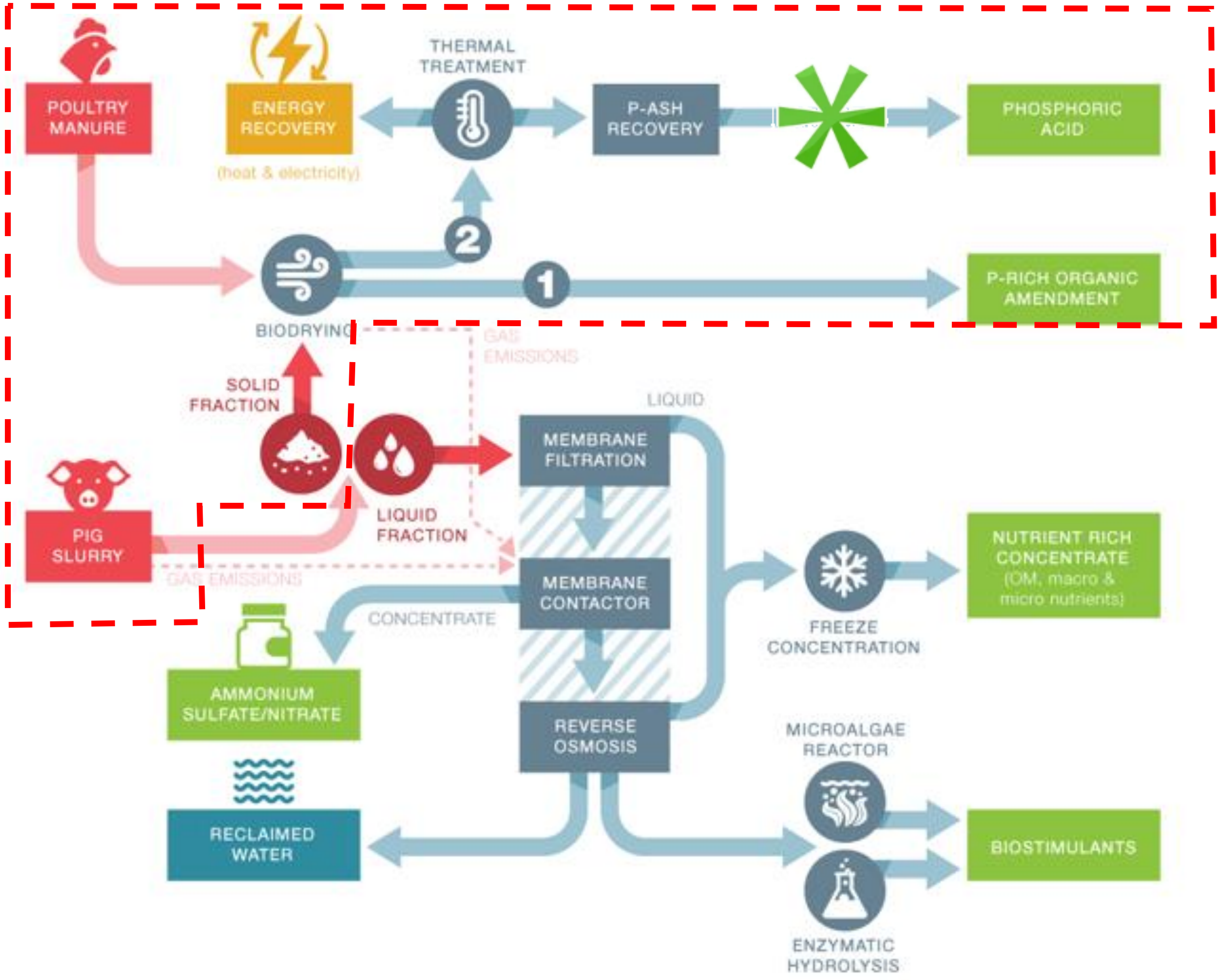

Organic amendment **Biomass boiler**

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02

Experimental Design

Raw materials and incubation trials

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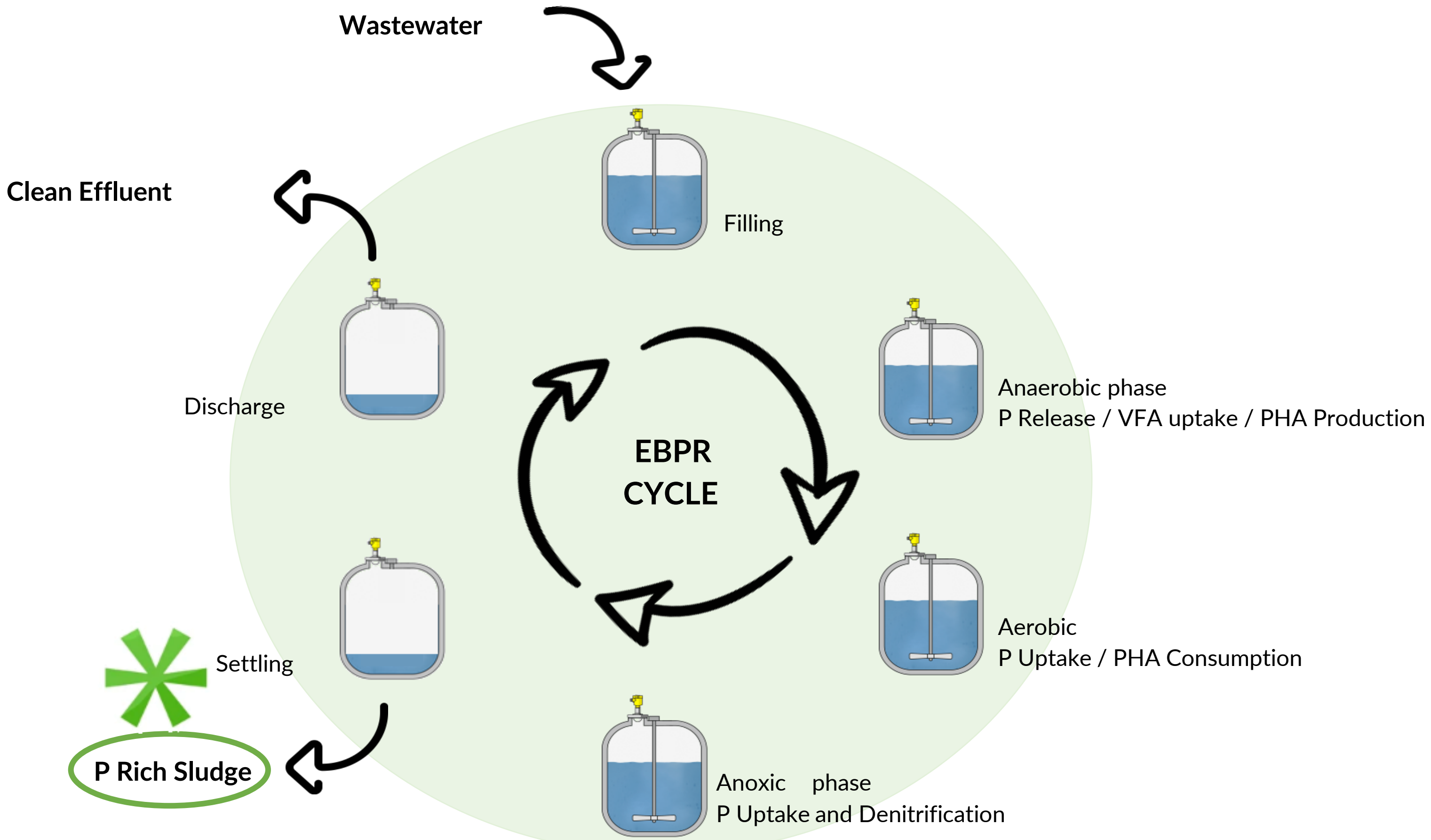


P RICH SLUDGE
BIOBASED FERTILIZERS

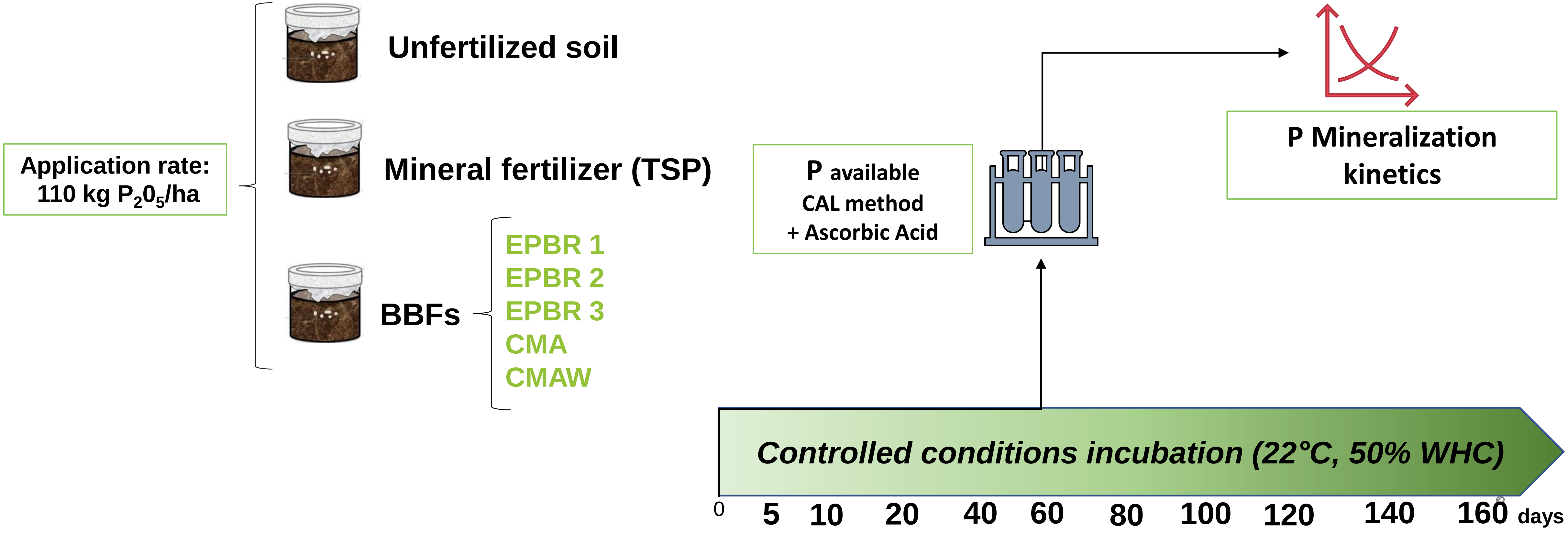
Raw materials and incubation trials

BBFs	Type of combustion	Temperature (°C)	% P_2O_5 content (dw)
EBPR 1	Muffle	550°C	34.47%
EBPR 2	Muffle	850 °C	39.84%
EBPR 3	Muffle	550 °C	28.16%
Combustion manure ash "CMA"	Combustion	550-600 °C	16.25%
Combustion manure ash hydrated "CMAW"	Combustion	550-600 °C	16.25%

Experimental Design

Raw materials and incubation trials

$$P_{rel,net}(\%) = \frac{([P_2 0_5 - P, treatment] - [P_2 0_5 - P, control])}{P_{total} applied} \times 100$$

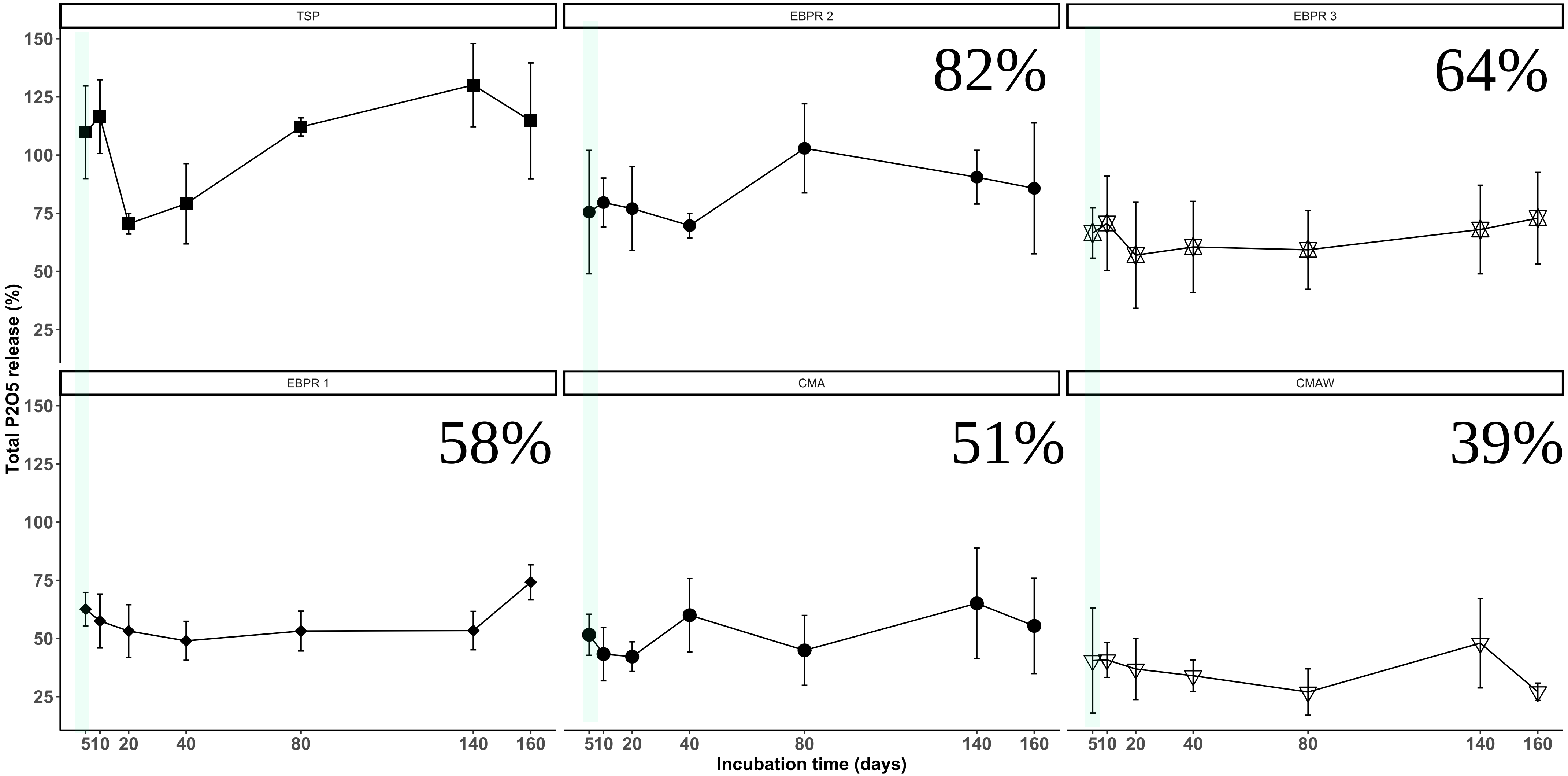


Raw materials and incubation trials

03

Main Results

Contrasting P Release patterns



No time effect within each treatment

~ 50% of the total P being released within the first five days

Primary effect = equilibrium state short after the initial release

Type of combustion

Burning Temperature

Burning Time

Origin and Type of material

EBPR >>>> CMA

EBPR 2 ~ TSP (Control +)

+ P_2O_5 -> + Release

Waste valorization

P rich materials

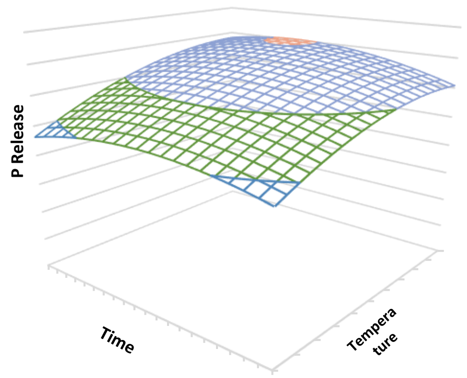
BBF formulation

Safety compliance

(STRUBI**<u>AS</u>**)

EXPERIMENTAL	PROCESS	FINAL PRODUCT

Complete screening



+ Temp = + P Release

+ Temp = + heavy metals

No need for pre-treatment for P release from ashes

Pot & Field tests (FEV)

Real P bioavailability

Different soils

Heavy metals

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