
CROPGEN
Renewable energy from crops and agrowastes
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Project details

EU FP6: Sustainable Energy Systems

Contract no: SES6-CT-2004-502824

Acronym: CROPGEN

Title:

Renewable energy from crops and agrowastes

Project partners

- School of Civil Engineering & the Environment, University of Southampton, UK (Soton)
- Centre for Under-utilised Crops, University of Southampton, UK (Soton-CUC)
- Department of Environmental Science, University of Jyväskylä, Finland (JyU)
- Sub-department of Environmental Technology, Wageningen University, Netherlands (WU)
- Institute for Agrobiotechnology BOKU University, Austria (BOKU IFA-Tulln)

Project partners

- Institute of Applied Microbiology, BOKU University, Austria (BOKU IAM)
- Department of Environmental Sciences, University of Venice, Italy (UNIVE-DSA)
- Scientific and Technological Department, University of Verona, Italy (UNIVR-DST)
- Industrial Process & Environment Department, Instituto de la Grasa, Spain (CSIC)
- Greenfinch Ltd, UK (Greenfinch)
- Organic Power Ltd, UK (OPL)
- Metener Ltd, Finland (Metener)

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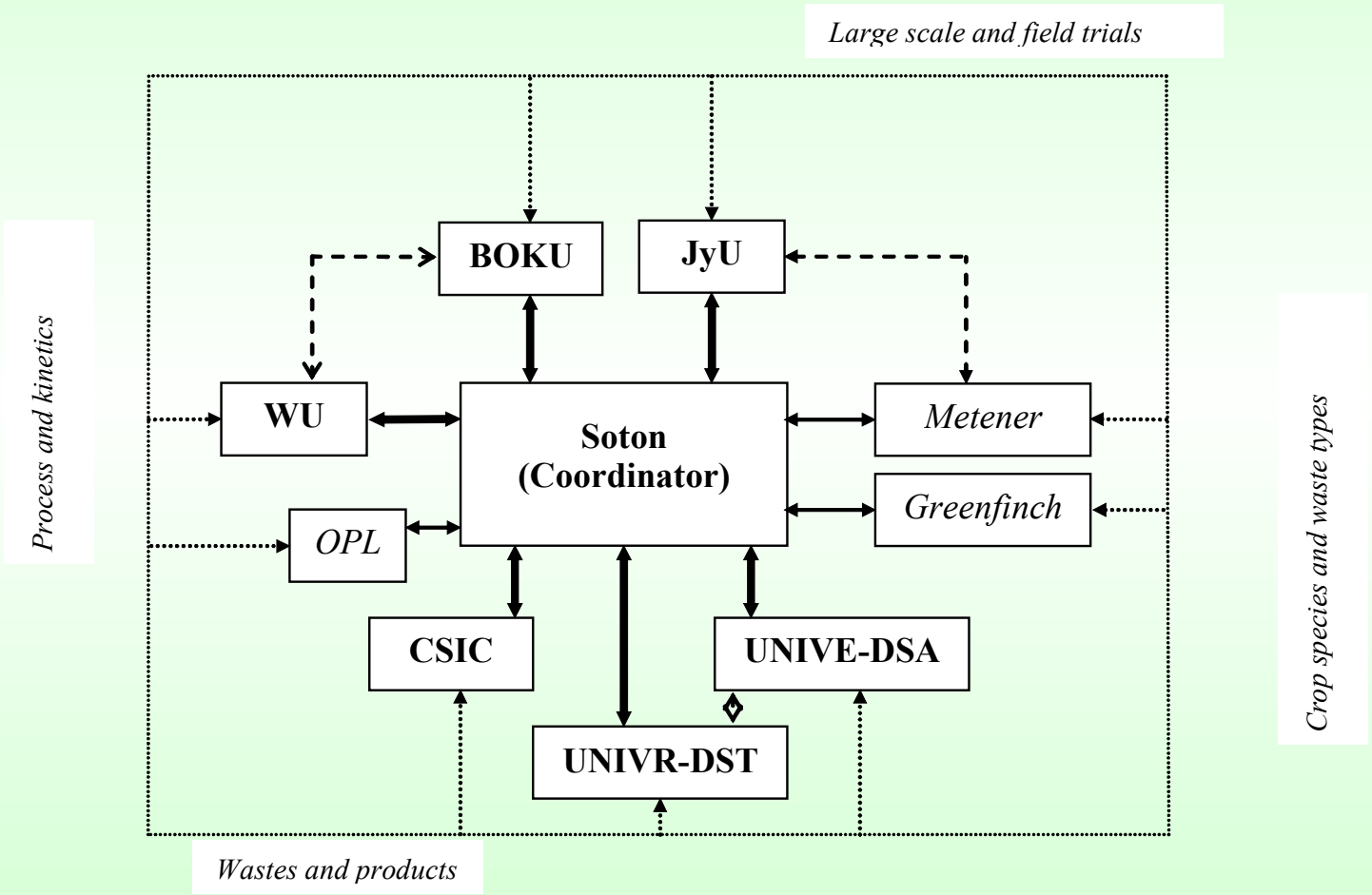
Project structures



Project aims

The overall objective is:

"To produce from biomass a sustainable fuel source that can be integrated into the existing energy infrastructure in the medium term, and in the longer term will also provide a safe and economical means of supplying the needs of a developing hydrogen fuel economy".

Work packages

WP0	Project coordination, management and dissemination activities
WP1	Selection and evaluation of potential energy crop species and agro-wastes
WP2	Determination of biochemical methane potentials and kinetic studies
WP3	Pre-treatments to enhance methane production from energy crops
WP4	Single phase trials, co-digestion and digestate plant nutrient assays
WP5	Process innovation for optimisation of biogas production
WP6	Innovations in bioreactor design
WP7	Bio-kinetic data, modelling and control
WP8	Energy production field trials
WP9	Overall assessment for bio-energy production

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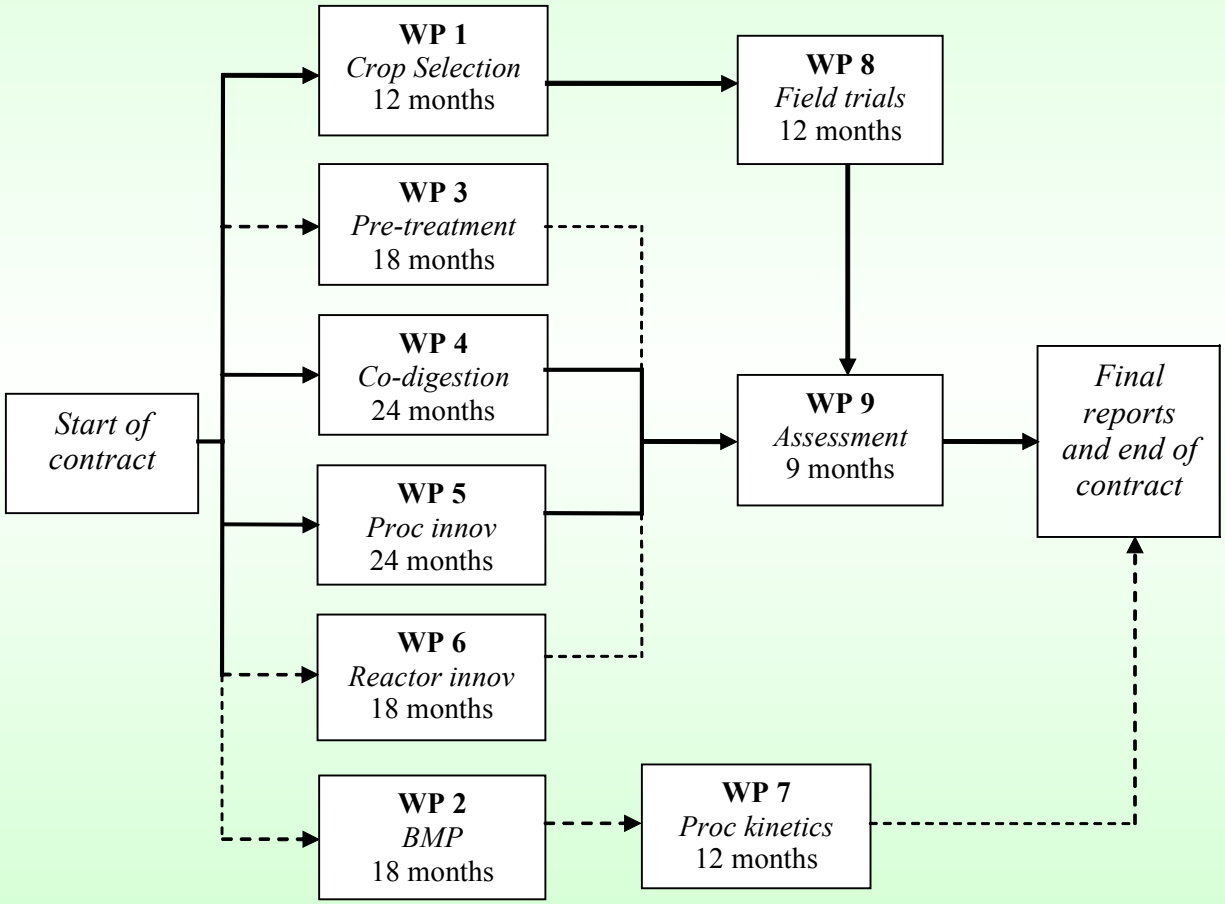
Work package interrelation



Summary of research aims

- Improve digestion performance through improved reactor design, operation and process control
- Identify energy crops with high energy yield and degradation potential
- Quantify ‘real’ energy gains by understanding system boundaries

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Summary of research aims

- Evaluate how farm energy production can be integrated to maximise yield by co-digestion of agro-wastes
- Assess post-harvest wastes for energy production in an industrial context
- Evaluate economic and environmental potential and barriers (legislative, fiscal, educational) to widespread implementation

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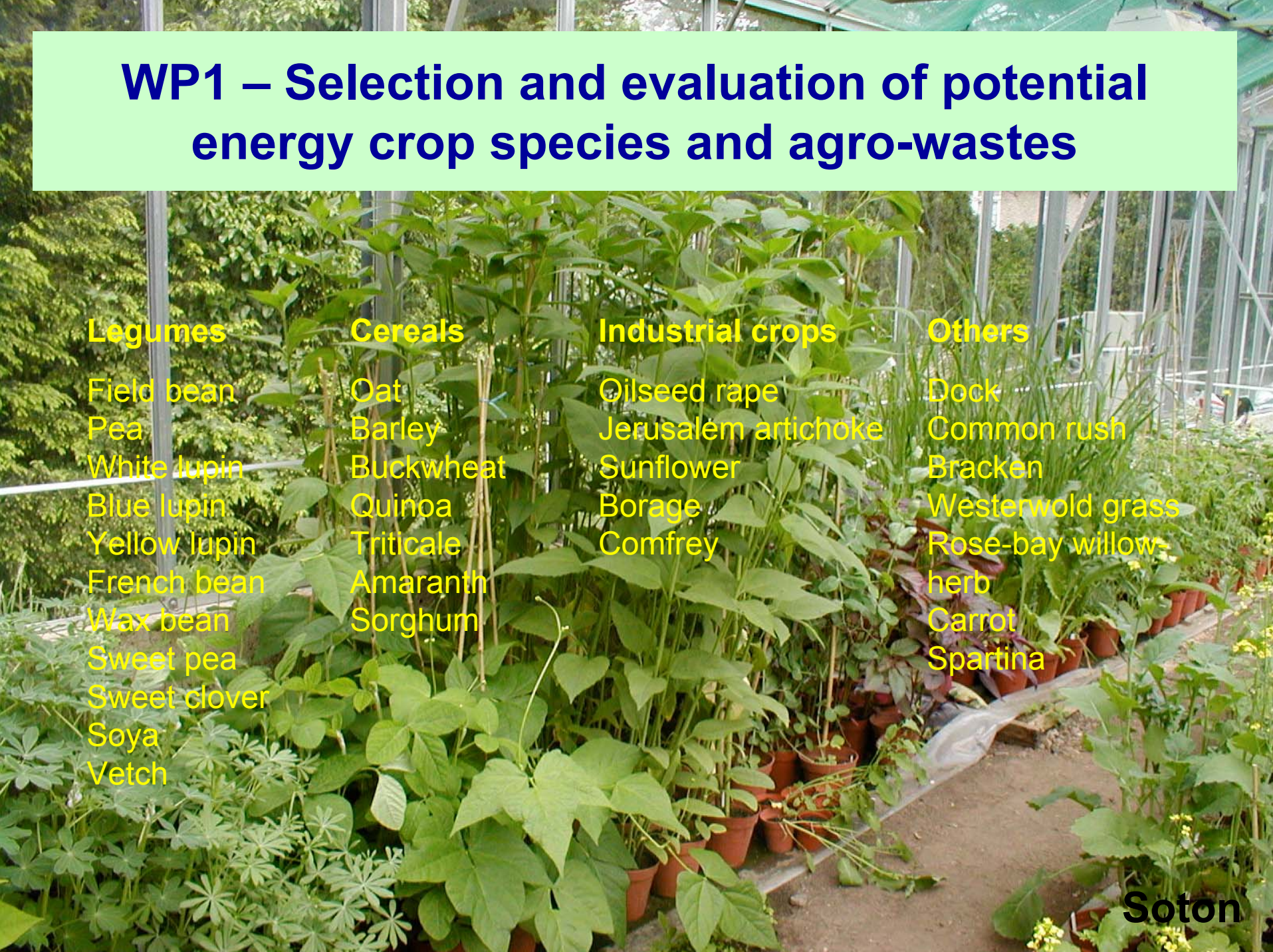
WP1 – Selection and evaluation of potential energy crop species and agro-wastes



Legumes	Cereals	Industrial crops	Others
Field bean	Oat	Oilseed rape	Dock
Pea	Barley	Jerusalem artichoke	Common rush
White lupin	Buckwheat	Sunflower	Bracken
Blue lupin	Quinoa	Borage	Westerwold grass
Yellow lupin	Triticale	Comfrey	Rose-bay willow-herb
French bean	Amaranth		Carrot
Wax bean	Sorghum		Spartina
Sweet pea			
Sweet clover			
Soya			
Vetch			

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WP2 - Determination of biochemical methane potentials and kinetic studies

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WP3 - Pre-treatments to enhance methane production from energy crops

BOKU-IFA

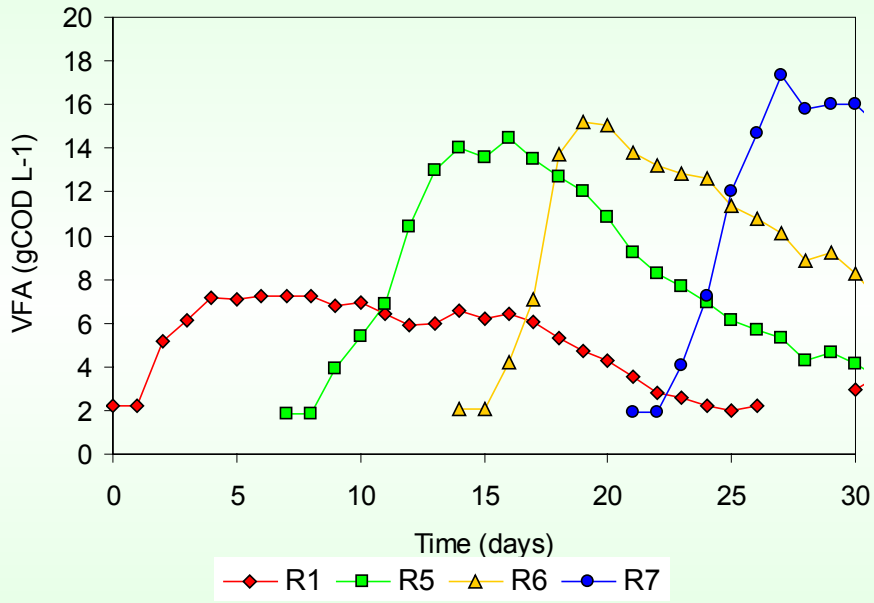
JyU and Metener

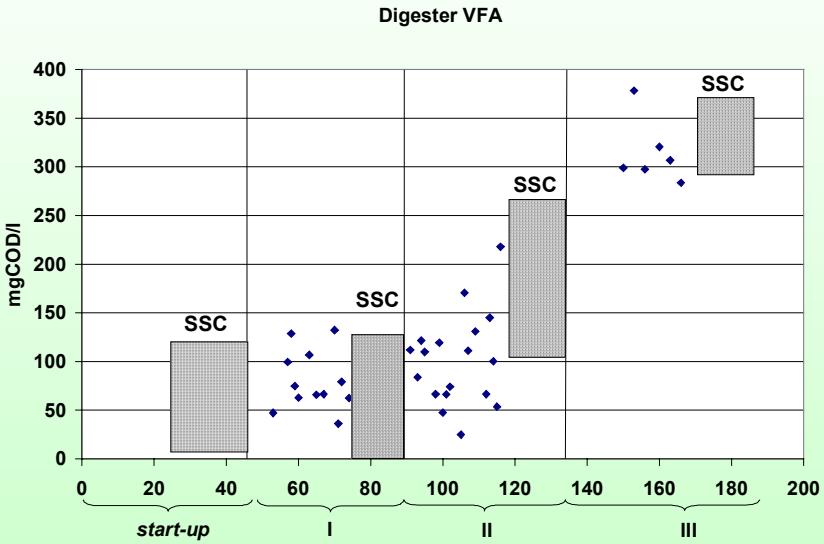
WP4 - Single phase trials, co-digestion and digestate plant nutrient assays

JyU, Greenfinch, UNIVE-DSA and UNIVR-DST, CSIC, BOKU

WP5 - Process innovation for optimisation of biogas production

Leach bed reactors - Soton





2-phase market waste digestion – UNIVE-DSA and UNIVR-DST

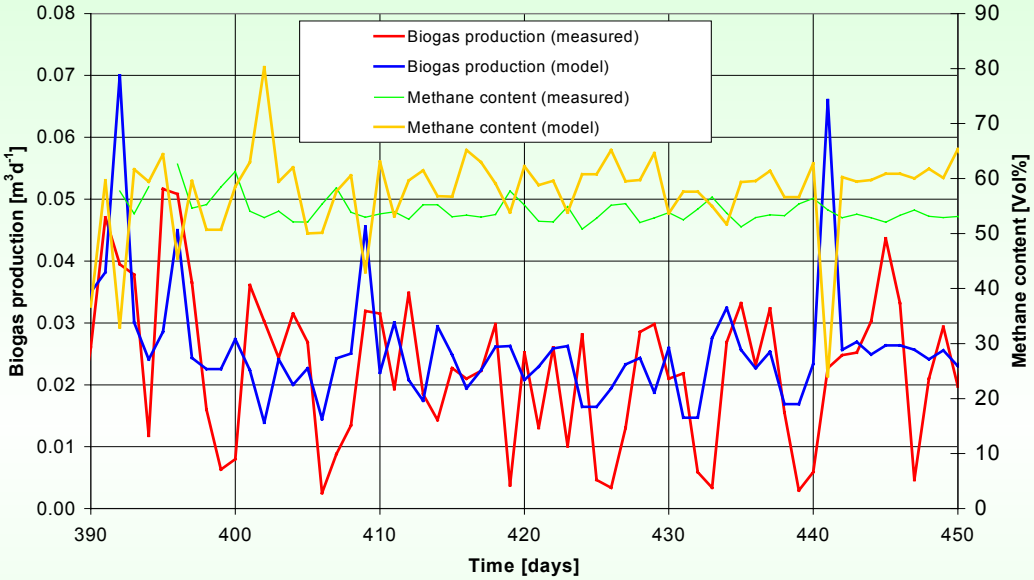
WP6 – Innovations in bio-reactor design

Soton / OPL

Plug flow and hydraulic flush reactor designs for crops and agrowastes

WP7 - Bio-kinetic data, modelling and control

- Virtual lab based on ADM1
- Laboratory experiments for model validation and kinetic data



Preliminary results with original ADM1

BOKU-IAM and WU

WP8 - Energy production field trials

WP9 - Overall assessment for energy production

Kalmari Farm (Metener / JyU trials)

Metener Oy
Biokaasuteknologiaa

University of Southampton

JYVÄSKYLÄN YLIOPISTO
University of Jyväskylä

BOKU

IAM

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www.cropgen.soton.ac.uk

CSIC

IFA
TULLN

GCC

Greenfinch

WAGENINGEN UNIVERSITY

ORGANIC POWER LTD

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Thank you for your attention!

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