

The Future - Technical potential

"Issues and opportunities"

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THE UNIVERSITY OF
WARWICK

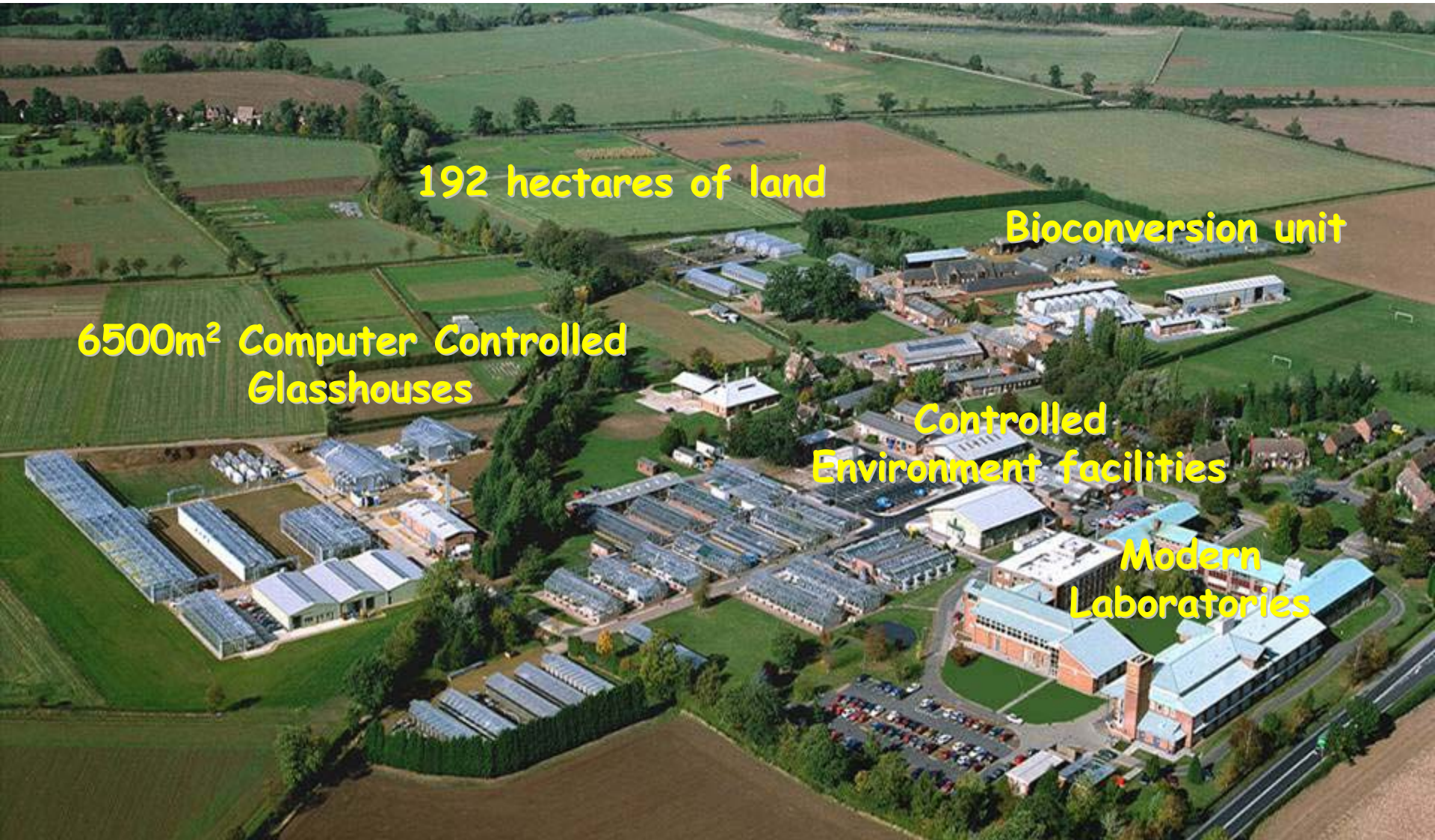


**Plant and Crop Science
Research department of the
University of Warwick**

**Sites at Wellesbourne, Warks.
and Kirton, Lincs.**



Warwick HRI - Wellesbourne



Some issues and opportunities for the future

Findings from the RICE
project

Research at Warwick



www.district.rice.eu

West Midlands

Saxony

Vastra Gotaland



Institut
Keramische Technologien
und Systeme



SÄCHSISCHES
TEXTIL
FORSCHUNGS
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**Aim: To identify new market opportunities
and industrial uses for non-food crops**

3 themes for plant based futures:

Health & Wellbeing

Bio-energy

Novel Materials

What scale of operation?





DuPont and BP Announce Partnership to Develop Advanced Biofuels

June 20, 2006

DuPont Bio-based Science and BP Fuels
Technology Expertise Will Bring Next
Generation Biofuels to Market



• 'Big' business stands the development costs (technology and market) and capital costs gains the 'added value'.

• Farmers supply a 'commodity' feedstock at 'market price'.

Perennial v annual crops?

Dedicated energy v 'dual' purpose crops?



Food v Fuel? - doesn't have to be a choice



- Utilise more 'captured' energy.
- Take advantage of plant breeding for disease resistance etc
- Fits current farming practices & rotations

Issues for agriculture and subjects for research

Soil fertility - How to replace soil carbon? Green waste?

Nitrogen fertilizer = Largest energy input into crops

Improve N use efficiency by breeding & crop rotation

Phosphorous - a non renewable resource?

Improve P use efficiency by breeding

Close P cycle -e.g. 'struvite' from sewage works

Water use - competing demands?

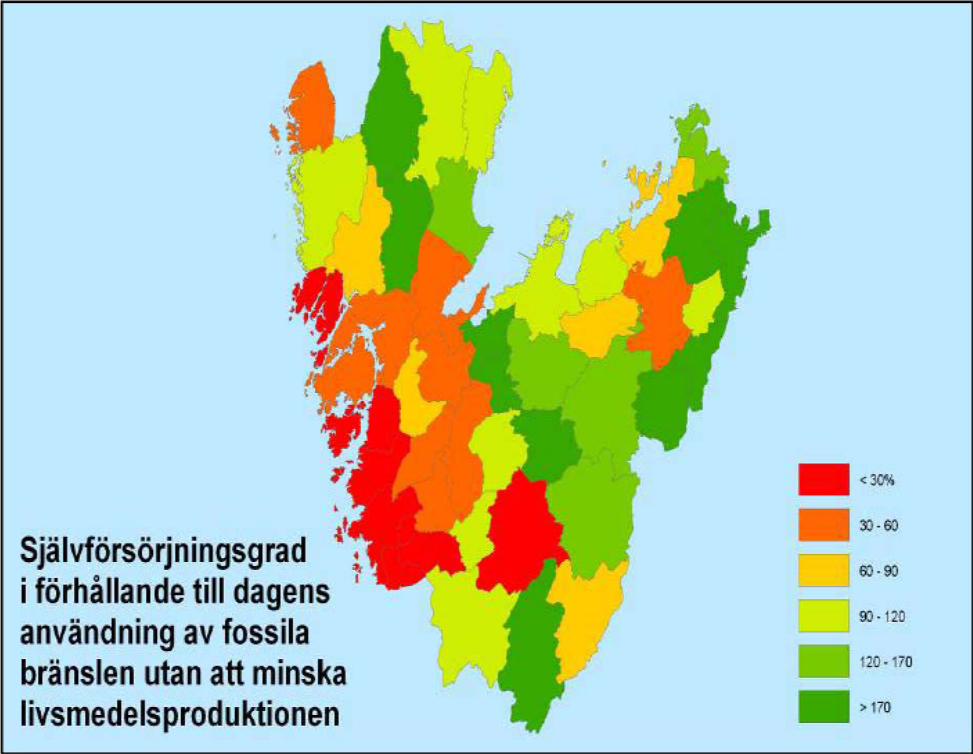
Improve water use efficiency by breeding

Land use -Public perception?

'Dispersed' community based Bio-energy production



Potential för förnybar energi från jord och skog



Västra Götaland

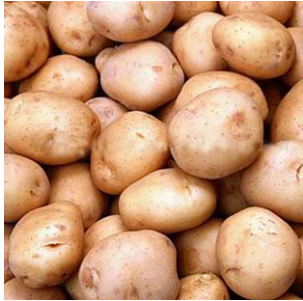
Källa: Agroväst-rapport "Potential från jordbruket i Västra Götaland" från jan 2005, samt uppgifter om åkerarealers användning och husdjursstatistik SGB 2004. Beräkningarna gjorda av Kent-Olof Söderqvist, Agroväst 2005-05-01

“Renewable Energy map” of districts in the Västra Götaland region of Sweden



Swedish farmers are farming and selling energy not feedstocks.

Eco one-the ecological racing car



Tyres with potato starch



Bioethanol from wheat



Brake pads from Cashew nut shells

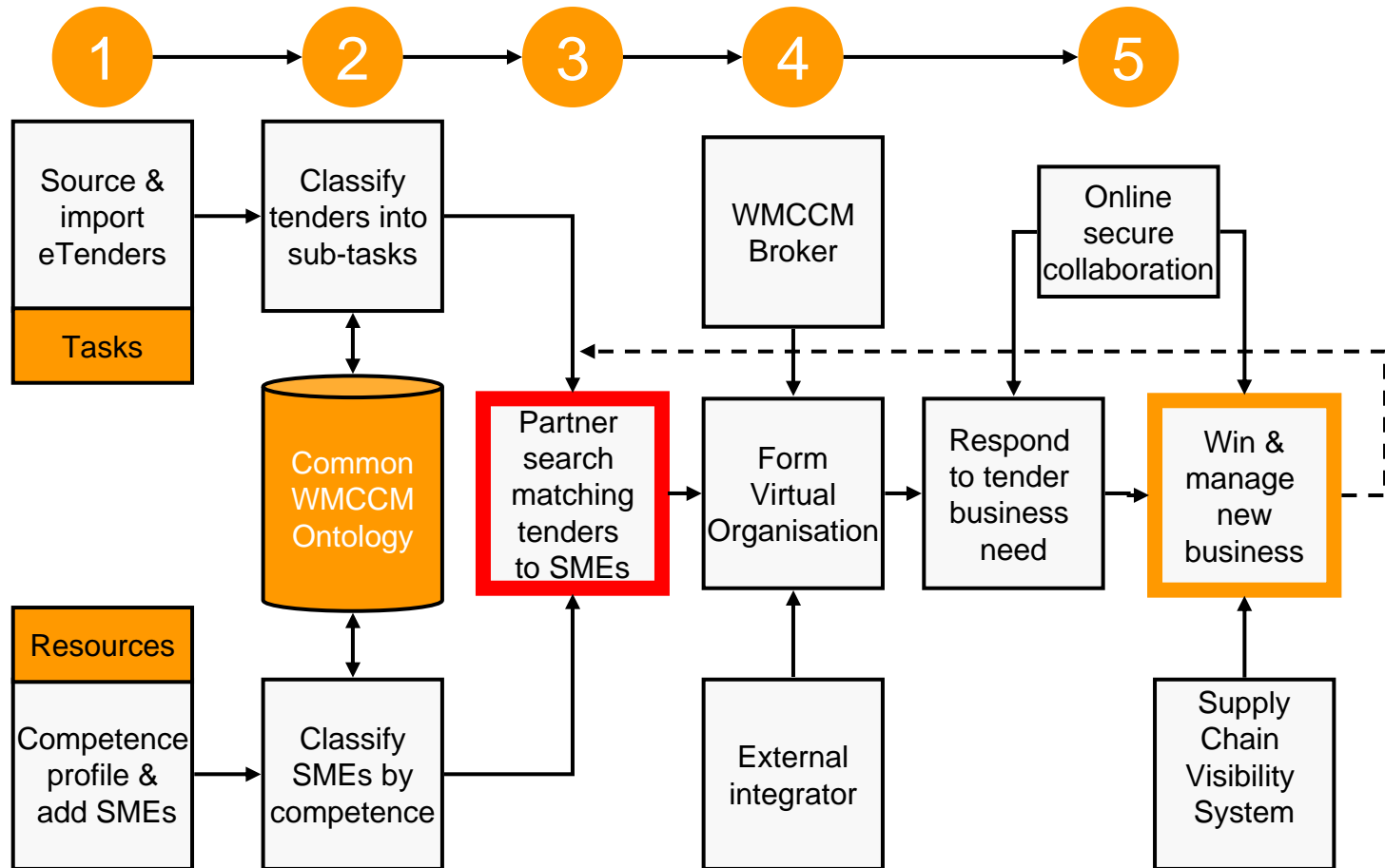


Biolubricants from rape



Body panels from rape and hemp

Collaborative Commerce Marketplace eTrade workflow





Plant Based Futures; Bio-Energy, Materials, Health

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Plant Based Futures



DISTRICT Sub-Project

RICE

REGIONAL INNOVATION
FOR A COMPETITIVE EUROPE

Plant Based Futures



Health & Well-being

- Nutraceuticals, cosmeceuticals & pharmaceuticals
- Woven & non woven bio fibres
- Trauma & assistive technologies
- Soluble/Bio-degradable products



Bio-energy

- Biomass
- Bio-ethanol
- Bio-diesel
- Oils, sealants & adhesives



Novel Materials

- Textiles
- Bio-ceramics
- Bio-plastics
- Technical products for construction & insulation





Thank You