InCrops Project

The InCrops Enterprise Hub is a regional knowledge transfer project that has been designed specifically to establish a distributed enterprise hub in alternative and non-food crops and to promote innovation and high value business opportunities for those seeking to exploit, through advanced technologies, the derivatives of such crops across a wide range of sectors and industries.

Our expert team of staff work to bridge the gap between R&D, business and regional economic growth. This document shows how InCrops thinks globally and invests locally to build advanced clusters for business exploitation. This activity address priority development areas in the alternative and non food crop sectors and utilises the East of England's world class research base in plant and crop science.

The information below maps global markets to regional economic opportunities and identifies which InCrops staff members are leading work in each sector. If you are interested in discussing any of these areas with InCrops please contact us (full details within).

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European Regional Development Fund
Investing in your future

ERDF
low carbon economic growth in the East of England

EEDA
East of England Development Agency

UEA University of East Anglia

Key: **JF –** *Dr John French – Managing Director john.french@uea.ac.uk 07770777 599 1256*
LS - *Dr Liliya Serazetdinova – Business Innovation Manager InCrops/JIC* *l.serazetdinova@uea.ac.uk 0777 630 1718*
BSR - *Dr Beatrix Schlarb Ridley – Business Innovation Manager InCrops/University of Cambridge* *b.schlarb-ridley@uea.ac.uk 0777 898 3612*
NC - *Nicholas Corker – Business Innovation Manager InCrops/BRE* *n.corker@uea.ac.uk 0779 567 3985*
CGE - *Dr Carlos Gonzalez-Esquivel – Agri-Business Manager InCrops/Easton College* *c.gonzalez-esquivel@uea.ac.uk 0777 645 4204*
MC - *Dr Mark Coleman – Innovation Fellow InCrops/UEA School of Biological Sciences* *m.coleman@uea.ac.uk*

Global Market Highlights	Regional Economic Opportunities for East of England	InCrops team lead	InCrops team interest
• **Plastic packaging** ○ Global market $80bn ○ Principally food uses ○ Biopolymer market share 1.5%-2%, potentially 10% ○ Petrochemical substitution	• Plastic packaging ○ technology transfer required to exploit market potential ○ significant fresh food packaging sector in EE ○ proportional of world share can come to EE linked to innovation in bioplastics especially polysaccharide technology ○ requires LCA and enhanced production and disposal	**LS**	**LS** **BSR**
• **Oleochemicals** consume 14% global vegetable oil production ○ 30% surfactants plant-derived ○ Biolubricants market share expected to rise from 2% ○ Plant-based solvents1.5%-2% market share due to opposition to VOCs	• Oleochemicals ○ specialist oil crops capable of growing in E of E ○ scope to develop new biolubricants ○ proportion of world share can come to E of E linked to biorefining expansion	**BSR**	**BSR** **CGE** **LS (biorefining)**
• **Natural fibres as alternatives to glass fibre in composites** ○ EU automotive demand potential 100kt by 2010 ○ Current 7-8kg per vehicle, potentially 12-13kg	• Natural fibres as alternatives to glass fibre in composites ○ scope for hemp, flax and 'other' fibres into composite panels, body internal panels and reinforced fibreglass. Scope to stimulate demand through best practice in the region. ○ scope to increase above 12-13kg with technological innovation	**JF**	**NC** **CGE** **LS**

Global Market Highlights	Regional Economic Opportunities for East of England	InCrops team lead	InCrops team interest
• **Natural fibres into construction** ○ Hemp into building ○ New fibres into insulation, miscanthus, flax etc ○ Finished wood products into housing ○ Shopfitting & other commercial applications ○ Civil engineering applications	• Natural fibres into construction ○ market demand for hemp and other innovative housing products ○ low carbon functionality as well as low carbon through sequestration ○ E of E housing growth projecting 400,000 new homes ○ technology transfer to enhance U value performance ○ need to substitute finished wood imports ○ soft flood defence works ○ sustainable urban drainage	**NC**	**LS** **CGE**
• **Plants as service providers, (ecosystem services)** ○ Biodiversity ○ Climate regulation ○ Aesthetic & health services ○ Water regulation ○ Waste treatments	• Plants as service providers ○ Plant propagation and application ○ Species selection ○ Standards in construction and maintenance ○ Community mgt ○ Urban and peri-urban agriculture ○ Green-infrastructure ○ Green roofs, green walls etc.	**NC**	**JF** **MC** **CGE**
• **Personal care product markets** £50 billion market value ○ Herbal renaissance in alternative healthcare and well-being ○ Predominance of wild harvested herbs and fragmented supply chains ○ Natural product markets in skin creams and beauty products ○ Fashion and clothing and consumer product markets multi-billion	• Personal care products ○ few companies in EE exploiting high value crops ○ scope to reach out to high value purchasing chains in Europe ○ present E of E companies not locally sourcing biological materials ○ multinationals able to mentor new spin outs ○ scope to exploit berry crops for flavouring and colorants ○ technology barrier over harvesting	**CGE/MC**	**JF** **CGE** **MC**
• **Functional foods** ○ Global market value over 120 billion ○ Rapidly growing international consumer market ○ Health foods/ diabetes management/high soluble fibre	• Functional Foods ○ scope for local production of functional food crops eg naked barley, camellina, slow foods and extracts ○ scope for local high value added supply chains ○ scope to increase essential oil production	**JF**	**BSR** **CGE** **JF** **LS**

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• **Transportation fuels** as 50%-60% global oil demand ○ EU target of 5.75% renewable sources by 2010 ○ US/Brazil ethanol production cost 50% that of EU ○ Biofuels demand may double in 10 years	• Transportation fuels as 50%-60% global oil demand ○ scope to advance technology to allow waste cellulose conversion via LC into ethanol and avoid food vs fuel conflict through co-product resource efficiency ○ scope to prototype new fuels through high tech industries	**BSR**	**BSR** **JF** **CGE**
• **Biomass Heat and Power** ○ EU biomass supply 3% from crops in 2003, 50% by 2030 ○ Cost competitiveness vs oil and gas crucial ○ Weak demand pull means government incentives	• Biomass Heat and Power ○ Region has under-utilised biomass crops due to poor supply chains eg miscanthus ○ scope to route fibre based crops into biomass and materials usage ○ Forestry waste resources not fully utilised in region	**BSR**	**BSR** **MC**
• **Biopharming** ○ $50bn biopharmaceuticals market 2003 ○ Cost and scalability advantages of bioreactors vs conventional production ○ Substantial potential for production of complex chemicals in plants ○ Barrier of public acceptability in EU	• Biopharming ○ eg algae based suncreams – future alternative C capture and metabolite production ○ biotech industry slow to exploit -scope to accelerate ○ steer towards closed controlled systems and culture systems linked to CHP heat and C02.	**BSR**	**BSR** **LS** **MC**
• **New green consumer markets** ○ Emerging markets in household goods, ecopaints, furnishings, ○ Fashion and clothing and natural pigments	• New green consumer markets ○ isolated examples in E of E with scope for support for expansion and new business start ups with local supply chains ○ examples of high value fashion based markets in South East and Europe that can be supplied from E of E.	**LS – Paints, fashion** **NC – household goods**	**BSR – pigments** **JF** **PW**
Other areas	○ nanotechnology applications ○ IBTI biorefineries	**LS** **LS**	**BSR** **BSR**