

InCrops Enterprise Hub



Mark Coleman

InCrops



Programme



17:00 Welcome and introduction

17:05 Presentations

Introduction to InCrops – *Dr Mark Coleman, InCrops*

Functional food: developing a product from a standing start - *David Eagle, On The Wild Side*

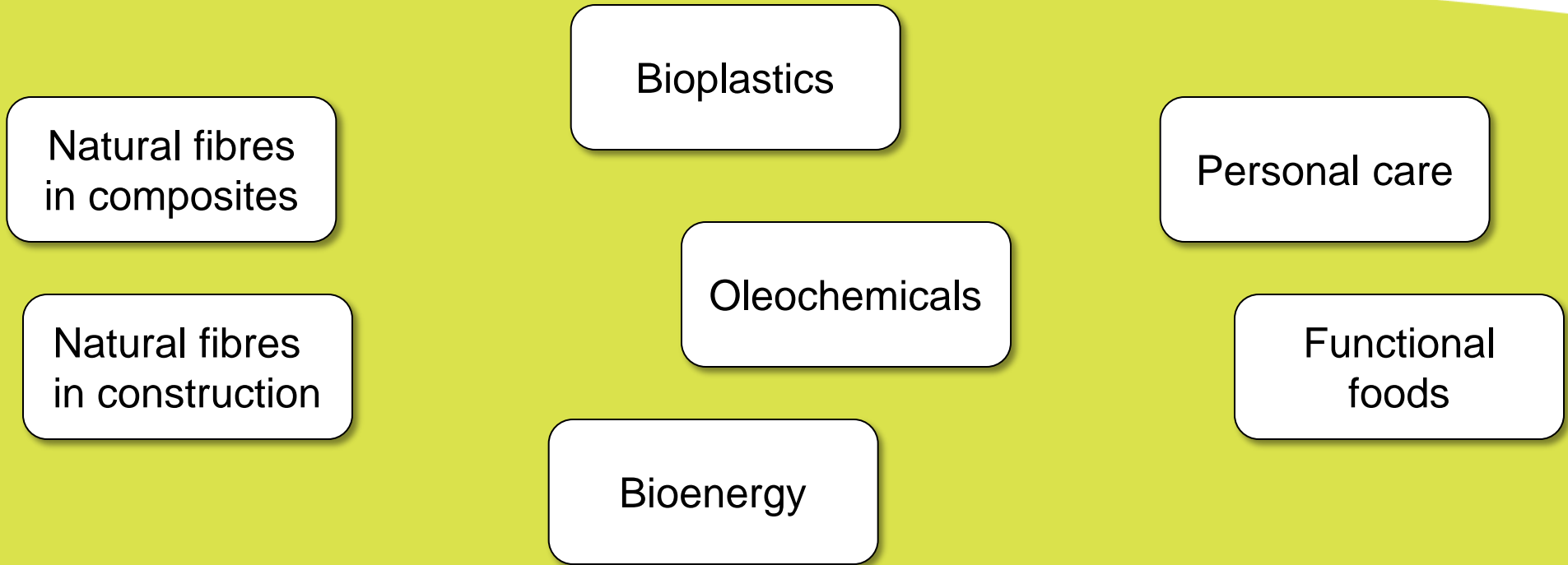
Alternative Berry Crops – *Dr Sally Francis, freelance consultant, writer and journalist*

17:45 Concluding remarks and discussion

18:00 Networking, light refreshments



InCrops Client Sectors



InCrops partners



InCrops team



- Director: Dr John French
- Business Innovation Managers: Drs Liliya Serazetdinova, Beatrix Schlarb Ridley, Mark Coleman, Ben Binns, Bianca Forte
- Agri-Business Manager: Carlos Gonzalez-Esquivel
- Project Administrator: Penny Wright
- Administrative Assistant: Julia O'Rourke



Sea Buckthorn

Hippophae rhamnoides



- Found widely on the East coast of the UK but not developed commercially in the region

- High in vitamins C & E, carotene, flavonoids, linoleic and linolenic acids
- Anti-aging, wound healing, and UV-B ray-absorbing properties



Sea Buckthorn



Vitamin C

	<i>mg/100 g</i>
Orange:	53
Blackcurrant:	155 – 215
Sea buckthorn	82 – 260

- Anti-oxidants in sea buckthorn: Vitamins C & E, carotenes

Anti-oxidant levels

	<i>ORAC ($\mu\text{mol TE}/100\text{ g}$)</i>
Orange:	700 - 1800
Apple:	2200 - 3800
Cranberry:	9500
Sea buckthorn:	70,000*

- Anti-oxidants have proposed anti-aging and other health benefits

Sea Buckthorn



Table 6. Fatty Acid Composition of Oil Triacylglycerols of Sea Buckthorn (*H. rhamnoides*)

fatty acid ^b	seed oil				pulp oil	
	Johansson et al. (1987a)	Mironov (1989) ^a		Mironov (1989)		
	mol %	Caucasus (%)	Pamirs (%)	Caucasus (%)	Pamirs (%)	
14:0	0.1					
15:0	0.2					
16:0	6.8	20	17	38	38	
16:1(<i>n</i> -7)	0.4	5	20	14	50	
18:0	1.8	3	1			
18:1(<i>n</i> -9)	12.7	13	19	33	12	
18:1(<i>n</i> -7)	2.7					
18:2(<i>n</i> -6)	34.7	40	29	15	1	
18:3(<i>n</i> -3)	38.5					
20:0	0.5					
20:1(<i>n</i> -9)	0.2					
20:2						
20:3						
22:0	0.1					
others	1.4					

^a Seed lipids contain ~8% of 7-oxononanic acid [see Degering (1963) for nomenclature] and lipids claimed to contain vitamins A, E, and P. ^b Nomenclature (e.g., *n*-9) indicates the position of the first double bond from the methyl carbon (methyl carbon = 1).

- Essential fatty acids (essential for normal growth)
- Other claimed properties: cancer prevention, cardiovascular disease prevention; brain health; rheumatoid arthritis

Sea Buckthorn

Clinical potential



Wound Healing (including burns): Upadhyay et al, 2009; Ianev et al, 1995; Gupta, 2005

Anti-ageing: Yang, et al, 2009

Dermatitis: Yang et al, 1999

Tendon Healing: Fu et al, 2005

Gastric Ulcers: Xiaoyun et al, 2007; Xing et al, 2002

Liver Disease: Ze-Li, 2003; Hsu, 2009

Platelet Aggregation: Johansson, 2000

Use in Chemotherapy: Nersesyan, 2004

Radio-protective Effects: Goel et al, 2002; Goel et al, 2003

Inflammation: Padwad et al, 2006; Ganju et al, 2005

Sea Buckthorn



Lisavenko
Institute



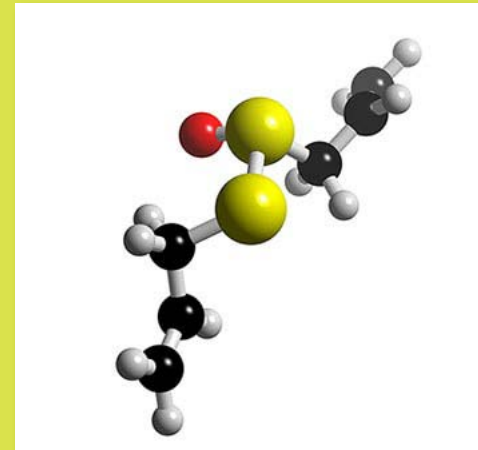
Garlic

Allium sativum



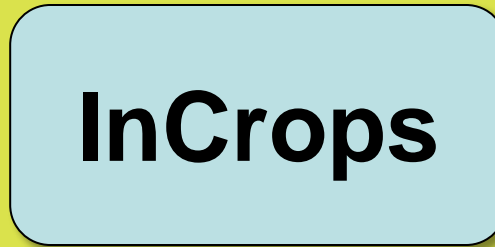
- Health claims: prevention of heart disease (including atherosclerosis, high cholesterol, and high blood pressure) and cancer; prevention and fighting common cold
- Note: NIH-funded RCT does not support cholesterol reduction claims
- Some evidence for anti-methanogenic activity in ruminants
- Extracts are insecticidal

Garlic



allicin

Garlic



Biotech
client

Hemp

Cannabis sativa L.



- Low-input crop
- Fibre used in construction, insulation, car panels, mats
- Waste used as fuel
- Oil rich in Omega 3, 6, 9



Flax/Linseed

Linus usitatissimum



- One of the oldest domesticated crops
- Oil used in food industry, paints
- Oil claimed to reduce cholesterol, improve digestion, anti-cancer effect
- Fibre used in clothing, insulation, absorbent mats



InCrops Trials

Hemp trials 2009

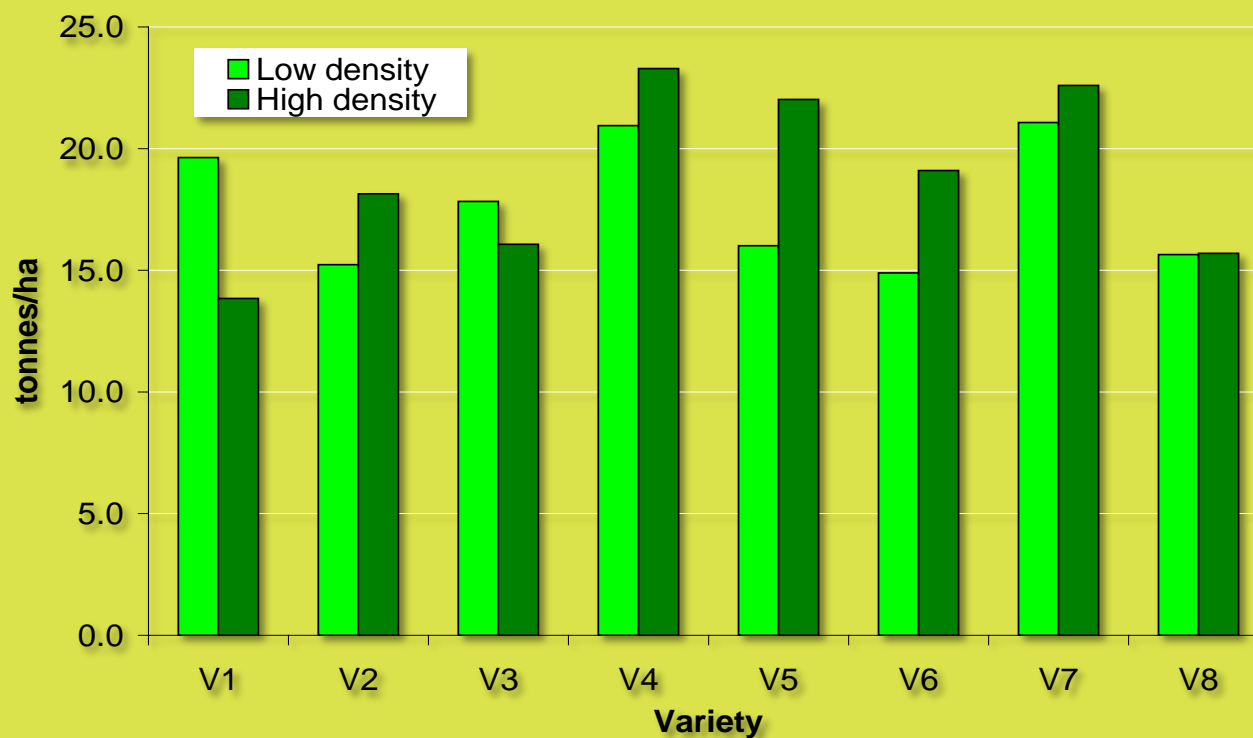


- Eight Polish and French varieties, two sowing densities (90 and 150 plants/m²). Completely randomised blocks
- Twelve weeks from sowing to harvest. 50 kg N/ha. No herbicides or pesticides used



InCrops Trials

Hemp trials 2009



InCrops Trials



Linseed trials 2009

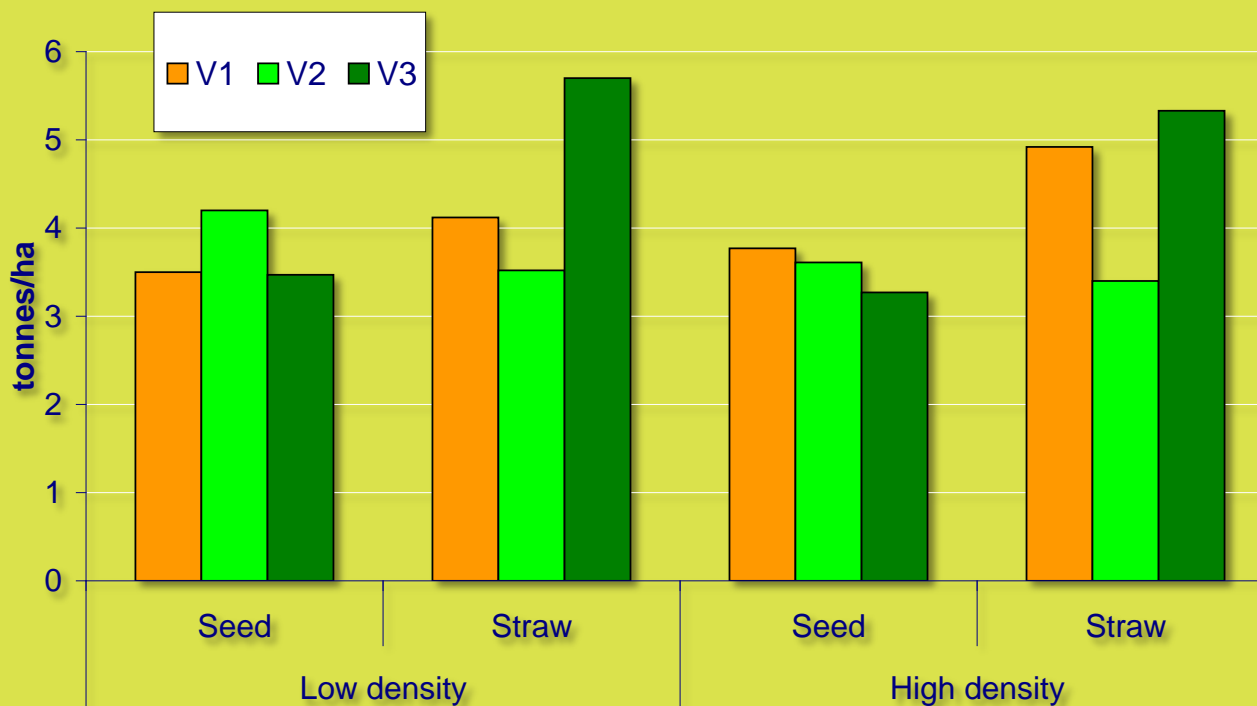
- Three varieties, two sowing densities (500 and 750 plants/m²). Completely randomised blocks with 4 replicates.
- 50 kg N/ha, no herbicides or pesticides used
- Yields ranging from 3.2 – 4.2 tonnes/ha of seed, plus 3.4 – 5.7 tonnes/ha of straw



InCrops Trials



Linseed trials 2009



InCrops partners





www.incropsproject.co.uk/

