



Refining the system for the future



Cathy Hawes

www.csc.hutton.ac.uk



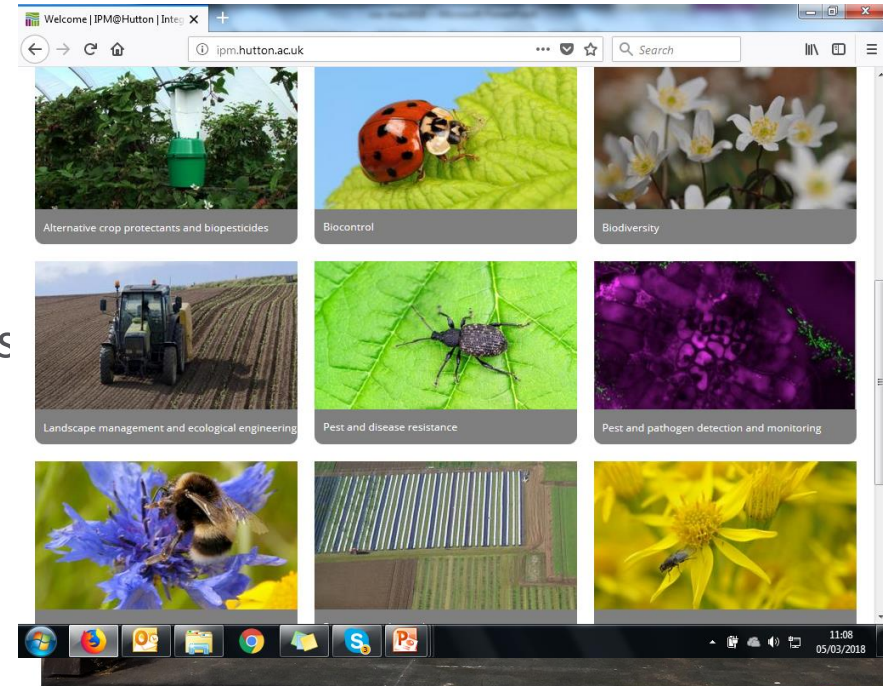
The James
Hutton
Institute



The future – refining the system



- Cost-benefit environmental and economic systems analysis
- CSC & IPM Stakeholders group
- Improved integrated management options
 - Direct drill
 - Cover cropping – clover/vetch mix following OSR and SB
 - IPM & weed management – integrate options from RD2.1.6, IPM@Hutton
 - Renewable sources of plant nutrients (biogas digestates, more legumes?)
 - Intercropping & crop diversification (bean/wheat, pea/barley)
 - Scaling



*TRUE partners, Kick-off Meeting, Edinburgh Scotland UK (April'17)
EU-TRUE has received funding from the European Union
Horizon 2020 Research and Innovation Programme under Grant Agreement No. 727973.*



Designing InnoVative plant teams for Ecosystem Resilience and agricultural Sustainability

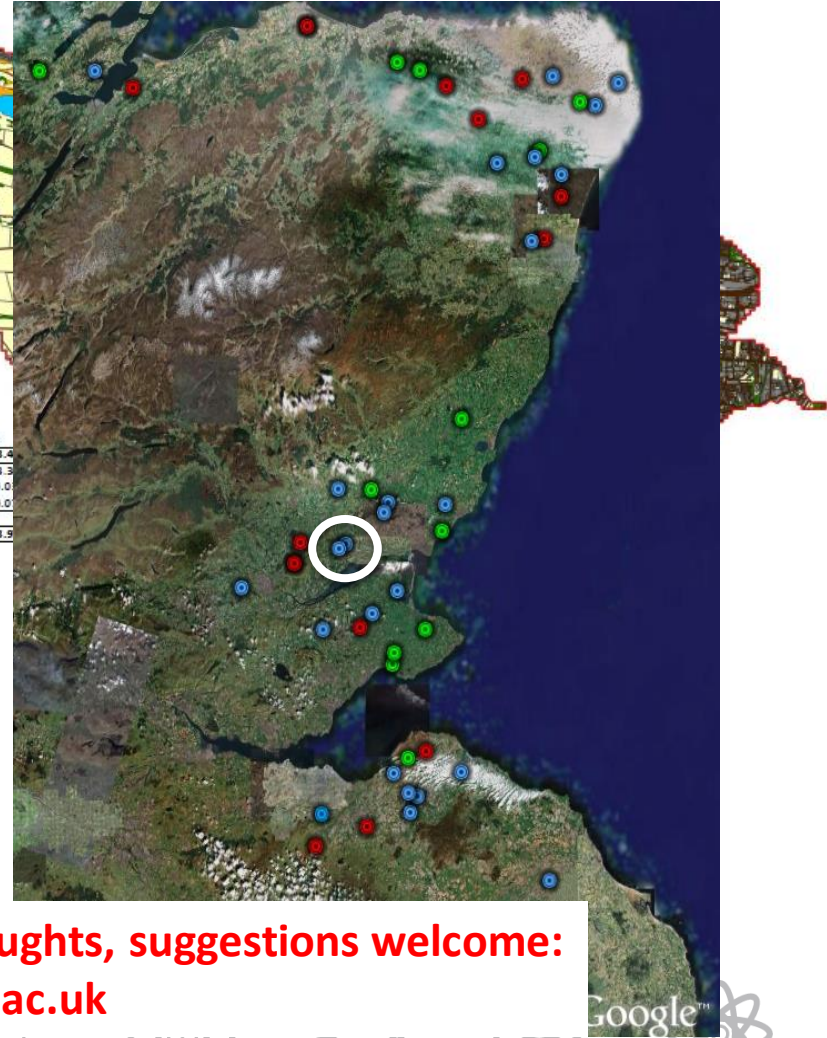
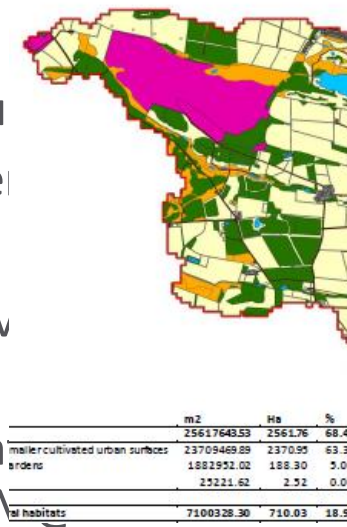
The DIVERSify project aims to develop a novel system for sustainable food production by optimising **crop species mixtures** or **'plant teams'** to improve yield stability, reduce pest and disease damage, and enhance stress resilience

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 727284



The future – refining the system

- Cost-benefit environmental and economic systems analysis
- CSC & IPM Stakeholders group
- Improved integrated management
 - Direct drill
 - Cover cropping – clover/v following OSR and SB
 - IPM & weed management options from RD2.1.6, IPM
 - Renewable sources of plant nutrients (biogas digestates, more legumes?)
 - Intercropping & crop diversification (bean/wheat, pea/barley)
 - Scaling



More? How can we do better? Feedback, thoughts, suggestions welcome:
Cathy.Hawes@hutton.ac.uk



Acknowledgements



- The CSC platform is funded through the Scottish Government Underpinning Capacity programme
- This is an open access resource that supports a wide range of projects and benefits from the input and advice we get from many different organisations.
- With thanks to the Agroecology Group (design, data collection, databasing and management), Colin Alexander (statistics), Euan Caldwell, David Young and Andrew Christie (farm management) and Andy Steven (agronomy advice).
- For more information, visit www.csc.hutton.ac.uk





	Potato		Winter wheat		Beans		Spring barley		Winter oilseed		Winter barley	
	conv	integ	conv	integ	conv	integ	conv	integ	conv	integ	conv	integ
Cultivation timing	Nov-Mar	Mar-Apr	Oct	Oct	Feb-Mar	Mar	Feb-Apr	Mar-Apr	Aug-Sep	Aug-Sep	Aug-Sep	Aug-Sep
Cultivation method	conv	conv	conv	conv	conv	non-inv	conv	non-inv	conv	non-inv	conv	non-inv
Sowing/planting 1	Apr	Apr	Oct	Oct	Mar-Apr	Mar-Apr	Mar-Apr	Mar-Apr	Aug-Sep	Aug-Sep	Sep	Sep
Sowing/planting 2								clover undersow (Apr)				oil radish cover (Aug)
Fertiliser 1 product		compost		compost		compost		compost		compost		compost
Rate (kg/ha)		3500		3500		3500		3500		3500		3500
Fertiliser 2 product	14-14-21	14-14-21	30-0-0	30-0-0	0-20-30	0-20-30	30-0-0	30-0-0	17-17-17	17-17-17	0-20-30	0-20-30
Rate (kg/ha)	1400	1050	300	225	200	150	380	285	170	120	300	225
Fertiliser 3 product			30-0-0	30-0-0			0-0-60	0-0-60	30-0-0	30-0-0	30-0-0	30-0-0
Rate (kg/ha)			300	225			160	120	300	230	300	225
Fertiliser 4 product			30-0-0	30-0-0					30-0-0	30-0-0	30-0-0	30-0-0
Rate (kg/ha)			300	225					300	230	300	225
Herbicide (pre-em) product			Liberator	Liberator					Katamaran turbo	Katamaran turbo	Liberator	Liberator
Rate (per ha)			0.6 l	0.3 l					2.5 l	1.25 l	0.6 l	0.3 l
Herbicide (post-em) product	Stomp, Artist, Reglone, Shark	Reglone, Shark	Traton SX, Charge	Traton SX, Charge	Stomp	Stomp	Traton SX, Charge	Headland spruce	Panarex	Panarex	Traton SX, Charge	Tomahawk Charge
Rate (per ha)	2.9 l, 2.5 kg, 2 l, 0.3 l	2 l, 0.3 l	0.04 kg, 1 l	0.04 kg, 1 l	3 l	1.65 l	30 g, 1 l	4.5 l	1 l	1 l	0.045 kg, 1 l	0.045 kg, 1 l
Harvest	Sep-Oct	Sep-Oct	Sep (straw baled)	Sep (straw chopped and incorporated)	Sep-Oct	Sep-Oct	Aug-Sep (straw baled)	Aug-Sep (straw chopped and incorporated)	Aug	Aug	Aug (straw baled)	Aug (straw chopped and incorporated)