



Farmers' knowledge for informing NFM modelling

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What have WP1 been up to?

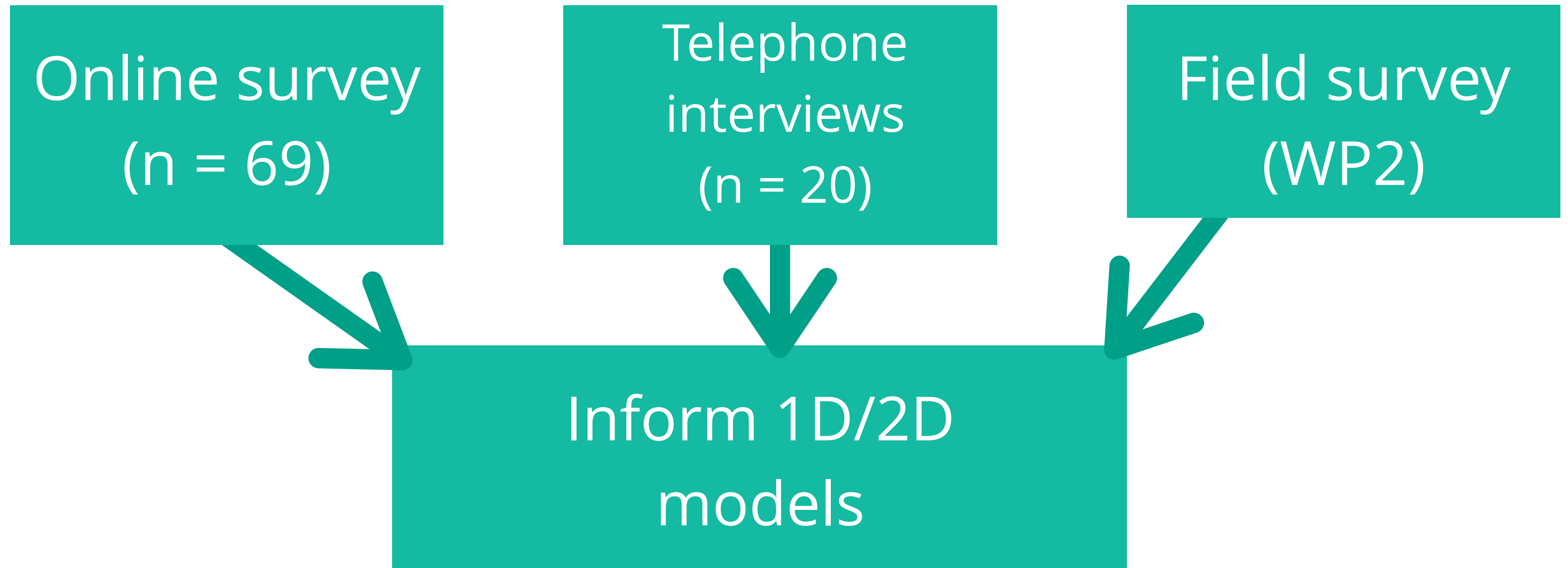
Farmer telephone interviews

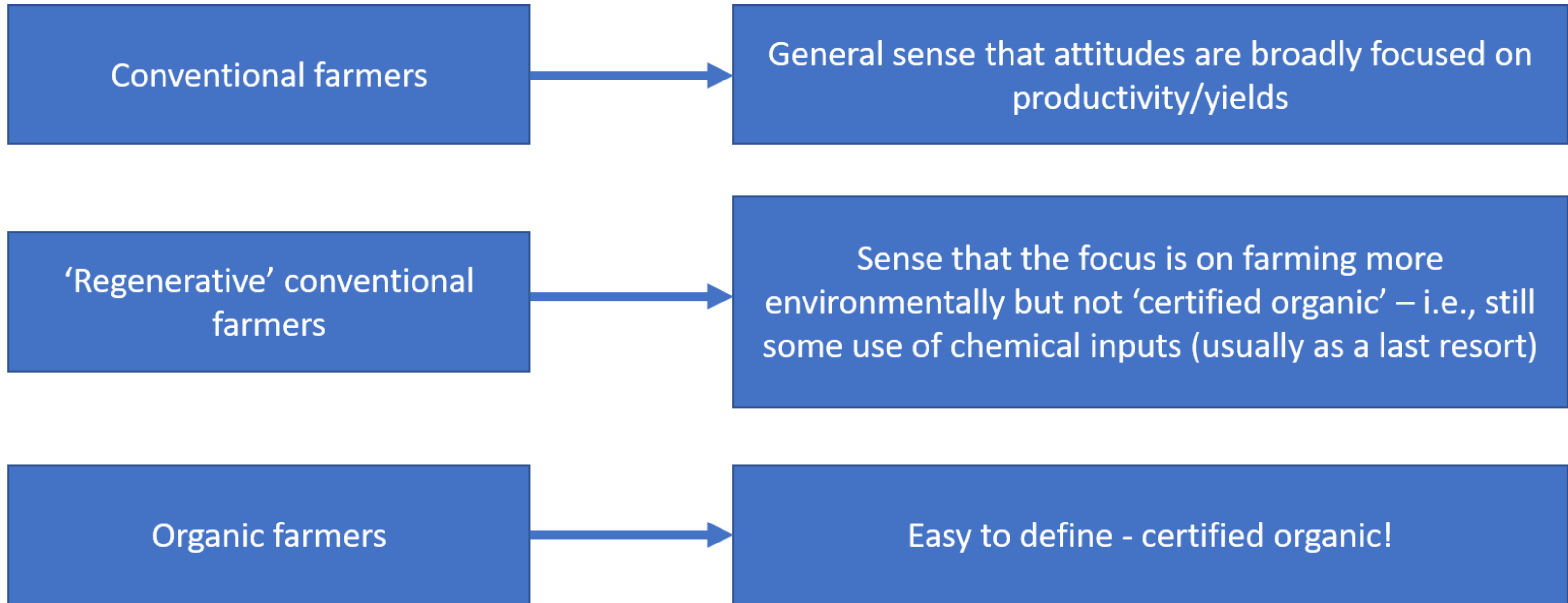
Analysis of telephone interviews and online surveys

Identifying storylines for the 1D/2D modelling

Our aim: Inform policy, improve decisions, deliver co-benefits for local communities across West Thames

Identifying storylines

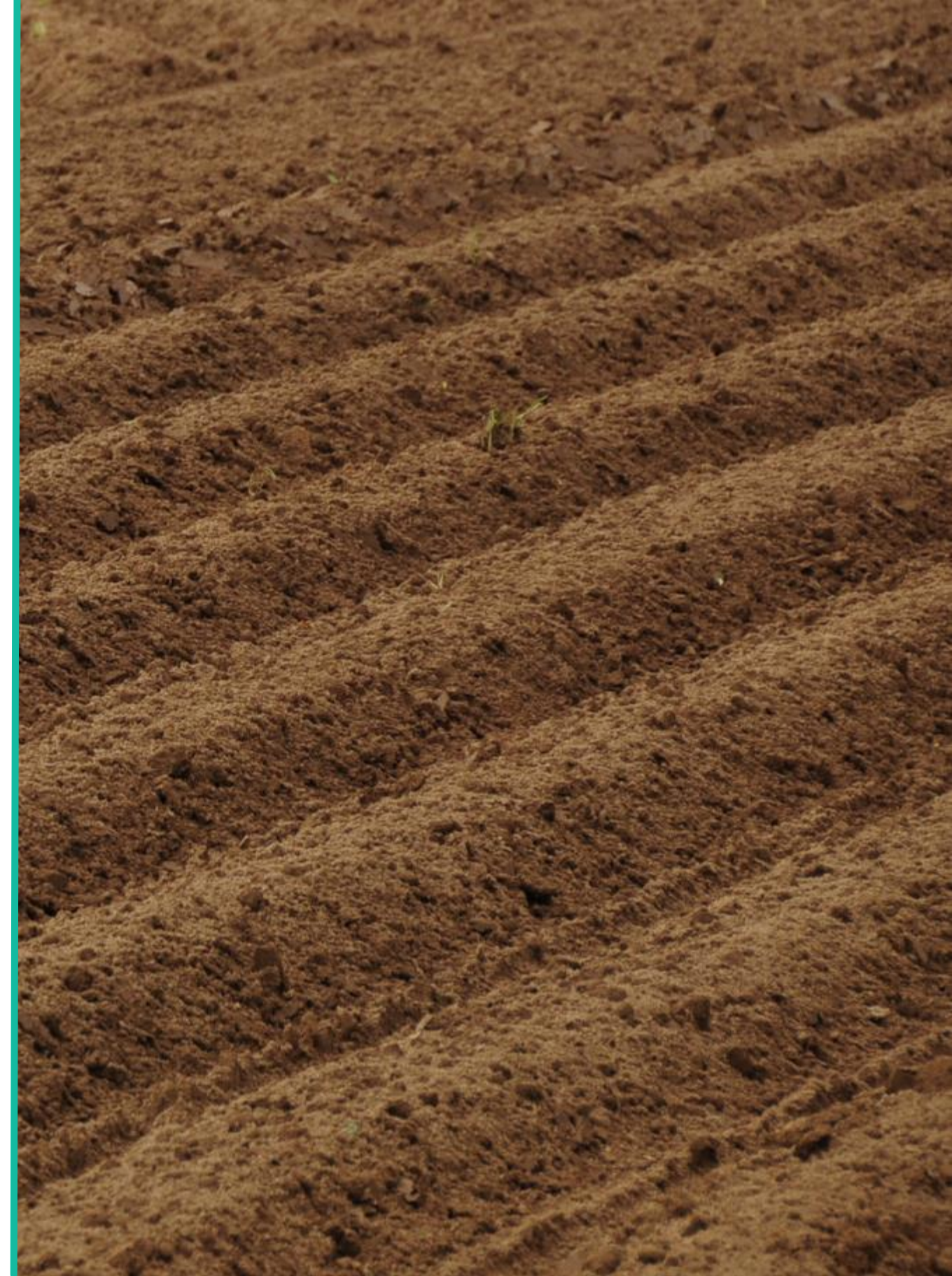


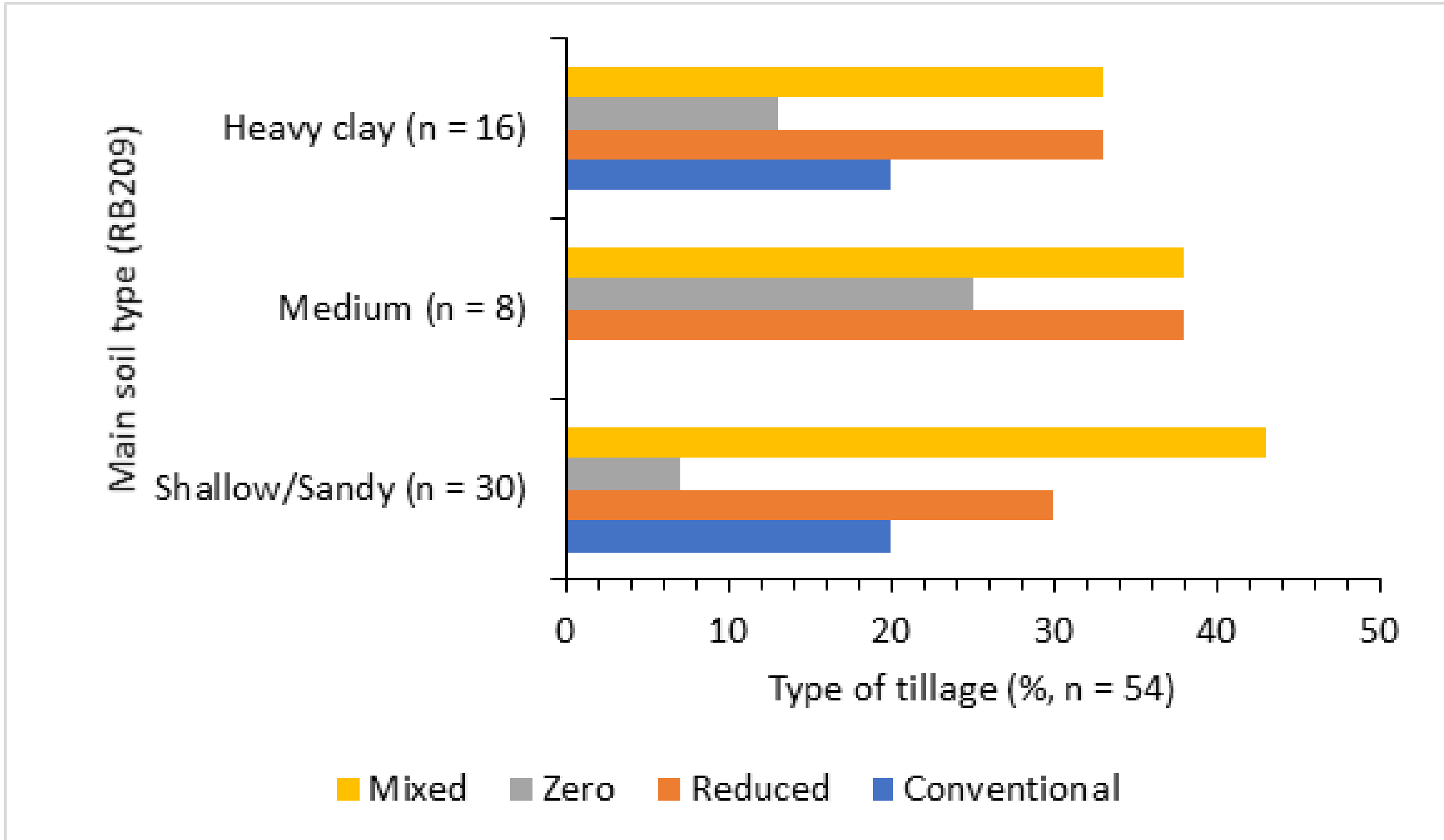


These definitions are based on our general understanding of agriculture and from looking at responses from the 69 online survey and telephone interview participants.

Tillage practices: Some interesting findings

'We use a mixture of everything. We will rotational plough where we've got a bad blackgrass problem. (...) We'll plough behind winter wheat in front of winter barley for black grass control. Any land that's had sewage sludge on it will be cultivated with a mixture of tynes and disks. Most fields will get a scratch cultivation with a bad stack carrier to try and get a chit on the black grass. ground that's in spring cropping will normally be direct drilled in the spring. My philosophy on cultivations is to do the minimum we need to do to get a seedbed to establish the next crop'





Rotations

Year 1 – generally cereals regardless of soil type and farm type

Grass leys most common under regenerative and organic farming

Crops become more diverse later in the rotation

Soil type	Farm type	Typical rot length	Y1	Y2	Y3	Y4	Y5	Y6
Heavy	Conv	6+ (long but simple)	WW	SB	WB	WW	SB	WB
			M	M	M	M	M	M
			WW	WOSR	WW	SB	WW	WOSR
	Regen	6+ (long and diverse)	WW	M	WW	SB	WOSR	
Med/Light	Conv	4-6 years (shorter, simple)	WOSR	WW	SB	WB		
			WW	SB	WOSR	WW	L/S	WW
			WW	WW	WOSR			
			WW	WB	WOSR	WW	WB	WOSR
	Regen	6+	WOSR	WW	SB	SB	WW	WB
			WW	WOSR	WW	SB	SP	WW
			GL	GL	GL	GL	WW	SB
	Org	6+ (grass leys)	GL	GL	GL	SW	WO	SB
			SW	SB	WO	GL	GL	SW
			SO	WR	SB	GL	GL	GL

Impact of soil type on rotations

'We've got everything ranging from sort of fairly thin soil over gravel by the river to some heavier, sort of 30% clay soils, we've got some Cotswold brash, we've got some lighter gravel ground. So we've got most things really! (laughs). Yeah, and wrongly, the whole farm gets treated the same with a three to four year rotation'

'Our soil is mostly medium and the heavier soils are in pasture...our approach to the pasture lands is to leave it the hell alone, so we don't do any fertiliser, and it's an incredibly low stock rate and only for a narrow window in the spring and summer.'

Storyline – 2D generalised

There were only minor differences in management by soil type, so we've focused on farming system

Farming system	Con – intense (50% arable area)	Con – regen (30% arable area)	Organic (20% arable area)
Crop rotation (detail crop types + leys if present)	Simple 3 crops 2x winter cereals 1x OSR or beans	Diverse 3+ crops 2 x winter cereals 2 x spring cereals + cover crops 1x beans/oats	Diverse 3+crops 2 x winter cereals 2 x spring cereals + cover crops 1x beans/oats 2 x grass ley (herbal)
Perm Grassland (rye/herbal)	Rye + clover	Herbal	Herbal
Tillage	Mixed	Min Till/No Till	Mixed
Cover crop	No	Yes	Yes
Organic amendments	Sludge/biosolids	Mixed	FYM/Slurry
Artificial fertiliser	Yes (high)	Yes (low)	No

Scenarios to test:

1. Current: 50% intense, 30% regenerative, 20% organic
2. Future: 50% regenerative, 30% organic, 20% intense

3. All Intense
4. All regenerative
5. All organic

Based on data from field survey, online survey, telephone interviews

Storyline – 1D exploration

Management factors to explore **highlighted** through 1D modelling on different soil types

Farming system	Con – intense (50% arable area)	Con – regen (30% arable area)	Organic (20% arable area)
Crop rotation (detail crop types + leys if present)	Simple 3 crops 2x winter cereals 1x OSR or beans	Diverse 3+ crops 2 x winter cereals 2 x spring cereals + cover crops 1x beans/oats	Diverse 3+crops 2 x winter cereals 2 x spring cereals + cover crops 1x beans/oats 2 x grass ley (herbal or rye, grazing intensity)
Perm Grassland (rye/herbal)	Rye + clover (hay/silage vs grazing intensity)	Herbal (hay/silage vs grazing intensity)	Herbal (hay/silage vs grazing intensity)
Tillage	Mixed (Conventional/Min Till)	Min Till/No Till	Mixed (Conventional/Min Till)
Cover crop	No (yes/no + types)	Yes – types mustard, turnips, vetch, cover	
Organic amendments*	Sludge/biosolids (yes/no)	Mixed	FYM/Slurry
Artificial fertiliser*	Yes (high)	Yes (low)	No

*OM and fertiliser have legal limits of application

Considering other factors, e.g., tenure

'If you can't put a monetary value on [cover crops], convincing [the landowner]...if all I can say is that this is great for the soils but it's actually gonna cost you money, it's quite hard to justify really at this time. If it was my farm then yes, I'd do it because I feel it's the right thing to do'

= adds complexity



What next?

Paper 2a: Modelling (storylines), farmer knowledge and NFM measures

Paper 2b: Farmer knowledge, practices, and informing NFM policy



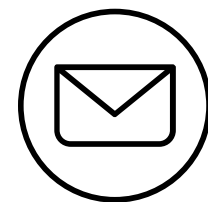
'We're quite interested in trying to take the foot off the pedal with arable, we've been flogging it a bit trying to get yields which aren't realistic on our land so we're trying to make things a bit simpler, maybe spend less on it and do a good job. The weather is such a big part with us, we could do everything right but then we have a drought like this year and it makes things difficult. You see people rushing around with huge machinery and they just seem to be running around trying to... (laughs). I'm not sure that's the answer really. We're certainly interested in taking a bit more of the poorer land out of production, we've got fields that don't yield very well so I would be interested in doing even more environmental stuff if possible'

Acknowledgements

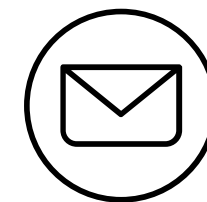
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Thanks to Jo Clark, Jon Hammond



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