



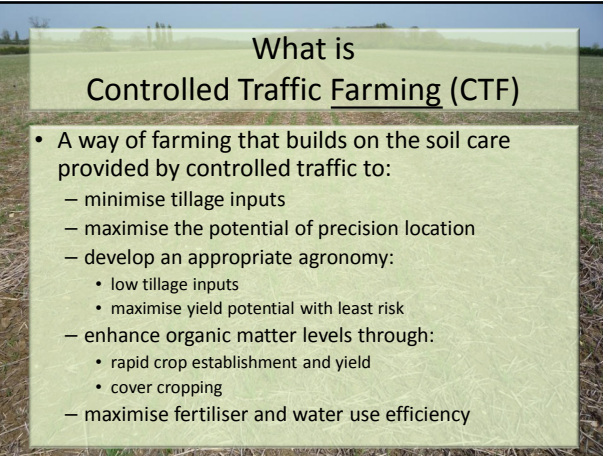
Controlled Traffic Farming -

- addressing the way forward



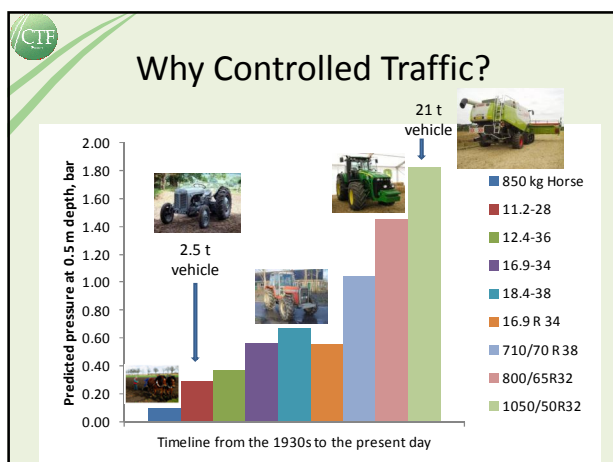
What is Controlled Traffic?

- A system that confines all field vehicles to least possible area of permanent traffic lanes
- philosophy:
 - *better to damage a small and known area than the whole field at random*



What is Controlled Traffic Farming (CTF)

- A way of farming that builds on the soil care provided by controlled traffic to:
 - minimise tillage inputs
 - maximise the potential of precision location
 - develop an appropriate agronomy:
 - low tillage inputs
 - maximise yield potential with least risk
 - enhance organic matter levels through:
 - rapid crop establishment and yield
 - cover cropping
 - maximise fertiliser and water use efficiency







CTF

EXAMPLES OF CTF SYSTEMS

Matching all widths

OutTrac system

1280 ha farm

Grain harvester

Grain auger

Trailer

Cultivator/drill

Chemical application

Harvester e.g. 2.8 m

Other vehicles e.g. 2 m

Matching widths

TwinTrac – tractors straddle harvester passes

190 ha farm

Grain harvester

Grain harvester

Grain harvester

Chemical application

Grain auger

Trailer

Harvester

Tractor

Max 6 m wide implements

Sown tracks

Tranlines

CTF

12 m CTF for forage



CTF

12 m cutting



CTF

12 m swathing



CTF

12 m Harvesting



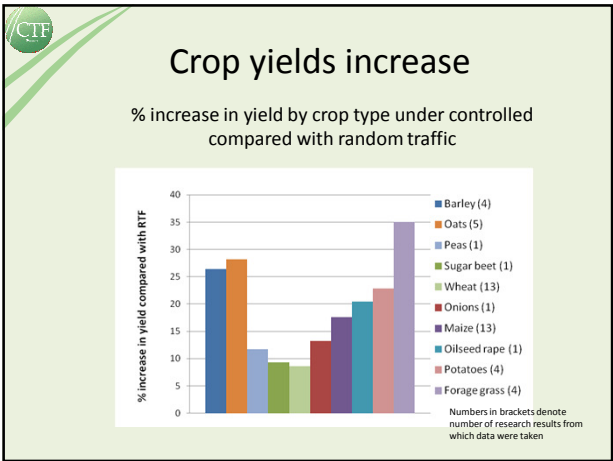
CTF

Baling in CTF system

- having bale in the right place is key

CTF

BENEFITS OF CTF





Lower on-farm costs
East Hendred

Old System			CTF System		
	Hrs/Ha	L/Ha		Hrs/Ha	L/Ha
V-Form	0.36	15	Subsoil CTF Lanes	0.22	5
Triple Press	0.25	9.38	10m Cult	0.15	6.8
Camb Roll	0.17	2	Camb Roll	0.17	2
6M Drill	0.26	9.74	10M Drill	0.17	7.48
Camb roll	0.17	2	Camb roll	0.17	2
1.21 Hrs/Ha		38.12 L/Ha	0.86 Hrs/Ha		23.28 L/Ha
Savings → 14.84 L/Ha at 70p p/l = £10.39/Ha (approx £10,390 over 1000 Ha)					
0.33 hrs/Ha (approx 333 hours over 1000 Ha)					

CTF

Reductions in tillage draught with no traffic

Depth of operation, mm	Draught savings compared with trafficked soil, %
100 (4")	60
200 (8")	20
500 (20")	18

CTF

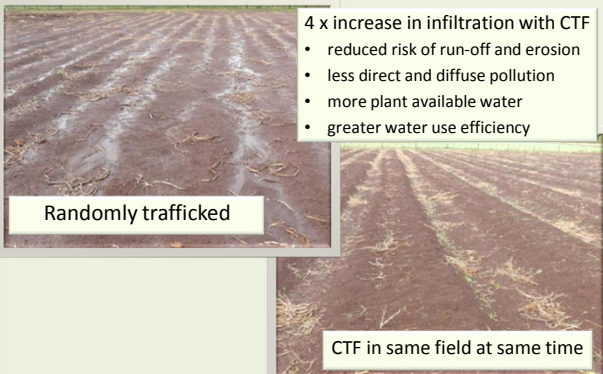
Lower energy & crop establishment costs

Energy ¹ , kWh/ha and costs ² (£/ha)			
Trafficked		Non-trafficked (CTF)	
Spring tine	16		
Power harrow	30		
Harrow	8	Harrow	7
Drill	8.6	Drill	7.5
Roll	8.4	Roll	7.5
Total energy	71	Total energy	22
Total cost	£30	Total cost	£9

¹Chamen, 1992; ²Nix, 2013

CTF

More environmentally friendly



Randomly trafficked

CTF in same field at same time

4 x increase in infiltration with CTF

- reduced risk of run-off and erosion
- less direct and diffuse pollution
- more plant available water
- greater water use efficiency

CTF

Less risk of N₂O emissions



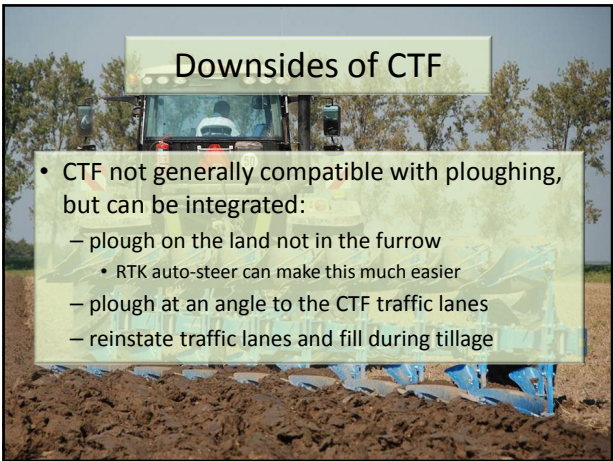
- Emissions approximately halved by CTF
 - Mosquera et al., 2005
 - Ruser et al., 2006

CTF

CHALLENGES POSED BY CTF

Downsides of CTF

- Needs careful planning and attention to detail
 - growing crops with low tillage inputs
 - machine dimensions critical
- Some inflexibility:
 - all working widths must be the same
 - track gauges must be matched
 - must rely on satellite guidance and auto-steer
 - you can't drive just anywhere on your fields!



Downsides of CTF

- CTF not generally compatible with ploughing, but can be integrated:
 - plough on the land not in the furrow
 - RTK auto-steer can make this much easier
 - plough at an angle to the CTF traffic lanes
 - reinstate traffic lanes and fill during tillage



CAP and Crop Diversification

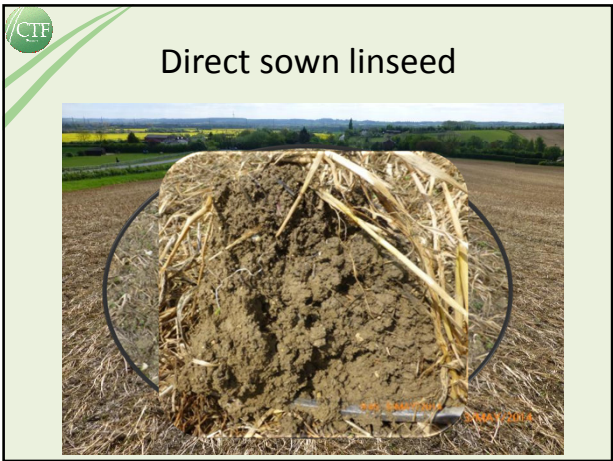
OPPORTUNITIES WITH CTF



Spring cropping – diversification



Direct sown spring barley on Hanslope clay



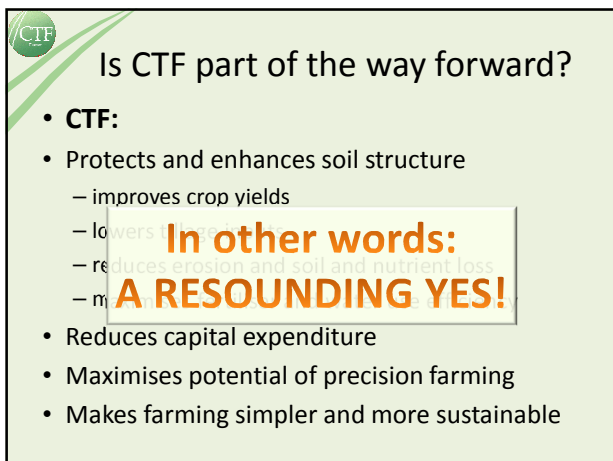








- strip till to warm soil ahead of planting
- spray off cover crop post planting
 - helps reduce weed competition



Is CTF part of the way forward?

- **CTF:**
- Protects and enhances soil structure
 - improves crop yields
 - lowers tillage costs
 - reduces erosion and soil and nutrient loss
 - maintains soil health
- Reduces capital expenditure
- Maximises potential of precision farming
- Makes farming simpler and more sustainable

**In other words:
A RESOUNDING YES!**