

# PRECISION FARMING & LOAM FARM MODEL

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THE  
ANDERSONS  
CENTRE

# WHAT IS PRECISION FARMING?

- **Early Definition:**
  - *“use every acre (or animal) within its capability and treat it according to its needs”* – adapted from Hugh Hammond Bennett
- **Site-specific technology-based management systems capable of using a vast array of data sources including:**
  - soils, crops, nutrients, moisture, yield maps, equipment (sensors etc.).
  - animals (e.g. temperature, fertility), outputs (e.g. quality).
  - not one specific technology but a range of tools that farmers can use.
  - focuses on improving the efficiency and sustainability of farm operations.
- **Closely linked with automation, ‘Big Data’ and GPS.**
- **Manage variability by using data to optimise inputs and outputs to maximise profitability.**
- **Concept around for many years, but now better tools and datasets.**

# APPLICATION IN FARMING?

- **Specific technologies have made strong inroads**
  - 23% of English farm businesses using precision farming techniques; increased to >50% of cereal and general cropping farms
  - supplied as standard in large tractors & combines (>300Hp)
  - requires integration with farm management software

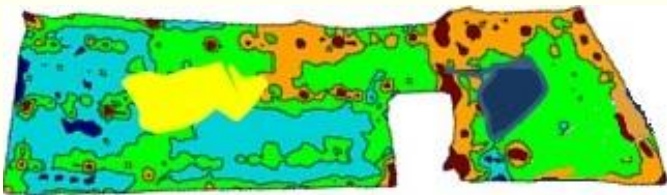
Technology	2012	2016	2019	Typical Approx. Cost
GPS (incl. auto-steering)	22%	~ 55%	~70%	£6K-£12K
Soil mapping	20%	~25%	29%	£12 - £25 per ha
Variable rate application	16%	~20%	25%	built into equipment
Yield mapping	11%	15-20%	~17%	Typically £3 – £7 per ha
Telematics	2%	~5%	~10%	Often free initially (1-3 yrs), then annual cost

# PRECISION AGRICULTURE: LOAM FARM

- 600 Ha of combinable crops (W. Wheat (300 Ha), W. OSR, S. Beans)

<i>Wheat Enterprise £/Ha</i>	2019	P. Ag	% Ch.
<b>Wheat Yield (t/Ha)</b>	9.96	10.14	+1.8%
<b>Output</b>	1,482	1,510	
<b>Variable Costs</b>	512	495	-3.2%
<b>Gross Margin</b>	971	1,015	+4.5%
<b>Overheads*</b>	442	433	-2.1%
<b>Rent and Finance*</b>	239	239	0%
<b>Drawings*</b>	79	79	0%
<b>Production Margin</b>	211	264	+24.8%

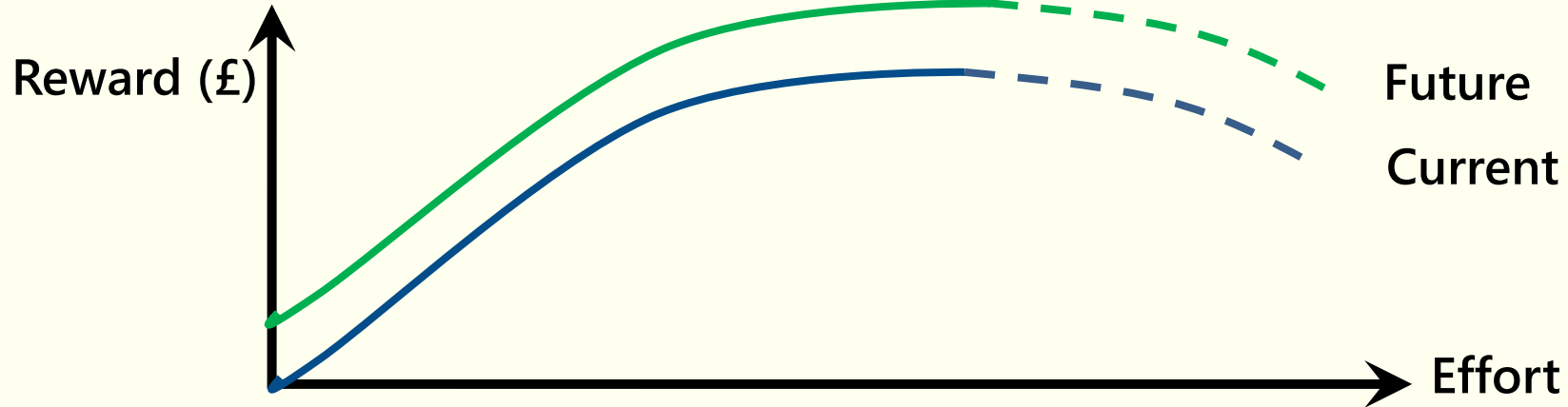
- Prev. limited precision ag. usage
- Some machinery is precision ag. capable.
- Gains dependent on weather conditions
- **Can under-performing areas be improved?**
- **If not, should they be cropped?**
- **Could these be used for other enterprises (e.g. public goods)?**



Source: Andersons

\* Based on whole farm £/Ha average, applied to wheat enterprise

# IS IT WORTHWHILE?



- **To a certain point, yes, thereafter benefit is questionable**
  - the larger the scale, the more likely a farm will benefit
  - remember to manage time efficiently
  - good farming fundamentals (e.g. manage soil PH) still key
- **Key question - Does this technology inform my decision-making, or is it a distraction?**
- **Over time, evolving technology should bring more reward for same effort**

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