Northampton Monitor Farm meeting report

Machinery costs

Speakers: George Badger and Jock Willmott (Strutt & Parker); Harry Henderson (AHDB)

Date: 27 November 2018

Venue: Cold Brayfield Village Hall

For more information, visit: cereals.ahdb.org.uk/northampton

Meeting summary

- There is a huge range in machinery costs across the Monitor Farm network
- Machinery costs can be lower where machinery is bought second-hand and kept for longer than average because it lowers the cost of depreciation; however the downside is that repair costs can be higher
- Reduced use of the plough can lead to lower fuel costs
- Management benchmarks can provide useful guidelines for helping to reduce machinery costs, e.g. cropped hectares per annual labour unit should be in the region 300 – 400
- Combine utilisation needs to be balanced with drying capacity – it might be cheaper to increase combine capacity than invest in drying facilities

Northampton Monitor Farm Update

Rick Davies

Harvest overview

- No rain in June; hardly any in July; a little in August, hardly any in September
- Harvesting started on 13 July, completed by 8 August
- No grain had to be dried

Yields

	2018	6-year average
Wheat 1	9.09	10.10
Wheat 2	9.17	9.71
OSR	3.42	3.64
Spring barley	6.65	7.58

Cultivations and establishment

- Claydon direct drill underpins system
- ***First wheat*** – cultivate (Dyna-drive) / direct drill (Claydon) / rake / roll

- ***Second wheat*** – direct drill/ rake / roll
- ***Spring barley*** – cultivate (autumn); then direct drill / rake / roll
- ***OSR –*** direct drill / roll
- Flat-lifting used where needed after OSR and second wheat
- Ploughing used as reset button if black-grass is beyond rogueing
- Drilling 5–15 October
- Ploughed end of October

Black-grass control
- Removing plants that are resistant to Atlantis
- Cost of rogueing £100/ha
- Aim is to get it down to £40/ha

Analysis of machinery costs

- Huge range in machinery costs across the monitor farm network
- Drilling cost across Monitor Farms is £16.63/ha
- Mixture of own, contracting, collaboration

Depreciation
- Based on when bought, how long it is likely to be kept and likely value at point of sale
- e.g. JD7530 £40,000 to £25,000; average £4,000 per year
- This is the largest component in machinery cost
- Northampton Monitor Farm is in the lowest 25% of costs for labour and machinery
- Depreciation is generally low since machinery is bought second hand and kept for 9–10 years
- Repairs are a bit above average but this is to be expected with older kit

Tractor and drill costs in Monitor Farm group

Direct drill	£19.36
Strip till	£20.26
Flail drill	£28.00

Fuel
- Litres per hour are converted to litres per hectare by multiplying by the work rate
- This is fairly accurate
- The Monitor Farm's two main tractors have similar cost per hour
- Rate of operation includes filling up and turning = 2.8 ha/hour
- Drilling cost £27.4/ha
- Combining cost £44/ha excluding labour (£50/ha with labour)
- Fuel costs are in the lowest 25% since there is no/little ploughing
- One tractor is hired in

Management benchmarks

Cropped hectares per annual labour unit
- Rick's is close to average
- You should aim for 300-400 per labour unit

Litres of diesel per hectare
(split out from grain drying)
- Average 100 l/ha
- Rick is in the lowest 25%
- The high range in the Monitor Farm group is due to a lot of road usage but there are a few anomalies

Horsepower per cropped hectare
- Including all tractors, combines, sprayers and telehandlers
- Average 2 HP/ha
- Rick 2 HP
- This is not a good proxy for cost – a lot of higher ones were often using cheap horsepower (old machines)

Machinery utilisation – how well utilised machines are
- Depends how many hectares you have to cover
- Average for spraying is above 20 ha/m sprayer boom
- Rick is in the red zone – this is down to attention to detail
- Average for drilling is 80 ha/m of drill
- Rick has high drill capacity since using two drills
- Combining – 48 Ha/m cutter bar – this is close to average (50 Ha/m)
- Some farms are cutting at 100 ha/m
- But this needs to be balanced with drying capacity
- It might be cheaper to increase combine capacity than invest in drying facilities

Operations analysis

Drilling
- Cost - £27.40/ha
- Excludes loading the drill but this would only be an extra £3/£4
- This is about half the cost of a contractor

Ploughing
- Cost £46/Ha (average £57/ha)
- The saving comes from using second hand tractors

Combining

- Cost £50/ha (average £66/ha)
- Low costs are due to:
    - Second hand combine
    - A less popular model
- The 7.5m header is just right for the area to be cut here

Points arising from discussion

- A lot of the machinery was purchased at a similar time – around five years ago
- Rick needs to be careful to have a structured replacement schedule so that it doesn't all need replacing at the same time, which could create cashflow problems
- Grain carting turned out to be more expensive than Rick thought – £35/ha, although this compares with the monitor farm group average of £36/ha
- This calculation is based on the same amount of time as combine drum hours

Establishment cost

Per crop

- Spring barley cheaper to establish than OSR despite single pass for OSR
- Very low cost for wheat compared with the Monitor Farm group because establishment involves just two passes

Typical costs

	Cost (£/ha)
Plough	109
Non-inversion till	87
Direct drill	60

- Based on all the Monitor Farm reports and a few more farms across the country, there is a £49/ha cost difference between ploughing and direct drilling
- This could be worth 0.3 t/ha of wheat

Northampton Monitor Farm

The drill used at the Monitor Farm keeps costs down for establishing first wheat

	Cost (£/ha)
1st wheat plough	23.66
1st wheat direct drill	21.62
2nd wheat direct drill	20.80

- 5-year average yields are the same for ploughing and direct drilling
- There is a huge range in costs across direct drill farms
- It is all about matching the capital value of the drill to its utilisation

Other points – from discussion

Resilience

- This is the ability to have all these things (establishment methods etc.) in your toolbox
- Rotations – growing OSR in the system is adding risk at present – but where then do you go after first wheat? Not spring barley, but what about 50% first wheat and 50% fallow? Too extreme?
- Increase resilience by doing something to build soil structure and fertility
- What about looking at winter barley or oats as alternatives to OSR?
- Northampton Monitor Farm grows very good second and third wheats. These could be rotated with spring barley but this would put a lot of pressure on the combine
- Consider joint ventures?

Find out more – Links to AHDB information sheets or research

Machinery cost calculator
Farmbench

For more information or to find out more about Farmbench, AHDB's benchmarking tool, contact: Judith Stafford

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