

ANGUS MONITOR FARM Reducing the Cost of Production – Plant Protection

THE CHALLENGE

- Reduced margins in cereal production and high price volatility in these markets has increased pressure on growers to reduce the cost of production.
- Identified by the business group benchmarking, the Mill of Inverarity has the potential to reduce the cost of plant protection products used in the business.
- The retirement of the Mill of Inverarity's agronomist provided an opportunity to trial different agronomists from different companies.
- The Stodarts believe that their wheat yields can be improved, especially in wheat crops following potatoes.
- Wheat is a more input intensive and therefore expensive crop to grow, with higher costs than the spring barley, making this an ideal crop to trial agronomists on.

WHAT WE DID ON FARM

Field Details

- In 2019, there were 4 fields of wheat grown. Two following oilseed rape and two following potatoes.
- The Den field (13.09ha) and Cocked Hat field (12.98ha), both following potatoes, were given to an independent agronomist to look after.
- The Bog field (11.78ha) and the Garden field (9.14ha) were given to an agronomist employed by a trade distribution company to look after.
- One field of wheat (Garden Field) was entered into the Yield Enhancement Network, and was therefore excluded from this trial.

Establishment

- The field was ploughed after the harvest of 2017, then the wheat was sown using a contractor with a one pass drill. Following the sowing, the field was rolled.
- Due to low pH the Den, Bog and Garden fields had calcium lime applied by GPS after sowing at an average rate of 3.3t/ha. The most recent pH maps are detailed below.

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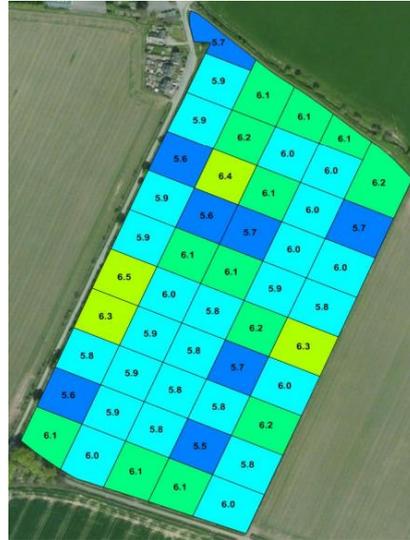
Soil pH

Independent Agronomist

Den

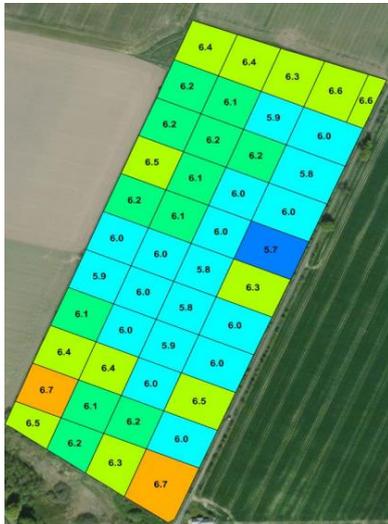


Cocked Hat



Trade Agronomist

Bog



Garden



Spray Costs for 2017/18

A breakdown of the spray costs from the previous season (2017/18) are detailed in table 1. These are compared against costs from the Monitor Farm Business group average, the Farm Management

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Handbook and the Agricultural Budgeting and Costing Book.

Table 1 - Winter Wheat spray costs for the 2017/18 season.

	Mill of Inverarity 2017/18	Business Group Average 2017/2018	Farm Management Handbook 2017/18	Agricultural Budgeting and Costing Book (England)
Herbicides (£/ha)	44.87	33.54		
Fungicides (£/ha)	128.04	135.04		
Insecticides (£/ha)	0.00	1.79		
Molluscicides (£/ha)	0.00	11.11		
Plant growth regulators (£/ha)	27.41	15.17		
Other crop protection (£/ha)	12.75	8.13		
Total crop protection (£/ha)	213.07	192.42	133	240

Based on the figures in table 1, the Mill of Inverarity is significantly higher than the gross margin data in the Farm Management Handbook. However, the spend is much lower than the English comparison and is likely due to increased herbicide costs south of the border due to black grass control. Nevertheless, there remains opportunity for the Mill of Inverarity to reduce their spray costs when compared against the business group's farms which are in the local area.

Fertiliser costs for trial crops

The fertiliser was not included in the trial as there was nutrient imbalances to correct in some fields and previous cropping was different. The average applications, excluding the YEN field are as follows.

Table 2 - Average fertiliser rates and costs for winter wheat.

Product	Average Rate (kg/ha)	Average Cost (£/ha)
18.46.00	127	50.80
0.12.42	250	70.00
Urea 38%N +19%SO3	189	51.03
Urea Granular 46%	198	50.68
	Total	222.51

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The average cost of all inorganic fertiliser application to the wheat, excluding the YEN field cost £322.51/ha. There was also additional Calcifert applied to the Den field to increase the pH. When compared to the Farm Management Handbook (£185/ha), the fertiliser spend is also high and may present an opportunity for reduction in the future.

RESULTS

2018/19 Agronomy Costs by Category

The agronomy costs for the 2018/19 season are detailed below per category.

Table 3 - Chemical costs for winter wheat.

	Trade Agronomist (£/ha)	Independent Agronomist (£/ha)	Difference (£/ha)
Herbicide	21.26	21.38	+0.12
Fungicide	172.34	130.73	-41.61
Insecticide	3.36	0	-3.36
Growth Regulator	19.70	12.50	-7.20
Trace Elements	18.63	1.80	-16.83
Other	0	2.78	+2.78
Total	235.29	169.19	-66.10

There was a significant difference in the costs of the chemicals used between the two agronomists. All chemicals were supplied by the trade agronomists company, and therefore the cost difference is based on products used and the rates applied, not the price of the chemical. The largest differences were in the cost of fungicide (£41.61) and trace elements (£16.83). However, there was also a difference in the number of applications and the agronomy fee, detailed below. The group identified that additional savings could be made through purchasing through a buying group.

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Table 4 - Application and agronomy costs for winter wheat

	Trade Agronomist (£/ha)	Independent Agronomist (£/ha)	Difference (£/ha)
Application Cost	(6x12.50) 75	(4x12.50) 50	-25.00
Agronomy Fee	0	12.50	+12.50
Grand Total	310.29	231.69	-78.60

Once the agronomy and application costs were included in the calculations, the difference between the two agronomists was £78.60/ha. If this was applied to all the wheat crops in 2019 there would be a saving of £3,693.41, based on an area of 46.99ha. However, this is still higher than the Farm Management Handbook figure of £133/ha. This saving is a significant reduction on the previous season but to reduce costs to the level of spending advised by SAC, chemical costs will need to be reduced and an autumn herbicide should be used to replace the more costly spring application.

2018/19 Agronomy Costs by Timing

The timing of applications was also different for the two crops. The independent agronomist kept to the 4 week intervals more closely than the trade, ensuring that the level of protection offered by fungicides was not exceeded. Table 5 details the timing and cost of each application.

Table 5 - Chemical costs for the winter wheat, split by timing

	Trade Agronomist		Independent Agronomist	
	Date of application	Cost of application (£/ha)	Date of application	Cost of application (£/ha)
Pre Emergence	15/09/2018	21.25		
T0	23/03/2019	43.76	10/04/2019	24.16
T1	05/05/2019	63.25	05/05/2019	50.81
T2	04/06/2019	57.89	04/06/2019	56.06
T3	06/07/2019	34.82	23/06/2019	38.16
Pre harvest	21/07/2019	14.05		

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Due to a delay in the trial starting, the independent agronomist was not given the field until part way through the winter. This resulted in no pre or post emergence herbicide being applied in the autumn and as a result a more expensive herbicide was applied in the spring. Additionally, the insecticide applied in July by the trade agronomist was not applied by the independent. The previous crop in was also different between fields which may have influenced the wheats performance, however for practicality, each agronomist could not be given one of each fields as this would have created too many spray recommendations.

WHAT HAS CHANGED ON FARM

In conclusion, there are significant differences in the price of crop protection as highlighted in the above results. Furthermore, the timings and chemicals used vary between recommendations. In the future, the Monitor Farm could look to reduce their chemical spend further by using a buying group, which is estimated to save 10% on their current spend. This trial could also be repeated in another season or on another crop to find out if these results are replicable. Although, when compared to the previous season costs, both the trade and independent agronomist have lower costs.

Key Points

- Benchmarking is key to identify points within a business which can be improved.
- Keeping a close eye on costs can lead to increased profitability by reducing the cost of production.
- Asking an agronomist to justify their chemical spend can help to keep spending down while ensuring the crop is protected.

FACILITATOR CONTACT DETAILS

David Ross
SAC Consulting
Arduthie Business Centre,
Kirkton Road,
Stonehaven,
AB39 2NQ
Tel: 01569 762305
Email: fbsstonehaven@sac.co.uk

Zach Reilly
SAC Consulting
77 North Street,
Forfar,
DD8 3BL
Tel: 01307 464033
Email: fbsforfar@sac.co.uk

