Crops Environment & Land Use Programme

eProfit Monitor Analysis

Tillage Farms 2016

teagasc
Agriculture and Food Development Authority

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Contents

Foreword

The Teagasc eProfit Monitor (ePM) is an online financial analysis tool available to all Teagasc clients. Tillage farmers work with their Teagasc Tillage Adviser to gather the data required. Once the data is entered, a range of reports for each enterprise (tillage crops, drystock, dairy) or the overall farm can be produced. If the farmer has carried out an ePM analysis on a yearly basis, multiple year reports tracking performance over a number of years can be generated. In addition, if the farmer is a member of a discussion group, a group report can be produced allowing each individual farmer to benchmark his performance with other group members. This purpose of this publication is to provide a range of benchmarks for both individual farmers and farmer groups. The analyses in this publication are based on data provided by Teagasc Tillage farmer clients relating to the 2016 production year and entered onto the ePM system prior to 9th September 2017.

A range of tables are provided with a summary of the key figures included in the main tables and a more detailed breakdown of costs contained in the later tables. Where 'Top 1/3' results are presented, the dataset was initially ranked on the basis of Gross Margin per hectare. The Gross Margin referred to in this publication refers to the tillage enterprise only and not the whole farm. Other enterprises on the farm may generate some additional profit for the farm business. In addition Basic Farm Payments, **other than** Direct payments (Protein payment), are excluded from this analysis.

Finally, I would like to acknowledge the work of all Teagasc Tillage Advisers in promoting, completing and using ePM and to tillage farmers for providing the data required for analysis. Without their support, this publication would not be possible. I would also like to acknowledge the work of Shay Phelan and Kevin Connolly in extracting the data necessary for this publication.

Michael Hennessy

Michael Hennessy,
Head of Crops Knowledge Transfer, Teagasc

Overall performance

The ePM is filled out by farmers in conjunction with their advisor. All of the farmers are self-selecting with the majority actively participating in Discussion Groups and could be classified as progressive farmers. 339 growers successfully completed the e-PM for the production year 2016. All of the participants were allocated to broad farming type categories as follows:

Table 1: Categories of farms and farmed area

Tillage - Production Type	No. of Farmers	Total Land area in group (hectares)
1. Winter Cereals	20	1242
2. Spring Cereals	34	1058
3. W. + S. Cereals	201	17142
4. Cereals + Beet	24	2081
5. Cereals + Potatoes	14	807
6. Cereals + Other	44	4009
7. Crops + Contractor	2	104
Total	**339**	**26442**

The advisor categorises the farmer depending on the predominance of the crop mix on the farm. For a farmer, to be categorised as a Cereals and Beet farmer, the farmer should have at focus on beet production year on year. Similarly a farmer categorised as Winter Cereal farmer will have a focus on winter cereals year on year with the majority of the crops are sown are winter cereals.

The Winter and Spring category of farmer were by far the largest group with 201 farmers. Comparisons of groups with less than 10 farmers should be treated with caution.

The overall performances of these groups are as follows:

Table 2: Returns from farmer categories

	Average (per ha)		Average (€/ha)						
Tillage - Production Type	**Total Tillage area**	**Leased Land area**	**Gross Output**	**Variable Costs**	**Machinery Costs***	**Gross Margin**	**Land Lease costs****	**Fixed Costs/ha**	**Net Margin (inc DP)**
1. Winter Cereals	1242	16	1458	560	409	489	35	208	246
2. Spring Cereals	1058	6	1112	526	370	216	112	207	-102
3. W. + S. Cereals	17142	32	1308	574	336	399	101	195	103
4. Cereals + Beet	2081	29	1468	589	381	498	147	177	174
5. Cereals + Potatoes	807	21	3122	1255	1131	736	228	339	170
6. Cereals + Other	4009	31	1334	529	318	487	106	217	164
7. Crops + Contractor	104	34	1334	517	261	556	203	318	34
Average	**26442**	**28**	**1387**	**591**	**377**	**419**	**108**	**206**	**106**

* *Average Machinery costs include contractor, machinery running, machinery leases and finance and machinery depreciation, ** Average cost of Land Lease (includes conacre and short & long term Leased Land) incurred divided over owned and leased land*

- The ePM average Net Margin for all farmers analysed is €106/ha

  This compared to the Teagasc NFS figure for Net Margin for the cereal enterprise on the average performing specialist tillage farm was -€98/ha in 2016 (Dillon et al, 2017[1]). The equivalent Teagasc, NFS figure for the top 1/3 of farmers was €293 per hectare.

- Farmers categorised as predominately winter cereal growers were the most profitable (€246/ha) by €140/ha compared to the average. This group had the lowest average land leased costs

- Spring Cereal growers had the lowest returns (-€102/ha) reflecting the reduced output however the group still retain similar machinery, fixed and land lease costs

1 Teagasc National farm Survey Results 2016, https://www.teagasc.ie/media/website/publications/2017/NFS-2016-Final-Report.pdf

- Cereal farmers with either beet or potatoes were at least €64/ha more profitable than average while they paid more for rented land and incurred higher machinery costs

- Cereal farmers expect fixed costs to decrease as farm size increases. Analysis of farms in the ePM categorising the farms by size shows a slightly positive trend to higher profitability by larger growers. The increase in profitability by these growers is in part driven by lower fixed costs* Further analysis of the machinery costs are outlined later in the document.

Farm Size (ha)	Fixed Costs €/ha*	Net Margin €/ha
0-100	213	147
101-200	151	179
201+	178	182

*Fixed costs exclude Land Lease and Machinery

Rented land

Of the 339 farmers 157 had (46%) had leased land (conacre or leased land).

Table 3: Farmer categories – utilisation of rented land

Tillage - Production Type	No. of Farmers	No. Growers with leased land	Farmers with leased land (% total)	Average area of Leased land (ha)	Area of leased land (% of total)	Average cost of Leased land /ha*	Average Gross Margin /ha	Average Net Margin excluding land lease /ha**
1. Winter Cereals	20	3	15%	16	25%	370	489	301
2. Spring Cereals	34	13	38%	6	20%	390	216	99
3. W. + S. Cereals	201	94	47%	32	37%	372	399	254
4. Cereals + Beet	24	14	58%	29	33%	434	498	341
5. Cereals + Potatoes	14	10	71%	21	37%	775	736	424
6. Cereals + Other	44	21	48%	31	34%	380	487	301
7. Crops + Contractor	2	2	100%	34	66%	306	556	372
Average	**339**	**157**		**28**				

** Leased land only (owned land not included), only from farms with Land Lease,*
*** Net Margin plus land rental*

- The Winter Cereal group had the lowest number of farmers with leased land at 15% but it represented 25% of the total area. Where as all other farmer groups farmed over 35% of leased land. The Cereals + Beet and the Cereals + Potatoes group had over 58% of leased land.
- Despite having the lowest overall profitability the Spring Cereal group of farmers paid more on average for leased land (€18/ha) than W+S Cereals
- Over 70% of farmers with potatoes had leased land, accounting for 37% of the total land farmed, but paid more than 200% more for leased land than the average cereal grower (group 1,2,3)

- Farmers classified as spring cereal are the group with the lowest profitability per hectare (€99/ha) when land lease is excluded, which is over 2.6 times lower than the other cereal only based groups (group 1,3)
- With the exception of Group 2 and 5, there was a positive differential between Gross Margin and Land Lease with the surplus contributing to the Fixed Costs on these farms.
- In Group 2 and Group 5 (Spring Cereals and Cereals and Potatoes) the average Gross Margin was less than the costs of leased land. Growers should carefully assess their margins before committing to Leased Land to ensure it is adding to the profitability of the farm.

Comparison of eProfit Monitor to the National Farm Survey (NFS) data

Teagasc produces an analysis of tillage costs on an annual basis using both the eProfit Monitor (ePM) and the National Farm Survey (NFS). These results tend to vary somewhat, which can be the source of some confusion. The ePM typically reports lower costs of production and higher profits. The National Farm Survey (NFS) involves the collection of data on an annual basis from a random, nationally representative sample of approximately 900 farms (of which about 75 are classed as specialist tillage farmers). The NFS is a member of the pan-EU Farm Accountancy Data Network (FADN) which uses a harmonised system to collect national statistics on farming across Europe. Data validation is by the Teagasc data recorder with reference to financial documents.

The Teagasc eProfit Monitor (ePM) is a financial benchmarking tool that is available to all Teagasc clients via the Teagasc advisor or can be accessed online. Data (both technical and financial) are provided by the farmer through the completion of an Input Sheet and can be entered directly by the farmer or (as is more likely) by his/her Teagasc Adviser. Farmers volunteer are encouraged by the adviser to complete the benchmarking analysis and farmers are encouraged to repeat the analysis over a number of years to establish trends on the farm. The results generated are not nationally representative as the farms included in the annual dataset are self-selecting and do not proportionally represent the entire farming population.

While there are some differences in the cost headings used and the calculation of depreciation, the results generated for an individual cereal farmer will be similar for both analyses. This suggests that the methodology employed by both systems is similar and that methodological differences do not account for the differing results from the two systems. Given the relatively small differences in the methodologies of the two systems, it is most likely that the difference in the results is due to sample issues.

Analysis of crops

The following section compares the main tillage crops across all farm categories. Comparisons are made between the **Average** of the group and the **Top 1/3** of growers in the group.

For the purposes of comparison the following is included in each category.

Table 4: Explanation of terms

Term	Included
Gross output	Sales of Grain and Straw (includes all moisture and related bonuses)
Material Costs	Seed, Fertiliser, Agrochemicals, etc
Machinery Costs	Machinery Costs*(Repairs, diesel, depreciation, leases, HP interest) + contractor charges
Other Variable Costs	Levies and Transport
Gross Margin	Gross Output minus (Material Costs + Machinery Costs +other Variable Costs)
Fixed Costs	Land Lease, light, heat, telephone, professional fees, land maintenance, etc.
Net Margin	Gross Margin minus Fixed Costs
Net Margin (inc DP)	Net Margin including Direct Payments (Protein Payments not Basic Payment Scheme)

* *Machinery Costs are treated as a variable cost (Strictly speaking these costs are Fixed Costs) to help farmers compare costs to the Teagasc Costs and Returns which is published each year*

Fixed costs (including Machinery costs but not Contractor Costs) are automatically calculated by the ePM software based on the relative proportion of gross output for each crop compared to the total output for all crops in the tillage enterprise i.e. winter wheat has a higher output than spring barley therefore it will attract more fixed costs than spring barley

The information from Table 5 onwards outlines the Output and Costs associated with the major crops grown. The tables outline the major cost and key figures for each crop. Comparisons are possible between the average of the group and the top one third of farmers in the group.

Farmers are ranked based on the Gross Margin of each farmer compared to the Gross Margin for all other farmers.

Figures may not match exactly due to rounding.

Winter Wheat

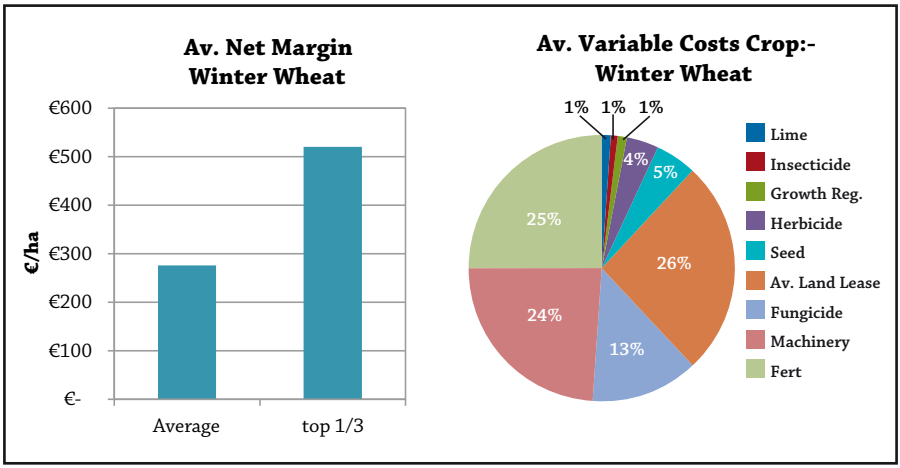
Table 5: Winter Wheat Returns

	Average	top 1/3	Top v Average
Physical			
Total No. hectares	4295		
No. Of Farms	166	55	
Tillage Adj. ha	26	33	+ 7
Yield t/ha	10.3	10.9	+ 0.59
Financial			
Crop Sales €/tonne	€ 148	€ 154	+ 6
Gross Output /ha	**€ 1,698**	**€ 1,897**	**+ 199**
of which is straw/ha	*€ 163*	*€ 212*	*+ 49*
Material Costs/ha	€ 699	€ 665	- 34
Total Machinery Costs/ha	€ 349	€ 326	- 23
of which are contractor/ha	*€ 120*	*€ 40*	*- 80*
Other Variable Costs/ha	€ 19	€ 8	- 11
Gross Margin / ha	**€ 630**	**€ 898**	**+ 268**
Total F. Costs / ha	€ 367	€ 386	+ 19
Net Margin/ha	**€ 263**	**€ 512**	**+ 249**
Key Figures			
Total Costs €/ton*	€ 139	€ 127	- 12
Av. Land Lease Costs/ha	€ 119	€ 117	- 2

** Cost per ton excluding straw*

- Average yields are 0.6t/ha (6%) above the CSO national average, with the top 1/3 of farmers producing 1.2t/ha (12%) above the CSO national average
- The top farms grew more area and produced 0.6t/ha more yield than the ePM average which delivered a higher Gross Output of €199/ ha or 11.7% higher than the average

- Despite achieving a higher yield the top group spent €68/ha less on variable costs compared to the average
- Fixed costs are 5% higher on the top group compared to average
- The Net Margin of the top 1/3 was €249/ha (94%) higher than the average group



Spring Wheat

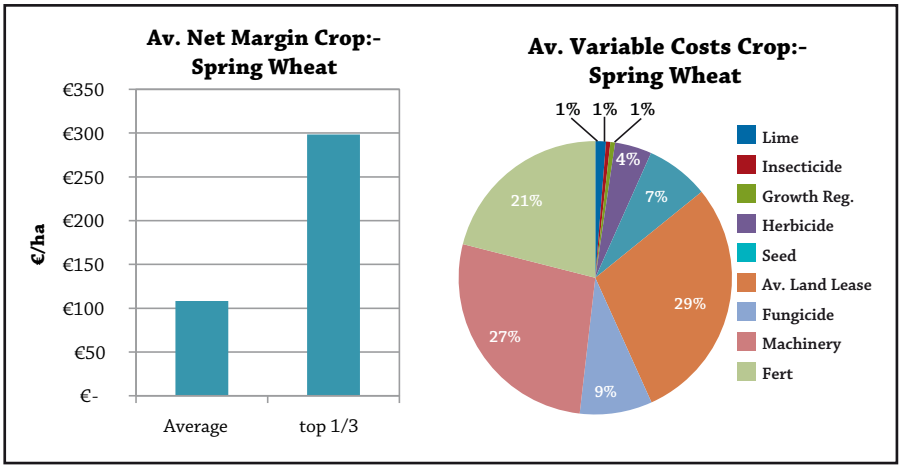
Table 6: Spring Wheat Returns

	Average	top 1/3	Top v Average
Physical			
Total No. hectares	527		
No. Of Farms	40	13	
Tillage Adj. ha	13	15	+ 1
Yield t/ha	8.2	8.7	+ 0.43
Financial			
Crop Sales €/tonne	€ 146	€ 155	+ 9
Gross Output /ha	**€ 1,350**	**€ 1,485**	**+ 134**
of which is straw/ha	*€ 144*	*€ 134*	*- 9*
Material Costs/ha	€ 528	€ 502	- 26
Total Machinery Costs/ha	€ 335	€ 274	- 61
of which are contractor/ha	*€ 165*	*€ 20*	*- 145*
Other Variable Costs/ha	€ 20	€ 12	- 8
Gross Margin / ha	**€ 468**	**€ 697**	**+ 229**
Total F. Costs / ha	€ 359	€ 398	+ 39
Net Margin/ha	**€ 108**	**€ 298**	**+ 190**
Key Figures			
Total Costs €/ton*	€ 151	€ 137	- 14
Av. Land Lease Costs/ha	€ 192	€ 166	- 26

** Cost per ton excluding straw*

- Average yields are 0.2t/ha (2.5%) above the CSO national average, with the top 1/3 of farmers producing 0.7t/ha (9%) above the CSO national average
- The top group produced 0.43t/ha (5%) more yield and €134/ha increased gross output than the average on the ePM

- The top 1/3 group incurred lower material cost of €26/ha compared to the averagewhich contributed to a higher Gross Margin of €229/ha
- Fixed costs were higher in the top group but the net margin of the group was €190/ha (175%) more than the average group



Spring Feed Barley

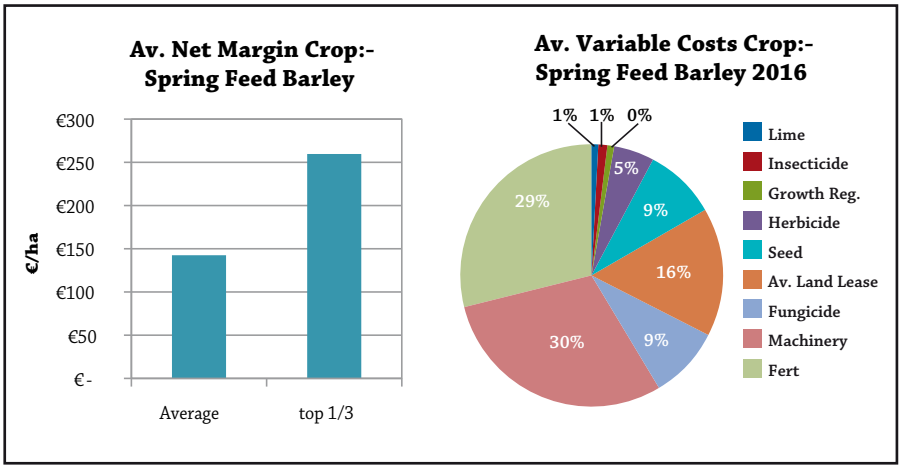
Table 7: Spring Barley Returns

	Average	top 1/3	Top v Average
Physical			
Total No. hectares	6684		
No. Of Farms	240	80	
Tillage Adj. ha	28	35	+ 7
Yield t/ha	7.5	7.7	+ 0.26
Financial			
Crop Sales €/tonne	€ 141	€ 146	+ 5
Gross Output /ha	**€ 1,236**	**€ 1,332**	**+ 95**
of which is straw/ha	*€ 182*	*€ 202*	*+ 21*
Material Costs/ha	€ 489	€ 471	- 18
Total Machinery Costs/ha	€ 279	€ 250	- 29
of which are contractor/ha	*€ 80*	*€ 25*	*- 54*
Other Variable Costs/ha	€ 15	€ 12	- 3
Gross Margin / ha	**€ 453**	**€ 599**	**+ 145**
Total F. Costs / ha	€ 311	€ 339	+ 28
Net Margin/ha	**€ 143**	**€ 260**	**+ 117**
Key Figures			
Total Costs €/ton*	€ 146	€ 139	- 8
Av. Land Lease Costs/ha	€ 151	€ 173	+ 22

** Cost per ton excluding straw*

- Average yields are 0.2t/ha (3%) above the CSO national average, with the top 1/3 of farmers producing 0.5t/ha (7%) above the CSO national average
- The top farms grew more area and produced 0.26t/ha more yield and had a higher Gross Output of €95 per hectare or 7% higher than the ePM average

- Despite achieving a higher yield the top group spent €18/ha less of material costs and €29/ha less on machinery costs compared to the average
- Fixed costs are 10.5% higher on the top group compared to average (reflecting higher output)
- Net Margins in the top group are 81% higher than the average reflecting the higher output and lower costs



Spring Malting Barley

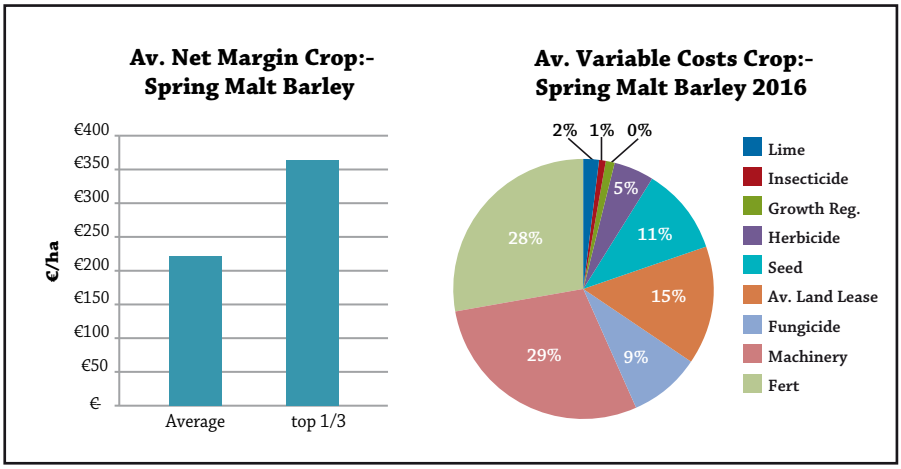
Table 8: Spring Malting barley Returns

	Average	top 1/3	Top v Average
Physical			
Total No. hectares	2531		
No. Of Farms	77	26	
Tillage Adj. ha	33	45	+ 12
Yield t/ha	7.8	8.2	+ 0.37
Financial			
Crop Sales €/tonne	€ 155	€ 161	+ 6
Gross Output /ha	**€ 1,388**	**€ 1,492**	**+ 104**
of which is straw/ha	*€ 171*	*€ 174*	+ 2
Material Costs/ha	€ 528	€ 518	- 10
Total Machinery Costs/ha	€ 283	€ 238	- 45
of which are contractor/ha	*€ 102*	*€ 22*	- 79
Other Variable Costs/ha	€ 18	€ 13	- 5
Gross Margin / ha	**€ 559**	**€ 723**	**+ 164**
Total F. Costs / ha	€ 336	€ 358	+ 22
Net Margin/ha	**€ 223**	**€ 365**	**+ 142**
Key Figures			
Total Costs €/ton*	€ 149	€ 138	- 11
Av. Lan Lease Costs/ha	€ 146	€ 189	+ 43

** Cost per ton excluding straw*

- Average yields are 0.5t/ha (6%) above the CSO national average, with the top 1/3 of farmers producing 0.9/ha (12%) above the CSO national average
- The top farms grew more area and produced 0.37t/ha (4%) more yield than the ePM average

- The Gross Output of the top group was €104/ha higher than average, resulting in a Gross Margin of €164/ha more than the average
- Fixed costs were 6% lower in the top group compared to average
- Net Margins were €142 (63%) higher in the top 1/3 group compared to the average



Winter Barley

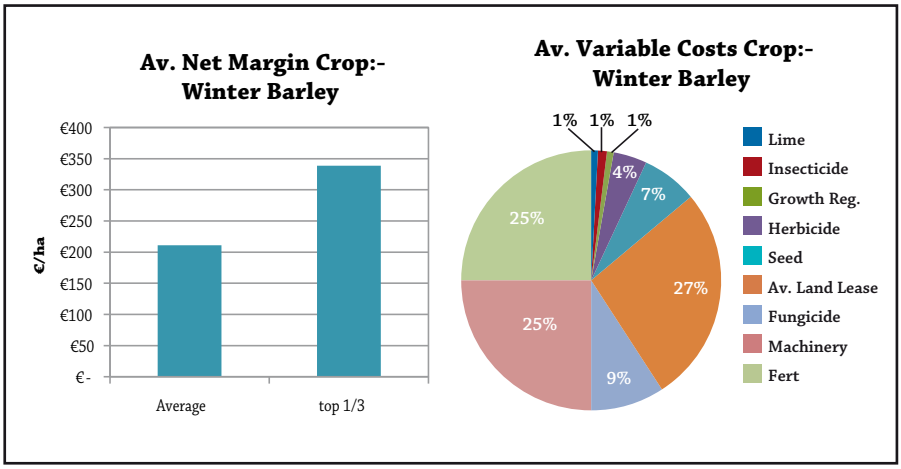
Table 9: Winter Barley Returns

	Average	top 1/3	Top v Average
Physical			
Total No. hectares	6379		
No. Of Farms	267	89	
Tillage Adj. ha	24	31	+ 7
Yield t/ha	8.8	9.2	+ 0.35
Financial			
Crop Sales €/tonne	€ 142	€ 146	+ 4
Gross Output /ha	**€ 1,493**	**€ 1,609**	**+ 115**
of which is straw/ha	*€ 231*	*€ 255*	*+ 25*
Material Costs/ha	€ 613	€ 591	- 22
Total Machinery Costs/ha	€ 316	€ 317	+ 1
of which are contractor/ha	*€ 80*	*€ 50*	*- 29*
Other Variable Costs/ha	€ 15	€ 12	- 3
Gross Margin / ha	**€ 550**	**€ 689**	**+ 139**
Total F. Costs / ha	€ 339	€ 351	+ 12
Net Margin/ha	**€ 211**	**€ 339**	**+ 128**
Key Figures			
Total Costs €/ton*	€ 145	€ 138	- 7
Av. Land Lease Costs/ha	€ 147	€ 147	+ 0

** Cost per ton excluding straw*

- Average yields are 0.2 t/ha (2%) above the CSO national average, with the top 1/3 of farmers producing 0.6t/ha (7%) above the CSO national average
- The top farms grew more area and produced 0.35 t/ha more yield resulting in a higher gross output of €115/ha (8% higher) compared to the ePM average group

- Despite having higher yield the top group spent €22/ha less on material costs with fertiliser (€21/ha) making up the biggest difference compared to the average group. The contractor costs were €29/ha lower in the top group compared to the average group
- Fixed costs are marginally higher in the top group (4%) compared to average
- Net margin was 54% higher in the top group compared to the average



Analysis of Barley Crops (Average)

Table 10: Barley Returns - Average growers summary

Average	Winter Barley	Spring Barley	Spring Malt Barley
Physical			
Total No. hectares	6379	6684	2531
No. Of Farms	267	240	77
Tillage Adj. ha	24	28	33
Yield t/ha	8.8	7.5	7.8
Financial			
Crop Sales €/tonne	€142	€141	€155
Gross Output /ha	**€1,493**	**€1,236**	**€1,388**
of which is straw/ha	*€231*	*€182*	*€171*
Material Costs/ha	€613	€489	€528
Total Machinery Costs/ha	€316	€279	€283
of which are contractor/ha	*€80*	*€80*	*€102*
Other Variable Costs/ha	€15	€15	€18
Gross Margin / ha	**€550**	**€453**	**€559**
Total F. Costs / ha	€339	€311	€336
Net Margin/ha	**€211**	**€143**	**€223**
Key Figures			
Total Costs €/ton	€145	€146	€149
Av. Land Lease Costs/ha	€147	€151	€146

- The Net Margin between winter barley and spring malting barley (+5%) is small but significant nonetheless
- Malting barley offers the best opportunity to increase profitability for the average spring barley grower with returns from malting barley €80/ha (55%) higher than spring feed barley
- Costs of production of malting barley (€149/ton) are higher than the other categories despite having a lower average land lease cost

Analysis of Barley Crops (Top 1/3)

Table 11: Barley Returns – Top 1/3 growers summary

Top 1/3	Winter Barley	Spring Barley	Spring Malt Barley
Physical			
No. Of Farms	89	80	
Tillage Adj. ha	31	35	26
Yield t/ha	9.2	7.7	8.2
Financial			
Crop Sales €/tonne	€146	€146	€161
Gross Output /ha	**€1,609**	**€1,332**	**€1,492**
of which is straw/ha	*€255*	*€202*	*€174*
Material Costs/ha	€591	€471	€518
Total Machinery Costs/ha	€317	€250	€238
of which are contractor/ha	*€50*	*€25*	*€22*
Other Variable Costs/ha	€12	€12	€13
Gross Margin / ha	**€689**	**€599**	**€723**
Total F. Costs / ha	€351	€339	€358
Net Margin/ha	**€339**	**€260**	**€365**
Key Figures			
Total Costs €/ton	€138	€139	€138
Av. Land Lease Costs/ha	€147	€173	€189

- Winter barley is 7% lower in net margin compared to Spring Malting Barley
- The top 1/3 of malting barley growers have higher margins than either Winter Feed Barley or Spring Feed Barley. The costs of production for barley are similar across all categories
- The top 1/3 of spring feed barley growers return a higher margin of €37/ha than the average malting barley grower

Winter Oats

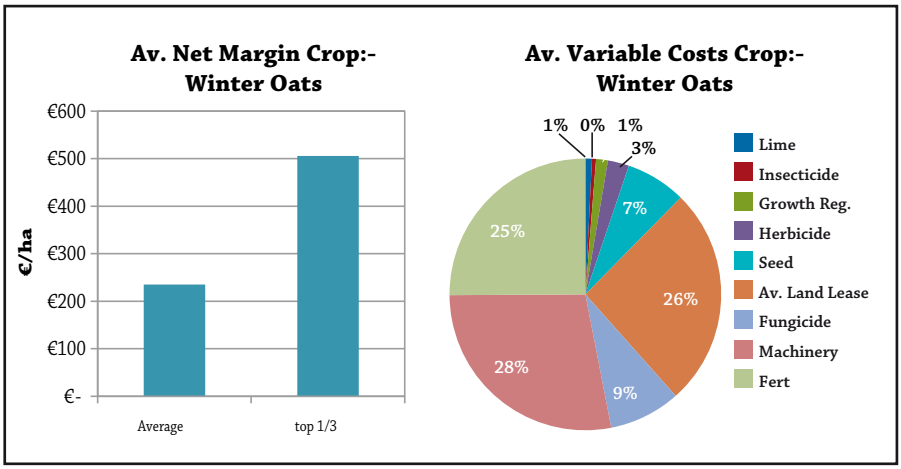
Table 12: Winter Oats Returns

	Average	top 1/3	Top v Average
Physical			
Total No. hectares	934		
No. Of Farms	75	25	
Tillage Adj. ha	12	12	0
Yield t/ha	8.4	8.9	+ 0.45
Financial			
Crop Sales €/tonne	€146	€161	+ 15
Gross Output /ha	**€1,378**	**€1,609**	**+ 231**
of which is straw/ha	*€144*	*€167*	*+ 22*
Material Costs/ha	€516	€499	- 17
Total Machinery Costs/ha	€317	€329	+ 12
of which are contractor/ha	*€120*	*€86*	*- 34*
Other Variable Costs/ha	€15	€9	- 6
Gross Margin / ha	**€530**	**€771**	**+ 242**
Total F. Costs / ha	€295	€266	- 29
Net Margin/ha	**€235**	**€505**	**+ 271**
Key Figures			
Total Costs €/ton*	€136	€124	- 11
Av. Land Lease Costs/ha	€122	€69	- 53

** Cost per ton excluding straw*

- Average yields are 0.1t/ha (1.2%) above the CSO national average, with the top 1/3 of farmers producing 0.6 t/ha (7%) above the CSO national average
- The top farms grew more area and produced 0.45 t/ha (5.3%) more yield and achieved a far higher price for grain than the ePM average grower.

- The top group had a Gross Output of €231 per hectare or 16% higher than the average
- Despite achieving a lower yield the average group spent €17/ha more than variable costs compared to the top group
- The Net Margin of the top growers was €271/ha or 115% higher than the average group



Spring Oats

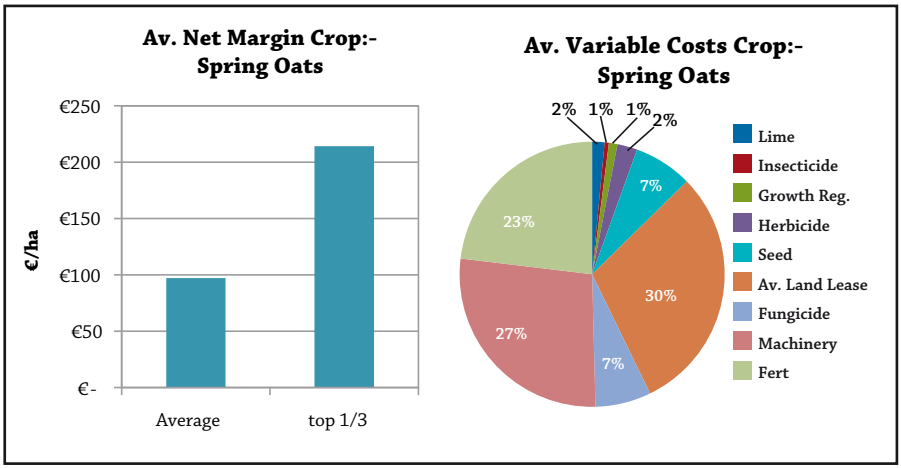
Table 13: Spring Oats Returns

	Average	top 1/3	Top v Average
Physical			
Total No. hectares	775		
No. Of Farms	67	22	
Tillage Adj. ha	12	14	+ 2
Yield t/ha	7.6	8.0	+ 0.38
Financial			
Crop Sales €/tonne	€143	€151	+ 8
Gross Output /ha	**€1,229**	**€1,396**	**+ 166**
of which is straw/ha	*€138*	*€190*	*+ 52*
Material Costs/ha	*€465*	*€435*	*- 31*
Total Machinery Costs/ha	€307	€317	+ 10
of which are contractor/ha	*€119*	*€54*	*- 65*
Other Variable Costs/ha	€20	€21	+ 1
Gross Margin / ha	**€437**	**€623**	**+ 186**
Total F. Costs / ha	€339	€409	+ 69
Net Margin/ha	**€97**	**€214**	**+ 117**
Key Figures			
Total Costs €/ton*	€149	€148	- 1
Av. Land Lease Costs/ha	€169	€191	+ 21

** Cost per ton excluding straw*

- Average yields are 0.3t/ha (4%) above the CSO national average, with the top 1/3 of farmers producing 0.6 t/ha (8%) above the CSO national average
- The top farms grew more area and produced 0.38 t/ha more yield achieved a higher price, sold more straw, and spent less on variable costs than the top one third of growers resulting in a higher Gross Margin of €186/ha or 42% higher than the ePM average.

- The costs to produce a ton of grain is similar in the two groups. However the top group retained more profitability due to higher yields and output
- The top farmers Net Margin was €117 (98%) higher than the average group



Winter Oilseed Rape

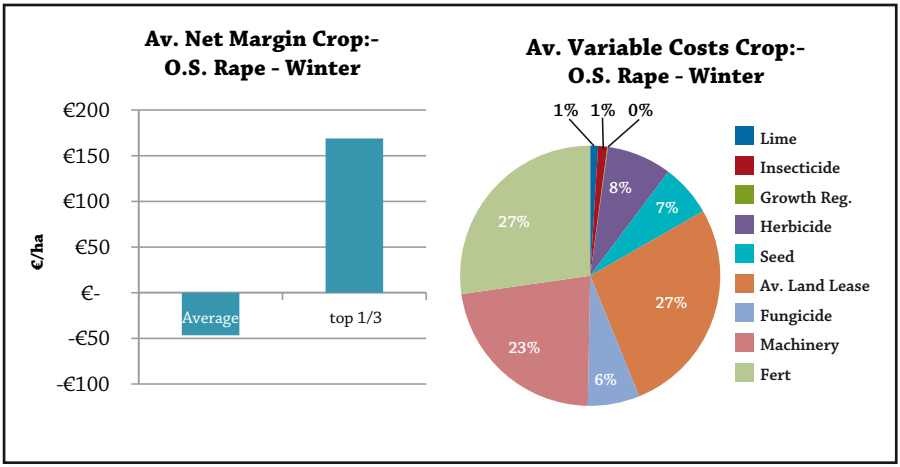
Table 14: Winter Oilseed Rape Returns

	Average	top 1/3	Top v Average
Physical			
Total No. hectares	661		
No. Of Farms	46	15	
Tillage Adj. ha	14.3	19.1	+ 1
Yield t/ha	3.4	3.7	+ 0.30
Financial			
Crop Sales €/tonne	€ 366	€ 378	+ 13
Gross Output /ha	**€ 1,246**	**€ 1,405**	**+ 159**
of which is straw/ha	*€ 2*	*€ 4*	*+ 2*
Material Costs/ha	€ 640	€ 628	- 12
Total Machinery Costs/ha	€ 289	€ 277	- 12
of which are contractor/ha	*€ 82*	*€ 36*	*- 46*
Other Variable Costs/ha	€ 14	€ 14	+ 1
Gross Margin / ha	**€ 303**	**€ 486**	**+ 183**
Total F. Costs / ha	€ 350	€ 317	- 33
Net Margin/ha	**-€ 47**	**€ 169**	**+ 216**
Key Figures			
Total Costs €/ton*	€ 380	€ 334	- 46
Av. Land Lease Costs/ha	€ 180	€ 151	- 29

** Cost per ton excluding straw*

- Winter oilseed rape average yields are 0.2 t/ha (5%) below the Teagasc estimated average national yield for Ireland in 2016, with the top 1/3 of farmer producing 0.1 t/ha (3%) above this national average
- The top farms grew more area and produced 0.3 t/ha more yield than the ePM average. This is hugely significant given the relatively low number of tonnes produced from the crop.

- The machinery costs (allocated) are low reflecting the low output from the crop
- The top group spent €24/ha less on material and machinery costs and also €33/ha less on fixed costs than the average group (enough to push the top group into profitability)
- The costs of production per ton were €46/ton higher in the average groups compared to the top group



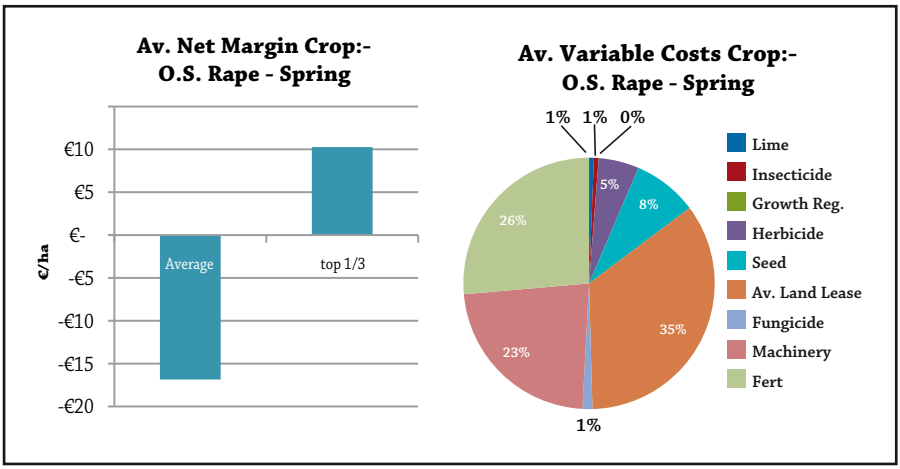
Spring Oilseed Rape

Table 15: Spring Oilseed Rape Returns

	Average	top 1/3	Top v Average
Physical			
Total No. hectares	147		
No. Of Farms	11	4	
Tillage Adj. ha	13	25	+ 12
Yield t/ha	2.9	3.0	+ 0.15
Financial			
Crop Sales €/tonne	€ 347	€ 349	+ 2
Gross Output /ha	**€ 998**	**€ 1,048**	**+ 51**
of which is straw/ha	*€ 7*	*€ 0*	- 7
Material Costs/ha	€ 427	€ 421	- 6
Total Machinery Costs/ha	€ 230	€ 218	- 12
of which are contractor/ha	*€ 55*	*€ 0*	*- 55*
Other Variable Costs/ha	€ 7	€ 8	+ 1
Gross Margin / ha	**€ 334**	**€ 402**	**+ 68**
Total F. Costs / ha	€ 351	€ 392	+ 41
Net Margin/ha	**-€ 17**	**€ 10**	**+ 27**
Key Figures			
Total Costs €/ton*	€ 355	€ 345	- 10
Av. Land Lease Costs/ha	€ 223	€ 263	+ 40

** Cost per ton excluding straw*

- Both groups contain small numbers therefore any comparisons should be treated with caution
- The top farms grew more area and produced 0.15 t/ha more yield which increased output by €51/ha compared to the average
- The machinery costs (allocated) are low reflecting the low output from the crop


Av. Net Margin Crop:-
O.S. Rape - Spring
€10
€5
€-
-€5
-€10
-€15
-€20
€/ha
Average
top 1/3
Av. Variable Costs Crop:-
O.S. Rape - Spring
1%
1%
0%
5%
8%
26%
35%
23%
1%
Lime
Insecticide
Growth Reg.
Herbicide
Seed
Av. Land Lease
Fungicide
Machinery
Fert

Spring Beans

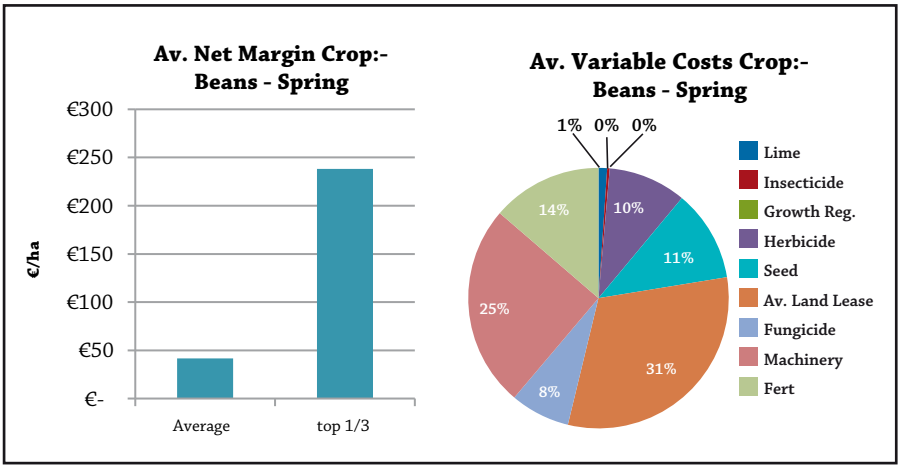
Table 16: Spring Beans Returns

	Average	top 1/3	Top v Average
Physical			
Total No. hectares	1192		
No. Of Farms	96	32	
Tillage Adj. ha	12	14	+ 1
Yield t/ha	6.1	6.7	+ 0.6
Financial			
Crop Sales €/tonne	€ 162	€ 163	+ 1
Gross Output /ha	**€ 1,064**	**€ 1,257**	**+ 193**
of which is straw/ha	*€ 1*	*€ 0*	*- 1*
Material Costs/ha	€ 435	€ 430	- 5
Total Machinery Costs/ha	€ 256	€ 240	- 16
of which are contractor/ha	*€ 74*	*€ 21*	*- 54*
Other Variable Costs/ha	€ 12	€ 12	- 1
Gross Margin / ha	**€ 361**	**€ 576**	**+ 214**
Total F. Costs / ha	€ 320	€ 337	+ 18
Net Margin/ha	€ 41	€ 238	+ 197
Net Margin/ha (Inc. DP)	**€ 225**	**€ 320**	**+ 95**
Key Figures			
Total Costs €/ton*	€ 168	€ 152	- 16
Av. Land Lease Costs/ha	€ 179	€ 190	+ 11

** Cost per ton excluding straw*

- Spring beans average yields are 0.2 t/ha (3%) above the Teagasc estimated average National yield for Ireland in 2016, with the top 1/3 of farmer producing 0.8/ha (13.5%) above this national average
- The top farms grew more area and produced 0.6 t/ha more yield than the average. Note: Due to an uneven recording of information some of the Direct Payment associated with beans was included in Gross Output for some growers but not others.

- Despite achieving a higher yield the top group spent marginally less on materials and €54/ha less on contractor costs than the average
- Net Margin (inc DP) (Direct Payments) brought both groups closer together (see point above). The top group achieved a higher net margin of €95/ha (42%) higher compared to the average



Beet (Fodder)

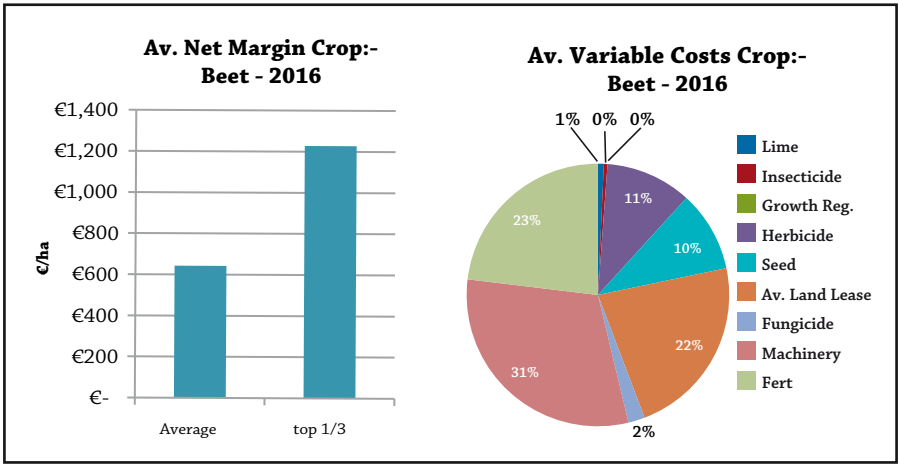
Table 17: Beet Fodder Returns

	Average	top 1/3	Top v Average
Physical			
Total No. hectares	431		
No. Of Farms	48	17	
Tillage Adj. ha	9	8	- 1
Yield t/ha	73.6	81.2	+ 7.61
Financial			
Crop Sales €/tonne	€ 35	€ 36	+ 1
Gross Output /ha	**€ 2,626**	**€ 3,002**	**+ 376**
of which is tops/ha	*€ 32*	*€ 52*	*+ 21*
Material Costs/ha	€ 898	€ 789	- 108
Total Machinery Costs/ha	€ 594	€ 615	+ 21
of which are contractor/ha	*€ 238*	*€ 177*	*- 61*
Other Variable Costs/ha	€ 56	€ 12	- 43
Gross Margin / ha	**€ 1,078**	**€ 1,585**	**+ 507**
Total F. Costs / ha	€ 436	€ 357	- 79
Net Margin/ha	**€ 642**	**€ 1,228**	**+ 586**
Key Figures			
Total Costs €/ton*	€ 27	€ 20	- 7
Av. Land Lease Costs/ha	€ 136	€ 57	- 79

** Cost per ton excluding straw*

- Yields on the top group were almost 10% higher than the average group which combined with a higher price reflected a higher gross output per hectare of €376/ha
- Despite the lower yields the average group spent €108/ha (13%) more on material costs than the top group

- The net margin of the both groups is quite high compared to other crops however the top group achieved €586/ha (91%) more than the average group



Break Crops compared (Average)

Table 18: Break Crops- Average grower returns compared

Average	Winter Oats	Spring Oats	Winter Oilseed Rape	Spring Oilseed Rape	Beans Spring	Beet
Physical						
Total No. hectares	934	775	661	147	1192	431
No. Of Farms	75	67	46	11	96	48
Tillage Adj. Ha	12	12	14.3	13	12	9
Yield t/Ha	8.4	7.6	3.4	2.9	6.1	73.6
Financial						
Crop Sales €/tonne	€ 146	€143	€366	€347	€ 162	€35
Gross Output /ha	**€1,378**	**€1,229**	**€1,246**	**€998**	**€1,064**	**€2,626**
of which is straw/ha	*€144*	*€ 138*	*€ 2*	*€ 7*	*€1*	*€32*
Material Costs/ha	€ 516	€465	€ 640	€427	€435	€898
Total Machinery Costs/ha	€317	€307	€289	€230	€256	€594
of which are contractor/ha	*€120*	*€119*	*€ 82*	*€ 55*	*€ 74*	*€238*
Other Variable Costs/ha	€ 15	€ 20	€14	€ 7	€12	€ 56
Gross Margin / Ha	**€530**	**€ 437**	**€303**	**€ 334**	**€361**	**€1,078**
Total F. Costs / Ha	€295	€ 339	€350	€351	€320	€436
Net Margin/ha	**€ 235**	**€ 97**	**-€47**	**-€17**	€ 41	**€642**
Net Margin (inc DP) /ha					**€ 225**	
Key Figures						
Total Costs €/ton	€136	€149	€ 380	€355	€168	€27
Av. Land Lease Costs/ha	€122	€169	€180	€223	€ 179	€136

- Winter oats and beans are the most profitable non root crop break crop in the top 1/3 and average groups however winter oats is the most profitable in both groups
- There is a wide variation on land lease costs of €101/ha or 82% however this in many cases reflects the rotation position of the crop with differences in the proportion of each crop sown on owned or leased land.
- Winter or Spring oilseed rape lost money in 2016 but the yield of winter oilseed rape was below trend yields therefore increased output would increase profitability substantially. However the yield of spring oilseed rape reflects average yields therefore only exceptionally high yielding crops returned a profit

Break Crops compared (Top 1/3)

Table 19: Break Crops- Top 1/3 growers returns compared

Average	Winter Oats	Spring Oats	Winter Oilseed Rape	Spring Oilseed Rape	Beans Spring	Beet
Physical						
No. Of Farms	25	22	15	4	32	17
Tillage Adj. Ha	12	14	19.1	25	14	8
Yield t/Ha	8.9	8.0	3.7	3.0	6.7	81.2
Financial						
Crop Sales €/tonne	€ 161	€ 151	€ 378	€ 349	€ 163	€ 36
Gross Output /ha	**€ 1,609**	**€ 1,396**	**€ 1,405**	**€ 1,048**	**€ 1,257**	**€ 3,002**
of which is straw/ha	*€ 167*	*€ 190*	*€ 4*	*€ 0*	*€ 0*	*€ 52*
Material Costs/ha	€ 499	€ 435	€ 628	€ 421	€ 430	€ 789
Total Machinery Costs/ha	€ 329	€ 317	€ 277	€ 218	€ 240	€ 615
of which are contractor/ha	*€ 86*	*€ 54*	*€ 36*	*€ -*	*€ 21*	*€ 177*
Other Variable Costs/ha	€ 9	€ 21	€ 14	€ 8	€ 12	€ 12
Gross Margin / Ha	€ 771	€ 623	€ 486	€ 402	€ 576	€ 1,585
Total F. Costs / Ha	€ 266	€ 409	€ 317	€ 392	€ 337	€ 357
Net Margin/ha	**€ 505**	**€ 214**	**€ 169**	**€ 10**	€ 238	**€ 1,228**
Net Margin (inc DP) /ha					**€ 320**	
Key Figures						
Total Costs €/ton	€ 124	€ 148	€ 334	€ 345	€ 152	€ 20
Av. Land Lease Costs/ha	€ 69	€ 191	€ 151	€ 263	€ 190	€ 57

- Beet is by far the most profitable crop of these break crops @€1,228/ha. However sales of the crop are on a farm to farm trade and generally for a limited/defined quantity and to farms with an existing trading relationship. Growing significant quantities of beet may not be possible for every farmer and a market should be secured before planting
- Winter Oats is the next best alternative with spring beans relying on the Direct Payment to increase the margins to acceptable levels (Direct Payment on beans ~€250/ha in 2016)
- Returns from the top 1/3 of farmers from oilseed rape crops struggle to compete against the Net Margin returns of average growers of all other crops. Growers should consider this very carefully before planting the next crop especially of spring oilseed rape

All Crops (Average)

Table 20: All Crops: Average grower returns compared

Average	Winter Wheat	Winter Barley	Spring Barley	Spring Malting barley	Spring Wheat	Winter Oats	Spring Oats	Winter Oilseed Rape	Spring Oilseed Rape	Beans Spring	Beet
Physical											
Total No. hectares	4295	6379	6684	2531	527	934	775	661	147	1192	431
No. Of Farms	166	267	240	77	40	75	67	46	11	96	48
Tillage Adj. ha	26	24	28	33	13	12	12	14.3	13	12	9
Yield t/ha	10.3	8.8	7.5	7.8	8.2	8.4	7.6	3.4	2.9	6.1	73.6
Financial											
Crop Sales €/tonne	€148	€142	€141	€155	€146	€146	€143	€366	€347	€162	€35
Gross Output /ha	**€1,698**	**€1,493**	**€1,236**	**€1,388**	**€1,350**	**€1,378**	**€1,229**	**€1,246**	**€998**	**€1,064**	**€2,626**
of which is straw/ha	*€163*	*€231*	*€182*	*€171*	*€144*	*€144*	*€138*	*€2*	*€7*	*€1*	*€32*
Material Costs/ha	€699	€613	€489	€528	€528	€516	€465	€640	€427	€435	€898
Total Machinery Costs/ha	€349	€316	€279	€283	€335	€317	€307	€289	€230	€256	€594
of which are contractor/ha	*€120*	*€80*	*€80*	*€102*	*€165*	*€120*	*€119*	*€82*	*€55*	*€74*	*€238*
Other Variable Costs/ha	€19	€15	€15	€18	€20	€15	€20	€14	€7	€12	€56
Gross Margin / ha	**€630**	**€550**	**€453**	**€559**	**€468**	**€530**	**€437**	**€303**	**€334**	**€361**	**€1,078**
Total F. Costs / ha	€367	€339	€311	€336	€359	€295	€339	€350	€351	€320	€436
Net Margin/ha	**€263**	**€211**	**€143**	**€223**	**€108**	**€235**	**€97**	**-€47**	**-€17**	€41	**€642**
Net Margin (inc DP) /ha										**€225**	
Key Figures											
Total Costs €/ton*	€139	€145	€146	€149	€151	€136	€149	€380	€355	€168	€27
Av. Land Lease Costs/ha	€119	€147	€151	€146	€192	€122	€169	€180	€223	€179	€136

** Cost per ton excluding straw*

All Crops (top 1/3)

Table 21: All Crops: Top 1/3 grower returns compared

Top 1/3	Winter Wheat	Winter Barley	Spring Barley	Spring Malting barley	Spring Wheat	Winter Oats	Spring Oats	Winter Oilseed Rape	Spring Oilseed Rape	Beans Spring	Beet
Physical											
No. Of Farms	55	89	80	26	13	25	22	15	4	32	17
Tillage Adj. ha	33	31	35	45	15	12	14	19.1	25	14	8
Yield t/ha	10.9	9.2	7.7	8.2	8.7	8.9	8.0	3.7	3.0	6.7	81.2
Financial											
Crop Sales €/tonne	€154	€146	€146	€161	€155	€161	€151	€378	€349	€163	€36
Gross Output /ha	**€1,897**	**€1,609**	**€1,332**	**€1,492**	**€1,485**	**€1,609**	**€1,396**	**€1,405**	**€1,048**	**€1,257**	**€3,002**
of which is straw/ha	*€212*	*€255*	*€202*	*€174*	*€134*	*€167*	*€190*	*€4*	*€-*	*€-*	*€52*
Material Costs/ha	€665	€591	€471	€518	€502	€499	€435	€628	€421	€430	€789
Total Machinery Costs/ha	€326	€317	€250	€238	€274	€329	€317	€277	€218	€240	€615
of which are contractor/ha	*€40*	*€50*	*€25*	*€22*	*€20*	*€86*	*€54*	*€36*	*€-*	*€21*	*€177*
Other Variable Costs/ha	€8	€12	€12	€13	€12	€9	€21	€14	€8	€12	€12
Gross Margin / ha	**€898**	**€689**	**€599**	**€723**	**€697**	**€771**	**€623**	**€486**	**€402**	**€576**	**€1,585**
Total F. Costs / ha	€386	€351	€339	€358	€398	€266	€409	€317	€392	€337	€357
Net Margin/ha	**€512**	**€339**	**€260**	**€365**	**€298**	**€505**	**€214**	**€169**	**€10**	€238	**€1,228**
Net Margin (inc DP) /ha										**€320**	
Key Figures											
Total Costs €/ton*	€127	€138	€139	€138	€137	€124	€148	€334	€345	€152	€20
Av. Land Lease Costs/ha	€117	€147	€173	€189	€166	€69	€191	€151	€263	€190	€57

** Cost per ton excluding straw*

Machinery Costs Analysis

Teagasc developed a Microsoft Excel based Machinery Cost Calculator (MCC) over the past number of years.

The MCC is filled out by the advisor with the farmer. The farmer lists all machinery on the farm under various headings; owned or leased, purchase price, usage, length of time on the farm, yearly repairs, fuel usage, etc. The resulting output allows a farmer to assess the costs of the machine in that year in cash costs (looking at HP repayments but not depreciation) and also in longer term costs (Depreciation included). Each machine is allocated costs according to the time dedicate to tillage operations, other enterprises and also contracting. This gives a more accurate figure for machinery costs on the tillage enterprise than broad figures used in farm tax accounts where assumptions vary from accountant to accountant.

How it works

The calculator divides the machinery into two categories those with repayments outstanding and with no debt outstanding.

For machines with repayments outstanding the programme uses the actual repayment figures for the machine each year. This figure is used to calculate the cash exposure of the farmer each year and also the cost of financing the machines. The depreciation figure is calculated based on a declining balance based on the original cost of each machine, including any trade in as part payment, the length of time the machine is expected to be on the farm and also the predicted residual value of the machine at disposal (at today's value). Repairs, maintenance and diesel are allocated according to the machine usage to the tillage enterprise, other enterprises or contracting.

For machines with no debt outstanding, the same procedures are followed in calculating the depreciation costs and the proportional costs to other enterprises or contracting. Repairs and maintenance can also be associated with each machine or a total figure can be added in at this stage.

Diesel costs are recorded from receipts on the farm. Other costs such as machine insurance, road tax and contractor charges are recorded.

Analysing Results

The results are presented to the farmer under the following headings:

- tillage costs,
- costs to other enterprises, and
- Costs for contracting.

The costs associated with the other enterprises and contracting can then be used to compare against the income from each activity.

The tillage costs are further broken down in **cash costs** and l**ong term tillage costs**.

The **cash costs** are recorded as all payments made by the farmer in that particular calendar year such as repayments, repairs, diesel, leases and machine hire, it does not include depreciation.

The **longer term cost include repairs, diesel, depreciation and interest** (but does not include the capital part of the repayment). These costs better reflect the longer term machine costs on the farm and are useful in assessing the replacement strategy on the farm.

Other costs which are recorded are the overall amount invested in machinery on the farm and the residual value of the machinery.

The MCC reflects a one year view of the machinery on the farm and all farmers are encourages to continually update the figures to establish trends on the farm over time. An alternative program is available from Teagasc which can be used to develop longer term machinery policy on the farm

The MCC generates output for farmers to use in the e-Profit Monitor. The key figures are: Machinery running (diesel, repairs, insurance, etc.), Machinery Leases (leases or HP interest) and Machinery Depreciation. The figures are specific to the tillage enterprise on the farm. These figures are classed as a Fixed Cost and are allocated to each crop based on the relative gross output per hectare of the crop compared to the total output per hectare of all the crops.

Machinery Costs Calculator 2016: Results

During 2016 a large number of farmers filled out the MCC and the combined results are outlined in this report.

Table 22: Machinery Cost Calculator - Main results

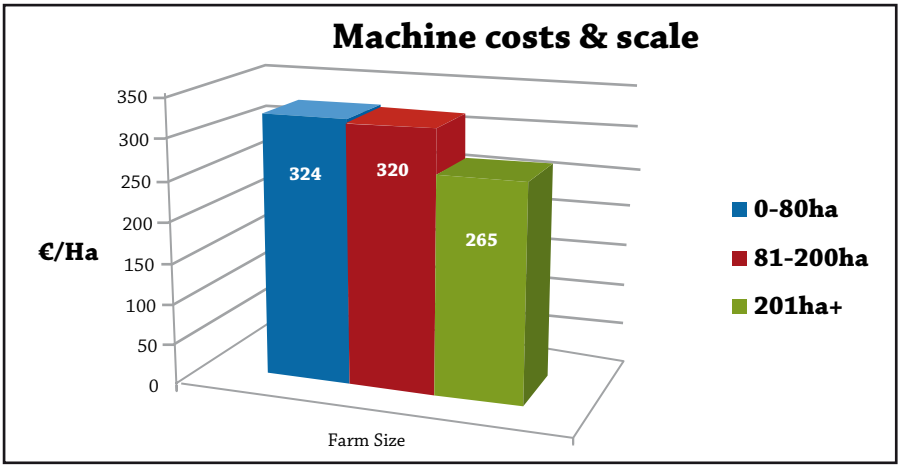
Total Number of Farms 139		
Total area 15,000 (ha)		
	Average	**Top 1/3**
Farm size (ha)	112.5 (Range 7–1000 ha)	335
Of which Tillage area (ha)	108	131
Total Tillage costs (€/ha)	335	199
Av. Tillage Cash costs per ha	293	178
% of farmers whose cost exceed a typical contractor costs (estimated at €400/ha)	14%	0
Diesel usage (L/ha)	65	57
Diesel Costs (€/ha)	108	95

**Note top 1/3 ranked based on the total machinery costs (€/ha)*

- The top 1/3 of farmers machinery costs are €199/ha. These farmers are in either of two general brackets; a) Smaller farmers with older machinery which is underutilised - 84% farm have an average area of 77 hectares (Av. Machinery costs €201/ha) or b) Very large farms -16% of farmers have an average area of 506ha (Av. Machinery costs €216/ha) and have matched capacity to farm size and combined this with clever machine purchasing and maintenance policies
- 14% of farmers could save money by hiring a contractor to complete all the machinery operations, i.e. they have costs above €400/ha.

- The top 1/3 of farmers are spending less on diesel but 83% of these farmers are farming within 8km of their base, with only 17% of farms are classified as very fragmented

Effect of Scale on Machinery Costs

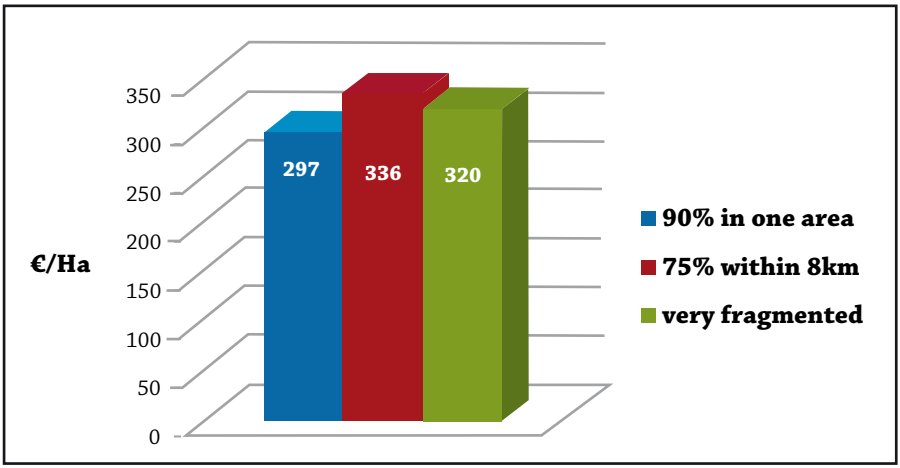


- Farmers with larger area decreased costs. The 201 hectare and over group had 18% lower costs than the 0-80 ha group of farmers
- The 81-200 hectare group had higher machinery costs which may reflect over capacity on their farmed area.
- Of the growers in each group land fragmentation can also influence the costs of machiery. The expectation would be that the 201 ha+ group would be more fragmented therefore incur a higher cost. The breakdown of each category is as follows:

	% of Farmers in each category		
Farmed Area	0-80 ha	81-200 ha	201 ha+
90% in one area	27%	15%	14%
within 8km	62%	46%	28%
Very fragmented	10%	38%	57%

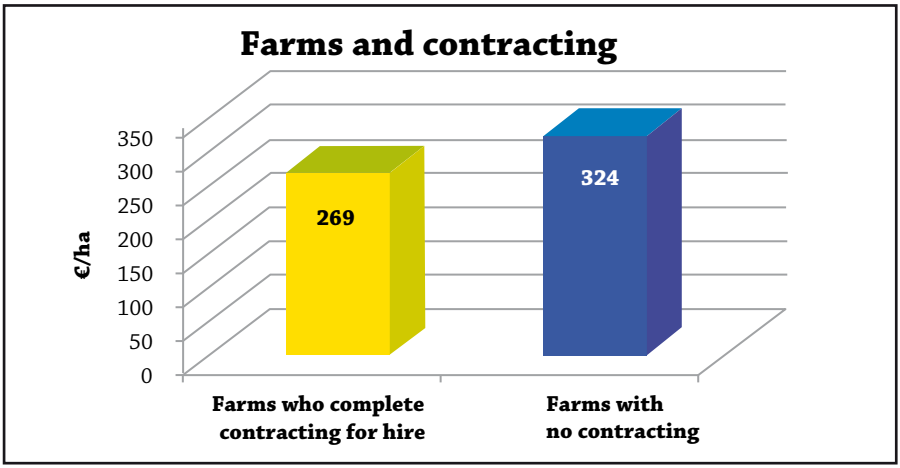
- For the smaller farmers, despite having the highest costs, the vast majority of farmers are not very fragmented. Conversely the larger farmers which we would expect to have more fragmentation have lower machinery costs

Effect of Land Fragmentation on costs



- The figures reflect the extra travel involved in having a fragmented holding. Farmers with land close to the base (90% in one area) had a lower cost (11%) compared to farmers who had 75% of land within 8km. The differential between the farmers with 90% of land in one area and the very fragmented farmers is smaller which is partly a reflection that the larger farmers tend to have a lower machinery cost.

Farms who engage in contracting



- Farms who engage in some contracting (these farmers would not be considered contractors) have lower costs (-16%). This group have varying degrees of contracting but other factors such as size and land fragmentation may all contribute to this difference.

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