The effect of stocking rate and prolificacy on profitability of a lowland sheep enterprise

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Introduction

Stocking rate and ewe prolificacy are the key drivers of productivity and profitability on Irish sheep farms (Diskin and McHugh, 2011)

Objective

To quantify the effect of stocking rate and prolificacy on farm productivity and profitability
Background

Teagasc
e-Profit Monitor Analysis
Drystock Farms 2014

**Average**
- 7.5 ewes/ha
- 1.45 lambs weaned/ewe
- 11 lambs/ha
- €34/ha NP

**Top 1/3**
- 9.6 ewes/ha
- 1.54 lambs weaned/ewe
- 15 lambs/ha
- €335/ha NP
Irish mid-season lamb production

- October
- March
- June
- Dec
Teagasc lamb production model

Flock net energy

Grass, Silage & Concentrate

Land
Capital
Labour
Animals
Mortalities
Variable costs
Fixed costs

1. Financial
2. Economic
3. Physical

Net profit
**Farm scenarios**

**Low**
- 20 ha
- 150 ewes
- 195 lambs
- 10 lambs/ha
- 8 lambs sold/ha

**Medium**
- 20 ha
- 200 ewes
- 300 lambs
- 15 lambs/ha
- 13 lambs sold/ha

**High**
- 20 ha
- 240 ewes
- 432 lambs
- 22 lambs/ha
- 19 lambs sold/ha
Scenario assumptions

Grass growth increased with demand

Grass utilization increased with stocking rate

Lamb mortality increased with prolificacy

Replacement rate increased with stocking rate and prolificacy
Model outputs
Physical performance

Low
7.5 ewes/ha
10 lambs/ha

Medium
10 ewes/ha
15 lambs/ha

High
12 ewes/ha
22 lambs/ha
# Lamb performance

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADG pre-weaning (g/d)</td>
<td>299</td>
<td>275</td>
<td>264</td>
</tr>
<tr>
<td>ADG post-weaning (g/d)</td>
<td>190</td>
<td>181</td>
<td>166</td>
</tr>
<tr>
<td>Lamb mortality</td>
<td>11.84%</td>
<td>13.44%</td>
<td>15.54%</td>
</tr>
</tbody>
</table>

- **36.1 kg**
- **33.1 kg**
- **31.4 kg**

The Irish Agriculture and Food Development Authority
## System performance

<table>
<thead>
<tr>
<th>Level</th>
<th>Performance</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>7.3 tonnes</td>
<td>75 kg N/ha</td>
</tr>
<tr>
<td></td>
<td>21 kg/ewe</td>
<td>1.3 kg/lamb</td>
</tr>
<tr>
<td>Medium</td>
<td>9.8 tonnes</td>
<td>115 kg N/ha</td>
</tr>
<tr>
<td></td>
<td>23 kg/ewe</td>
<td>2.4 kg/lamb</td>
</tr>
<tr>
<td>High</td>
<td>12.5 tonnes</td>
<td>150 kg N/ha</td>
</tr>
<tr>
<td></td>
<td>26 kg/ewe</td>
<td>4.3 kg/lamb</td>
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</tbody>
</table>
## Financial performance

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total income/ha (€)</td>
<td>891</td>
<td>1,346</td>
<td>1,883</td>
</tr>
<tr>
<td>Variable costs/ha (€)</td>
<td>575</td>
<td>772</td>
<td>968</td>
</tr>
<tr>
<td>Gross margin/ha (€)</td>
<td>316</td>
<td>575</td>
<td>915</td>
</tr>
<tr>
<td>Fixed costs/ha (€)</td>
<td>230</td>
<td>243</td>
<td>253</td>
</tr>
<tr>
<td>Net profit/ha (€)</td>
<td>45</td>
<td>285</td>
<td>610</td>
</tr>
</tbody>
</table>
Sensitivity analysis

Scenario 1                  Scenario 2

Low  €45/ha  +  Medium  €285/ha  +  High  €610/ha

7.3 T  7.3 T  

-€153/ha NP  -€368/ha NP
Summary

• Lambs weaned per hectare and grass growth drive profit

• As the number of lambs produced increases the cost of production per lamb reduces

• Increasing lambs weaned per hectare without increasing grass growth is counter productive
Conclusion

Lambs weaned per hectare along with grass growth and utilisation are the key drivers of profit.
Thanks for listening

Any questions ???