Fertilizing For Profit on Grassland Farms

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Teagasc Naas

The Fertilizer Association Of Ireland
Spring Scientific Meeting

Tuesday, 2 February 2016
Fertilizing For Profit on Grassland Farms

• Context
  • Land Use
  • Existing Efficiencies ???????
  • Scope For Improvement
• Lime-Impact @ Farm level

• The Universal crop – Grass Silage
  • Nutrition
  • Yield Measurement

• Case Studies

• Finally Check for Sleepers !!!!!!!
## Farm Numbers, Land area farmed and family farm income (FFI) on National Farm Survey Farms in 2014 (NFS, 2014)

<table>
<thead>
<tr>
<th>Activity</th>
<th>No Farms</th>
<th>Land Owned Ha</th>
<th>Land Rented Ha</th>
<th>Total area farmed ha</th>
<th>Average FFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy</td>
<td>15,654</td>
<td>45</td>
<td>12.8</td>
<td>57.8</td>
<td>€67,598</td>
</tr>
<tr>
<td>Cattle Rearing</td>
<td>15,707</td>
<td>33.4</td>
<td>7.1</td>
<td>40.5</td>
<td>€10,369</td>
</tr>
<tr>
<td>Cattle Other</td>
<td>25,674</td>
<td>36.6</td>
<td>5.9</td>
<td>42.5</td>
<td>€13,321</td>
</tr>
<tr>
<td>Sheep</td>
<td>12,195</td>
<td>47.1</td>
<td>10.6</td>
<td>57.7</td>
<td>€15,065</td>
</tr>
<tr>
<td>Tillage</td>
<td>6,651</td>
<td>53.3</td>
<td>14.1</td>
<td>67.4</td>
<td>€28,995</td>
</tr>
<tr>
<td>Mixed Livestock</td>
<td>2,760</td>
<td>50.7</td>
<td>14.8</td>
<td>65.5</td>
<td>€56,183</td>
</tr>
</tbody>
</table>

Fertility improvement must improve income

Brian Moran NFS
What Can Be Done About Low Farm Income

Teagasc Profit Monitors 2014

- **GM Suckler To Weanling/Store**
  - Average: €358/ha
  - Top 1/3: Difference mainly output

- **GM Non Breeding Beef Farms**
  - Average: €503/ha
  - Top 1/3

Other Enterprises showing similar variation
## Farm Numbers, Land area farmed and family farm income (FFI) on National Farm Survey Farms in 2014 (NFS,2014)

<table>
<thead>
<tr>
<th></th>
<th>Av area farmed</th>
<th>Rented land %</th>
<th>Stocking Rate Lu/Ha Percentage Farms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Owned &amp; Rented</td>
<td></td>
<td>&lt;1</td>
</tr>
<tr>
<td><strong>Dairy</strong></td>
<td>55</td>
<td>22.3</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Cattle Rearing</strong></td>
<td>38.5</td>
<td>17.9</td>
<td>33%</td>
</tr>
<tr>
<td><strong>Cattle Other</strong></td>
<td>40</td>
<td>14.1</td>
<td>16%</td>
</tr>
<tr>
<td><strong>Sheep</strong></td>
<td>54.2</td>
<td>18.9</td>
<td>23%</td>
</tr>
<tr>
<td><strong>Mixed Livestock</strong></td>
<td>63</td>
<td>22.6</td>
<td>10%</td>
</tr>
</tbody>
</table>

- Land rental 9-12%
- Overheads Forage purchases 5% all enterprises
- Soil Fertility Decline ??
- Chicken and Egg
Key Soil Fertility Targets - Lime

- Grassland Farms pH 6.2-6.3
- 70% Livestock farms Deficient - Lost in Soil Fertility Debate
- “Who Spreads Lime”
- North Kildare Molybdenum
Grass Silage-Universal Crop

✓ First Cut Target Yield Min 5t dm/ha-All Farms
✓ Yield impact on Cost/t Dry Matter
✓ Soil test results-Silage Fields Very Obvious.
✓ Gradual decline in Yields over time-Not noticed

Silage P & K requirements to replace removals in harvested herbage (P and K index3)

<table>
<thead>
<tr>
<th></th>
<th>First Cut (5 t/ha DM)</th>
<th>Second Cut (3t/ha DM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P and K requirements</td>
<td>20 - 120 (16 – 100)</td>
<td>12 – 75 (10 – 60)</td>
</tr>
<tr>
<td>kg/ha (units/acre)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Prime target for scarce resources Lime,N,P,K
Silage Yield Measurement

- Farmers in Crop-Measuring Yield
  - Visible Yield
  - Soil Test Results
  - Applied Nutrients

- Lessons learnt
  - How poor yields are
  - Acceptance poor yields
  - Impact of low Ph and K
  - Variation between fields
    - but fixed fertilizer programme.
  - Cut late to get yield>impact on quality

70 Kg N/ha for first cut ???????

Example

pH 5.29
Yield 2.3 t DM/ha
Limed: >5.5 t DM/ha
Practice Changes - Case Study A

- 60 Ha Dry stock Farm - 12 ha Spring Barley
- 40 Single Sucklers
  - Bulls Sold as Stores
  - Heifers Finished
  - Spring Lambing Flock 200 ewes.
- Stocking Rate 2 lu/ha
- Soil Fertility
  - P-74% @ Index 1 & 2
  - K-79% @ Index 2
  - pH-88% < pH 6.2

S/Rate 2 LU/ha ???????

What's The Problem.

- Poor Grass Growth
- Reduced output.
  - Lambs weaned/ewe
  - Store Bulls low sale weight.
  - Heifers - High Meal Feeding.
  - Suckler Cows Reduced Body Score.

Not only about S/R also output
Practice Changes-Case Study A

- Triggers for Change
  - Exiting REPS – Income Replacement.

Management + Investment

- 2011 Lime Applied
- Fertilizer Investment 2010 To 2014 ↑ 68%
- 2014 Paddocks 35 ha
## Case Study A>>> Outcomes

### Store Bulls

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days On Farm</td>
<td>477</td>
<td>457</td>
<td>435</td>
</tr>
<tr>
<td>Live weight</td>
<td>440</td>
<td>451</td>
<td>476</td>
</tr>
<tr>
<td>Sale weight kgs</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Heifers**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Days On Farm</td>
<td>636</td>
<td>634</td>
<td>634</td>
</tr>
<tr>
<td>Carcass Wt.</td>
<td>N/A</td>
<td>312</td>
<td>329</td>
</tr>
</tbody>
</table>

- **Store Bulls**
  - Days on Farm -22
  - Sale Weight + 25 Kgs
  - Sale Value + €1,400

- **Heifers**
  - Days On Farm Same
  - Sale Weight + 17 kgs
  - Sale Value + €1,200
  - 2016 Carcass wt 359 kgs

### Farm Gross Margin Increase-- 30%

**Target Beef Output/LU +7%, Weaning Rate +36%**
## Case Study A-Farm Nutrient Balance

<table>
<thead>
<tr>
<th></th>
<th>Off takes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Production</strong></td>
<td>P(kg)</td>
</tr>
<tr>
<td><strong>Live weight (Kgs)</strong></td>
<td>29,879</td>
</tr>
<tr>
<td><strong>Grain (tonnes)</strong></td>
<td>86</td>
</tr>
<tr>
<td><strong>Total Off takes (Kg)</strong></td>
<td>591</td>
</tr>
<tr>
<td><strong>Inputs (Kg)</strong></td>
<td>1300</td>
</tr>
<tr>
<td><strong>Balance (kg)</strong></td>
<td>709</td>
</tr>
<tr>
<td><strong>Percentage off take supplied</strong></td>
<td>220%</td>
</tr>
</tbody>
</table>

The Farm is Nitrate Compliant

*Must not overlook fuel---N*
Practice Changes - Case Study B

- 37 Ha Drystock Farm
- 40 Single Sucklers
  - Calves Sold as Weanlings
- Heavy Soils
- Impeded Drainage

- Stocking Rate 1.38 lu/ha
- Soil Fertility
  - P,K 55% @ Index 3
  - Ph—Optimal Ph

- Poor Grass Growth
  - Low S/R
  - Low output.
  - Low Sale weights

- Suckler Cows Reduced Body Score.
Practice Changes-Case Study B

- Triggers for Change
  - Exiting REPS –Income Replacement.

Management + Investment

- 2012 Paddocks Installed
- Strictly grazed out 2-3 days
- 12 ha rented land dropped 2013
- Surplus grass Conserved and sold.
# Case Study B>>>>>> Outcomes

<table>
<thead>
<tr>
<th>Farm key KPIs</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area Farmed Ha</td>
<td>49.44</td>
<td>37.48</td>
<td>37.33</td>
</tr>
<tr>
<td>Stocking Rate Kg Organic N/Ha</td>
<td>82</td>
<td>122</td>
<td>135</td>
</tr>
<tr>
<td>S/R + 27%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stocking Rate Lu/Ha</td>
<td>1.38</td>
<td>1.54</td>
<td>1.76</td>
</tr>
<tr>
<td>Fertilizer Cost €/Ha</td>
<td>€115</td>
<td>€118</td>
<td>€127</td>
</tr>
<tr>
<td>Purchased Concentrate €/ha</td>
<td>€65</td>
<td>€50</td>
<td>€54</td>
</tr>
<tr>
<td>Gross Output €/Ha</td>
<td>€773</td>
<td>€782</td>
<td>€1,036</td>
</tr>
<tr>
<td>Gross Margin €/ha</td>
<td>€411</td>
<td>€414</td>
<td>€637</td>
</tr>
</tbody>
</table>

- Gross Output/ha + 34% (€263)
- Gross Margin +€226 (55%)
- Grass growth>> Better Management
- Soil Fertility Movement ???-Soil Test
## Case Study B-Farm Nutrient Balance

<table>
<thead>
<tr>
<th></th>
<th>P (kg)</th>
<th>K (Kg)</th>
<th>N (Ig)</th>
<th>Recommended Offtakes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Production</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liveweight (Kgs)</td>
<td>18,077</td>
<td>180</td>
<td>135</td>
<td></td>
</tr>
<tr>
<td>Hay Sales (Tonnes Dry Matter)</td>
<td>6</td>
<td>24</td>
<td>150</td>
<td>24</td>
</tr>
<tr>
<td><strong>Total Offtakes (Kg)</strong></td>
<td>204</td>
<td>285</td>
<td>3,468</td>
<td></td>
</tr>
<tr>
<td><strong>Inputs (Kg)</strong></td>
<td>125</td>
<td>250</td>
<td>2430</td>
<td></td>
</tr>
<tr>
<td><strong>Balance (kg)</strong></td>
<td>-79</td>
<td>-35</td>
<td>-1038</td>
<td></td>
</tr>
<tr>
<td><strong>Percentage offtake supplied</strong></td>
<td>61%</td>
<td>88%</td>
<td>70%</td>
<td></td>
</tr>
</tbody>
</table>

Farm being soil tested
Fertilizing For Profit-Key Tools

- Soil Sampling
- Nutrient Management Plan
- On Farm Measurement
  - Silage Yield measurements.
  - Grass growth rates.
  - Housing and turnout dates.
  - Animal growth rates.
  - Suckler cow fertility and Ewe weaning rate.
- Profitability
- Best Practice

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Crop</th>
<th>Area (ha)</th>
<th>Soil Sample</th>
<th>Soil pH</th>
<th>Index</th>
<th>Lime</th>
<th>N</th>
<th>P</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Grazing</td>
<td>15.4</td>
<td>No Soil Test</td>
<td>-</td>
<td>3</td>
<td>145</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>Grazing</td>
<td>1.3</td>
<td>No Soil Test</td>
<td>-</td>
<td>3</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>Grazing</td>
<td>1.0</td>
<td>No Soil Test</td>
<td>-</td>
<td>3</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5A</td>
<td>Grazing</td>
<td>2.6</td>
<td>5A</td>
<td>5.5</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3B</td>
<td>1 Cut + Grazing</td>
<td>4.5</td>
<td>3B</td>
<td>5.6</td>
<td>2</td>
<td>3</td>
<td>116</td>
<td>36</td>
<td>180</td>
</tr>
<tr>
<td>4B</td>
<td>1 Cut + Grazing</td>
<td>7.6</td>
<td>4B</td>
<td>5.7</td>
<td>1</td>
<td>6</td>
<td>116</td>
<td>36</td>
<td>180</td>
</tr>
<tr>
<td>4C</td>
<td>Grazing</td>
<td>4.2</td>
<td>4C</td>
<td>5.8</td>
<td>1</td>
<td>6</td>
<td>83</td>
<td>22</td>
<td>71</td>
</tr>
</tbody>
</table>

The Irish Agriculture and Food Development Authority
Final Thoughts

- No Restrictions on farm efficiency

- Profit Essential
  - More From Less
  - Biological Efficiency
  - Climate Change/Environment
  - Genetic Gain

Thank You