The cost of maize and alternative forages

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Presentation Overview

• Background

• Cost of maize silage
  – Effect of yield variation
  – Effect of polythene mulch
  – Effect of soil nutrient status

• Costs of alternative winter feeds relative to purchased rolled barley

• Conclusion
Background

• Feed cost is the greatest direct cost (Teagasc NFS, 2008)

• Need to control/ reduce feed cost

• Need to evaluate factors affecting feed crop cost:
  - Changing input prices
  - Management
  - Soil and weather

• Grange Feed Costing Model (GFCM; Teagasc Grange 2010)
Analysis assumptions

• Soil index 3 for P and K
• High standards of management assumed (yields & quality)
• Annual land charge of €300/ha for all crops
• Current contractor charges for all operations (Teagasc, 2010)
• All chemical fertilisers used (Coulter & Lalor, 2008)
• Jan 2010 fertiliser and spray prices (CSO, IFJ, Teagasc 2010)
• Purchased rolled barley costed at €150/t fresh delivered
• Costs per hectare, per tonne utilised (consumed) dry matter, per 1,000UFL
## Cost of maize silage

<table>
<thead>
<tr>
<th>Description</th>
<th>€/ha</th>
<th>€/acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land charge</td>
<td>300</td>
<td>120</td>
</tr>
<tr>
<td>Crop establishment (incl plastic)</td>
<td>713</td>
<td>285</td>
</tr>
<tr>
<td>Fertilisers and sprays</td>
<td>432</td>
<td>173</td>
</tr>
<tr>
<td>Harvesting</td>
<td>309</td>
<td>124</td>
</tr>
<tr>
<td>Feedout</td>
<td>88</td>
<td>35</td>
</tr>
<tr>
<td>Other variable costs</td>
<td>70</td>
<td>28</td>
</tr>
<tr>
<td>Fixed costs</td>
<td>88</td>
<td>35</td>
</tr>
<tr>
<td><strong>Total feed cost</strong></td>
<td><strong>1,999</strong></td>
<td><strong>800</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UDM Yield t/ha, t/ac</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>UDM Yield t/ha, t/ac</td>
<td>13.9</td>
<td>5.6</td>
</tr>
</tbody>
</table>

| Total feed cost €/ t UDM                               | €144  |        |

*Source: GFCM, Teagasc, Grange*
Effect of yield variability

Source: GFCM, DARDNI, DAF, Teagasc, UCD
Effect of yield variability

Source: GFCM, DARDNI, DAF, Teagasc, UCD
## Maize yields with and without plastic

<table>
<thead>
<tr>
<th>Yield</th>
<th>Plastic/No Plastic</th>
<th>Dry Matter Yield (t UDM/ha)</th>
<th>Energy Yield (‘000 UFL/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below average</td>
<td>P</td>
<td>12.1</td>
<td>9.7</td>
</tr>
<tr>
<td></td>
<td>NP</td>
<td>8.7</td>
<td>6.8</td>
</tr>
<tr>
<td>Average</td>
<td>P</td>
<td>13.9</td>
<td>11.8</td>
</tr>
<tr>
<td></td>
<td>NP</td>
<td>11.7</td>
<td>9.4</td>
</tr>
<tr>
<td>Above average</td>
<td>P</td>
<td>15.6</td>
<td>14.0</td>
</tr>
<tr>
<td></td>
<td>NP</td>
<td>14.7</td>
<td>13.2</td>
</tr>
</tbody>
</table>

Source: GFCM, DARDNI, DAF, Teagasc, UCD
Plastic effect on maize cost: DM basis

- Below ave: No Plastic = €195, Plastic = €166
- Average: No Plastic = €146, Plastic = €144
- Above ave: No Plastic = €117, Plastic = €129

Source: GFCM, DARDNI, DAF, Teagasc, UCD
Plastic effect on maize cost:
Energy basis

- Sowing under polythene reduces maize cost by:
- Sowing under polythene reduces variability of yield by: 48%
- Sowing under polythene reduces variability of maize cost by: 45%

Source: GFCM, DARDNI, DAF, Teagasc, UCD
Effect of soil nutrient status and slurry usage

- Field 1: High P and K status. Previously permanent grassland.

- Field 2: Low P and K status. Previously in continuous maize/cereals.
<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>P</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field 1</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Field 2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Coulter & Lalor, 2008
Effect of soil nutrient status

Maize grown in Field 2 costs 9% more than an equivalent crop grown in Field 1.

Source: GFCM, DARDNI, DAF, Teagasc, UCD
Effect of cattle slurry usage

Slurry usage reduced maize cost by:

- Field 1: 16%
- Field 1 'S': 13%
- Field 2: 16%
- Field 2 'S': 13%

Source: GFCM, DARDNI, DAF, Teagasc, UCD
### Alternative feed crops
#### Utilisation and yield

<table>
<thead>
<tr>
<th>Crop</th>
<th>Utilisation$^1$</th>
<th>Yield (t UDM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grazed grass</td>
<td>0.75</td>
<td>9.0</td>
</tr>
<tr>
<td>One cut silage system</td>
<td>0.81</td>
<td>6.75</td>
</tr>
<tr>
<td>Two cut silage system</td>
<td>0.81</td>
<td>10.5</td>
</tr>
<tr>
<td>Maize</td>
<td>0.86</td>
<td>13.9</td>
</tr>
<tr>
<td>Whole crop wheat</td>
<td>0.86</td>
<td>13.8</td>
</tr>
<tr>
<td>Whole crop triticale</td>
<td>0.86</td>
<td>14.4</td>
</tr>
<tr>
<td>Fodder beet</td>
<td>0.81</td>
<td>12.1</td>
</tr>
</tbody>
</table>

$^1$Utilisation: kg consumed per kg grown

Source: GFCM, DARDNI, DAF, Teagasc, UCD, CSO
Alternative feed crops
Components of feed cost

Source: GFCM, DARDNI, DAF, Teagasc, UCD, CSO
Alternative feed crops
Total feed cost/ ha

€2,606
€1,999
€1,805
€1,735
€1,527
€883
€676
0

GG, GS1, GS2, WCT, WCW, WCM, FBH

Source: GFCM, DARDNI, DAF, Teagasc, UCD, CSO
Alternative feed crops
Total feed cost: DM basis

Source: GFCM, DARDNI, DAF, Teagasc, UCD, CSO
Alternative feed crops
Total feed cost: Energy basis

Source: GFCM, DARDNI, DAF, Teagasc, UCD, CSO
Alternative feed crops
Total feed cost: Energy basis

Source: GFCM, DARDNI, DAF, Teagasc, UCD, CSO
Cost relative to purchased barley
Energy basis

Source: GFCM, DARDNI, DAF, Teagasc, UCD, CSO
Cost relative to purchased barley
Energy basis

- Below ave
- Average yield
- Above ave

Source: GFCM, DARDNI, DAF, Teagasc, UCD, CSO
Cost relative to purchased barley

Energy basis

Below ave  Average yield  Above ave

Source: GFCM, DARDNI, DAF, Teagasc, UCD, CSO
Conclusion

- Yield is the greatest factor affecting feed cost variability
- Soil nutrient status and testing is important
- Plastic important for maize, particularly wrt crop quality
- There are range of cost competitive winter feeds
- Range of factors affect the choice of feed crops including:
  - Cost of production and feeding
  - Livestock feed requirements
  - Farm layout
  - Available facilities and labour
Thank you for your attention