An Introduction to the Teagasc Agricultural Knowledge and Innovation System (AKIS)

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Presentation to Conference

“Innovations and knowledge transfer challenges for Farm Advisory Systems 2014–2020 programming period”, Vilnius, Lithuania
Outline

• Teagasc – a brief history
• Teagasc Mission and Goals
• Structure and funding of Teagasc
• The Teagasc AKIS
• Key components of the Teagasc AKIS
• Adviser to farmer communication channels
• Research to adviser communication channels
• Evaluation of advisory/extension outputs, outcomes and impact
• Future challenges and direction
Teagasc

- Teagasc – Pronounced “Chawg-as’k” is a Gaelic word meaning “teachings” or “learnings”

- The Irish Agriculture and Food Development Authority

- An autonomous state agency

- Established in 1988 as an amalgamation of two separate bodies embracing Research, Education and Advisory/Extension

- State Advisory/Extension and Education service a legacy of 100+ years

- Agricultural research 50+ years - establishment of The Agricultural Institute in 1958 with the assistance of Marshall Aid
Teagasc Mission

“To support science-based innovation in the agri-food sector and broader bio economy so as to underpin profitability, competitiveness, and sustainability”.

The Irish Agriculture and Food Development Authority
Teagasc Goals

1. “Improve the competitiveness of agriculture, food and the wider bio-economy”
2. “Support sustainable farming and the environment”
3. “Encourage diversification of the rural economy and enhance the quality of life in rural areas”
4. “Enhance organisational capability and deliver value for money”.

The Irish Agriculture and Food Development Authority
### Teagasc Advisory Staff and Walsh Fellows on the 01/01/2013

<table>
<thead>
<tr>
<th>Knowledge Transfer Advisory Regions</th>
<th>Advisory Region Staff 01/01/2011</th>
<th>Advisory Region Staff 01/01/2012</th>
<th>Advisory Region Staff 01/01/2013</th>
<th>% of total Teagasc staff</th>
<th>Advisors</th>
<th>Teachers</th>
<th>Managers / Admin.</th>
<th>Other Support Staff</th>
<th>Walsh Fellows 01/01/2013</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>403.7</td>
<td>391.4</td>
<td>359.9</td>
<td>32%</td>
<td>239*</td>
<td>32</td>
<td>84.7</td>
<td>3.8</td>
<td>15</td>
</tr>
</tbody>
</table>

* Teagasc Advisor numbers fell in 2012 from 258 on the 01/01/2012 to 239 by year end due to retirements, redeployment, and restrictions on recruitment.
<table>
<thead>
<tr>
<th>Management Accounts</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Actual</td>
<td>Budget</td>
</tr>
<tr>
<td>Income</td>
<td>€ '000</td>
<td>€ '000</td>
<td>€ '000</td>
</tr>
<tr>
<td>Knowledge Transfer Advisory Income</td>
<td>11,943</td>
<td>12,345</td>
<td>11,617</td>
</tr>
<tr>
<td>Expenditure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge Transfer Advisory Expenditure</td>
<td>31,621</td>
<td>28,902</td>
<td>27,466</td>
</tr>
<tr>
<td>% of Advisory exp. recovered from Advisory Charges</td>
<td>38%</td>
<td>43%</td>
<td>42%</td>
</tr>
<tr>
<td>Advisory exp. * as a % of total Teagasc Spend</td>
<td>24%</td>
<td>23%</td>
<td>22%</td>
</tr>
</tbody>
</table>

* Total Expenditure excluding pensions
The Teagasc AKIS …
The three-legged stool …
The Irish Agriculture and Food Development Authority
Cascade model - operational version of Teagasc AKIS

Research Farms
Curtin’s
Derrypatrick
Athenry

BETTER farms
Beef – 37
Sheep – 10
Dairy – 37

14,000 Discussion Group members

45,000 Clients

140,000 Farmers

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Research to adviser communication channels

- Integrated programme structure – Research and Knowledge Transfer (KT) departments (subject matter specialists) report to the same Head of Programme
- Regular In-service Training (monthly) sessions and Webinars
- Regular communications between subject-matter specialists and advisers, including phone conferences
- Regular publication of Technology Updates (short versions of newly published research in KT-usable format)
- Special research “open days” for advisers
- International study visits
Adviser to farmer communication channels

- Discussion Groups (DGs)
- “One-to-one” (consultancy)
- Open days (exhibits of technology/practices)
- Farms walks' (structured visits to “model” commercial farm)
- Publications
  - T-Research (Teagasc - quarterly)
  - Today’s Farm (Teagasc - bi-monthly)
  - Newsletters (Teagasc - monthly)
  - Farming Media
- Web [Webinars, Apps, Facebook & Twitter (Interactive Q&As)]
Teagasc KT advisory models and tools

• Models (cascade or ripple model)
  • Research Demonstration farms
  • BETTER FARMS (commercial farms with intensive advisory input)
  • Discussion Groups (DGs)

• Tools (software & databases)
  • e-Profit Monitor (Teagasc and Irish cattle Breeding Federation)
  • Cost Control Planner (Teagasc)
  • Financial Planner (Teagasc)
  • Pasture Base Ireland (Grass Production Database - under development)
Teagasc research demonstration dairy farms

Curtin’s Farm – Southern region
- 48 ha (soil: free draining sandy loam over Karst limestone)
- 140 cow spring calving dairy herd
- Farmlet systems research
- Develop and appraise alternative pasture-based dairy systems focused on sustainable high profit per hectare milk production for the southern region.

Ballyhaise Farm (agricultural College) – Northern region
- 32 ha (soil: clay/loam Drumlin)
- 110 cow spring-calving dairy herd
- Farmlet systems research/education resource
- Develop and demonstrate high profit per hectare pasture-based dairy systems for the northern region.
Teagasc research demonstration farms (Beef and Sheep)

Derrypatrick Beef Farm (Principal beef production region - East)

• 62 ha (soil: heavy brown earth gley)
• 100 cow spring calving suckler herd
• Farmlet systems research
• Evaluate alternative cow genotypes in pasture-based suckler systems focused on maximising gross margin/ha (target €1000/ha)

Athenry Sheep Farm (West of Ireland)

• 30 ha (soil: free draining stony loam over limestone rock)
• 360 ewe lowland March lambing flock
• Farmlet systems research and Demonstration
• Development of profitable and sustainable pasture-based systems of lamb production to demonstrate the potential and operation of high output/ha sheep flocks
• BETTER … “Business, Environment and Technology Through Extension and Research”

• A national 3-year programme (2nd phase) to demonstrate the potential to increase the gross margin on suckler and beef farms to €1,000/ha through an intensive farm advisory programme.

• Focus on enhancing the level of technical efficiency on a small group of participating farms (35 in the current programme).

• Dissemination of the results from participating farms to the wider population of Irish beef farms through (i) weekly reports in the farming media (The Irish Farmers Journal) throughout the year and (ii) regular farm walks, seminars, etc.
BETTER Beef Programme structure

Programme Stakeholders

Management Team
1 Researcher, 4 Programme Advisers, Programme Mgr.
2 Farmers Journal

Industry Partners

4 Programme Advisers

32 Local-area Advisers

35 Commercial Beef farms & 2 Agric Colleges

160 “Satellite” Farms

The Irish Agriculture and Food Development Authority
Discussion Groups – Structured Peer to Peer learning

Discussion Groups: 15-20 members managed by farmers and facilitated by advisers

Substantial shift away from “one-to-one” delivery and toward Discussion Groups in recent years

**Early 1990s**: Teagasc incorporates discussion groups into advisory programmes

**Mid 1990s**: industry (mainly dairy co-ops) become involved in discussion group programmes

**2009-**: state support for formation of discussion groups (Dairy, Beef and Sheep)
Benefits of Discussion Group membership (Dairy)

- Discussion Group members are up to 20% more likely to adopt new technologies and best management practices
- Positive impact on grassland, breeding and financial management
- Changes made by group members in last three years: grassland management (70%); breeding and fertility (13%); and reduced costs (11%)
- Discussion Group members earned €247 premium per hectare in gross margin terms
- Discussion Group members earned 2 to 3 cent more per litre than non group members
- Gross Margin/hectare on a 50-cow and otherwise identical farm of a DG member is about €2600 compared to €2350 for the non-member.
  - A difference of 11% as a result of membership)
Tools: Example - Teagasc eProfit Monitor (ePM)

- Secure online access for farmers and advisers to enter and analyse farm financial data
- Multi-enterprise (dairy, cattle, sheep and tillage) analysis possible
- Central database with regular secure backups
- Each enterprise’s performance can be assessed against a benchmark/standard
- Give feedback to the farmer on the results
- Work with the farmer in using the results in decision making for the year ahead
## Teagasc eProfit Monitor

### Dairy Enterprise Summary Report 2011

#### Cents per Litre

<table>
<thead>
<tr>
<th>Farmer: Example Farm</th>
<th>Code:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical Farm</th>
<th>This Year</th>
<th>Last Year</th>
<th>% Change</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm Ha</td>
<td>45.20</td>
<td>45.20</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Stocking Rate (LU/ha)</td>
<td>2.24</td>
<td>2.16</td>
<td>+4%</td>
<td>2.5</td>
</tr>
<tr>
<td>Dairy Cow Numbers</td>
<td>63</td>
<td>62</td>
<td>+2%</td>
<td></td>
</tr>
<tr>
<td>Milk Platform Ha</td>
<td>27.00</td>
<td>26.90</td>
<td>+0%</td>
<td></td>
</tr>
<tr>
<td>Milk Plat Stocking Rate</td>
<td>2.33</td>
<td>2.30</td>
<td>+1%</td>
<td>3.3</td>
</tr>
<tr>
<td>Litres Milk Produced</td>
<td>400,703</td>
<td>388,477</td>
<td>+3%</td>
<td></td>
</tr>
<tr>
<td>Protein %</td>
<td>3.27%</td>
<td>3.22%</td>
<td>+2%</td>
<td>3.60%</td>
</tr>
<tr>
<td>Fat %</td>
<td>3.76%</td>
<td>3.72%</td>
<td>+1%</td>
<td>4.20%</td>
</tr>
<tr>
<td>Kg MS per Cow</td>
<td>461</td>
<td>448</td>
<td>+3%</td>
<td>442</td>
</tr>
<tr>
<td>Kg MS per Milking Platform Ha</td>
<td>1,075</td>
<td>1,033</td>
<td>+4%</td>
<td>1,460</td>
</tr>
<tr>
<td>Co-op Price (cent/litre)</td>
<td>33.85</td>
<td>29.30</td>
<td>+16%</td>
<td>31</td>
</tr>
<tr>
<td>Replacement Rate</td>
<td>41 %</td>
<td>27 %</td>
<td>+52%</td>
<td>18%</td>
</tr>
</tbody>
</table>

### Financial Farm

<table>
<thead>
<tr>
<th>Per Farm Ha</th>
<th>This Year</th>
<th>Last Year</th>
<th>% Change</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per Farm Ha</td>
<td>€1,325</td>
<td>€875</td>
<td>+51%</td>
<td></td>
</tr>
<tr>
<td>Whole Farm Net Profit</td>
<td>€1,686</td>
<td>€1,238</td>
<td>+36%</td>
<td></td>
</tr>
</tbody>
</table>
Teagasc Performance Management Framework

Influences:
- External Environment
- DAFM
- Stakeholder
- Consultative groups
- Food Harvest
- 2020
- Teagasc Statement of Strategy 2012 – 2015
- Business Plans
- Road Maps
- Foresight 2030

Stage 1
Teagasc Outputs

Teagasc has 100% control over the achievement of these outputs.

Stage 2
Technology / Practice Adoption

Due to external factors Teagasc has less than 100% control over the achievement of Technology Practice Adoption and Impact.

Stage 3
Impact

Responsibility of Programmes / Departments / Units

Outcomes of Joint / Combined Actions of Research, Knowledge Transfer and Operations

The Irish Agriculture and Food Development Authority
## Selection of Knowledge Transfer (Advisory) Outputs for 2013

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No of Advisers (Dec 2012)</strong></td>
<td>238.8</td>
</tr>
<tr>
<td>1 Clients</td>
<td>42,131</td>
</tr>
<tr>
<td>2 Visits</td>
<td>21,977</td>
</tr>
<tr>
<td>3 Consultations</td>
<td>61,660</td>
</tr>
<tr>
<td>4 Discussion /Project Groups</td>
<td>697</td>
</tr>
<tr>
<td><strong>Farm Planning Activities</strong></td>
<td></td>
</tr>
<tr>
<td>5 SFP submitted</td>
<td>41,400</td>
</tr>
<tr>
<td>6 Profit Monitors</td>
<td>6,579</td>
</tr>
<tr>
<td>7 DEP/ BTAP / other physical farm plan</td>
<td>5,266</td>
</tr>
<tr>
<td>8 Full Farm Business Plans</td>
<td>1,442</td>
</tr>
<tr>
<td><strong>Environment / Regulation Activities</strong></td>
<td></td>
</tr>
<tr>
<td>9 Simple Fertiliser Plans</td>
<td>10,545</td>
</tr>
<tr>
<td>10 New Derogations</td>
<td>458</td>
</tr>
<tr>
<td>11 Derogation renewals/ revisions</td>
<td>2,778</td>
</tr>
<tr>
<td>12 Cross Compliance Support</td>
<td>5,919</td>
</tr>
<tr>
<td>13 TAMS</td>
<td>613</td>
</tr>
<tr>
<td>14 AEOS</td>
<td>734</td>
</tr>
<tr>
<td>15 REPS Records</td>
<td>8,113</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
</tr>
<tr>
<td>16 No. of BETTER/Monitor Farms</td>
<td>96</td>
</tr>
<tr>
<td>17 Total No. of Meetings / Seminars</td>
<td>86</td>
</tr>
<tr>
<td>18 Total No. Farm Walks /Demos</td>
<td>158</td>
</tr>
<tr>
<td>19 Total Other Events</td>
<td>102</td>
</tr>
</tbody>
</table>
# Selection of Teagasc 2013 Practice Adoption and Impact KPIs

## Dairy Practice Adoption

**Grass Utilisation**
- Increase grass utilization by 5% base of 7.8 DM/ha

**Breeding / Quality**
- Increase Herd EBI by €10 per year
- Increase the % of milk recording farms with average SCC <200,000 cells/ml from (2010) 19% to 50%

## Dairy Impact
- Increase milk solids produced per hectare to 1,250 kg/ha
- Reduced total production costs to less than €2/kgMS (Spring) and €2.5/kgMS (Autumn) on eProfit Monitor farms
- Achieve an annual gain in profit from productivity exceeding 4% per annum

## Beef Practice Adoption

**Grass Utilisation**
- Increase grass utilisation by 3% from 6.6 to 6.8 t DM/ha

**Breeding**
- Reduce calving interval by 2 days from 396 days to 394 days
- Increase use of 4 & 5 star sires in beef herd on ICFB

## Beef Impact
- 3% increase in average kg/ha liveweight (equivalent to 16kg)
- Reduce cost of producing a kg of beef liveweight on eProfit Monitor farms by 2% from €1.99 to €1.95
- Achieve an annual gain in profit from productivity exceeding 2% per annum.

## Sheep Practice Adoption

- Increase sheep farmers participation in Sheep Ireland from 30% to 40%
- Increase the average stocking rate in lowland mid-season sheep production from 8.8 currently to 11.5 ewes.

## Sheep Impact
- 5% increase from 10.6 to 11.1 lambs weaned per hectare on eProfit Monitors farms
- Reduce Costs of Production By 3% on avg from €96 to €91 per head *
- Top 20% with costs < €75/head *
- Increase Profit from Productivity by 2% per annum.

* Costs at constant prices
Using ePM to Measure Advisory Impact (profit from productivity)
Challenges and future directions

• Industry and service challenges (some independent and some responsive)

• Sustainable intensification; larger farms; expansion (dairy) and greater price and production volatility (climate change)

• Resource constraints, especially staff, due to public-employment recruitment embargo

• Continued shift towards group-based delivery and away from “one-to-one” service

• Clearer delineation between public service function and role of the private sector (“contestability”)

• Continued need to improve and innovate knowledge transfer systems