Achieving sustainable land management - *the challenges and opportunities*

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Content

- The challenges
- Our current approach
- Opportunities
  - Collaboration and decision tools to promote best farm practice
  - Developing the market for sustainable land practices
Some of the environmental challenges for agri-food supply chain

25 Year Environment Plan goals
Goal ‘Clean air’

Around 88% of ammonia emissions in the UK come from agriculture.
Goal ‘Clean and plentiful water’

Water Framework Directive targets to achieve Good Status.

For rivers
70% failing due to sediment
60% failing due to nitrates
25% failing due to phosphates
Goal ‘Clean and plentiful water’
Poor Infrastructure
New legislation in England

Farming rules for water: are you on the right track?

From April 2018 all farmers need to meet new rules to protect water quality.

#FarmingGoodPractice
gov.uk/defra/farmingrulesforwater

Introduced April 2018
Current approach
Regulation of farm businesses in context

Meets strategic objectives e.g. 25 Year Environment Plan

- Payments for ecosystem services
- Catchment partnerships
- Innovation and best practice
- Some whole farm 3rd party assurance schemes

Regulatory baseline
Farmer protects environment and causes no damage.

Non-compliance
Regulatory effort is targeted at places where there are environmental issues

Level of compliance by farmer
- Basic farm payments: cross compliance
- Third party farm assurance
- Advice / knowledge exchange
- Baseline business decisions
Rewarding lower risk farm businesses

- EA formally recognises that LEAF Marque certified farmers likely to be lower environmental risk
- Data sharing portal set up in partnership with LEAF
- Enables EA access to daily update of LEAF Marque farms
- LEAF marque farmers not normally selected for EA inspection, enabling us to target our resources at higher risk farm businesses
Regulation of farm businesses in context

Benefits & opportunities for sustainable land management

- Payments for ecosystem services
- Catchment partnerships
- Innovation and best practice
- Some whole farm 3rd party assurance schemes

Non-compliance

Regulatory effort is targeted at places where there are environmental issues

- Basic farm payments: cross compliance
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- Advice / knowledge exchange
- Baseline business decisions
Promoting sustainable land practices – soil health
Example catchment: Arun and Western Streams

- Highly erodible soils
- High risk crops e.g. salad, potatoes
- Land rented on short term tenancies
- Frequently changing decision makers / contractors
- Transient / absent land stewardship
- Sediment, nutrient impacts on water quality,
- Loss of productive soil. Increased flood risk
Soils erosion
- valuable soil lost
- impact on highway
Sediment removed during water treatment

Sediment dredging from river at public water abstraction point
From productive field to pile
Promoting soil health

- Soil assessment - organic matter, worm counts
- Cultivation techniques – tillage, cross slope contours, timing, machinery
- Crop types, inter-cropping and rotations
- Integrate livestock
- Irrigation and drainage
Run-off attenuation features

Sediment Trap

Check dam

Soil bund

Compost soxx

Debris Dam

Filter fence
Soil erosion prediction tool to determine risk and best mitigation
Soil erosion & compaction control in potatoes

www.cranfield.ac.uk
Predicting sediment loss

Input data includes:
- Soil
- Crop
- Climate
- Slope

Runoff
Eroded sediments
Nutrients e.g. $\text{PO}_4^{3-}$
Soil loss prediction t/ha/year

Example output:
for ‘bare soil. median rainfall’

• Catchment output
• Data also at field and sub-field level
Prediction tool enables selection of best mitigation measures.

Location

• Target specific field/part field

Select mitigation type

Examples:

• Cover crops
• Grass buffers
• Filter socks
• Wheeling management
Future Opportunities

• Developing the market for sustainable land management practices
Components

- **Trading platform /‘wiring’**
  - e.g. auction tool

- **Buyers/beneficiaries**
  - e.g. Private/public sector orgs

- **Sellers/suppliers**
  - e.g. farmers/land managers

- **Brokers/delivery partners**
  - e.g. Third sector

Data/information/decision support tools maximise benefits
Using the online auction tool
Evaluating the tool – outcomes for natural flood management

<table>
<thead>
<tr>
<th>Measure</th>
<th>Countryside Stewardship payment rate</th>
<th>Trial 1 average payment rate</th>
<th>Trial 2 average payment rate (provisional)</th>
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</thead>
<tbody>
<tr>
<td>Maize management</td>
<td>£133/ha</td>
<td>£74/ha</td>
<td>£46/ha</td>
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<tr>
<td></td>
<td></td>
<td>(56% of CS)</td>
<td>(35% of CS)</td>
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<tr>
<td>Hedge planting</td>
<td>£11/m</td>
<td>£12/m</td>
<td>£8/m</td>
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<tr>
<td></td>
<td></td>
<td>(103% of CS)</td>
<td>(70% of CS)</td>
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<tr>
<td>Leaky dams</td>
<td>£461 each</td>
<td>£197 each</td>
<td>N/A</td>
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<tr>
<td></td>
<td></td>
<td>(43% of CS)</td>
<td></td>
</tr>
<tr>
<td>Grassland subsoiling</td>
<td>N/A/A</td>
<td>£68/ha</td>
<td>£54/ha</td>
</tr>
</tbody>
</table>

On average 50% cost reduction compared to countryside stewardship options
Benefits of a market-based approach

- Better value for money
- Lower transaction costs
- Scope to blend private and public funding
- Attractive for suppliers (farmers) – felt more control
- Potential to deliver better/multiple environmental outcomes

More trials to be undertaken in 2019.
Summary

• 25 Year Environment Plan goals present challenges

• We can’t reach goals through regulation only – we need a mix of approaches

• Collaboration & data based tools can improve decisions-making at catchment/field/sub-field level

• They can support development of the market for sustainable land practices
How can LEAF Marque and businesses in the agri-food supply chain enhance their resilience and help to develop this market?

Thank you

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