

**Balancing competitiveness and environmental sustainability –
future challenges facing agriculture**

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Overview

- Some reflections in the English-Irish relationship that is germane to agricultural economics
- Focus on the key environmental issues facing farming and how problem might be converted to opportunity.

Congratulations to the Agricultural Economics Society

- Established in 1926: 83 years of support for evidence over rhetoric, for truth over posturing

Congratulations to Teagasc

- Actively promoting this event, and for bringing high quality applied hard science (biology, engineering, physics) and harder (Economics) to bear on the key issues we face in Ireland, in particular as regards environment.
- Our best hope of integration of environment and agricultural development in Ireland

Reflections on the British Irish relationship

- There is generic antipathy between neighbours...

Edward Mortimer: *A nation..is a group of people united by a common dislike of their neighbours, and a shared misconception about their ethnic origins.*
(from Introduction, *People, Nation and State: A Collection of Essays on Nationalism*, (with Robert Fine)

- But sharpened in the case of Irish English relationship by the Great Famine

Intellectual Antecedents

- Keynes

The ideas of economists, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed, the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist. Madmen in authority, who hear voices in the air, are distilling their frenzy from some academic scribbler of a few years back. I am sure that the power of vested interests is vastly exaggerated, compared with the gradual encroachment of ideas.

Malthus and Darwin

- 211 years ago: Malthus (1798). *An essay on the principle of population*
- "*The power of population is indefinitely greater than the power in the earth to produce subsistence for man*"
- 200 years ago Darwin was born; 150 years since 'The Origin of Species' was published
- 164 years ago, the Great Famine in Ireland begins

Potato famine (1845-1852) the definitive event in Ireland shaping these negative relationships

- The daily intake of potatoes in 1845 was enormous: 4 to 5 kilos (9 to 11 pounds) daily per adult male equivalent for most of the year.

And the tradition lives on..take careful note of the menu for dinner this evening...

Population in England and Wales, Scotland and Ireland (island) 1841 and 2009, Mill.

Year	Eng & Wales	Scotland	Ireland (island)	Ireland as % of Eng and Wales	Ireland as % of Scotland
1841	17.9	2.62	8.2	45.8	312.0
2009	54.1	5.1	6.0	11.1	117.6

Some Outcomes

- A million died, a million left. Infectious diseases -- especially typhoid fever, typhus and dysentery/diarrhea -- rather than literal starvation were responsible for the bulk of mortality.
- Ireland's population dropped from close to half of that of England and Wales to just over 11 per cent by 2009.
- Irish - and subsequently Irish-American – antagonism to Britain was driven by the conviction that 'not enough' was done
- Huge Success of CONCERN Worldwide – cultural disposition to help the hungry

The Shadow of Malthus

- *The government's obsession with parsimony and its determination to make the Irish pay for 'their' crisis cannot but have increased the death rate. The same goes for the insistence on linking relief with structural reform (e.g. by making the surrender of all landholdings over a quarter of an acre in size a strict condition for relief). At the height of the crisis the policy stance adopted by the Whigs was influenced by Malthusian providentialism, i.e. the conviction that the potato blight was a divinely ordained remedy for Irish overpopulation. Compassion on the part of the British elite was in short supply. The fear that too much kindness would entail a Malthusian lesson not learnt also conditioned both the nature and extent of intervention*
- Source *Ireland's Great Famine*, Cormac Ó Gráda, University College Dublin
- <http://eh.net/encyclopedia/article/ograda.famine>

Sultans and Queen Victoria

- *In 1845, [Ottoman Sultan Abdülmecid](#) declared his intention to send 10,000 sterling to Irish farmers but [Queen Victoria](#) requested that the Sultan send only 1,000 sterling, because she had sent only 2,000 sterling. The Sultan sent the 1,000 sterling but also secretly sent 3 ships full of food. The English courts tried to block the ships, but the food arrived at [Drogheda](#) harbour and was left there by Ottoman sailors*
- Political separation in some form was probably inevitable thereafter

**So Warren Gatland (coach of the Welsh rugby team)
got it wrong..**

Speaking before the Championship decider in Cardiff, reported *the Times*, March 19, 2009.

“Probably, of all the teams in the Six Nations, the Welsh players dislike the Irish the most”

Only a New Zealander could say this..

But benefits today?

If there were no famine, and Ireland had maintained its population 'share' we would have almost 25 million people on the island, of which about 9 million would be in the greater Dublin region, a prospect that not all would welcome.

**Colonial Experience creates
differences in overtness and
transparency.**

Eamon De Valera (former Taoiseach and President) *In England, you could say what you liked so long as you did the right thing, while in Ireland you could do what you liked, so long as you said the right thing*

Environmental Challenges as Opportunities

Climate Change – overview

- It's already happening, and we are devoting too little resources to understanding how to best adapt.
- Use of the atmosphere to dispose of greenhouse gas emissions is now a scarce resource. We need to factor in the costs of using it just as we factor in the cost of land, fertiliser etc.
- In policy terms in Europe – and soon in the US –it is a zero sum game – if you emit more, I have to emit less.
- The price of a tonne of CO₂ in the European Union Emissions Trading scheme will be the equivalent of 'Brent crude' oil price as a proxy.
- China now the largest greenhouse emitter, and holder of US debt. Some interesting geodynamics in prospect

Climate Change – Adaptation 1

- Adaptation to climate change that will already happen is the single biggest challenge and opportunity facing agriculture.
- This means having the best evidence possible about:
 - What the climatic future holds
 - What it implies for the existing crop mix
 - What are new opportunities to which it gives rise.
- Earth Systems Institute UCD in collaboration with Teagasc and others is running series of talks every Friday at 12:30 in the Royal College of Physicians, Dublin on ‘Meeting the Climate Change Challenge’ – see: <http://www.ucd.ie/earth/>
- Many presentations address the ‘What can we expect’ question.

Climate Change – emissions

- Fundamental equation –methane with oxygen produces CO₂
- $1 \text{ CH}_4 + 2 \text{ O}_2 \rightarrow 1 \text{ CO}_2 + 2 \text{ H}_2\text{O}$
- In **OECD countries**, only Ireland and New Zealand have a major share of emissions from agriculture, but everybody has some, and this is a real market opportunity. We should not become technology takers. This is an opportunity to find a way forward that can reduce emissions at a cost in the €20-40 range, and export the smart technologies and smart policies that deliver.
- In **developing countries**, huge issue relating mostly to land clearance, which is linked closely to biodiversity.. The solutions here are likely to be some combination of property rights adjustment – give farmers a ‘commercial stake’ in keeping natural areas intact – and big breakthroughs that makes intensification – using the same land to produce more – rather than extensification the most commercial option

Climate Change – rewarding sequestration

- The rules of photosynthesis has not been repealed:
- Sunlight ↓
- $6 \text{ CO}_2 + 6 \text{ H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{C}_6 + 6 \text{ O}_2$
- The problem is the ‘system’ has concluded that the evidence to quantify the tonnes of sequestration achieved is still too inexact - and the system – what would happen in the absence of policy – is too subject to gaming - therefore no price signal rewarding progress.
- But after 2012, in Europe, there are strong incentives – existence of a cap on the non trading sectors – and some possible interaction with the EU ETS – to provide a real and continuing price signal from 2013.

Water – the new oil - quantity

more surpluses and deficits than previous world wide.

Both storage capacity and flood control capacity will be in the 'wrong place' some of the time.

All modelling shows that there is huge water wastage when it is priced at zero or very low, as happens in many parts of Europe and the rest of the world.

Unless water pricing by the State, and or traded for a price that reflects scarcity – is introduced, we'll drift towards gratuitous scarcity, rationing, tension between farmers and the city, and the latter will eventually 'win'.

Noah Cross in Chinatown (1974) *Either you bring the water to L.A. or you bring L.A. to the water*

Farmers every where, and householders in Ireland, are allergic to paying for water. But the only way to address scarcity in a way that is economically efficient and fair.

Short term gain, but in the longer term, the costs of not pricing and real, and will grow inexorably over time.

Adaptation 2

But we need far more focus on these questions, informed by the best possible research, and a series of demonstration projects to help find a productive way forward.

The continuing context is that we will have much more intense weather, more droughts and more flooding, and water management (see below) – too much or too little - will become a key issue.

In Ireland, there is some confusion concerning property rights to ground water. This will crystallise in the form of legal battles and associated uncertainties and damage to both enterprise and environment if it is not addressed.

Water – Quality 1

Ireland peculiarity

the dispersed patterns of rural settlement that many favour in Ireland, where water supply and waste disposal are also dispersed, poses substantial risks for groundwater water quality.

If development is confined to the right soils and substrate, *if* the correct equipment is installed, and *if* it is maintained and managed properly, then problems should not arise.

But there are many ‘ifs’ in the preceding sentence, and all conditions are unlikely to apply all of the time.

Because a site is multiple times the market value of agricultural land, there is continuing pressure to allow development

Water – Quality 2

- Intensification of farming, including especially the concentration of livestock waste, but also the increased use of fertilisers, also increase the likelihood of waste flowing into groundwater or streams.
- And a 'blame game' sometimes develops, where eutrophication of water is blamed by one source on the other and vice versa
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- With the help of subsidies, farmers are investing heavily in waste storage capacity, so as to ensure that waste is not spread on land in inappropriate weather. Fertiliser use has stabilised or fallen because of better information and higher prices.

Water Quality - action

There is a strong case for the following:

- Providing more autonomy to farmers to devise strategies for managing their waste. At present it is a very top down technology driven process, that does not encourage or reward initiative or innovation.
- Developing tracers that would allow the origins of emissions to be traced back to the source, perhaps related to DNA testing. From field to fork traceability is now becoming universal in OECD countries, and will eventually apply in all countries that wish to export to the OECD.

Biodiversity – which should be re-named 'nature'

Quantity of Production and Biodiversity: It is hard to imagine increasing biodiversity and increasing output consistently at the same time, although I'm sure that there are exceptions. More quality and higher prices may be associated with more biodiversity.

Tropical Imperative: Most of our Planet's species are in the tropical zone. Since we all – and especially those who are rich and need advanced medicines – benefit at several levels – including climate change mitigation – from conserving these endowments, there are very strong arguments for supporting conservation in this zone. In relative terms, it is not clear how effective in terms of costs and achievements biodiversity conservation is in OECD. There seems to be strong case for concentrating efforts in 'the South'.

Some Cheap Huckstering

UCD is bringing over 300 biological and physical scientists, engineers and economists together in the Earth Systems Institute to partner with other universities and Teagasc to have a real go at developing *smart technologies* and *smart policies* to move us forward

Conclusions

We are way behind, and time is not on our side

Three priorities for moving forward

Research, research and research, to which should be added
'Demonstration'

We need smart technology and smart policy to move agendas forward, focused on helping farmers move from passive accepters or resisters to these challenges, to seeing ways forward that can combine commercial and environmental success.

Key roles for *Agricultural Economics*

- Invented the application of economics based on substantive evidence and the scientific method.
- It understands the power of **incentives** and of high quality **information**
- Its ethic, ethos and approach has never been more needed to move our planet and our farmers forward in ways that our posterity will be proud of.

And it takes real effort to be certain:

- **Hugh Leonard:** *Everything I once thought I knew for certain I have seen inverted, revised, disproved, or discredited. Shall I tell you something? In seventy years the one surviving fragment of my knowledge, the only indisputable poor particle of certainty in my entire life, is that in a public house lavatory incoming traffic has the right of way. [Drumm to Charlie in *Da* (Act Two)]*

End of Story

Thanks