



Innovation Seminar

20 October 2017



INNOVATION SEMINAR



Introduction

DAVID CAFFALL

COALITION COORDINATOR



Innovation Seminar

Speakers

- *Introduction – David Caffall*
- *Sarah Mukherjee, CPA*
- *Stephen Howarth, AEA*
- *Dawn Howard, NOAH*
- *Jeremy Moody, CAAV*
- *Discussion*



What is the-

agri-brexit
COALITION



A loose alliance of 8 organisations

- **NOAH** **National Office for Animal Health**
- **NAAC** **National Association of Agricultural Contractors**
- **GAFTA** **Grain and Feed Trade Association**
- **CPA** **Crop Protection Association**
- **CAAV** **Central Association of Agricultural Valuers**
- **BSPB** **British Society of Plant Breeders**
- **AIC** **Agricultural Industries Confederation**
- **AEA** **Agricultural Engineers Association**



Why was it formed?

**To provide a single, joined-up voice for
the organisations representing the industries
supplying goods and services to
UK agriculture in the Brexit process.**

- **A segment with turnover well in excess of £10 Billion annually.**
- **A near-market R&D spend in excess of £70 Million annually.**
- **The leaders in supplying goods, services and advice to Britain's farms.**

Our 5 Key Issues



- **Innovation**
- **Free Trade / Customs**
- **Raising Productivity**
- **Pragmatic Policy & Regulation**
- **A Modern, Resilient Agriculture**



CLEARLY OUR RAISON D'ETRE

INNOVATION SEMINAR

agri-brexit
COALITION

Crop Protection and Innovation Challenges and Opportunity

SARAH MUKHERJEE

CROP PROTECTION ASSOCIATION



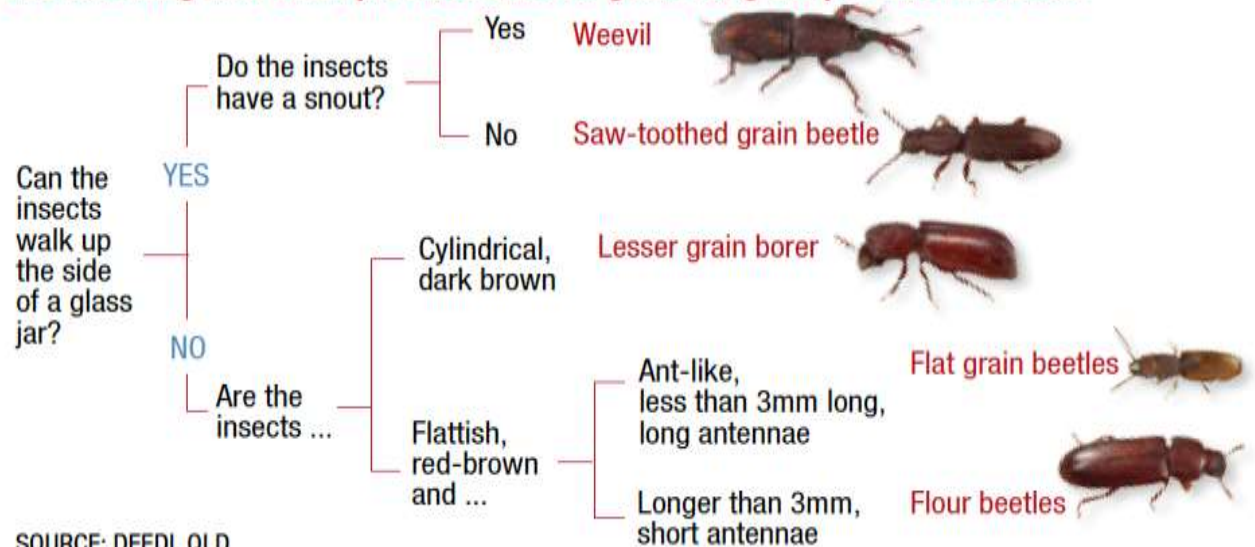
Not so long ago...



All after your bread...

IDENTIFICATION OF COMMON PESTS OF STORED GRAIN

The following flow chart provides a useful guide for grain pest identification.



SOURCE: DEEDI, QLD

BREXIT: A CHALLENGE AND OPPORTUNITY

Crop protection products are vital to the success of the UK food and farming sector. Brexit presents the UK with a unique opportunity to become a global hub for crop protection research and development.

Our members
invest
£200m

contributing to a total
industry spend of

In **R&D**
each year

£4bn
globally

1990

2017

33%

7%

But R&D spend on
products for the
European market
is declining

The food and farming
sector is worth

£108bn

The UK spends

£750m

on crop protection
every year

Without crop protection
products, the
nation's food bill
would increase by

40%

Putting pressure on
household budgets

This is the UK's
chance to lead
the way in
crop protection
innovation across
the globe.


Crop Protection
Association

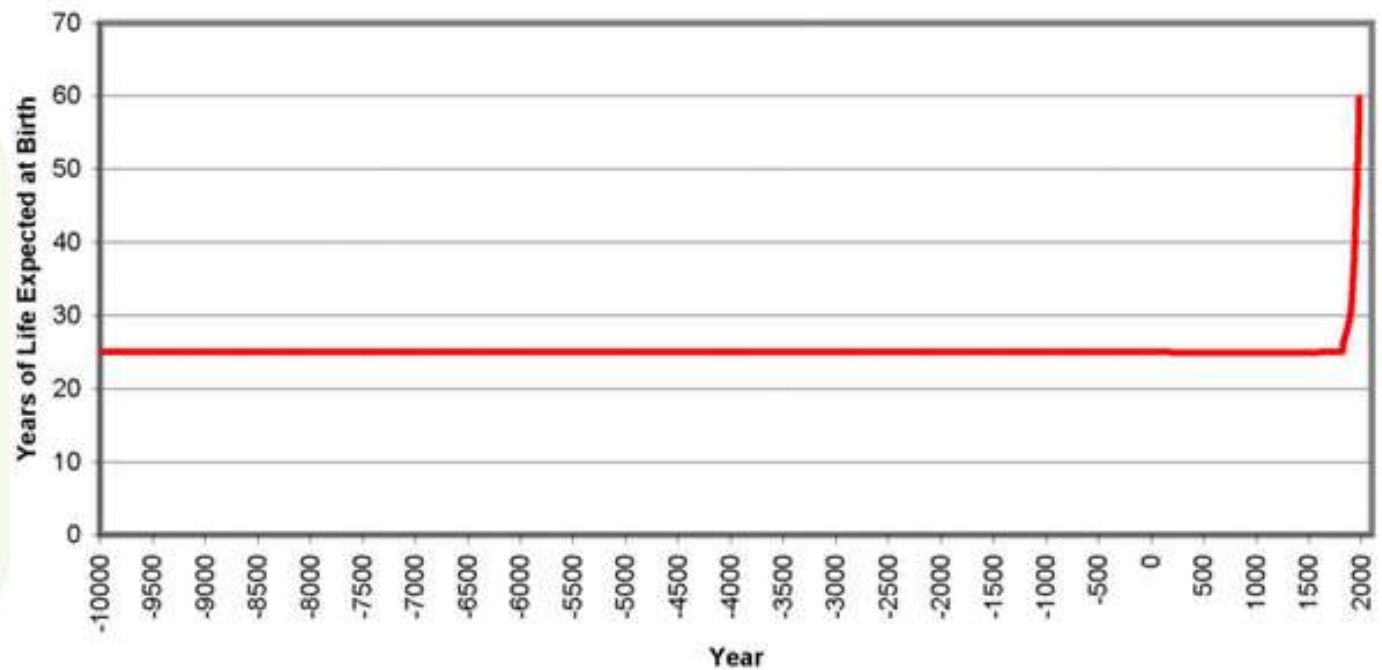


I'm all ears.....

The appliance of science.....



Global Life Expectancy -10,000 BCE - 2003



Source: Indur M. Goklany. "The Improving State of our World." Washington, DC: Cato Institute, 2007, 36. Life expectancy is believed to have been 20-30 years prior to 1820. Age 25 is selected as an average.

The appliance of science (2)



Thank you

Sarah.m@cropprotection.org.uk





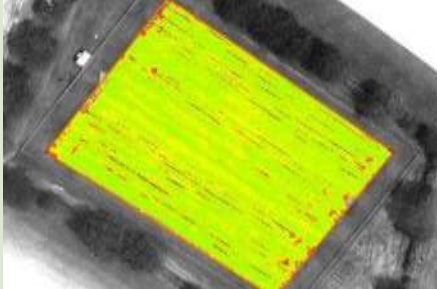

Innovation in action

- State of the art

STEPHEN HOWARTH

AEA

FARMING IS CONSTANTLY EVOLVING

1.0 Mechanisation	2.0 Green revolution	3.0 Precision agriculture	4.0 Digital Farming
1990	1950	1990	2010
			
<p>Introduction of tractors</p> <p>Increase in efficiency</p> <p>But still labour intensive</p> <p>Relatively low productivity</p>	<p>New agronomic practices</p> <p>Use of fertiliser and pesticide</p> <p>Better seed quality</p> <p>Increased yields</p>	<p>Guidance systems</p> <p>Yield monitoring</p> <p>Variable rate application</p> <p>Telematics</p> <p>Data management</p>	<p>Farm management systems in real time</p> <p>Added-value services</p> <p>Automation</p> <p>Data platforms improve processes and value chain</p>

**WHERE NEXT?
AUTOMATION**

HandsFree Hectare



Harper Adams University's Hands Free Hectare was the first time anywhere in the world a crop has been successfully grown without a single human setting foot on the field.



It used a specially adapted tractor and combine harvester, which could be controlled remotely, while crops were monitored using drones.



WHERE NEXT? ALTERNATIVE FUELS



A variety of alternative fuel options are being worked on, to replace diesel engines. These include electric power, which could use on-farm renewable generation and methane power, utilising waste products from farming. Solar powered options may need a bit more work, though!



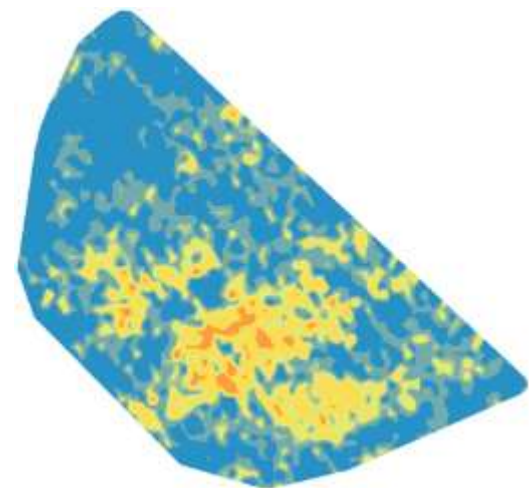
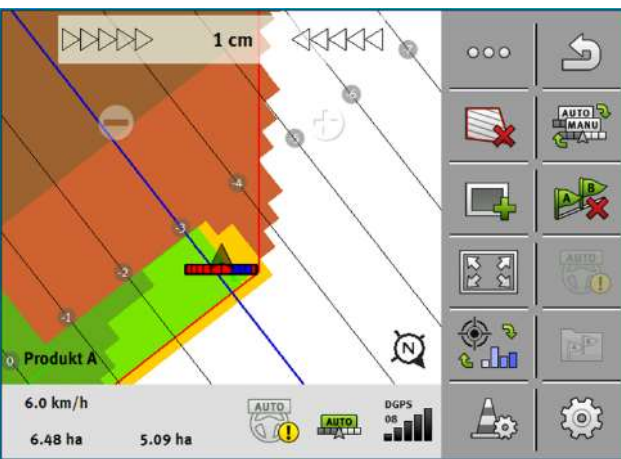
WHERE NEXT? DIGITALISATION



The biggest driver of change, though, is digitalisation. It's necessary for automation but has much wider potential.

One example involves the UK's cluster of sprayer manufacturers. Use of cameras and sensors can detect weeds, such as Black Grass, so pesticides can be targeted where they are needed. Software can also avoid spraying the same area twice, so less chemical is used.

There are many other examples, using robotics, telematics and other emerging technologies.



Video: [Click here to view](#)

**MAKING IT HAPPEN
THE OPPORTUNITY**

Leaving the EU gives the UK a unique chance to decide if we want to be at the forefront of making the farm of the future a reality



MAKING IT HAPPEN

THE BENEFITS

- Economic benefits from improved productivity on farm and increased investment in the UK
- Environmental benefits through reduced use of chemicals and lower emissions from machinery
- Social benefits from freeing up farmers' time and strengthening rural communities
- EQUALS
- **A more sustainable, competitive, productive and highly regarded UK agricultural sector**



MAKING IT HAPPEN

THE POLICY FRAMEWORK

- Support for the investment required by farmers wanting to adopt new technology
- Development of the skills and knowledge needed:
 - Engineers and technicians to make, service and repair new technologies
 - Farmers and growers who use them
- Regulation which is appropriate to the industry, so investment can focus on delivering value not compliance
- A digital infrastructure which allows everyone to benefit
- Agreeing trade deals which allow UK manufacturers to compete globally





Thank You

Stephen Howarth

01733 207609

07841 489292

Stephen.Howarth@aea.uk.com

INNOVATION SEMINAR

agri-brexit
COALITION

Innovation in action

- Case study

DAWN HOWARD
NOAH



NOAH represents the UK animal health industry. Promoting the development and use of safe, effective, quality medicines for the health and welfare of all animals

Role of NOAH

- Represent 90% of UK animal medicines market; value circa £630m+
- Corporate Member = UK Marketing Authorisation
- Member of EU & global animal health associations





Animal Health



People depend on animals for food, companionship, assistance and leisure. They rely on the UK animal medicines industry to help keep animals **healthy** and protect their **welfare**. Our medicines treat and prevent disease – it's not possible to raise livestock or keep pets without them.

Imagine a world without animal medicines...

We will be at greater risk from pests and diseases such as salmonella, rabies and worms.

More livestock would become sick and would not be permitted to enter the food chain – essentially going to waste.

Food would become more expensive, British farming would be put under further strain, and we would be even more reliant on imports.



The industry supports many others, including:

19,700
vets

9,000
qualified animal health advisers

11,700
veterinary nurses

Thousands of livestock farmers and people involved in pet and equine care, sport and leisure

Specialist research units at eight UK universities

The UK animal medicines industry is an innovative, skills-based sector. We employ around 2,000 people directly and represent £600m of sales every year.

The industry invests £500m across Europe in research and development, creating and improving veterinary medicines to keep animals healthy.



Pets are kept by
13m
UK households



The police, firefighters and other emergency services call upon nearly
1,500
working dogs



8,000 guide dogs,
1,600 hearing support dogs and hundreds more animals support people with disabilities across the country



At any given time there are around
140 million
cows, pigs, sheep and chickens in the UK



The UK produces over
165k tonnes
of farmed fish every year



British families care about the welfare of their pets, spending
£6bn
on their care every year.
That generates
£2.2bn
of tax revenue.

All these animals have a right to have access to the correct medicines to treat disease and keep them healthy and support good welfare.

Innovation in action

- NOAH members produce a range of veterinary medicinal products; vaccines, immunologicals, anti-inflammatories, anti-parasitics, teat sealants, antibiotics
- Long history of innovation
- But innovation & new product development is costly
- Vet medicines market in EU only 2.5% of human medicines market!

Innovation in Animal Health



Healthy animals mean healthy people and a healthier planet

Our members provide solutions to prevent and treat animal disease. Without them, it would be simply impossible to raise healthy livestock or look after our pets.

@animalhealthEU
WeCare.petsEurope

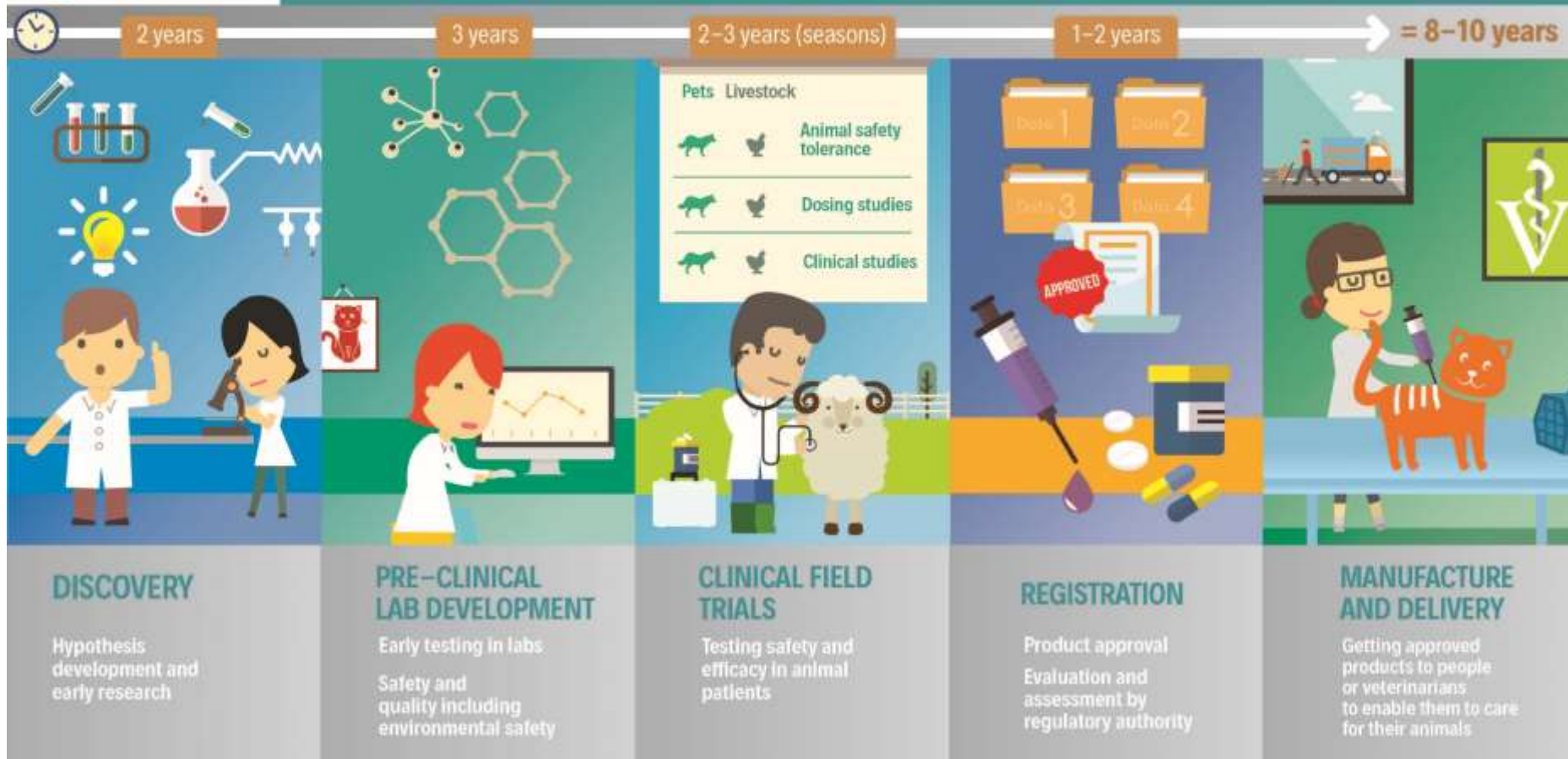
www.animalhealtheurope.eu



The pathway to new Veterinary medicines



Developing new medicines and vaccines requires extensive research and testing



Innovation in action- AMR

- O'Neill review on Antimicrobial Resistance (AMR) published May 2016
- 10 global recommendations
- *No. 5 Promote new, rapid diagnostics to cut unnecessary use of antibiotics*
- *No. 6. Promote the development and use of vaccines and alternatives*



Innovation in action

Promote new, rapid diagnostics to cut unnecessary use of antibiotics

- Our industry's aim is for antibiotics to be available & effective for as long as possible – for this to happen we need responsible use
- Fully support development & wider use of rapid diagnostics
- Not currently the main focus of NOAH members' business activities
- UK needs a positive climate to encourage R&D by diagnostic companies to improve availability
- Global, human & veterinary medicine challenge

Innovation in action

Promote the development and use of vaccines and alternatives

- Use of vaccines to prevent disease & reduce the need for sick animals to be treated with antibiotics is a concept all can support
- Numerous success stories of innovation by animal medicines industry to develop vaccines *where it is technically feasible to do so*

Innovation in action

- Food Standards Agency announced in October 2017 that "Lion Mark" eggs, which includes majority of eggs produced in the UK, are virtually free of salmonella.
- Vaccination of laying hens played a central role in this



Innovation in action

- Salmon Pancreas Disease virus (SPDV) in farmed salmon
- A new vaccine to protect against SPD was authorised across the EU in 2017.
- UK regulatory agency (VMD) steered the authorisation application through challenging regulatory hurdles, involving complex scientific debates to champion the adoption of this innovative DNA vaccine technology for veterinary use

News story

First veterinary DNA vaccine authorised for Clynav

From:
Published:

Veterinary Medicines Directorate
29 June 2017

First DNA vaccine authorised in the EU to protect Atlantic salmon against Salmon Pancreas Disease.



A new vaccine to protect Atlantic salmon against Salmon Pancreas Disease, for which the VMD played the lead assessment role, has been authorised across the EU through the [centralised procedure](#). Clynav is the first DNA vaccine to be authorised in the EU.

The VMD steered the authorisation application through challenging regulatory hurdles involving complex scientific debates and negotiation, championing the adoption of this innovative DNA vaccine technology for veterinary use.

The authorisation of this vaccine has the potential to herald a new era of novel vaccines to protect animals against disease.

Clynav is marketed by Elanco Europe Ltd.

Source- <https://www.gov.uk/government/news/first-veterinary-dna-vaccine-authorised-for-clynav>

Innovation in action

- Schmallenberg virus emerged 2011/2012 in Northern Germany
- Caused fever followed by abortion in cattle, sheep & goats
- Veterinary medicines industry reacted very quickly to develop commercially available vaccines in 2013



Source-Animal and Plant Health Agency

Innovation in action

- Innovation pipeline for new veterinary medicines slowed in recent years
- Acknowledged as problem by EU Commission & Regulatory agencies across Europe
- Draft new EU Veterinary Medicines Regulations published 2014, due to take effect 2021
- Many of the proposed measures designed to encourage innovation in the vet medicines industry
- Essential that post-Brexit, UK does not lose access to innovative vet medicines & avoids delays to new products launched in the UK later than the EU

- NOAH Brexit Conference planned- One Great George Street, London, 01/11/2017
- Tickets via Event Brite

<https://www.eventbrite.co.uk/e/brexit-whats-the-future-for-animal-health-tickets-36684702934>



DATE AND TIME
Wed 1 November 2017
10:00 - 16:00 GMT
[Add to Calendar](#)

LOCATION
One Great George Street
Westminster
London
SW1P 3AA
[View Map](#)





Supporting the future of animal health

INNOVATION SEMINAR



The urgency of innovation

JEREMY MOODY
CAAV



Loose Assumptions

- Brexit seems likely to produce
 - a more challenging environment for farming
 - a more commercial environment for farming
- See Brexit as a process over time, rather than an event
 - the moment may happen in March 2019
 - probably followed by a range of transitional or implementation periods
 - third country trade deals follow – by 2022/25?
 - domestic policy changes over time

The Challenge



- To be “match fit” for then
 - In 7 years? To face the EU and the world
- Comparative figures show the challenge
 - Against the EU, never mind third countries
- Productivity largely stood still for 25 years
 - The problems of area payments
 - Some gain in total factor productivity
 - Possible signs of some uplift in some sectors
 - BUT big challenge
 - As in the rest of the economy – but more so?

Some Changes



- Change to trade – had support from EU tariffs
 - **With the EU?**
 - Free trade? But frictionless? Imported inputs?
 - **Third countries** – will there be tariffs?
 - Issues for import sectors and for export sectors
- Reorientation of support – more required
 - From current comfort to future benefit?
 - More on the environment
 - Less margin on area payments
 - All with more domestic scrutiny and decision

DEFRA Policy Themes



- Environmental improvement
- Productivity
- “Human ecology” of the countryside
- Animal welfare
- Resilience
- “Doing policy better” – about outcomes
- Larger task than just for Government
- Good delivery by farmers and their advisers
- Devolved governments making own choices

Core Productivity Themes

- The **WHO** of farming
 - The best farmers with access to land
- The **HOW** of farming
 - Efficient use of resources
 - On the cusp of a technological revolution
- Role for UK as global hub for agri-tech innovation

The WHO of Farming



- How to get access to land for the best farmers
- Good existing ones
- Good new entrants
- Indecon study showed average 12% gain from land going to the trained
 - Is that 50% increase in TIFV ex-subsidy?
 - More than from generational change
- Entry, progression, retirement
 - Tenancy law, housing, etc
 - Taxation – CAAV Discussion Paper

The HOW of farming

- Skills and timeliness
- Innovative outlook
- Business strategy and awareness
- Adoption of new technology
- Managing information – the new economy
- Investment – as in rest of the economy
- Digital, optical and other technologies
- New markets – differentiation
- INNOVATION

Outcomes are Not Average



- AHDB early modelling of scenarios
 - High performing farms do best in all types
 - Wide range of performance
 - Not always large farms doing best
- But static analysis – farmers then react
 - Values/rents change
 - Change enterprises, crops and rotation
 - Change inputs and use
 - Change land base
 - New techniques and technologies
 - Market and consumer reactions

Shakespeare' Choice



“The fault, dear Brutus, is not in our stars, but in ourselves, for we are underlings.”

Julius Caesar, Act 1, Scene 2

OR

“There is a tide in the affairs of men.

Which, taken at the flood, leads on to fortune”

Julius Caesar Act 4, Scene 3

“Why then the world's mine oyster
Which I with sword will open.”

Merry Wives of Windsor, Act 2, Scene 2

What Do We Need?



- Focus on competitiveness and productivity
- Investment and restructuring
- Education and knowledge exchange
- Openness to and adoption of innovation
 - How to do that?
- Role for trusted advisers?
 - Strategic discussion of family businesses
 - Informing decisions about business approach, land occupation and structures

Key Points



- Research and development for practical use
- Knowledge transfer/exchange
- For farming as a business
- For environment - water, soil, climate management, biodiversity
- Supply chains
- Investment in new technology
 - Tax reliefs, loans, development control, etc
 - CAAV Discussion Paper on taxation
 - The skills in knowing how to use it

Clean Growth Strategy - 1



- Just published: carbon reduction/ innovation

“To support greater productivity of agricultural land, we need to: increase carbon storage through fertilising crops more effectively, develop new animal and plant breeding technologies, use precision farming technologies on smaller scale farms, and develop robotics and new sensor technologies. We also need to reduce plant and tree disease and investigate methods to improve soil health and carbon stocks.”

Clean Growth Strategy - 2



- Agri-tech initiatives
 - Agri-EPI centre at Harper Adams
 - Use of big data and modelling
 - Crop and livestock technologies
- Land use
 - Low emission fertilisers and bio-stimulants
 - Soil health and land management techniques
 - Crop and livestock genetics
 - Low emission farming techniques, including robotics, precision farming
 - Reuse of by-products

The Opportunity of Brexit?



- Brexit is a prompt to do many things we should do anyway such as:
 - competing for world trade
 - improving productivity
- We should take the opportunity for a Post Brexit Settlement
 - As Government and society did from 1942/3 for the Post War period
 - Many similarities
 - Biggest peacetime task since 1945/47

Global Agri-Britain



- Strong research institutions
- Substantial domestic base for innovation
- Pragmatic view of science
- Intellectual property framework
- Global links and standing
- Role for UK as global agri-science research and innovation hub
- What steps to achieve that?
- Getting it right in UK as base for world trade

Carpe Diem: Seize the Day



- Requires effective and practical leadership
 - From Government and all others
 - With analysis, ideas and direction
 - And at farm level
- Enabling effective innovation
- For agriculture, the rural economy and the environment:
 - Finding the direction to a viable future?
 - How do we want to handle this?
 - How do we manage the transition?
- To make our own destiny – a new Settlement

CAAV

Professionals in the Countryside



jeremy@caav.org.uk

www.caav.org.uk



Innovation Seminar

20 October 2017

