The UK Plant Quarantine Service
“Working with Alien pests and Diseases”

BCPC
Diseases Review

10th Oct 2019

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The UK Plant Health Service

- **DEFRA (Policy)**
  - Department for Environment (PH and Seeds)

- **APHA (Delivery)**
  - Animal and Plant Health Agency

- **PHSI (Field Team)**
  - Plant Health and Seeds Inspectorate

- **FERA (Identification and Advice)**
  - Laboratory and technical support

- **Forestry Commission/ Forest Research**
  - Plant Health on commercial forestry

- **NIAB**
  - Seed Delivery (In conjunction with PHSI)
The Role of Plant Health: To Protect Food Security

Population to be fed per Hectare of arable land globally against the percentage increase of agricultural production and Food Price Index

By 2050, the FAO estimates that demand for food will increase over 70% above the current situation.

From 1998-2009 food prices rose by 33% / 26% four-year rise in UK food prices between June 2007-11

Source: UN Food and Agriculture Organisation (FAO) Rome / DEFRA Food Statistics Pocketbook 2018
FAO predicts we will need 70% more food by 2050.
UK is 60% Self sufficient in Food (2017)
(If all food was amalgamated we would have to import all food from August to Christmas)

- Food/ Feed/ Drink trade gap is £24.2 Billion
- Fruit and Vegetables was the largest import sector with a trade gap of £9.85 Billion
- 93% of Fresh Fruit imported / 45% of UK Vegetables imported
- Food prices rose 37% between Jan 2007 and July 2014
- World population increased by 31% between 1990-92 and 2010-12

Sources: HM Revenue and Customs / DEFRA Food Statistics Pocketbook 2018
Chinese Overseas Mergers and Acquisitions in past four years

- China 1/10\(^{th}\) of Farmland but consumes 1/5\(^{th}\) of global Food
- Bought 6.5 Million Hectares in Africa
- Bought 3.0 Million Hectares in Ukraine
- Buying several thousand hectares in France, USA, Australia
- $59 Billion spent on Food and seed Companies in 2012-2017

- Pork Smithfield Foods United States of America $4.7
- Cereals Weetabix United Kingdom $1.8
- Biscuits Manassen Foods Australia $0.51
- Dairy Tnuva Israel $2.5
- Sugar Nobel Agri Singapore $1.5
- Meat Campofrio Spain $0.34
- Cotton Cubbie Australia $0.4
- Grain Nidera Netherlands $3
- Seed / cuttings and plant protection products Sygenta $43
- Seed Corn Dow seeds Brazil $1.1
The Role of Plant Health: To Protect The Environment

Sudden Oak Death          Asian Longhorn     Kudzu Vine
FAO predicts we will need 30% more Freshwater and 50% more energy by 2050. 20% of Irrigation Water is from non-renewable sources.
Government / Industry Response

Increase interest in horticulture
Reducing food Waste
Targeted Research
Buy British
Renewable Energy
Allow sale of deformed vegetables
Increase Public Awareness
Increase interest in Agriculture
Save Water
Reduce obesity

Climate Change

Red Tractor Logo
House Insulation
Recycling
Self Sufficiency
Eat Local Food
Increase interest in Sciences
Low Watt/ LED lighting
Grow your own
Smart Meters
Use GM Crops

In 1960 we used 75% of World annual resource
In 1993 we used 120% of World annual resource
In 2016 we used 155% of World annual resource
In 2018 we used 170% of World annual resource
In 2019 we used 175% of World annual resource

Source: Global Footprint Network : Earth overshoot day 29th July 2019
Movement of Controlled Plant Material

Plants / Fruit / Vegetables / Flowers / Seeds / Machinery / Biological Products / Growing Media / Timber and Wood packing

**Controls:** Prohibited / Regulated / Non Regulated

**THIRD COUNTRY:** PHYTOSANITARY CERTIFICATES
- Import : Phytosanitary Certificate / CITES Permit / Sci. Licence
- Export : Phytosanitary Certificate / CITES Permit / Import permit

**EU:** PLANT PASSPORTING
- Propagator/ Grower
- Retail

**UK:** MARKETING SCHEMES
- Seeds / Soft and Top Fruit Propagation / Ornamental Propagation
Increase of plant and tree pests into the UK

There are now 1053 Pests and diseases on the Risk Register

https://secure.fera.defra.gov.uk/phiw/riskRegister/
Notifications 2018: total 9053 (TC 8720 /EU 333)
(Harmful pests and diseases/ Wood Packaging/ Phyto Certificate incorrect)

HO: EU 1712  UK notified 27% of the total harmful pests and diseases intercepted

Main Third Countries sending Harmful organisms
SIX MAIN AREAS OF WORK

Imports
Exports
EC Schemes
UK Schemes
Pest Surveillance
Eradication and Containment
Major Pests and Diseases for the UK

- *Xylella fastidiosa* (Bacterial Leaf Scorch)
- *Bemisia tabaci* (Tobacco Whitefly)
- *Thrips palmi* (Melon Thrips)
- *Ralstonia solanacearum* (Brown rot)
- *Clavibacter michiganensis* (Ring rot)
- *Phytophthora ramorum* (Sudden Oak Death)
- *Anoplophora chinensis* (Asian Longhorn Beetle)
- Tuber Spindle Tuber Viroid
- *Liriomyza* leaf miners
- *Xanthamonas arboricila pv pruni* (Bacterial Canker of Prunus)
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- *Spodoptera frugiperda* (Fall Armyworm)

HAVE ALL BEEN FOUND IN MY REGION
XYLELLA FASTIDIOSA

- Bacterial Disease
- From Mid Americas : Costa Rica
- Arrived on Coffee Plants
- Spreading in Europe
- One Interception to date on Coffee plant in London
- No known treatments
- Spread by frog hoppers injecting bacteria
- Bacteria grows and blocks water vessels
- Difficult to spot, sample and test for
- Consequences of outbreak is severe
- Important to find fast (Interception)
- Over 320 Known genera it attacks
- Main hosts Olive, Lavender, Rosemary
- In Italy, France, Spain, Portugal
X. fastidiosa impacts – wider environment
Xylella fastidiosa & subspecies - implications

- Anyone ‘importing’ host plants from the EU needs to ensure they are accompanied by a plant passport confirming they have been sourced from disease free areas/sites. Plant passporting obligation applies to all ‘professional operators’.
- An outbreak could lead to ‘host’ destruction within 100m, and a 5km-wide zone banning all host plant movements for five years.
- **Period of restrictions**: the requirements for the demarcated area of the outbreak will remain in force for a minimum of 5 years after official surveys have confirmed that X. fastidiosa is not present.
- Important to determine if an interception or an outbreak
- Interception: Shipment destruction
Bacterial Spot of Prunus (Xanthomonas arboricola pv pruni)

- Bacterial Disease
- Goes on any *prunus sp.*
- Intercepted on *Prunus laurocerasus* and *Punus incisa*
- Serious defoliator of the plant
Potato Brown Rot (*Ralstonia solanacearum*)

- Bacterial Rot of potatoes affects solanaceous plants
- Many strains can also affect Banana and pelargonium
- Originated in Egypt
- Washed ware potatoes allowed bacterium to go down the sink through the sewerage system into the rivers
- Grows and multiplies on Deadly nightshade (*Solanum dulcamara*)
- Farm Crops irrigated with contaminated water
- Brassicas not susceptible but can perpetuate the bacterium
Tobacco Whitefly (*Bemisia tabaci*)

- A pest of a wide range of plants, including vegetables, salad crops and ornamentals, and is a **vector of more than 110 viruses**. Such as Tomato Yellow Leaf Curl Virus and Bean Yellow disorder Virus.
- *Bemisia tabaci* is frequently intercepted on ornamentals in the UK, particularly on herbs and Ajuga. The number of these interceptions has risen over last 2 years.
- Now established on the continent spreading viruses
- UK a protected Zone for the pest
Viruses:

- **Imported chillies:**
  - Potato virus Y (Non-European strain)
  - Chilli Mottle Virus
  - Pepper Vein Yellows Virus

- **Tomato Crops**
  - Tomato Brown Rugose Virus (UK Outbreak) *(new controls Sept 2019)*
  - Tomato leaf Curl Virus (New Delhi strain) *(EU outbreak)*
  - Tomato Chlorosis Crinivirus (UK outbreak)
  - Southern Tomato Virus (UK outbreak)
New Outbreaks:

Elm Yellows Virus (*Candidatus Phytoplasma ulmi*)

- Affects Elms in North America
- Imported from Italy
- Spread by the whitebanded elm leafhopper (*Scaphoideus luteolus*)
- Trees planted in Southern England
Sudden Oak Death (*Phytophthora ramorum*)

- A fungus attacking a range of hardy stock.

- Attacks woodland trees: Beech / Birch / Larch

- Attacks moorland: Heather / Bilberry

- Attacks gardens: *Viburnum* / *Camellia* / *Rhododendron*

- Spreading in across the country

- Spreads by air / water / footwear / plants
On the Horizon: 
Karnal Bunt (*Tilletia indica*)

- Originates in India
- Attacks wheat
- Durum and Triticale affected
- Transmission on seed
- Survives in soil for 5 years +
- Can pass through cattle gut
- Recent interceptions from India
New Outbreaks: Juniper Root Rot (*Phytophthora austrocedrae*)

- South American Origin
- Outbreaks in Teeside and Scotland
- New outbreaks in Devon
- Biosecurity breakdown by visitors
- Carried on footwear
Methods of in field monitoring and Diagnostics

- Bio sensors
- Mass trapping and analysis
- Mobile Apps
- Genome Testing
- Pheromone Trapping
- Lateral Flow Device
- Remote Sensing (UAV)
Prepare Now!

Brexit
31/10/19

Or

New EU Plant Health Regulation
14/12/19