

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



BCPC  
Diseases Review

10<sup>th</sup> Oct 2019

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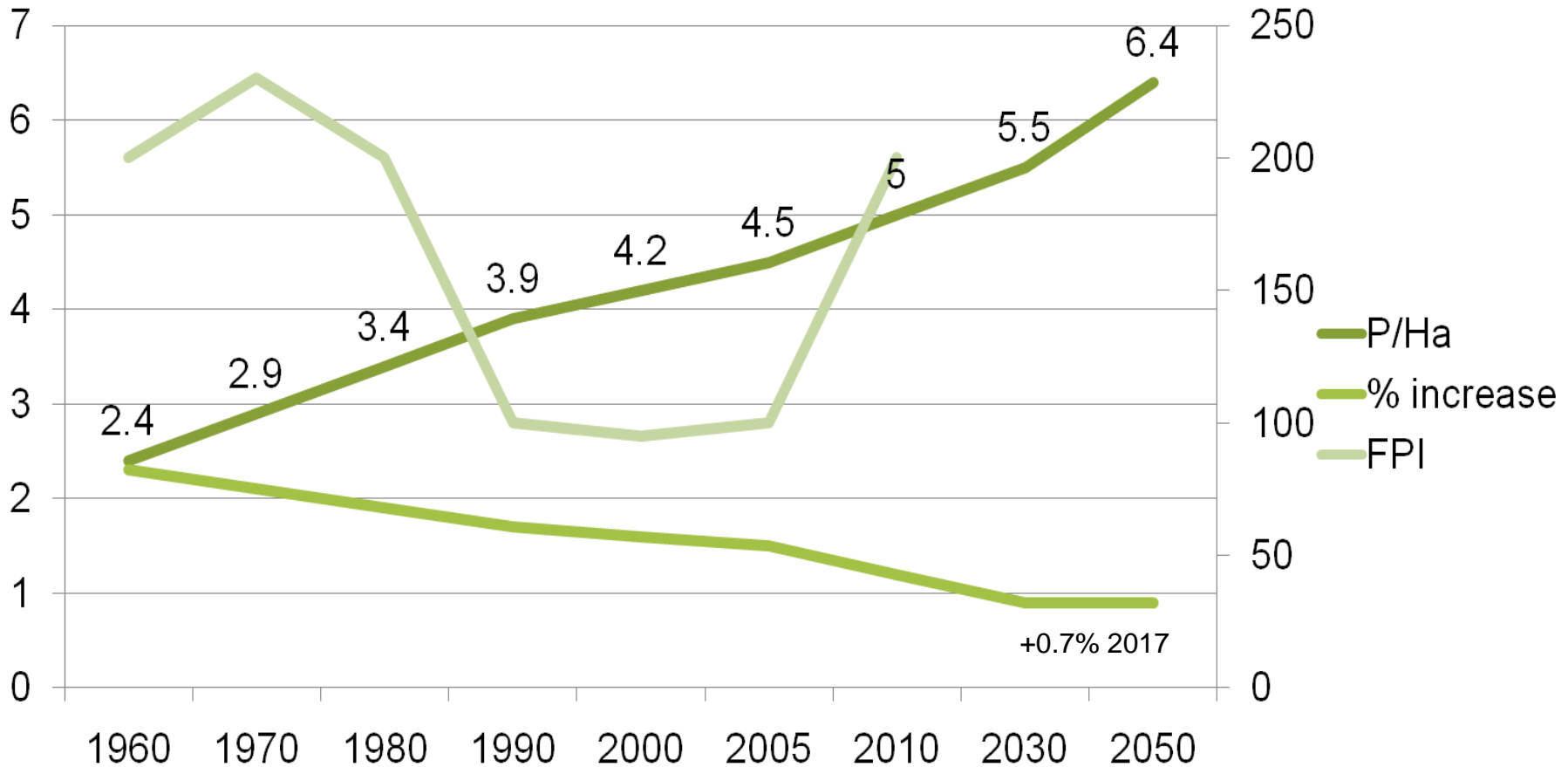
# The UK Plant Health Service

- **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)

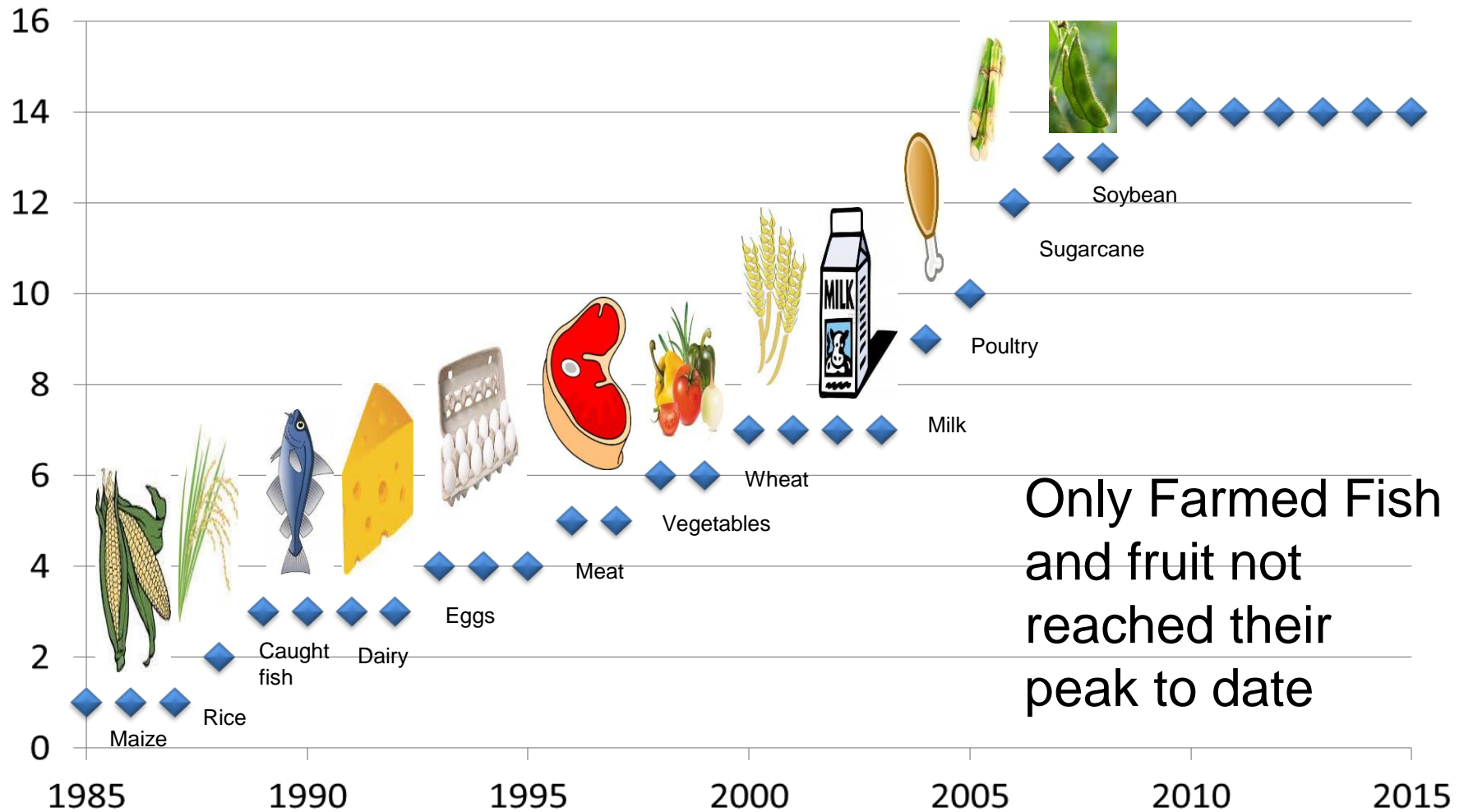


# The Role of Plant Health: To Protect Food Security

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



# Peak Rate Years of Global Resources : Food



Only Farmed Fish and fruit not reached their peak to date

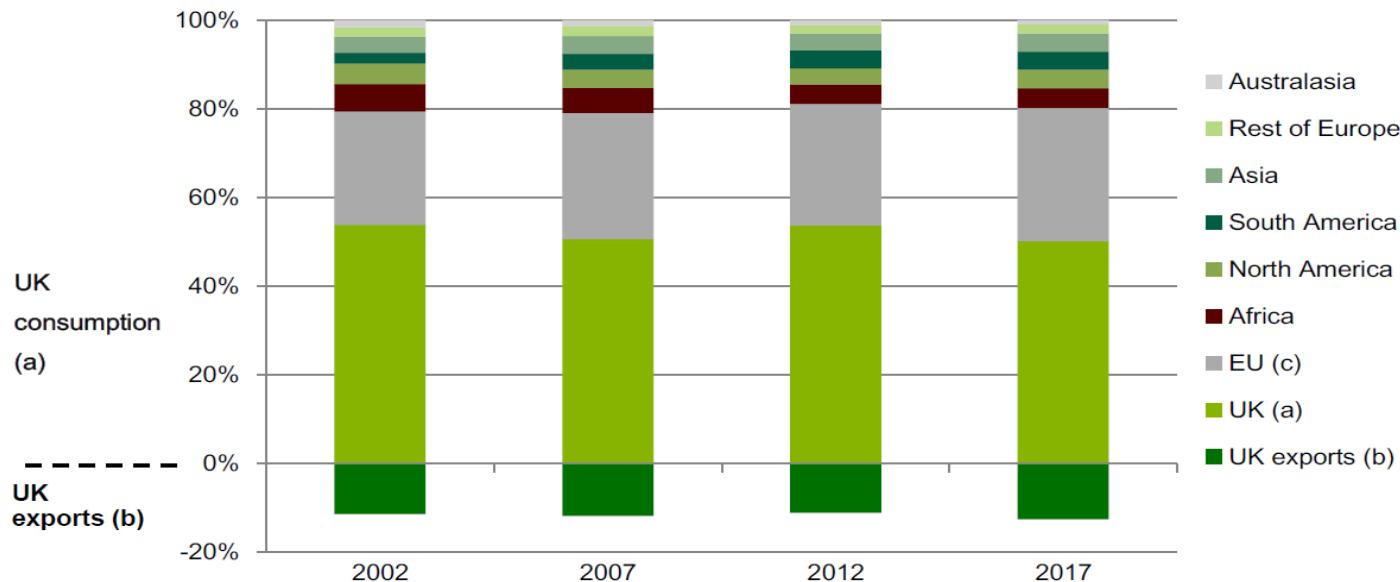
# UK is 60% Self sufficient in Food (2017)

(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

4.5 Origins of food consumed in the United Kingdom: 2002, 2007, 2012, 2017

2017  
50% of  
what  
we eat  
is UK  
Origin



# Chinese Overseas Mergers and Acquisitions in past four years

- China 1/10<sup>th</sup> of Farmland but consumes 1/5<sup>th</sup> 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

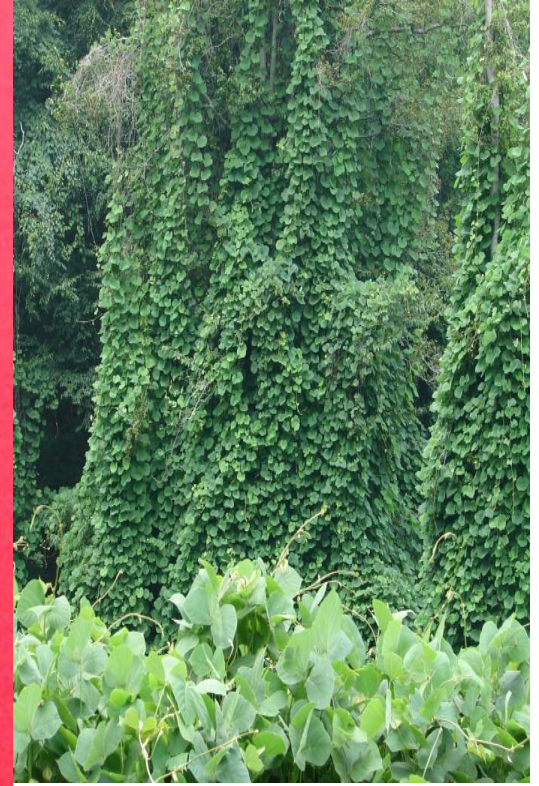
# The Role of Plant Health: To Protect The Environment



Sudden Oak Death

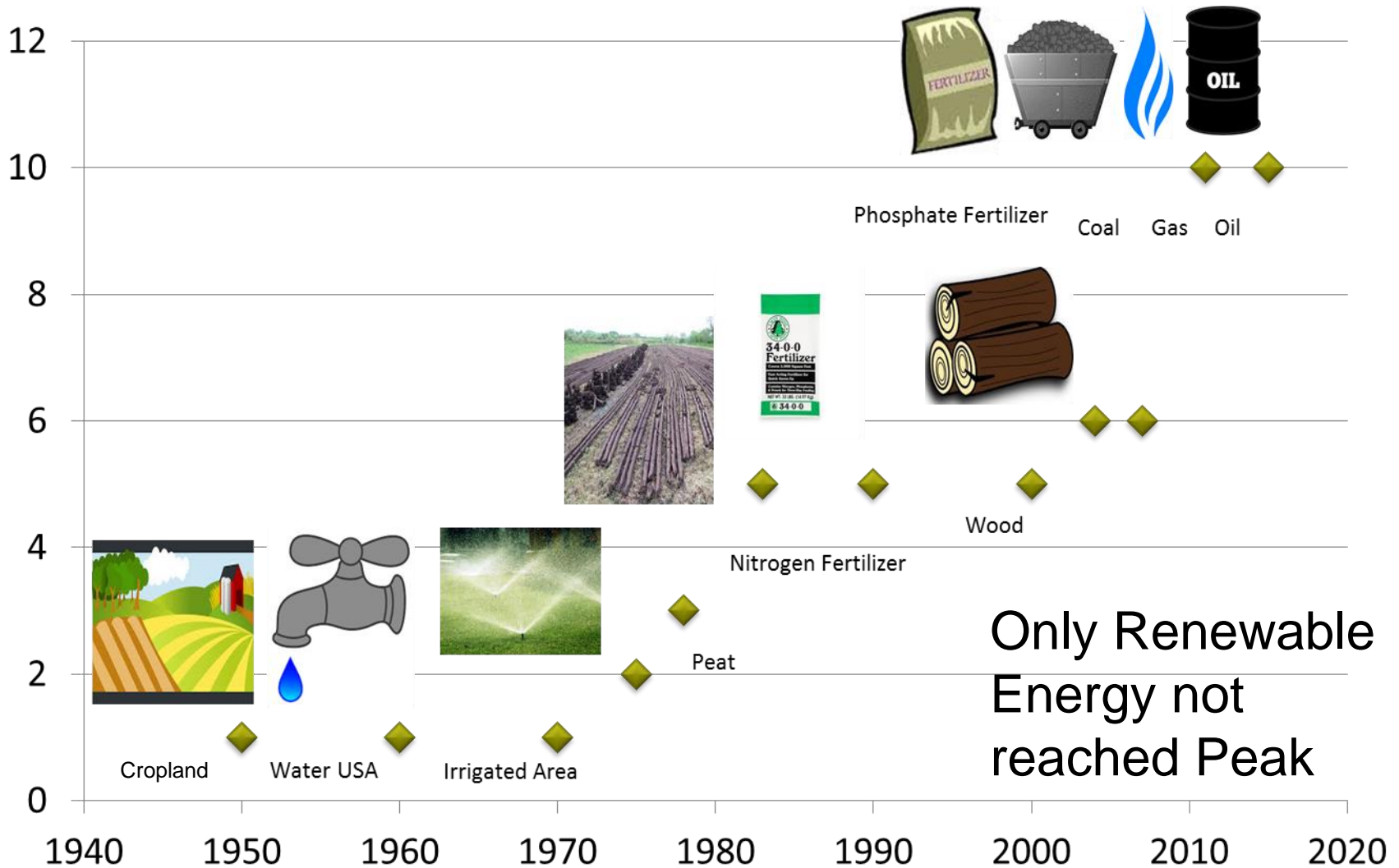


Asian Longhorn



Kudzu Vine

# Peak Rate Years of Global Resources: Reserves





# Government / Industry Response

Increase interest in horticulture

## Reducing food Waste

Targeted Research

Buy British

## Renewable Energy

Red Tractor Logo

## House Insulation

Recycling

Self Sufficiency

## Eat Local Food



# Change

## REDUCTION OF PERSONAL CONSUMPTION OF CARBON : FOOD/ FUEL

Allow sale of deformed vegetables

## Increase Public Awareness

Increase interest in Agriculture

## Save Water

Reduce obesity

## Increase interest in Sciences

Low Watt/ LED lighting

## Grow your own

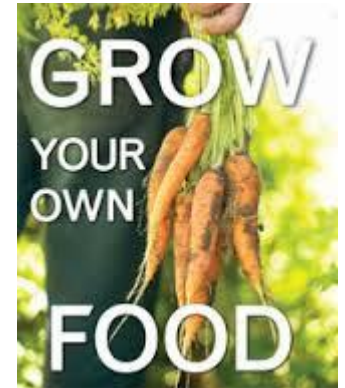
Smart Meters

Use GM Crops

# Climate



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



# 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

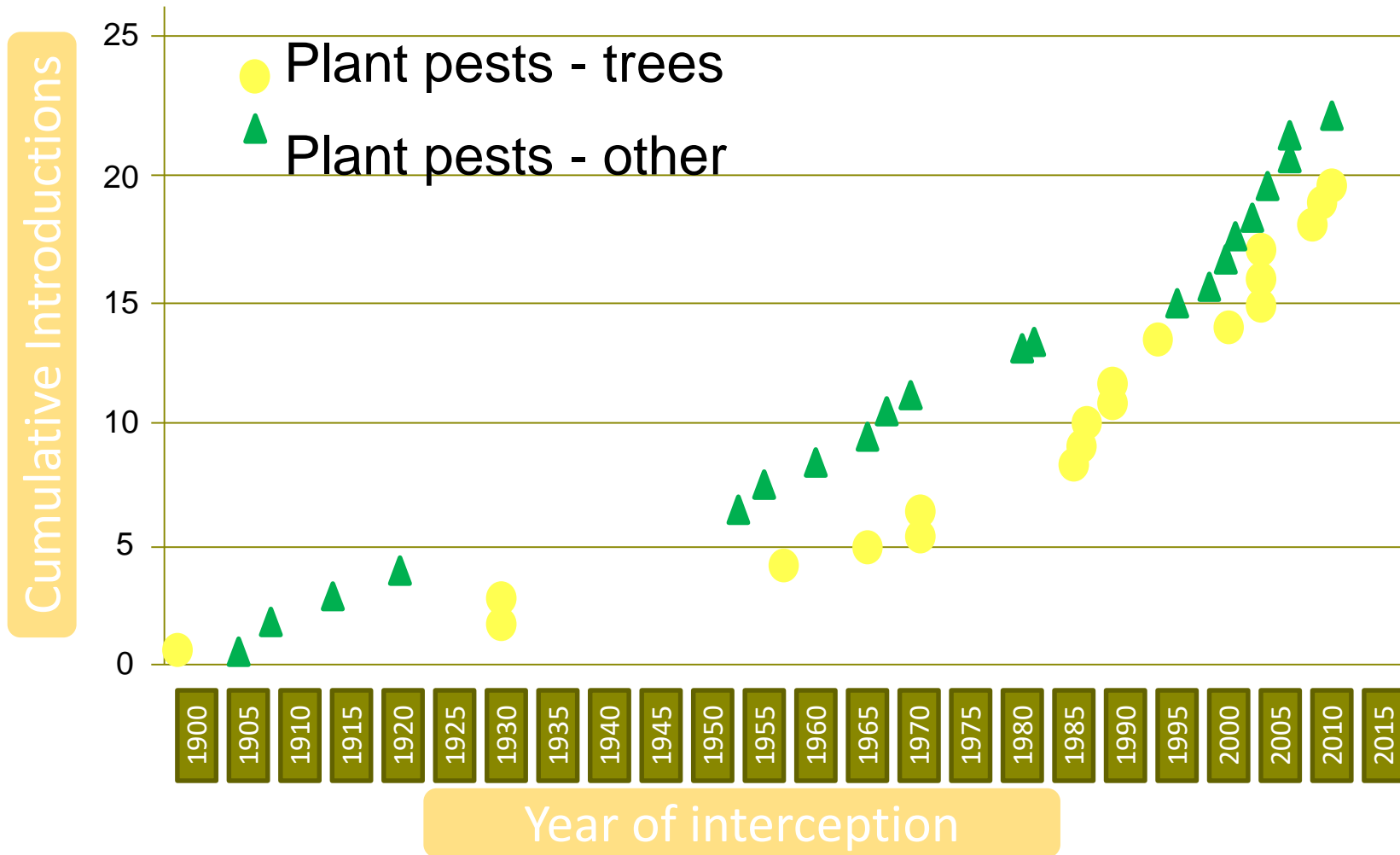
- Propagator/ Grower
- Retail

## **UK** : MARKETING SCHEMES

- Seeds / Soft and Top Fruit Propagation / Ornamental Propagation

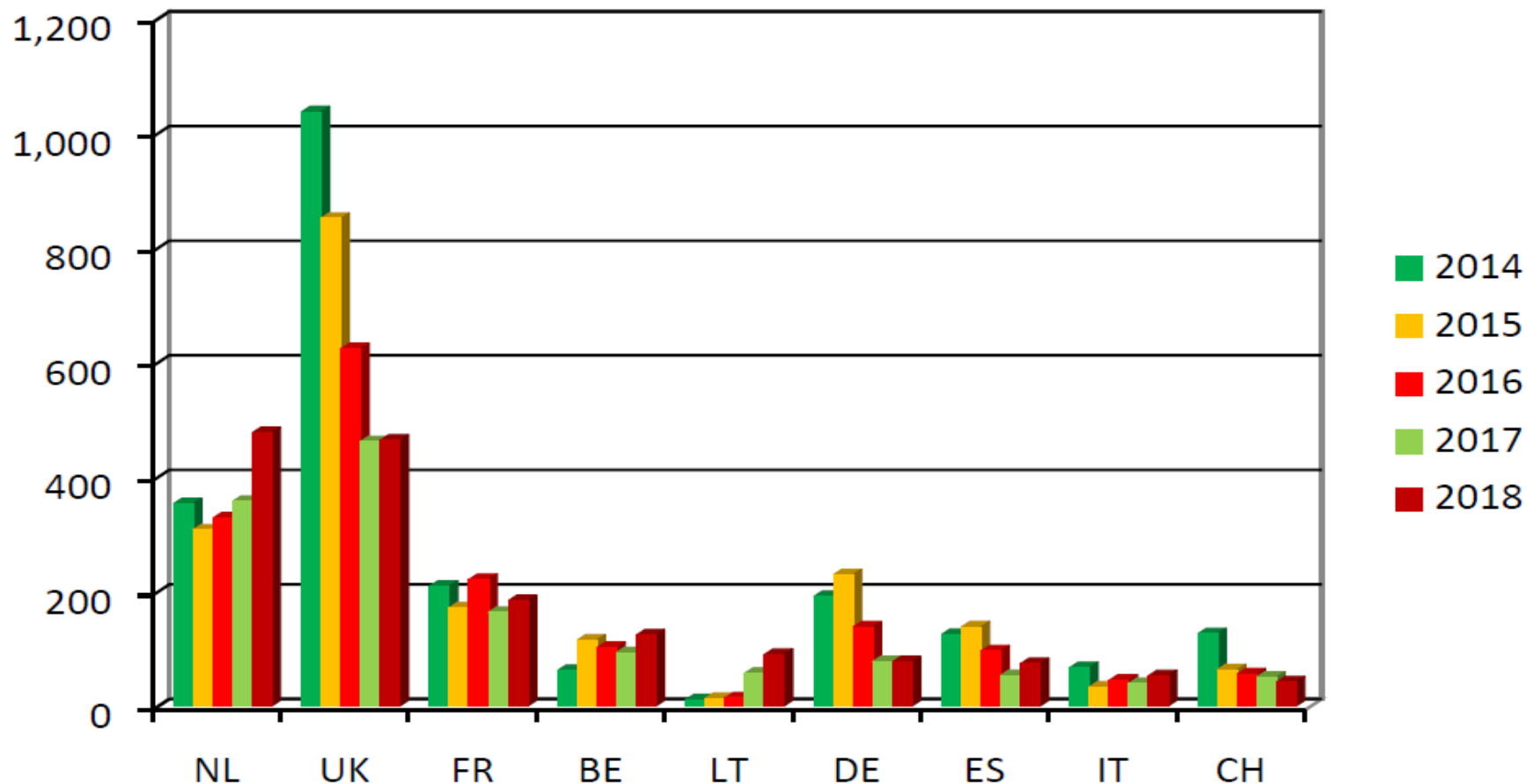
# Increase of plant and tree pests into the UK

There are now 1053 Pests and diseases on the Risk Register



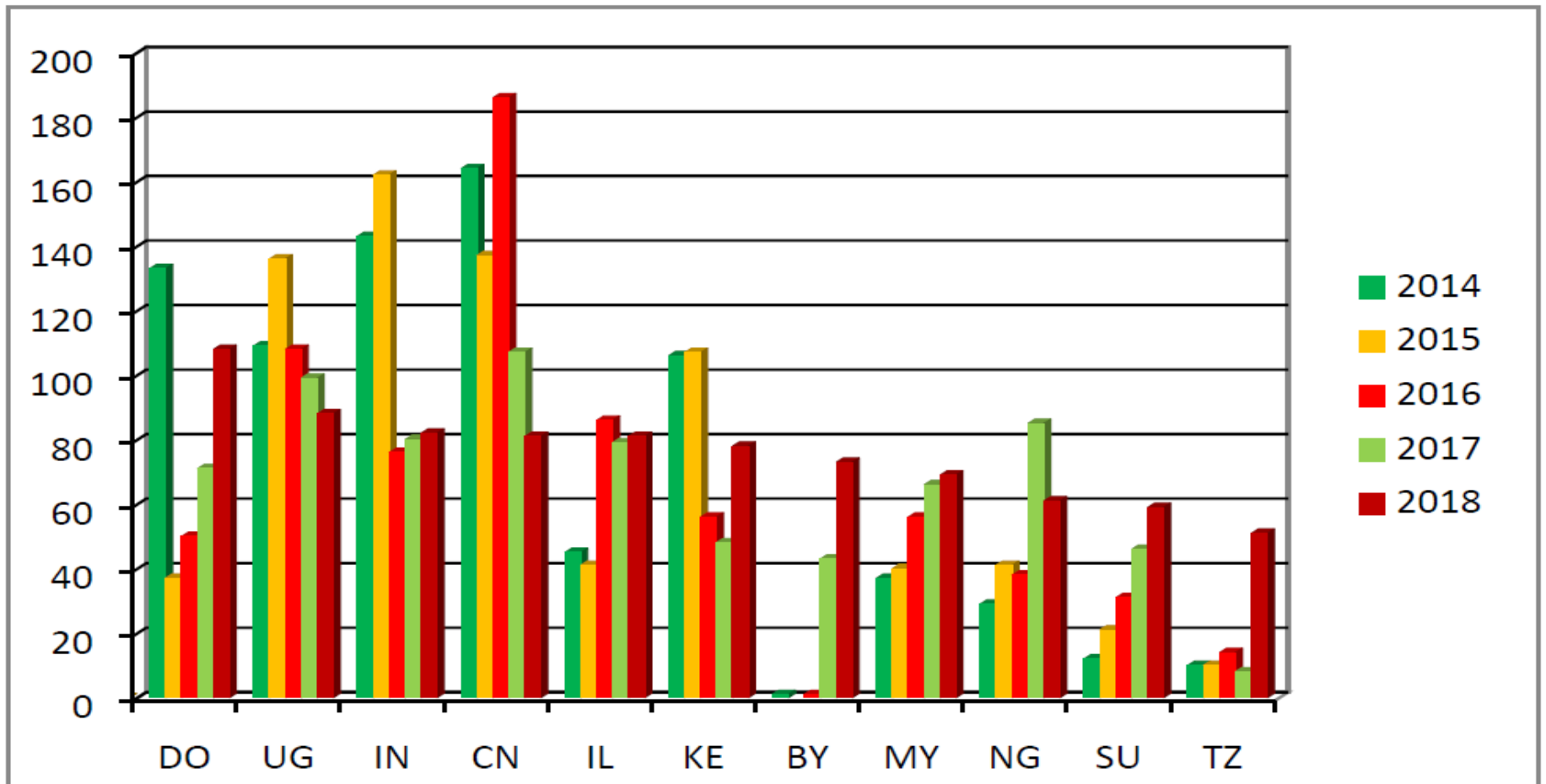
# Notifications 2018: total 9053 (TC 8720 /EU 333)

(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
- *Xanthomonas 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 affect 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:

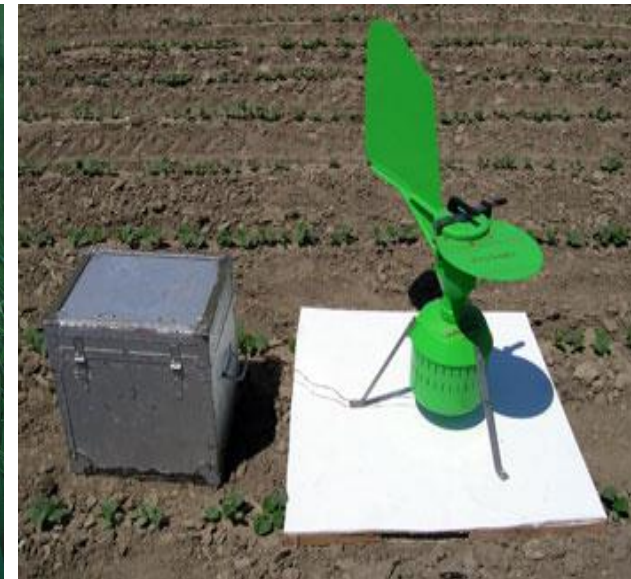
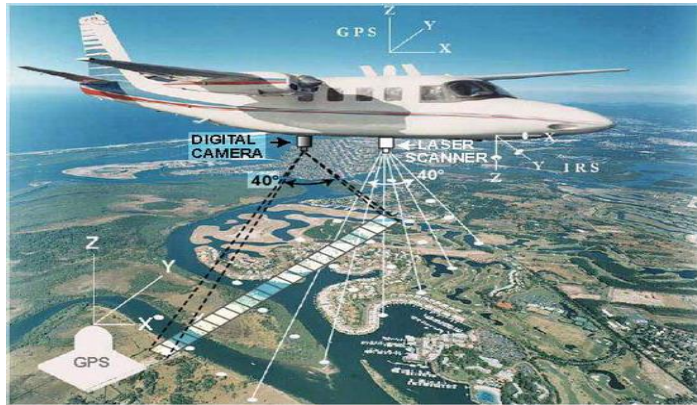
## Juniper Root Rot (*Phytophthora austrocedrae*)

- 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)



# Thank you

Andrew Gaunt APHA Plant Health

## Prepare Now!

**Brexit**  
**31/10/19**

**Or**

**New EU Plant Health**  
**Regulation**  
**14/12/19**

