



# *Managing foliar diseases with loss of CTL*

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# What might be impacted?



Botrytis on lavender



Rust on Hypericum



Powdery mildew on spiraea

# The application of chlorothalonil no longer permitted since May 20<sup>th</sup> 2020

## CTL based products include

<b>Product*</b>	<b>PCS No.</b>	<b>Product</b>	<b>PCS No.</b>	<b>Product</b>	<b>PCS No.</b>
Barclay Avoca	4458	Daconil	5748	Amistar Opti	5068
Jupital	4503	UNIPRO CTL	5944	Ortiva Opti	5992
Rover 500	4467	Spirodor	5934	Proceed	5519
Balear 720 SC	4411	Cavaterra	5059	Treoris	5310
Abringo	4239	Phyton	5019	Aylora	5311
Joules	4784	Orchid B	5058	Fielder SE	4251
Muti-Star 500	4812	Chlorthalis	5193	Fezan Plus	4468
Supreme	4841	Bravado	6013	Crafter	5345
CT 500	5302	Bravo 500	3452	Tonga	6285
Stefonil	5351	Curator	5069	Cigal Plus	6061
Renew Chlorothalonil	5362	Vertik	5071		
Farmco Chlorothalonil	5593	Perseo	5750		

\*On PCRD database Nov 2019

# Should we be concerned?

## 1. What diseases are a problem?

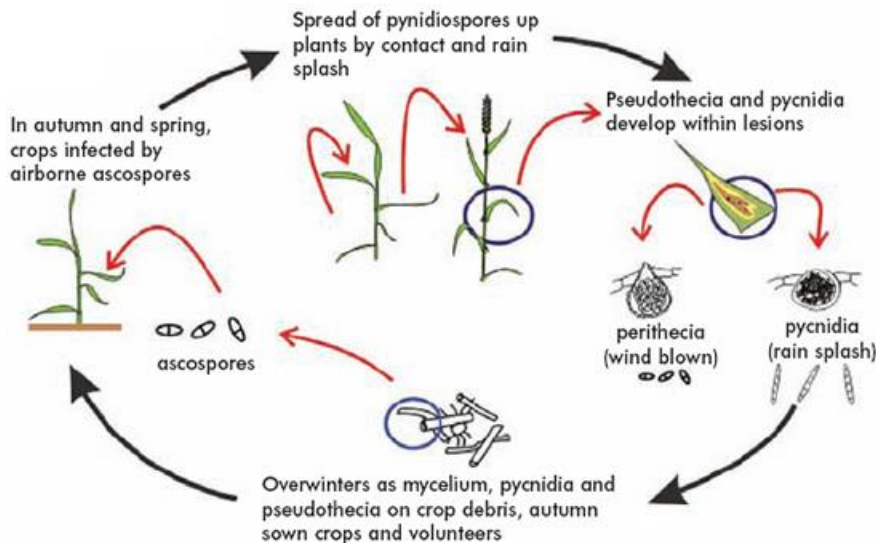
- Septoria tritici blotch of winter wheat
- Ramularia leaf blotch of winter & spring barley
- Chocolate spot of winter & spring beans

## 2. Are there solutions?

- Variety
- Agronomy
- Chemistry

# Why has CTL become important - wheat

## Septoria tritici blotch



## The Pathogen: *Z. tritici*

- Evolved for mild damp conditions
  - Extremely adaptable
    - Polycyclic

## The Host: Wheat

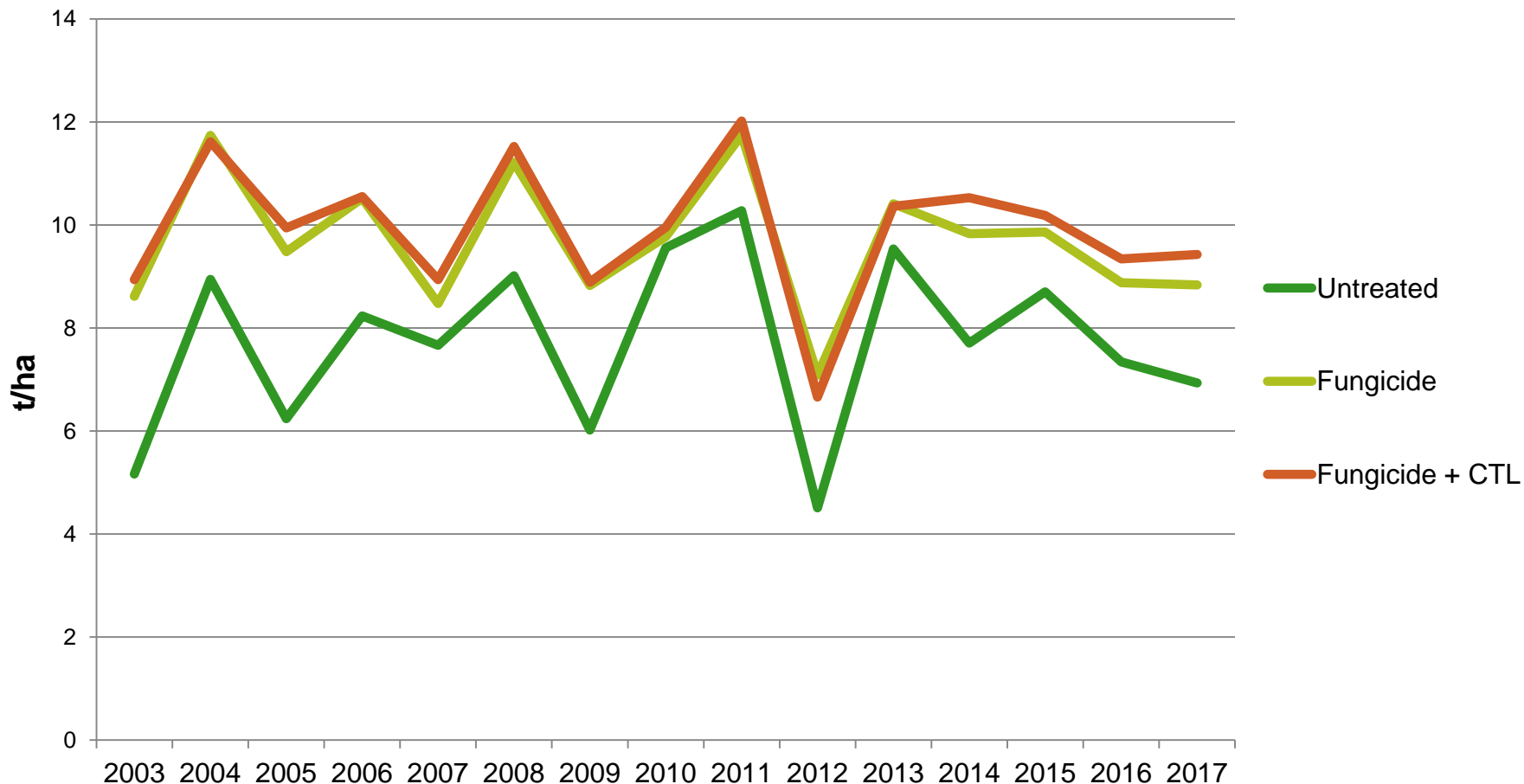
- Mostly susceptible varieties

## The Environment: Ireland

- Wet, wet, wet
- Winter cropping?

# The problem – WHEAT

Yield responses (winter wheat) from fungicides 2003-2017

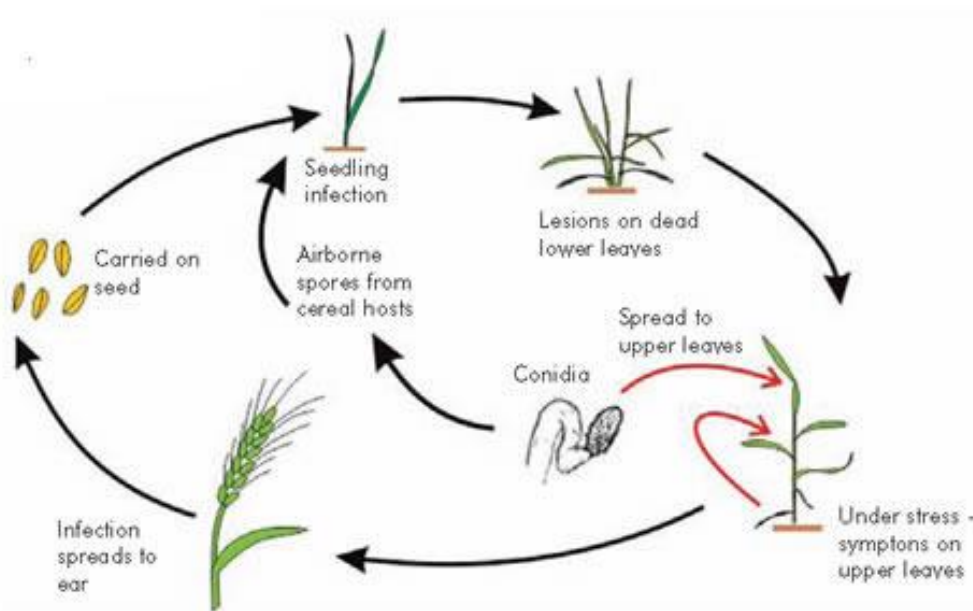


## Teagasc Wheat Fungicide Trials 2003-2017

- 73 Trials
- 154 Direct comparisons
- Significant Year x CTL interaction ( $P < 0.001$ )

# Why has CTL become important - barley

## Ramularia leaf spot



## The Pathogen: *R. collo-cygni*

- Evolved for mild damp conditions
  - Extremely adaptable
  - Polycyclic

## The Host: Barley

- Mostly susceptible varieties

## The Environment: Ireland

- Wet, wet, wet
  - ????

<https://cereals.ahdb.org.uk/cereal-disease-encyclopedia/>

# The problem – BARLEY



Kildalton 16/07/2019



# Why is SEPTORIA a problem?



- **Varietal Resistance** – improving but still require protection
- **Agronomic practises** – cost/benefit (e.g. how late to we need to delay planting)
- **Nutrition** – limited capacity to impact disease development
- **Fungicides** – has demonstrated quite an ability to become resistant
- **CTL has provided consistent/inexpensive “backup” to all of above**

# Why is RAMULARIA a problem?



- **Varietal Resistance** – if available not in elite varieties
- **Agronomic practises** – don't stress the crop....in the Irish climate??
- **Nutrition** – don't stress the crop!
- **Fungicides** – has demonstrated quite an ability to become resistant
- **CTL has provided consistent/inexpensive “backup” to all of above**

# So how will we manage without CTL?

## 1. Know your risk

- Strengths & weakness of variety?
- When & where is it being grown?
- Know strengths & weakness of fungicides

## 2. Know your crop

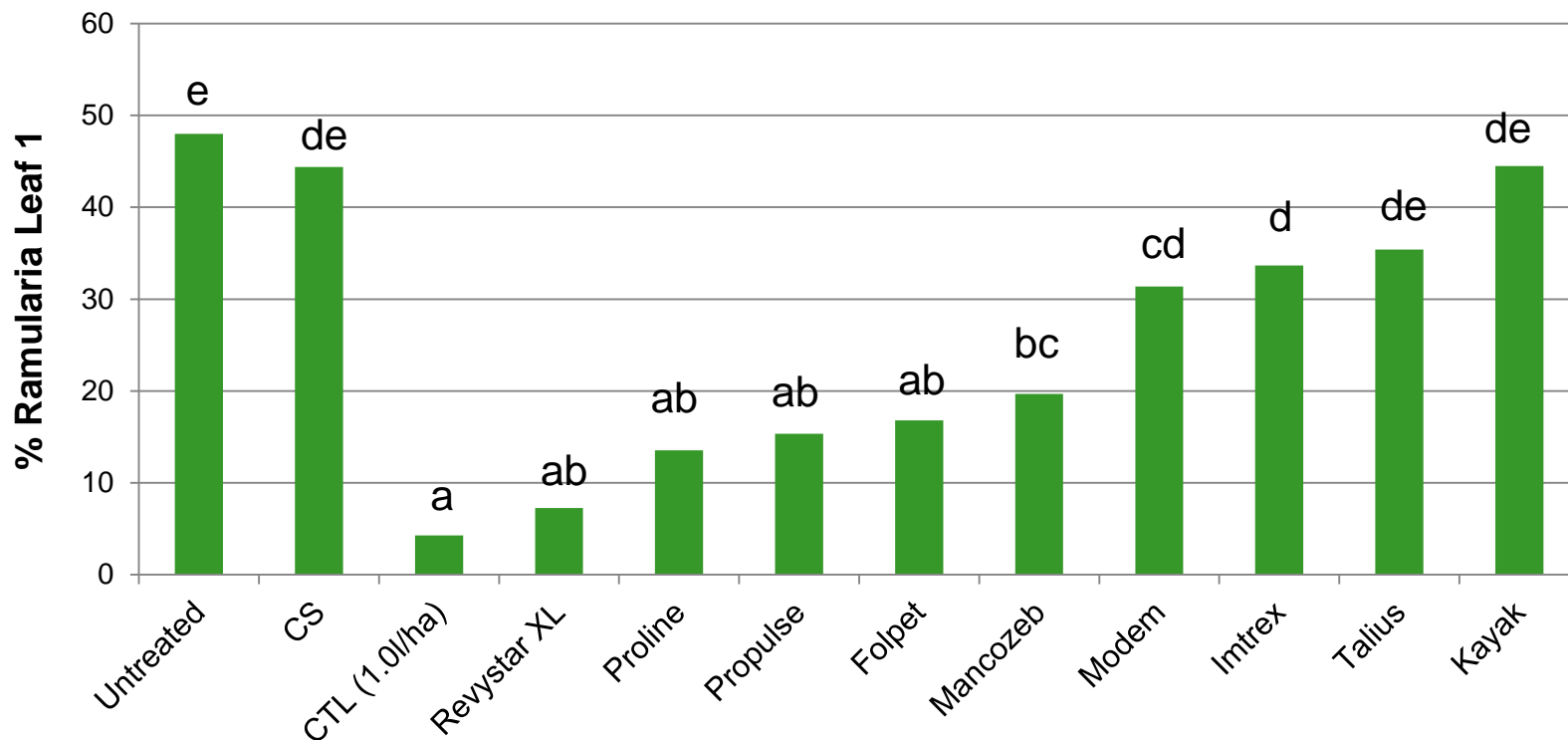
- What growth stage – timings critical
- What is disease pressure?
- Is it under stress – Ramularia

## 3. Know your fungicide

- What can I expect from the fungicide, new or old?
- Alternative multisites do work!

# What's working & what's not

## Control possible without CTL – Winter Barley 2019

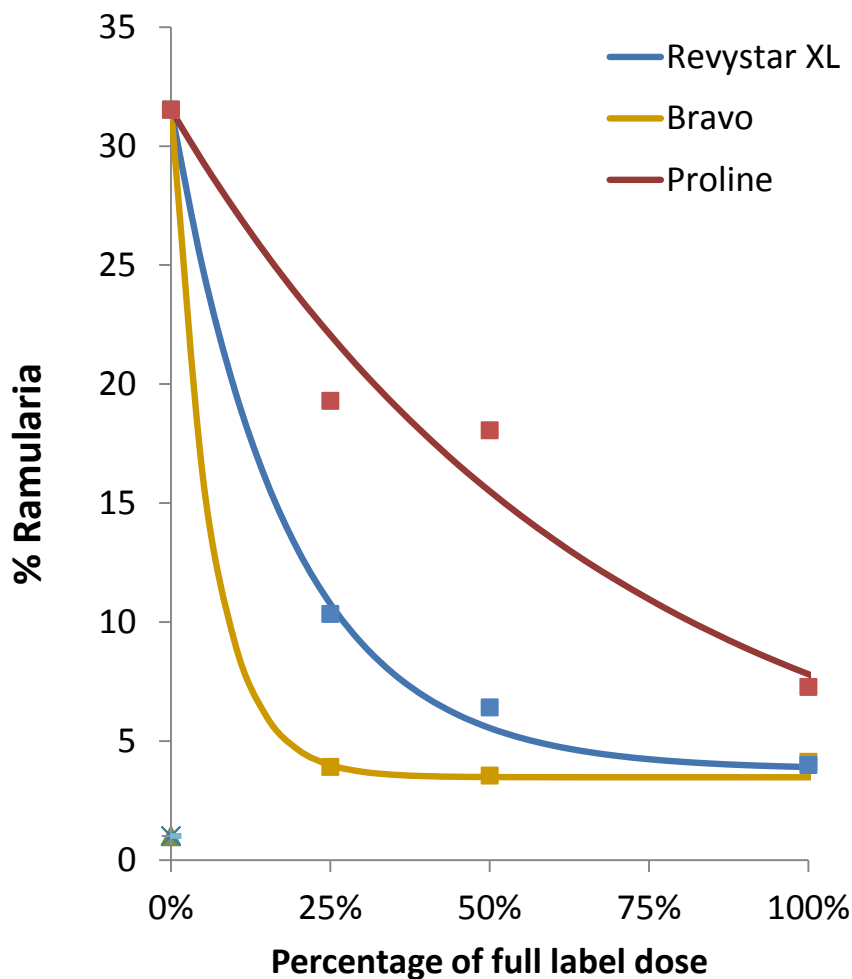


### Teagasc Ramularia “Alternative” Fungicide Trial 2019

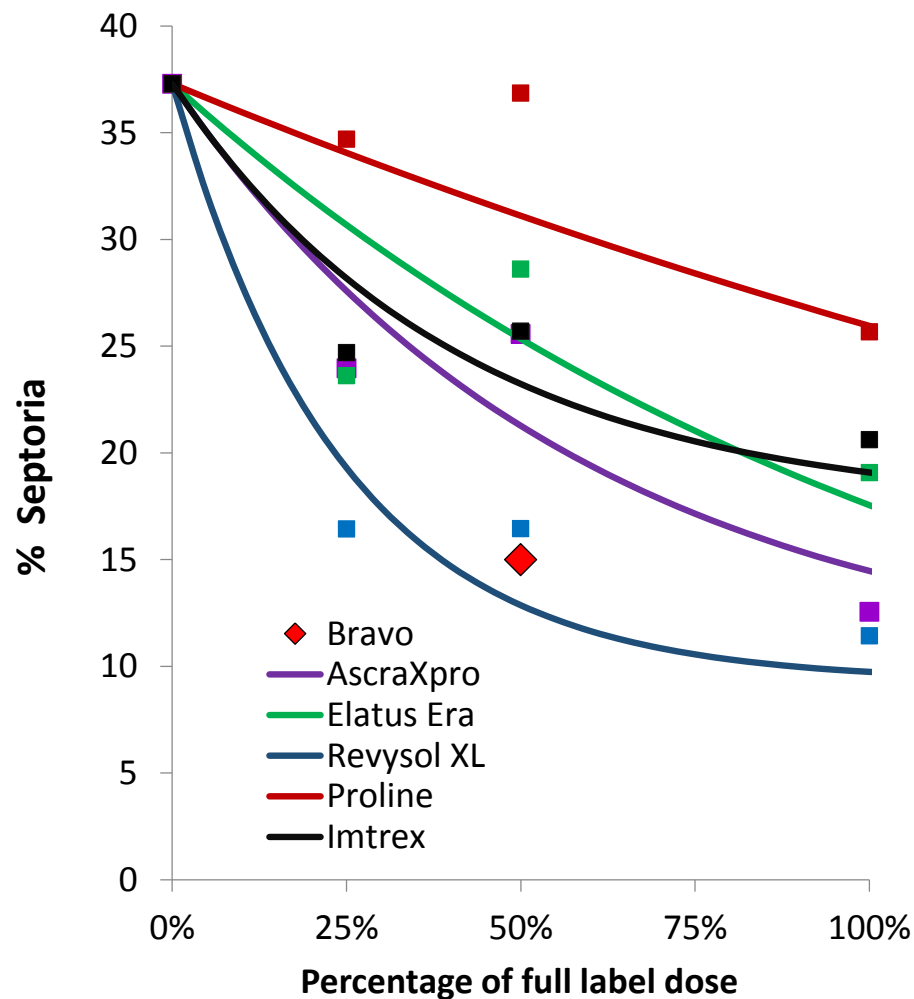
- WB at two sites, cv Pixel
- Cover Spray (CS) Proline (0.4 l/ha) & Modem (0.625 l/ha)
- No site x treatment interactions ( $P=0.174$ )
- Significant fungicide effect ( $P<0.001$ )

# How does new chemistry fit - 2019?

## Ramularia - Protection

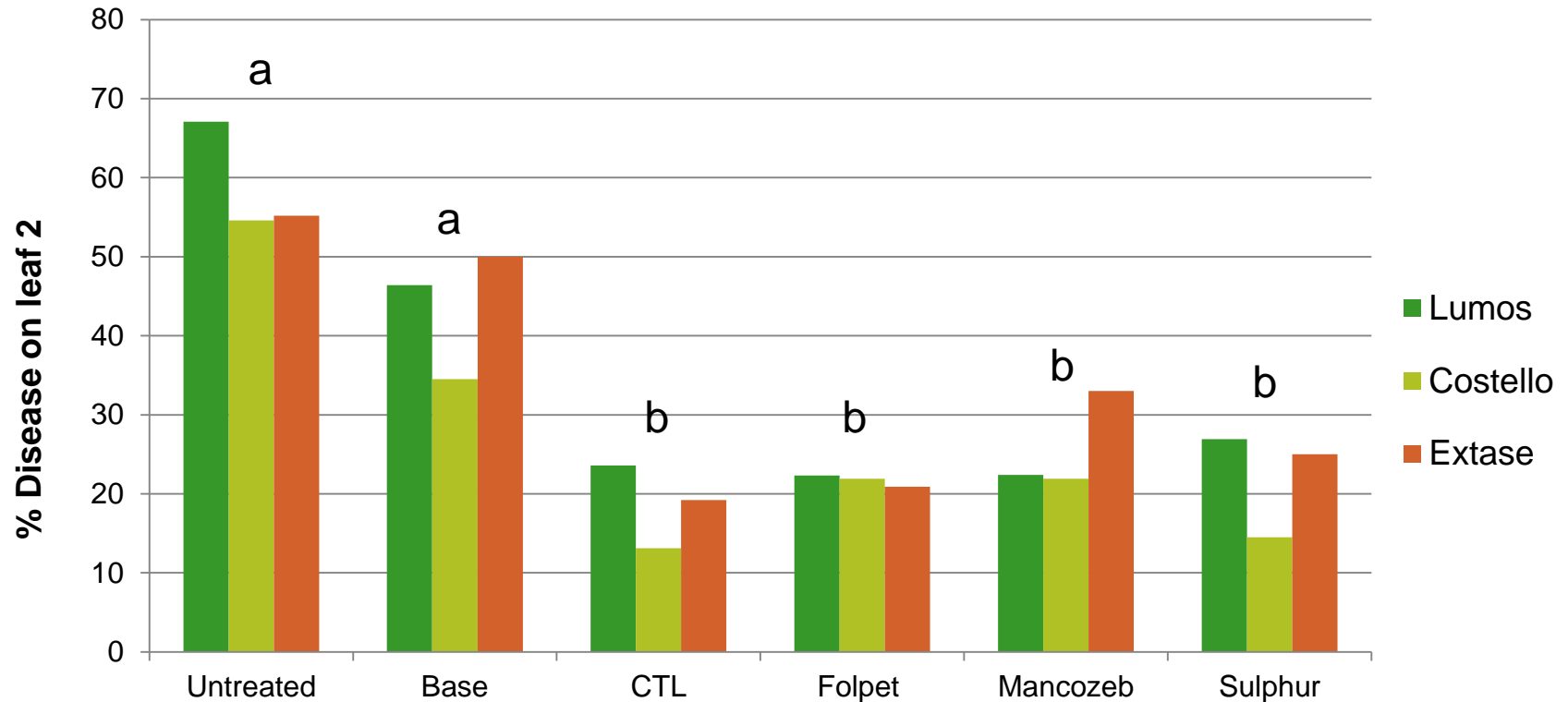


## Septoria - Protection



# Role of alternative multisites - wheat?

Assessing if alternatives provide same control & resistance management



## Teagasc Wheat Fungicide Trial Cork 2019

- Base: Elatus Era (0.8 l/ha) fb Librax (1.8 l/ha)
- No variety x treatment interactions ( $P=0.85$ )
- Significant fungicide ( $P<0.001$ )

# Conclusions

- Loss of CTL will impact disease control
- Impacts can be minimised
  - Variety
  - Agronomy
  - Chemistry
- Need for resistance management to continue – multi-sites still required!

# Acknowledgements



## Teagasc Crops Research

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