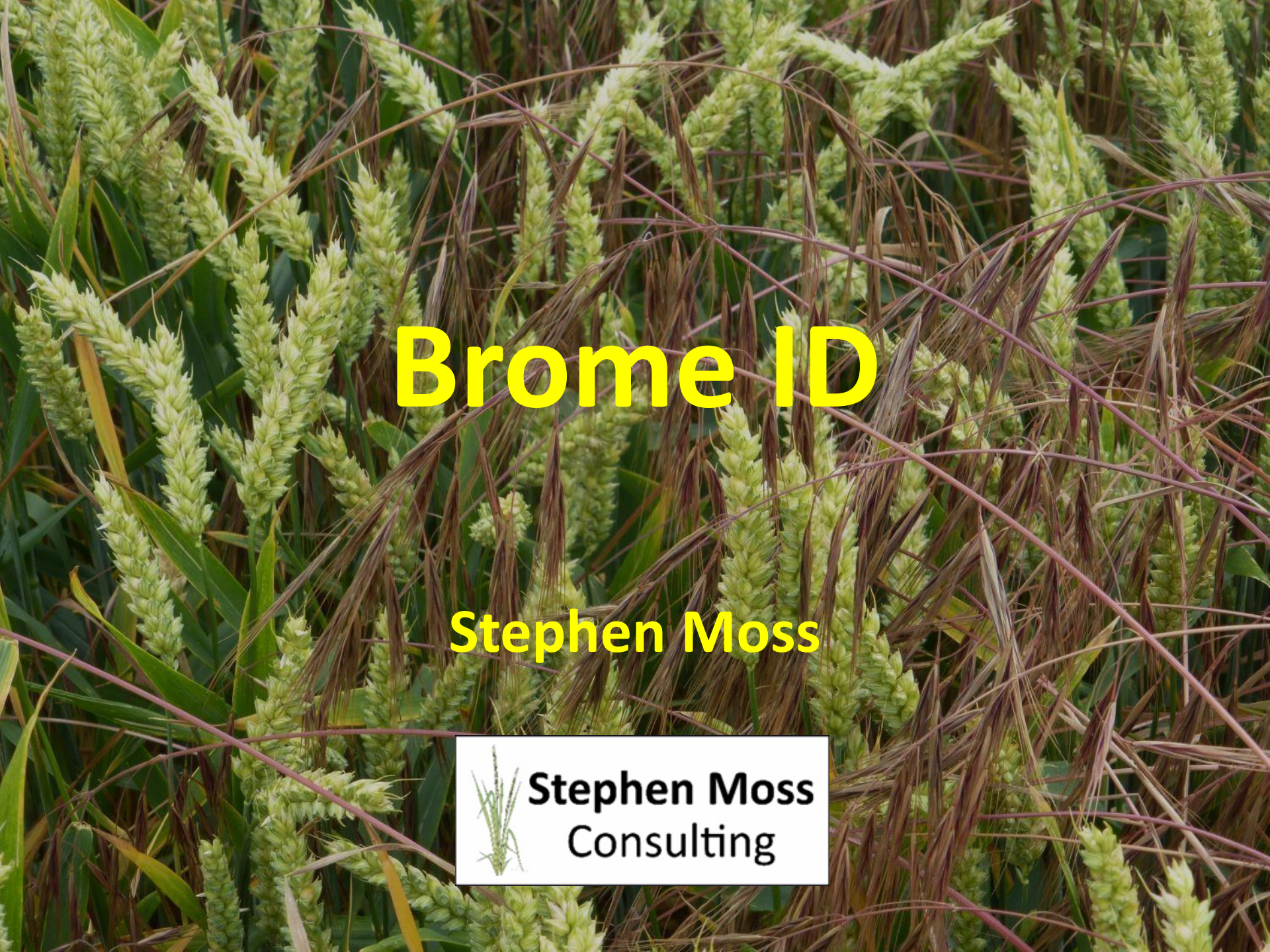

Brome ID
Stephen Moss
Stephen Moss
Consulting

# *Bromes: why does identification of species matter?*

- **Different control measures apply to sterile and great compared with soft, meadow and rye brome in relation to post-harvest cultivations.**
- **Label claims for control of bromes vary, although there are also non-label claim for control.**
- **Great brome is generally considered a more challenging species than sterile brome?**
- **Rye brome is generally considered a more challenging species than meadow or soft brome?**
- **Emergence patterns and seed survival may vary between species and populations**

# New brome project (started 2017)
## (led by ADAS Boxworth – Laura Davies)

- **Survey of different brome species**
- **Variation in response to herbicides within, and between, species**
- **Evidence for herbicide resistance and mechanisms**
- **Influence of herbicide timing to maximize control**
- **Knowledge Transfer**

ADAS AHDB CEREALS & OILSEEDS ROTHAMSTED RESEARCH

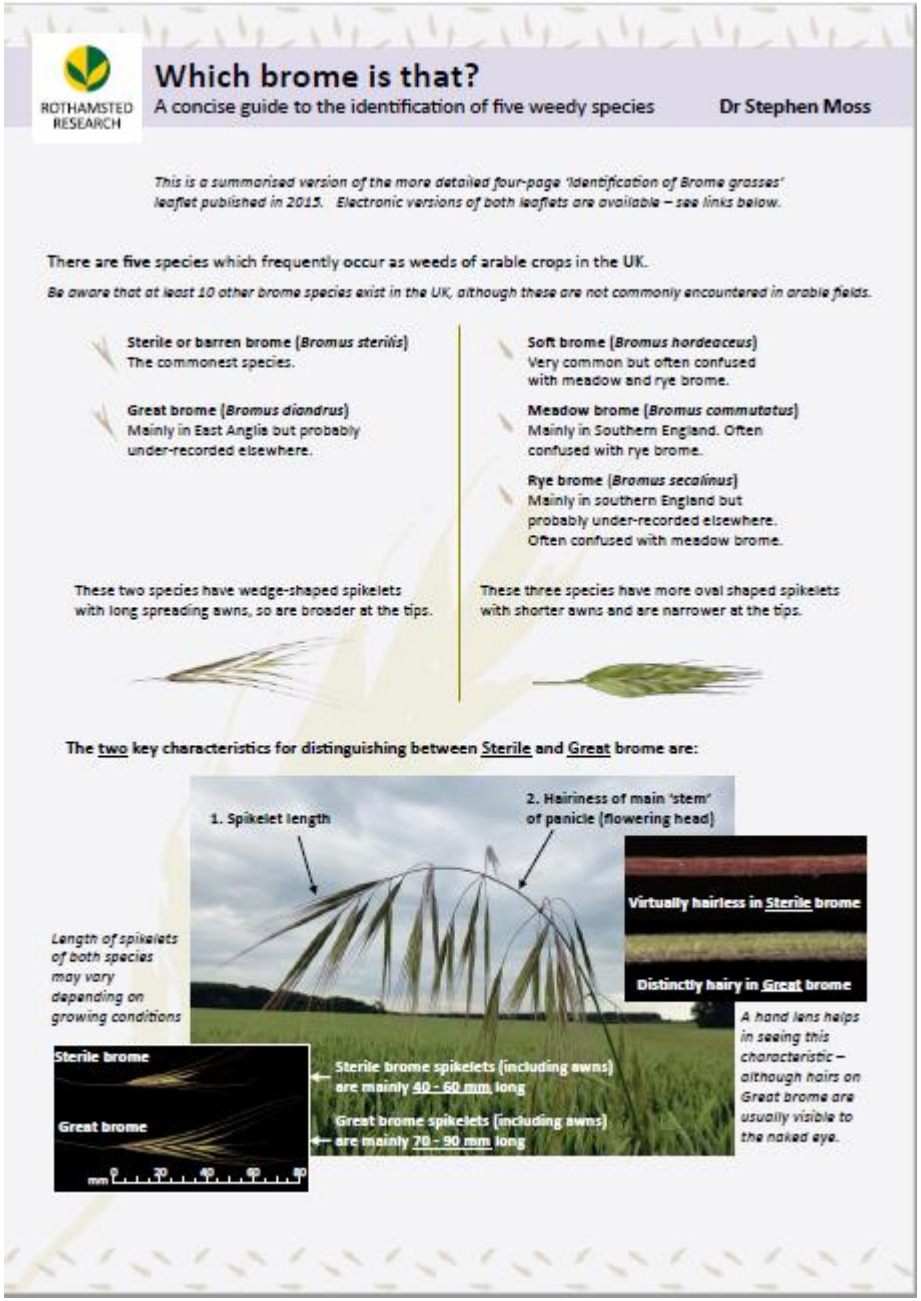
BASF The Chemical Company Bayer CropScience UPL CORTEVA agriscience Agriculture Division of DowDuPont™

# New brome project (started 2017)

## 58 seed samples for ID and herbicide testing

| Species | Number of samples | 1989 survey (733 random fields) |
|---|---|---|
| Sterile brome | 20 | 87% |
| Great brome | 8 | 1 FIELD ONLY |
| Sterile & Great mix | 1 | - |
| Meadow brome | 8 | 6% |
| Rye brome | 15 | NONE |
| Soft brome | 1 | 7% |
| Mix *Bromus* | 3 | - |
| Unknown (Field brome?) | 2 | - |

- **38% wrongly identified by farmers/agronomists**
- **8 samples of rye brome wrongly identified as soft or meadow**



ROTHAMSTED RESEARCH

## Which brome is that?

A concise guide to the identification of five weedy species

Dr Stephen Moss

*This is a summarised version of the more detailed four-page 'Identification of Brome grasses' leaflet published in 2015. Electronic versions of both leaflets are available – see links below.*

There are **five** species which frequently occur as weeds of arable crops in the UK.

*Be aware that at least 10 other brome species exist in the UK, although these are not commonly encountered in arable fields.*

- **Sterile or barren brome (*Bromus sterilis*)** The commonest species.
- **Great brome (*Bromus diandrus*)** Mainly in East Anglia but probably under-recorded elsewhere.
- **Soft brome (*Bromus hordeaceus*)** Very common but often confused with meadow and rye brome.
- **Meadow brome (*Bromus commutatus*)** Mainly in Southern England. Often confused with rye brome.
- **Rye brome (*Bromus secalinus*)** Mainly in southern England but probably under-recorded elsewhere. Often confused with meadow brome.

These two species have wedge-shaped spikelets with long spreading awns, so are broader at the tips.

These three species have more oval shaped spikelets with shorter awns and are narrower at the tips.

The two key characteristics for distinguishing between Sterile and Great brome are:

1. Spikelet length
2. Hairiness of main 'stem' of panicle (flowering head)

Virtually hairless in Sterile brome

Distinctly hairy in Great brome

*Length of spikelets of both species may vary depending on growing conditions*

Sterile brome

Great brome

Sterile brome spikelets (including awns) are mainly 40 – 60 mm long

Great brome spikelets (including awns) are mainly 70 – 90 mm long

*A hand lens helps in seeing this characteristic – although hairs on Great brome are usually visible to the naked eye.*

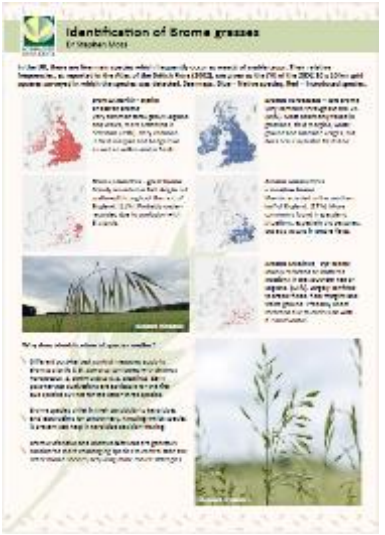
# Which brome is that?

**A 2-page identification leaflet**

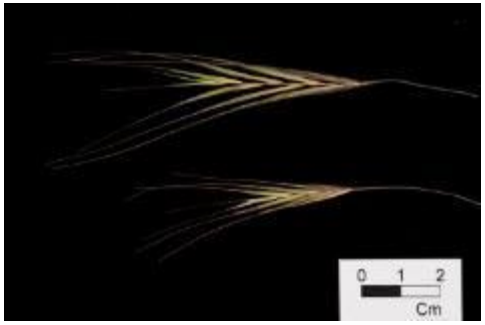
**Available now from:**
**https://croprotect.com/**
(on 2nd page of weeds section)

**Also on WRAG website**

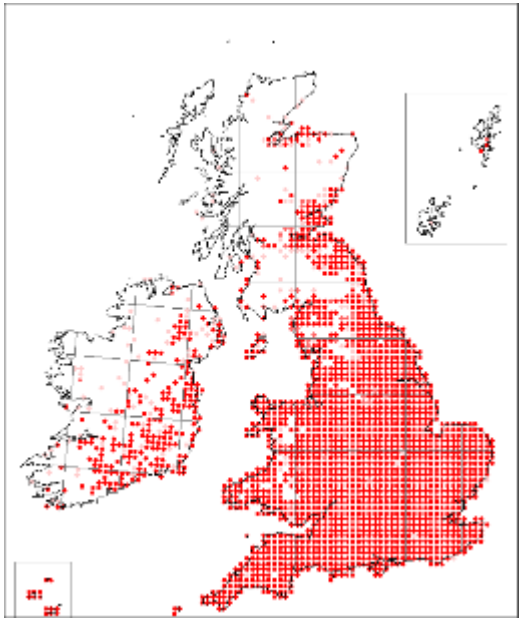
**This new leaflet is as shorter version of the 4 page version produced last year**



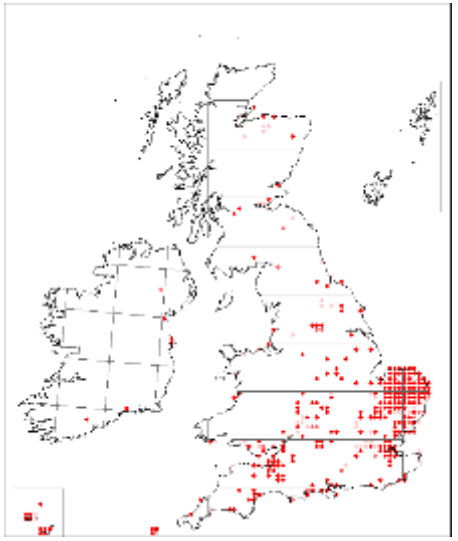
# Bromes: which species?



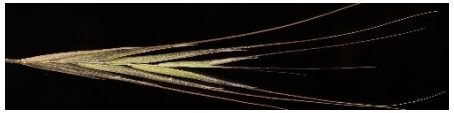

**Sterile brome**
***Bromus sterilis***



**Great brome**
***Bromus diandrus***



# Brome ID – key features

|  | Sterile | Great |
|---|---|---|
| Spikelet length | 40 – 60 mm | 70 – 90 mm |
| Hairiness of main ‘stem’ of panicle | Virtually hairless | Distinctly hairy |


Great – 80 mm long
Sterile – 50 mm long

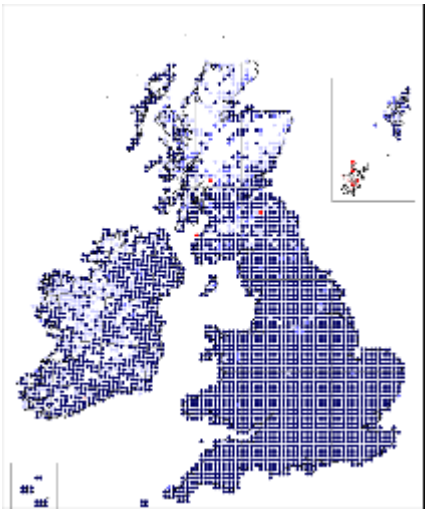
Sterile brome – hairless main stem of panicle

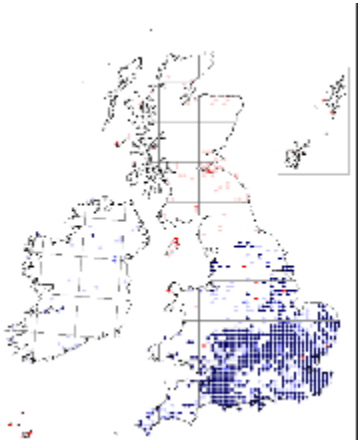
Great brome – hairy main stem of panicle

# Bromes: which species?

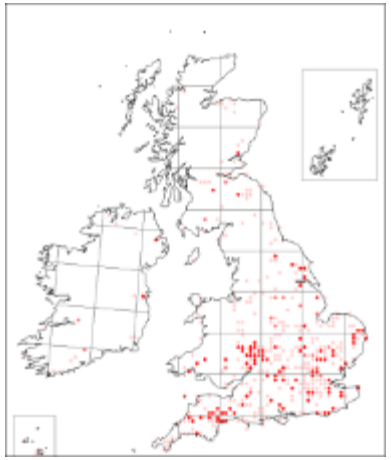
**Online Atlas of the British and Irish Flora**
**http://www.brc.ac.uk/plantatlas/**

**Soft brome**
***Bromus hordeaceus***





**Meadow brome**
***Bromus commutatus***



**Rye brome**
***Bromus secalinus***

# Brome ID – key features

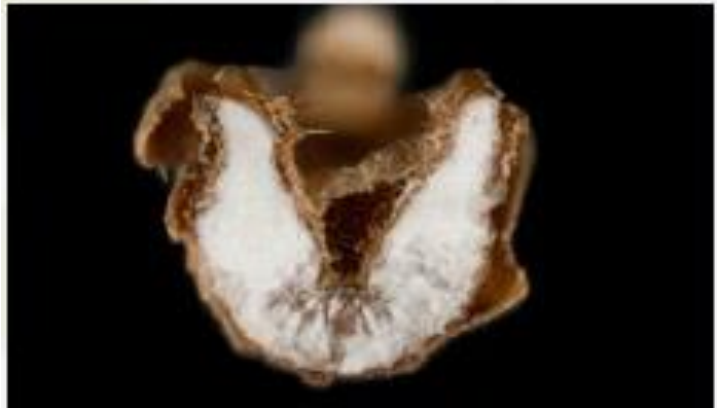
|  | Soft | Meadow | Rye |
|---|---|---|---|
| Panicle | Compact | Looser | Looser |
| Panicle branches relative to spikelet length | Mainly shorter | Mainly longer | Mainly longer |
| Spikelets | Hairy | Hairless | Either |
| Seed cross section shape* | Saucer | Saucer | Deep ‘U’ or ‘V’ |

* This is by far the most reliable diagnostic test for rye brome


Soft brome – hairy spikelets
Meadow brome – hairless spikelets

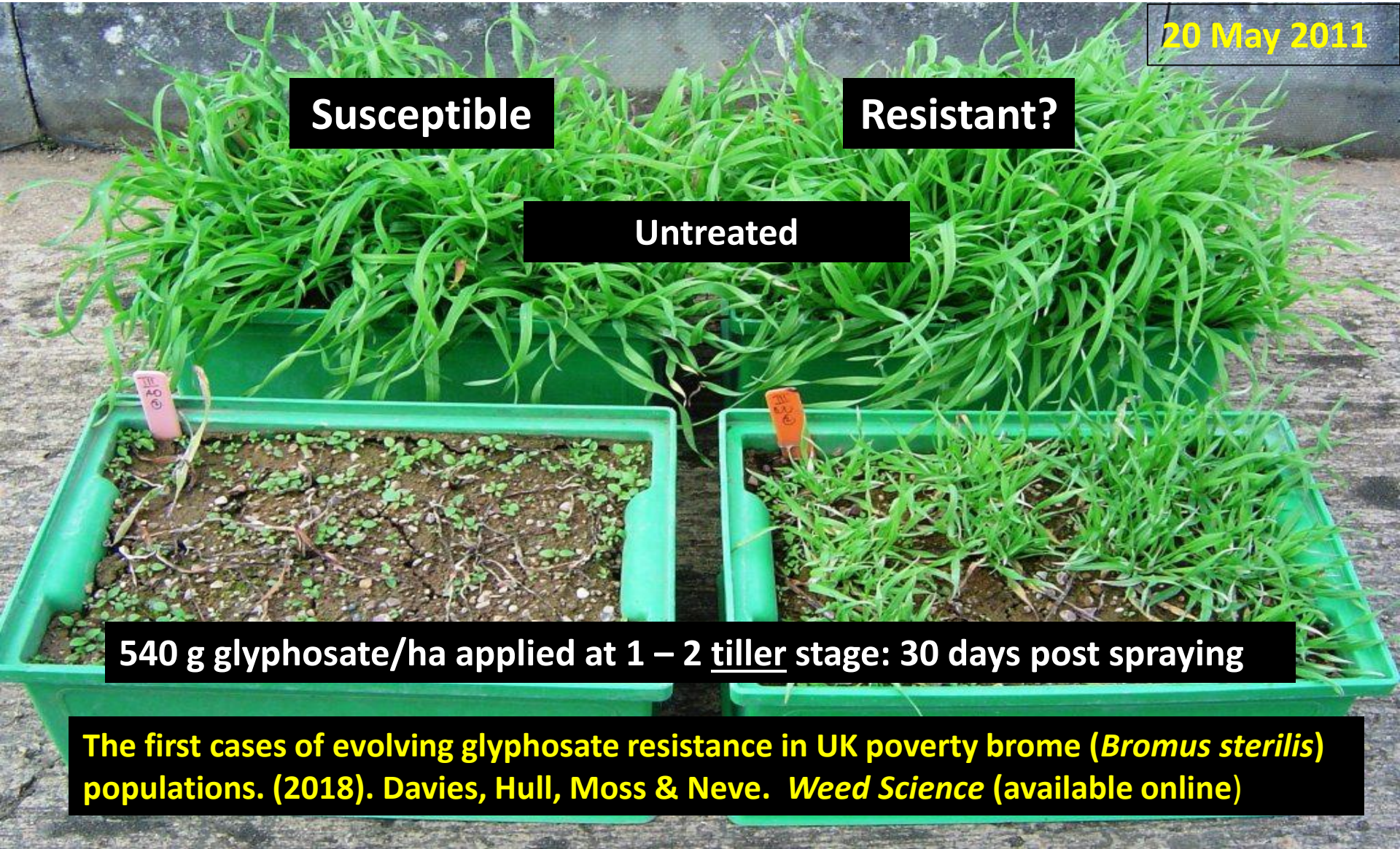
**Cut ripe seeds in half**

**Cross section saucer shaped?**
**Then it's <u>meadow</u> brome**
(soft brome is similar)



**Cross section 'V'/'U' shaped?**
**Then it's <u>rye</u> brome**
(rye Y)

# Glyphosate-resistant sterile brome




The first cases of evolving glyphosate resistance in UK poverty brome (*Bromus sterilis*) populations. (2018). Davies, Hull, Moss & Neve. *Weed Science* (available online)

# Adverts

- ’Free*’ brome presentations/ID workshops by Laura Davies/Stephen Moss as part of AHDB brome project KT

  *(travel/subsistence costs need paying)

- Brome ID phone app – student or BASIS project?

Stephen Moss Consulting

alopecurus@aol.com

# Brome identification

**Are spikelets wedge shaped (sterile, great) or more oval shaped (soft, meadow, rye)?**

- **If wedged shape, are spikelets 40 – 60 mm (sterile) or 70 – 90 mm long (great)?** (including awns)
- **Is main stem of panicle hairless (sterile) or hairy (great)?**

- **If oval shaped, are spikelets hairy (soft or rye) or hairless (meadow or rye)?**
- **Is white cross-section of ripe seed saucer (meadow or soft) or V or U shaped (rye)?**  
- **Is the panicle compact (soft) or looser (meadow or rye)?**

 **= spikelets**

 **= panicle**