# Curbing herbicide leaching: Results from latest studies on black-grass control

- Resistance tests on black-grass seeds collected in previous crop so resistance can be quantified
- Water conditioners – how much do these help?
- Field trials to explore scope for reducing the rate of propyzamide following effective use of clethodim

Affinity Water

Stephen Moss Consulting

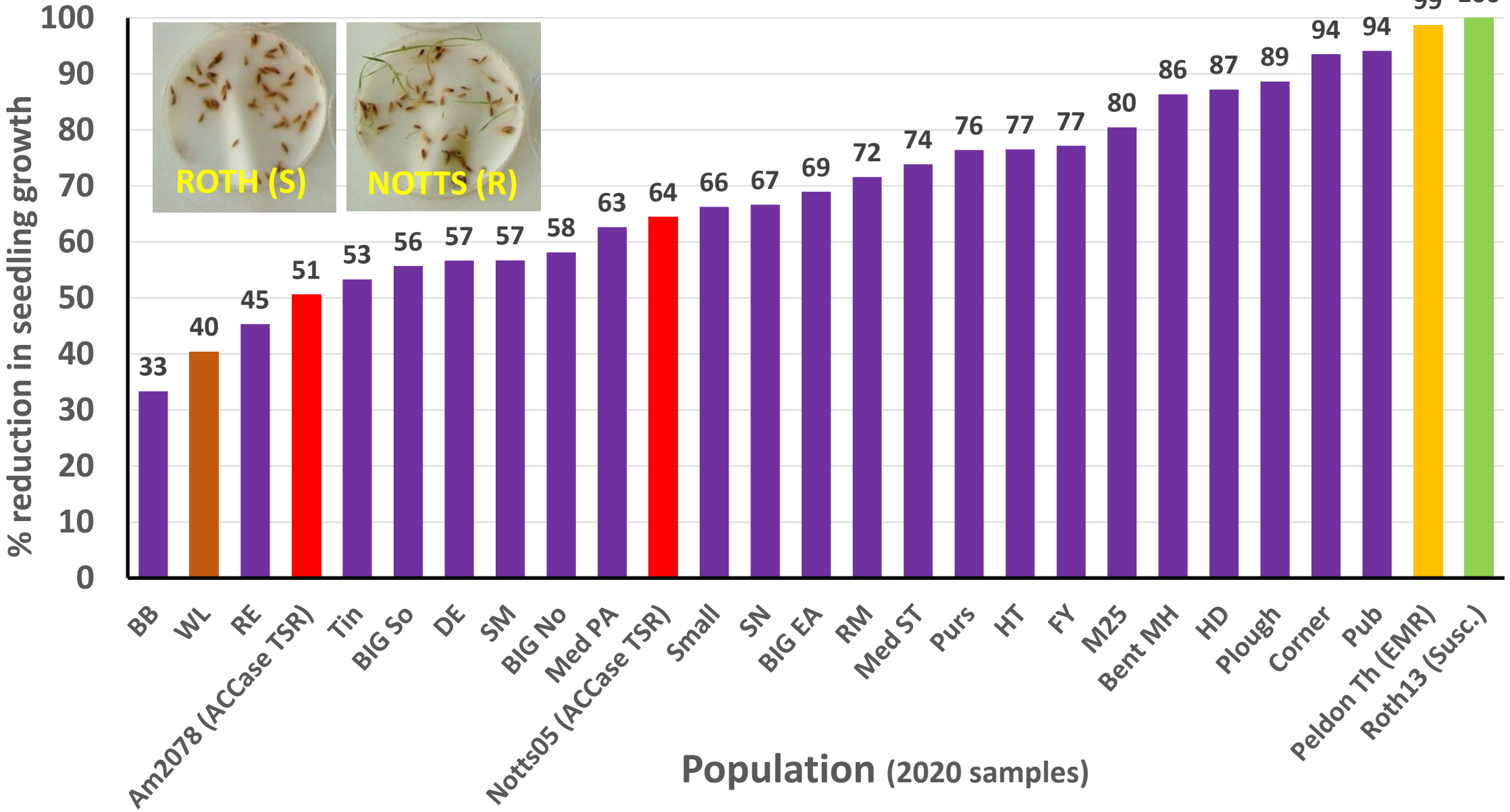
love every drop anglianwater

# CLETHODIM 1 ppm: % reduction in black-grass growth in Petri-dishes

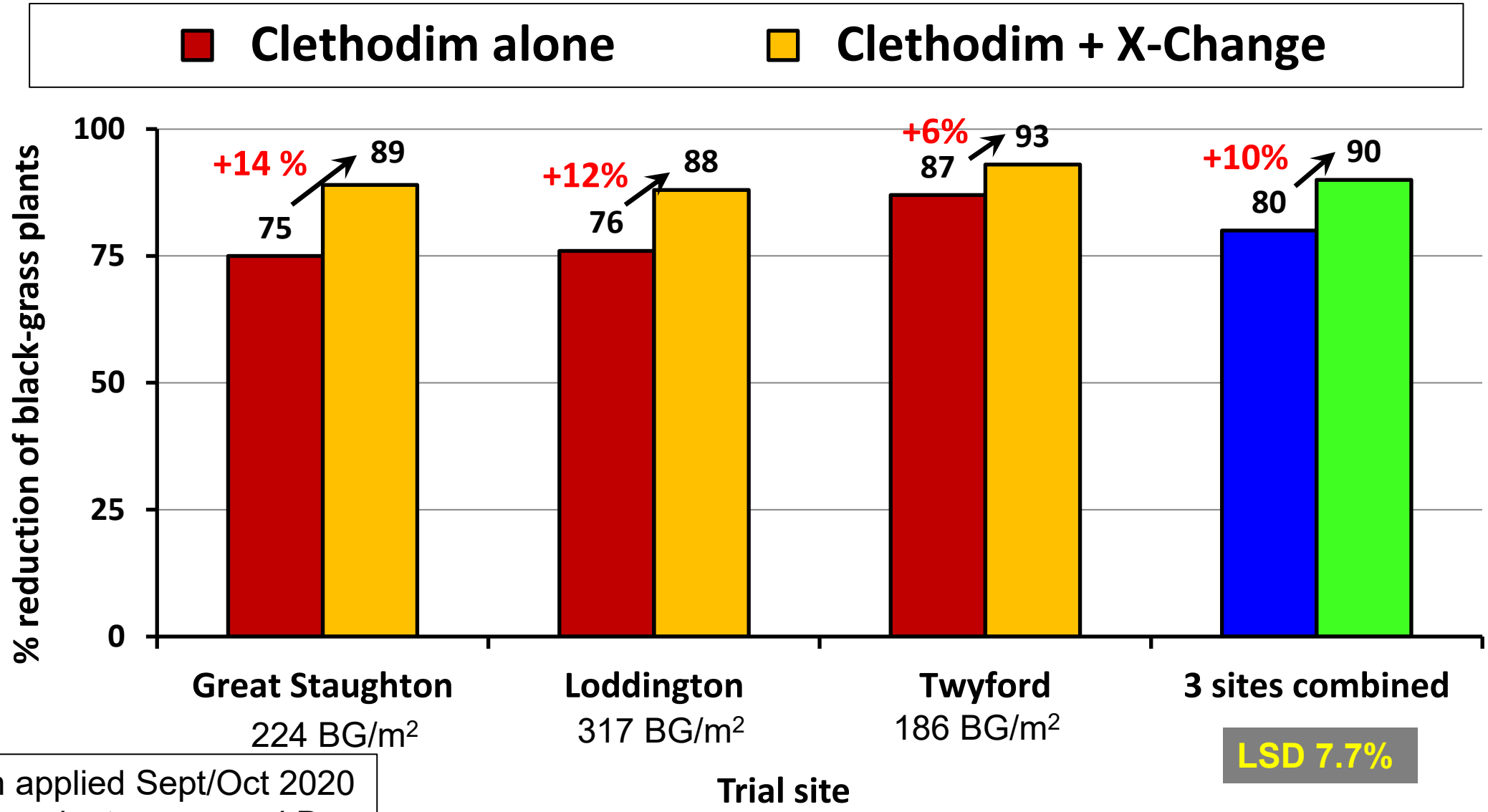








# Effect of water conditioner (X-Change) on efficacy of clethodim against black-grass in OSR



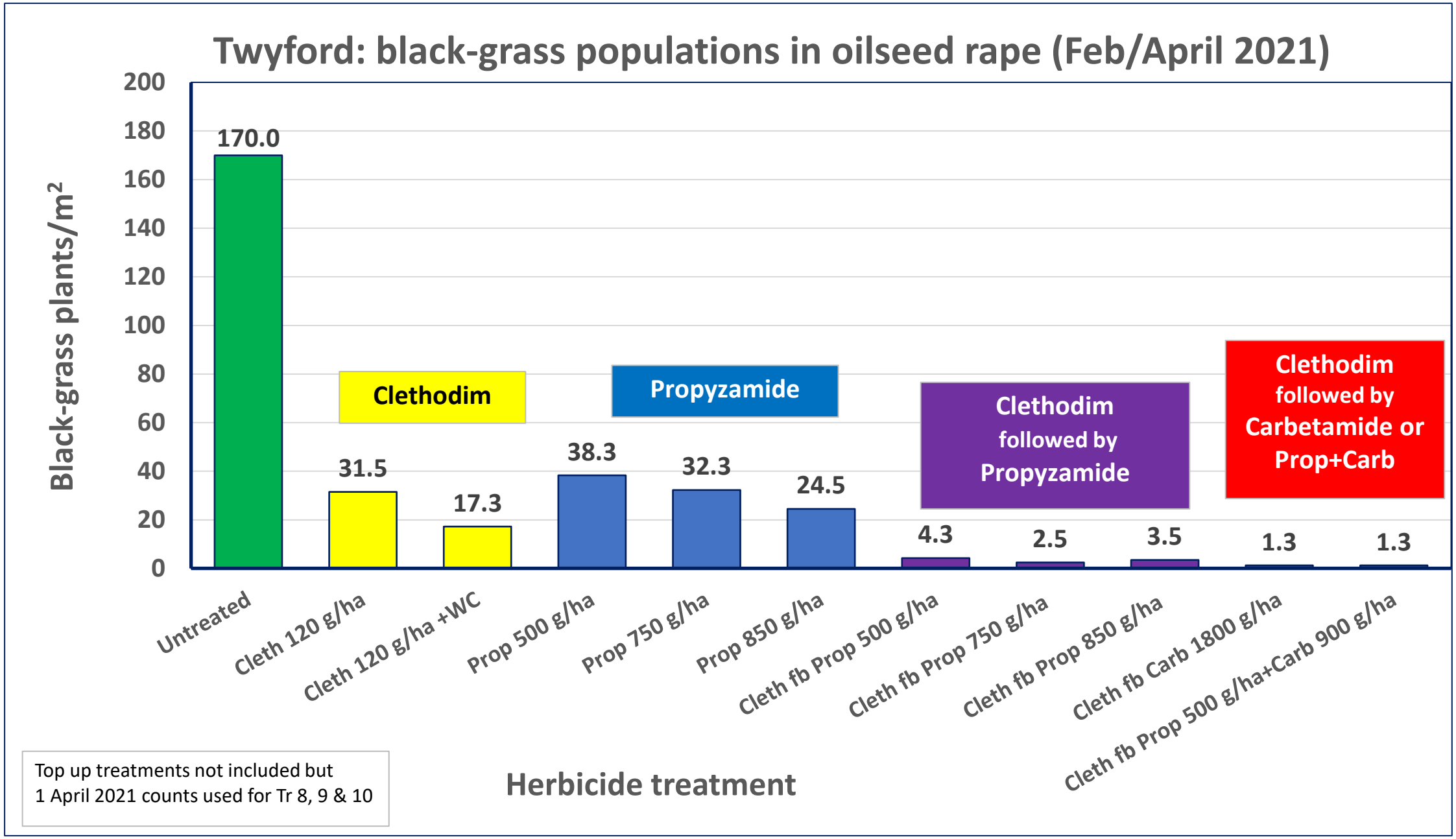

Clethodim applied Sept/Oct 2020
Black-grass plants assessed Dec

# 4 OSR field trials (2019 -21): 12 main treatments

- **Untreated**
- **Propyzamide @500, 750 & 850 g/ha (*as AstroKerb*)**
- **Clethodim @ 120 g/ha (+/- water conditioner) (*as Centurion Max*)**
- **Clethodim f b Propyzamide @500, 750 & 850 g/ha**
- Clethodim f b Carbetamide @1800 g/ha
- Clethodim f b Propyzamide 500 g/ha + Carbetamide 900 g/ha

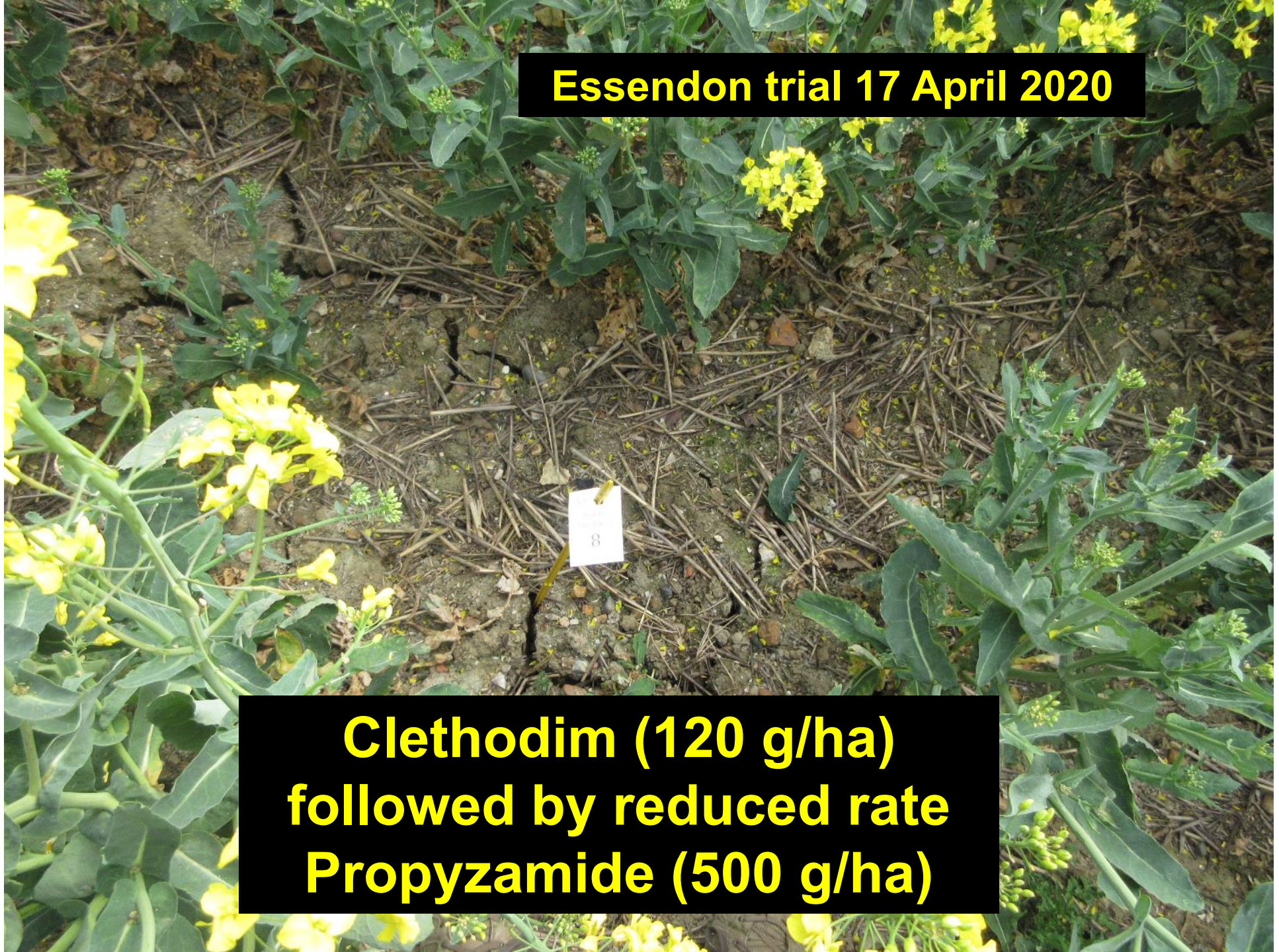
**Clethodim applied between 17 Sept and 16 October**

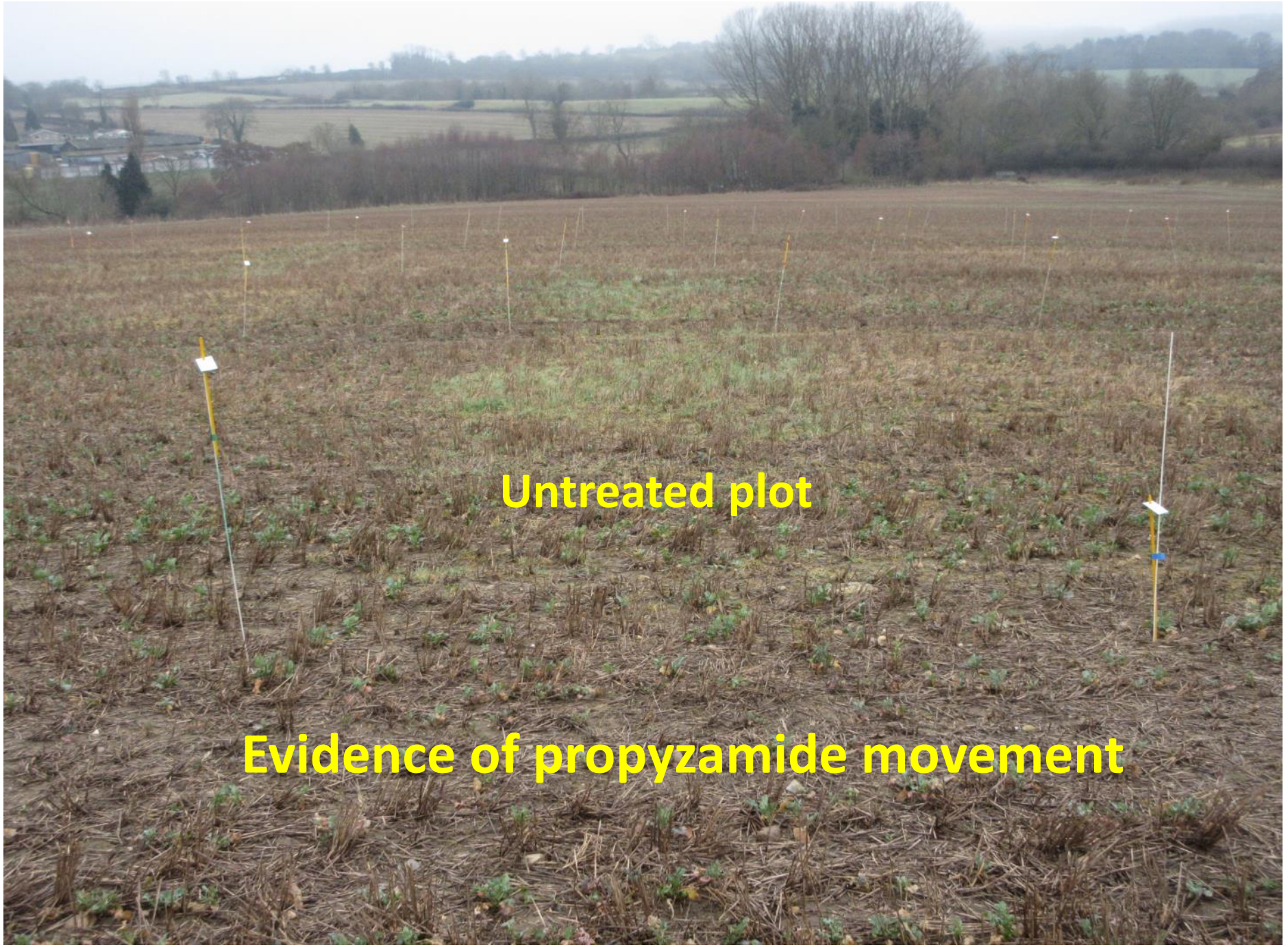
**Propyzamide** & Carbetamide **applied between 19 November and 1 December**


Twyford: black-grass populations in oilseed rape (Feb/April 2021)
Black-grass plants/m²
200
180
160
140
120
100
80
60
40
20
0
170.0
31.5
17.3
38.3
32.3
24.5
4.3
2.5
3.5
1.3
1.3
Clethodim
Propyzamide
Clethodim followed by Propyzamide
Clethodim followed by Carbetamide or Prop+Carb
Untreated
Cleth 120 g/ha
Cleth 120 g/ha +WC
Prop 500 g/ha
Prop 750 g/ha
Prop 850 g/ha
Cleth fb Prop 500 g/ha
Cleth fb Prop 750 g/ha
Cleth fb Prop 850 g/ha
Cleth fb Carb 1800 g/ha
Cleth fb Prop 500 g/ha+Carb 900 g/ha
Herbicide treatment
Top up treatments not included but
1 April 2021 counts used for Tr 8, 9 & 10

# Twyford OSR trial: black-grass on 22 Jan 2021


Essendon trial 17 April 2020
Untreated


Essendon trial 17 April 2020
Clethodim (120 g/ha)
followed by reduced rate
Propyzamide (500 g/ha)




Stephen Moss Consulting

# Challenges to getting farmers to use less propyzamide

1. More complex and time-consuming to manage; the 'inconvenience' factor.
2. Increased costs, especially if no reduction in herbicide use is achieved.
3. Risky; control levels more variable and less predictable than with herbicides.
4. Less effective than herbicides
5. More expensive than herbicides for the level of control achieved.
6. Higher labour requirement; availability and cost implications.
7. Lack of appropriate equipment or trained employees.
8. Little visible evidence of immediate success.
9. Risky for farm agronomist/consultant, so reluctance to recommend.
10. Less return for supplier of herbicides, so reluctance to recommend.
11. No compensation following control failure (more likely with herbicides).
12. May have adverse environmental effects (e.g. soil erosion after intensive cultivations).
13. Harder physical effort compared with spraying (e.g. hoe versus knapsack sprayer).
14. Short term priorities; reluctance to commit to long-term strategies.
15. Complacency; belief that new herbicides will solve existing problems.
16. Dependency on favourable weather (e.g. for alternative crops or delayed sowing).

Integrated weed management (IWM): why are farmers reluctant to adopt non-chemical alternatives to herbicides? Stephen Moss (2019) Pest Management Science 75: 1205–1211

Stephen Moss Consulting

# Issues / Questions

1. ***How big a problem is propyzamide in water nationally/regionally?***
2. ***How much of the problem is point source v movement through/over soil?***
3. ***Are there agronomic methods or chemicals that would reduce leaching risk?***
4. ***How can farmers be persuaded to reduce use of propyzamide, at least in high leaching risk areas or where black-grass populations are low?***
5. ***Importantly, this decision can wait until the degree of control from clethodim is evident - can drones help in this decision making?***
6. ***Are reduced rate <u>sequential</u> (Oct & Dec) applications of propyzamide a realistic option? (Could reduce overall use <u>and</u> 'spread the load').***
7. ***Are there implications for herbicide resistance risk?***
8. ***How effective? Cost savings? BLW issues?***

Stephen Moss Consulting
alopecurus@aol.com