

The Impacts of Pesticides on the Environment

What the Science says

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PROTECTS Project

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PROTECTS PROJECT

- Understanding impacts of pesticides on soil and bees
- Collaboration between four universities, Teagasc and DAFM



Maynooth University
National University of Ireland Maynooth



Trinity College Dublin
The University of Dublin



Department of
**Agriculture,
Food and the Marine**
An Roinn
**Talmhaíochta,
Bia agus Mara**

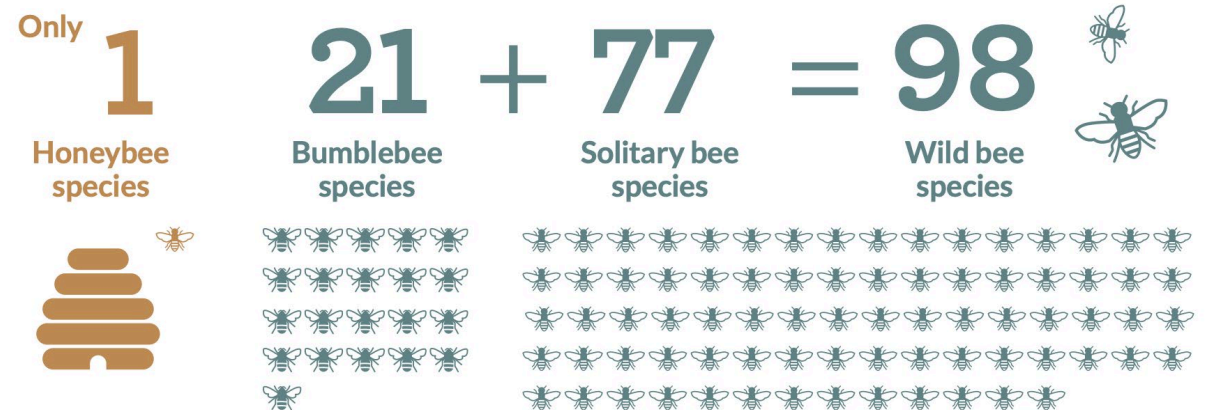
Topics

- Bees and soils value
- Threats to bees
- How much do we know about herbicides and fungicides
- Glyphosate contamination of flowers
- Pesticide products on sale

Bees and soils

- **Bees:** pollinators of 75% crops and 90% of wild plants
- **Soils:** foundation of agriculture, recycles nutrients, regulates climate

| The most important pollinators in Ireland are insects, particularly bees and flies.



Threats to bees

- Land use change
- Pesticides
- Climate change



Herbicides and fungicides

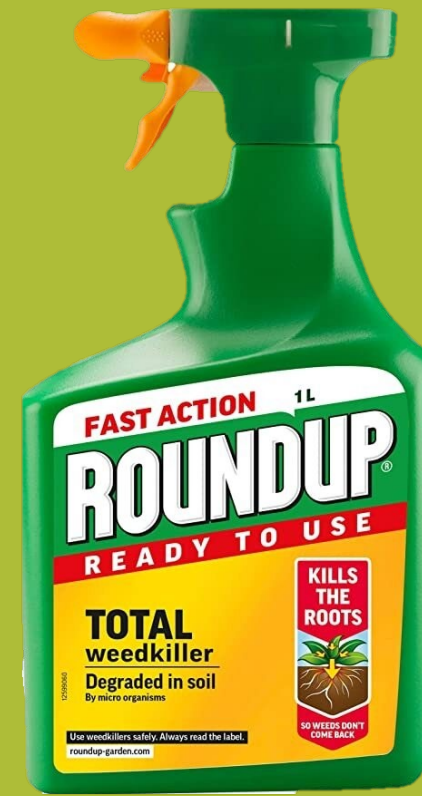
- Don't know how they impact bees

Herbicides	Studies
Glyphosate	15
Atrazine	6
2,4-D	5
Paraquat	5
Simazine	4

Fungicides	Studies
Propiconazole	15
Boscalid	13
Chlorothalonil	12
Pyraclostrobin	12
Iprodione	11

Glyphosate

- The most widely used pesticide globally
- Herbicide

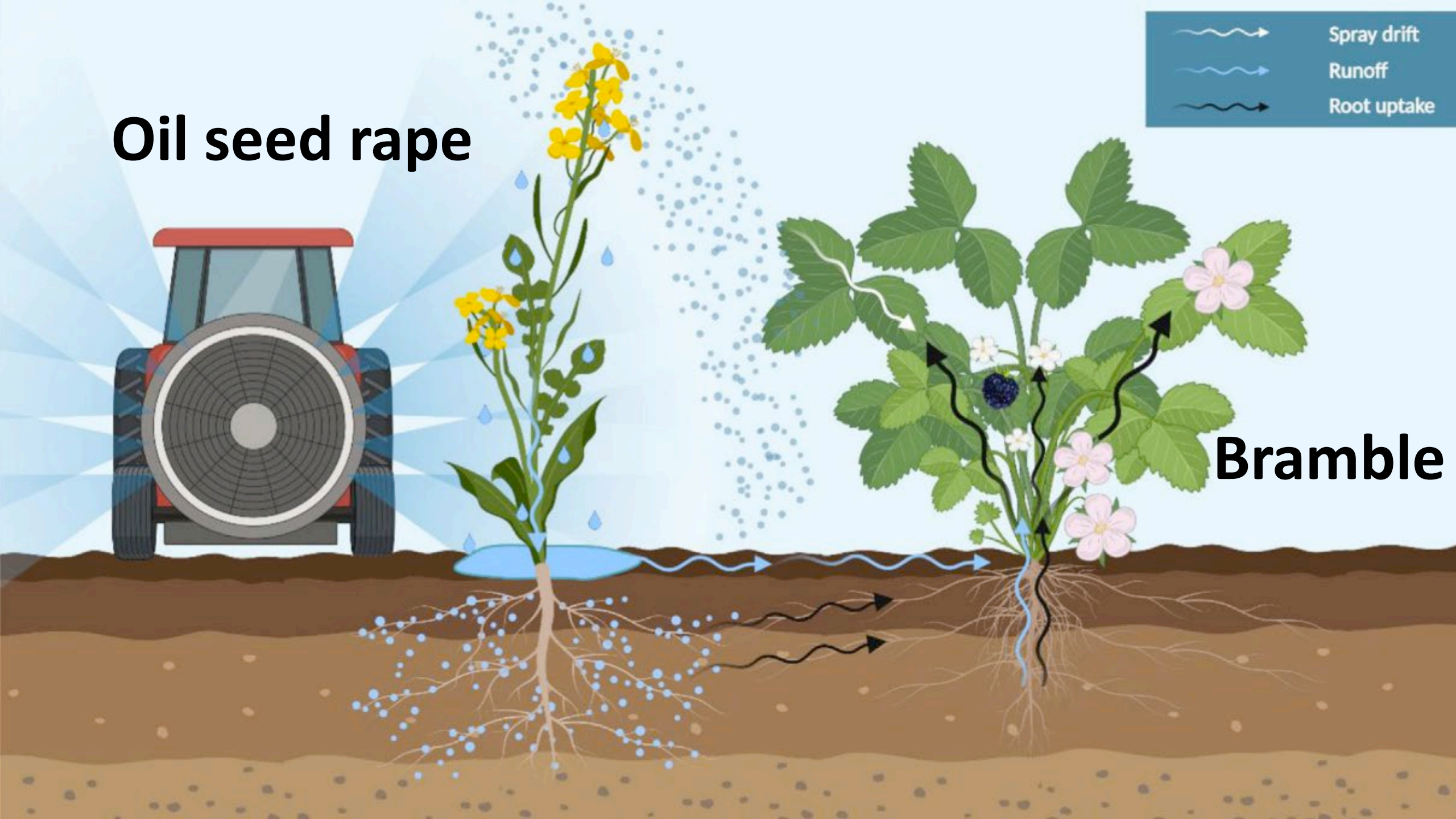


Residues can spread further than expected

- Glyphosate used as desiccant in oil seed rape
- Contaminates bramble flowers at field margin



Oil seed rape



Bramble

Glyphosate Detection

Spray Before Sowing Spray After Sowing Desiccant Spray



Not
Detected

Not
Detected



Not
Detected

Not
Detected



Not
Detected



Detected

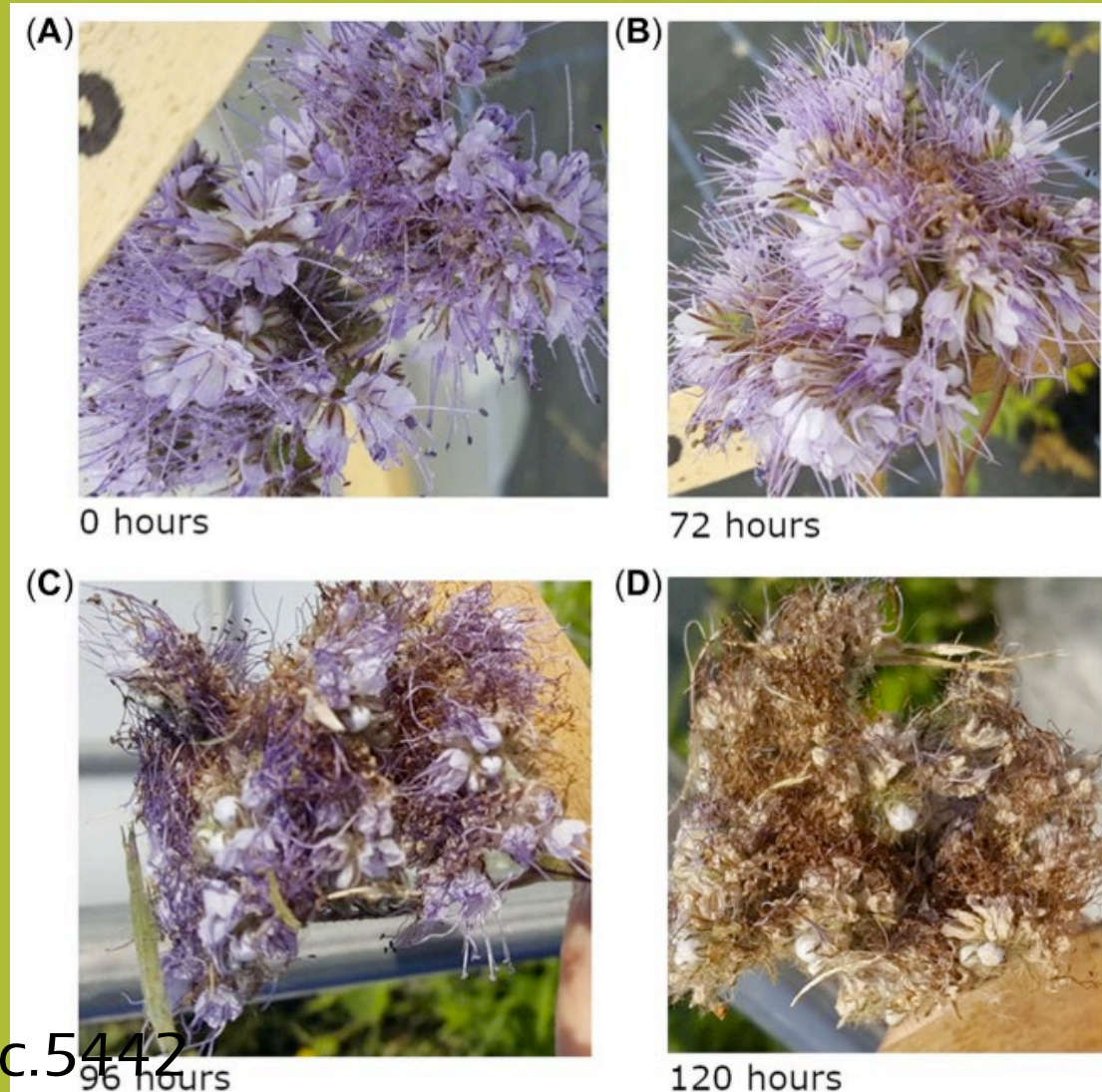
Soils and pesticide residues

- We've also found long persistence of several pesticides in soil
- Boscalid, prothioconazole and glyphosate



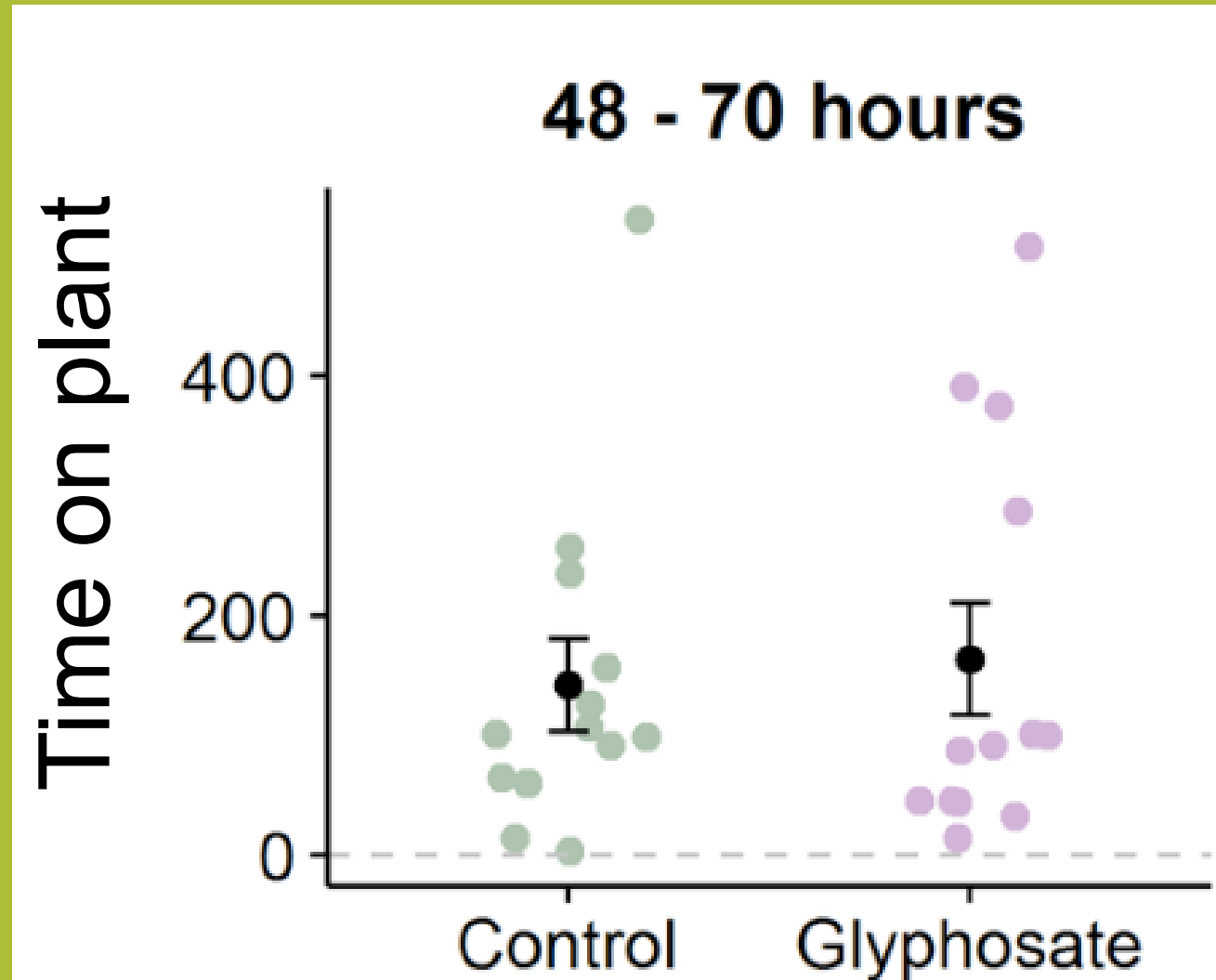
Glyphosate sticks around

- Glyphosate sprayed on flowering weeds
- Weeds nectar still contaminated 70 hours later



Glyphosate sticks around

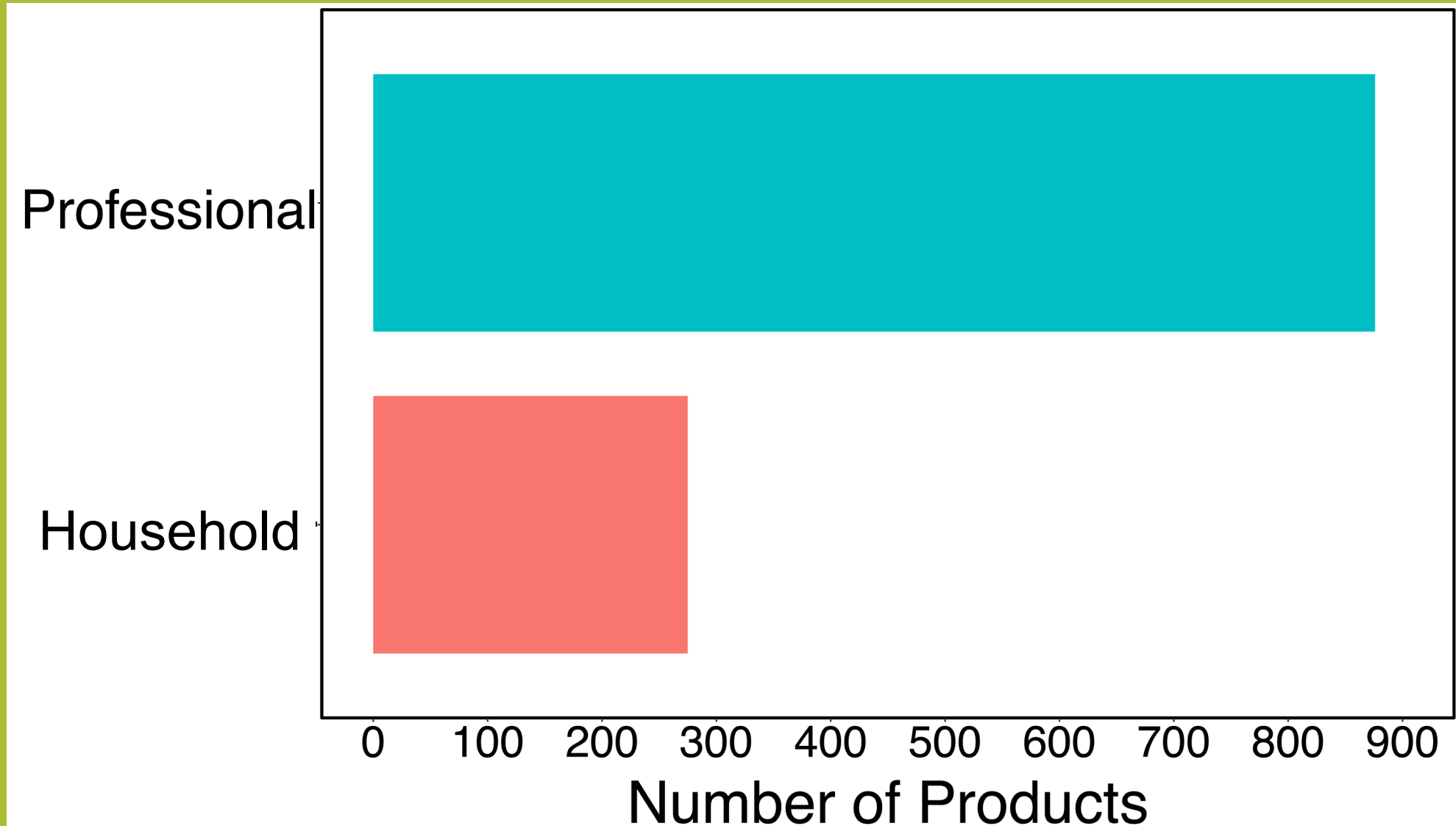
- Bees still forage on sprayed plants for 70 hours
- To minimise bee exposure to herbicides, avoid spraying flowering weeds



Glyphosate and bees

- Overall there is limited evidence glyphosate can be harmful to bees
- Not at all on the scale of neonicotinoids
- But heavy glyphosate usage makes this more of an issue

Pesticide products on sale





Pesticide products on sale

- Farmers requirements:
 - Training
 - DAFM inspections
 - PPE
 - Record keeping
 - Safe storage
 - IPM
- Household use requirements:
 - Effectively nothing

So why is all the pesticide focus on farmers?



Farmland:

actions to help pollinators

All-Ireland
Pollinator Plan

www.pollinators.ie



Implementation coordinated by the

National Biodiversity Data Centre

More resources at:

www.pollinators.ie



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...and all these wonderful
people



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Let's chat



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