

Brigg Monitor Farm meeting report

Economic sprayer washings management

Speakers:

Stephen Watson (ADAS)

Kelly Hewson-Fisher (Anglian Water)

Isobel Wright (Lincoln Institute for Agri-food Technology)

Ian Gould (Lincoln Institute for Agri-food Technology)

Date: 20 December 2018

Venue: University of Lincoln, Riseholme Campus



For more information, visit: cereals.ahdb.org.uk/brigg

Meeting summary

Key points

- Only very small amounts of chemical (e.g. on a foil seal) are needed to pollute large volumes of water and long stretches of water course
- Several options are available for responsible disposal of pesticides depending on your system requirements
- Some systems are costly but low cost and/or home-made options are available
- Responsible disposal of chemicals is vital if we are to reduce the risk of losing further actives
- Research into mitigation of flooding risk is underway in the natural flood management area at Riseholme Campus

Drinking water standards

Kelly Hewson-Fisher

- In high risk groundwater catchments only very small levels of pesticides are needed to exceed the limit
- Test results indicate the highest level detected was for metaldehyde
- Some chemicals can be removed easily (e.g. glyphosate) but not metaldehyde
- “We need to work together in the catchment so we can keep these actives”
- Having a lot of actives available allows you to spread risk

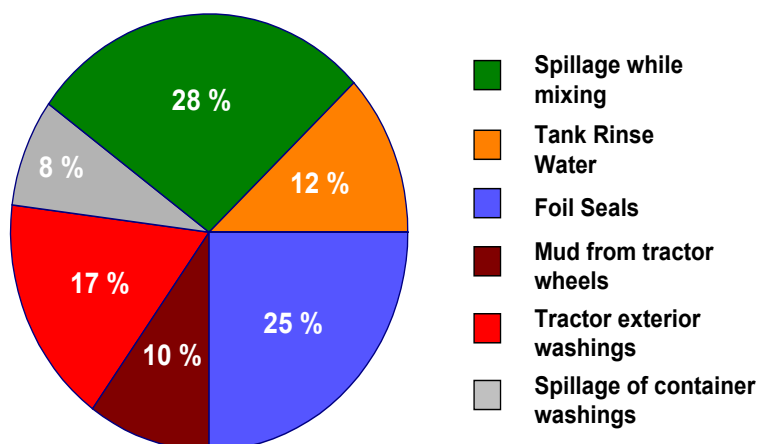
- Clopyralid and propyzamide are difficult to treat and propyzamide is very persistent
- Nearly all the chemicals tested exceeded the 0.1µg/l limit
- The problem with metaldehyde is it passes up the food chain
- 40 – 70% of pesticides in water comes from farmyards
- Possible mitigation measures include drip trays, spill kits and Dammit mats
- For advice contact the Environment Agency Helpline or Anglian Water
- Solve before it becomes a problem

Brigg Monitor Farm Pesticide Handling

Stephen Watson, Isobel Wright

Sources of farmyard pesticide pollution

Over 60% comes from the filling point



Results from Year 1 Aventis Cherwell Study

Bayer CropScience Cherwell Study

- There is enough pesticide on a foil seal to contaminate 10 million litres of water, equivalent to 30 km of stream
- Pesticide residues in containers and sprayer leaks can also result in contamination of huge amounts of water
- Spills on concrete can still be there 55 days later, e.g. chlorothanilil
- Small amounts can be detected in drains 6 months after application
- KHF pesticide amnesty – phone David Brown at Chemclear
- Treating dilute pesticide washings
- Disposal to an approved contractor is expensive
- Other options include:
 - Biobed

- Biofilter
- Heliosecc
- Phytobac (similar to a biobed but with no discharge of liquid)

Biobed

- Relatively simple to construct and low cost
- Drive over
- Can be offset pad linked to biobed
- Doesn't need to be covered
- Can deal with more than 15,000 litres
- Minimum size = filling area x rainfall

Biofilter

- Can be purchased or home-made from IBCs
- The water one can be at the side
- For stability they are best housed in a frame
- Needs to be covered
- Cost £3000 approx

Heliosecc

- Relies on evaporation from wind and sun to leave pesticide residues on liner
- Liner is removed annually by an approved waste contractor
- Filling area needs to be covered
- Might not be big enough for a large farm
- Cost £5,000 – 6,000 approx.

Phytobac

- Consists of a lined container of Biomix which stays in for 5 years
- The system relies on evaporation and there is no drainage
- You don't need to pay for disposal
- Discharge from the phytobac can be used to wash off the sprayer
- Cost £9,000 – 10,000 approx.



Biobed



Heliosecc (biofilter behind)



Biobed (left, foreground); biofilter (centre); heliosecc (rear view)

Rules and regulations

- These handling facilities can be installed under T32 Exemption if they fulfil the following:
- 10 metres from a watercourse
- 50 metres from borehole
- 250 metres from borehole used for domestic purposes or production
- Maximum volume of dilute pesticide washing is 15,000 litres/year
- Must be outside Source Protection Zone 1 (Red Zones)
- If you can't meet these requirements you need to contact the EA for specific approval for your site

Sprayer washing facilities at Brigg Monitor Farm

The current facilities need to be replaced and have been reviewed by ADAS conclusions of the report:

- Replace existing nissan hut with new build roofed filling area
- 12 m long x 6 m wide bunded filling area
- Move pesticide store into new building
- Link whole system to biofilter

Grants

- Are available if you are in the right area
- For biobeds, biofilters and concrete filling areas; and a bit available for sheds
- Advice is available for siting
- despite all the land draining into the River Ancholme, the farm is just outside (by 87m) the drinking water safeguard zone so is not eligible for a grant

Other things to consider:

- For a phytobac, how you are going to empty the biobed in 5 years?
- If you are putting up a shed to house a new system don't base it on the sprayer you have now, e.g. if you might change to a trailed sprayer think about fitting it in the shed – do you want to reverse it in?
- Pesticides are not assessed for their ability to appear in water as part of the registration process
- Some manufacturers are supplying inadequate kit, e.g. a bund that could only contain 10%

Natural flood management area, University of Lincoln Riseholme Campus

Isobel Wright

- To mitigate against extreme weather events
- Demonstration area
- Has a straight water course running through it
- The water course has 8 leaky barriers – at each one water spills over into a pond
- This mechanism is designed to lower the peak event
- Silt and clay drop out at the barriers and can then be returned to the field
- Also water could be taken and put in a reservoir
- Logs have been used to narrow the gap for water to pass – this creates fine sediment traps
- The whole system needs simplifying – currently you need a permit from the EA to make a barrier
- More information is needed on the cost of setting up similar systems and maintenance
- The flood management area was unusually dry because of the extremely dry summer and autumn, and at the time of our visit there was no flowing water



Natural flood management area, University of Lincoln, Riseholme



Isobel Wright explains the use of logs to create "leaky barriers"

Robotics technology development at Lincoln

Ian Gould

- Robot to navigate between pickers
- Soil mapping for soil properties
- Adaptive sampling to do areas of contrast
- Remote sensing for soil moisture
- Use of UV light to treat strawberries for mildew – so no fungicides are needed which has positive implications for water quality



Two robots under development for use in horticulture

Find out more – Links to AHDB information sheets or research

[Pesticide action network – UK](#)

[Health and safety executive – Pesticides](#)

**For more information or to find out more about Farmbench, AHDB's benchmarking tool,
contact:** Judith Stafford

E: judith.stafford@ahdb.org.uk

M: 07891 556623

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