



## Best Practice Information Sheet

A joint project between the Environment Agency and Natural England, funded by Defra and the Rural Development Programme for England, working in priority catchments within England.

# Land management

## Tramline and Wheeling disruption

### What is the issue with tramlines and wheeling?

In arable crops, approximately 70-80% of runoff from fields occurs along tramlines and wheelings. Soil becomes compacted as a result of regular wheel traffic over these areas.

Disrupting tramlines and wheelings can provide various benefits, including:

- Reducing soil erosion and nutrient loss
- Increasing water and nutrient infiltration into crops
- Decreasing the likelihood of surface water ponding and surface soil waterlogging will improve access to the site
- Reducing compaction will increase soil pore spaces
- Reducing environmental impact due to losses of sediment and nutrients into watercourses. This causes eutrophication of algae and increased levels of silt



### Steps to success

- 1. Review the current situation:**
  - Identify where there are problematic tramlines in the field. Identify any high risk fields that have steep topography.
- 2. What are the opportunities available to reduce runoff down tramlines and wheelings?**
  - Increase tramline widths from 12m to 18m.
  - Use low pressure tyres with correct pressures.
  - Avoid travelling on wet soils in the autumn and early spring.
  - Put in an extra tramline at the lowest end of the field, disconnected from other tramlines. This will create an extra 'buffer strip'.
  - Use tramline disruption machinery where movement of water and sediment occurs.
- 3. Calculate the cost-benefit of these opportunities by:**
  - Identify the benefits of reducing sediment, nutrient and pesticide loss.
  - Removing sediments from entering watercourses can reduce de-silting operations and reduce flood risk.
  - Less water pooling in wheelings improves access for sprayers and fertiliser applicators, thereby reducing disease and growth issues.
  - Identify the payback period for business planning.
- 4. Implement the action plan:**
  - Prioritise high risk fields that have steep slopes and are nearby to watercourses. Cultivate and place tramlines across the slopes if possible.
  - Plan where tramlines are located and consider placing an extra tramline headland at low points.
  - Look at where gateways and entrances are positioned when entering fields. If possible move to the highest point on the field.
  - Once compaction is visible in the tramlines and conditions are suitable, run over the area with the tramline disruption kit.
- 5. Monitor progress:**
  - Monitor soil and water movements after rainfall.
  - Look at crop progression and quality.
  - It might be worth travelling over the site more than once during the season if conditions allow.

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## Practical Examples

### Transferring water and nutrients back into the crop

Breaking the pathways of water flowing down tramlines is key for reducing runoff. The Earthwake and Simba spiked machinery are two pieces of machinery in cereals which can achieve this.

The Earthwake acts like a corkscrew, cutting diagonal channels to allow for any water running down tramlines to enter back into the crop. Similarly, the Simba's harrows are offset to create channels back into the crop.

Studies have seen runoff reduced by 72-99%. This can produce savings of up to £9-80 per ha per year, taking into account losses of sediments, pesticides and nutrients. Please note that this does vary based on soil type, slope and conditions.



*The Earthwake from Lland-ho (left) and Simba spiked harrow attached to a sprayer (right)*

## Tramline Disruption

### Wheeling disruption in Potatoes and vegetables

Growing potatoes and vegetables where irrigation and beds or ridges are created can cause significant amount of runoff down wheelings. This can be reduced significantly by using machinery that directs water into the crop and creates small dams and ridges.

In potatoes, approximately 5% of irrigation is lost due to runoff. When using devices such as the wheeling disruptor, irrigation runoff can reduce to less than 1%.



*The Wonderwheel by Bye Engineering*



*The Aqueel from Aqua Agronomy*

This information sheet is part of a series providing farmers with advice on land management practices to protect water bodies, produced by The Rivers Trust with support from Catchment Sensitive Farming. The advice will also enable farmers to use farm resources more efficiently and help meet Nitrate Vulnerable Zone and Soil Protection Review requirements under Cross Compliance and environmental regulation. Information for these sheets was provided through the Broadland Catchment Partnership and Cam and Ely Ouse Catchment Partnerships Water Sensitive Farming project.



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