UK Railway Weed Spraying Data control
Statistics

- We treat 19,500 miles of track 1.5 times in one season.
- We have 5,000,000 neighbours.
- We use 66,000 litres dff & glyphosate mix
- We use 45,000 litres glyphosate on restricted sites
Why we need to spray

Faversham 2014

Avonmouth 2014
We use a combination of residual and non-residual herbicides

- Due to the time demands on the railway we have very little white space between trains to operate the Weed-Spray train.
- Freight traffic and track maintenance mostly takes place at night leaving little white space.
- 1\textsuperscript{st} treatment we spray all unrestricted sites with DFF glyphosate, and restricted sites with glyphosate only.
- Some “No Spray” sites are hand pulled and ballast cleaned more regularly.
- 2\textsuperscript{nd} spray we treat all Glyphosate only sites and missed or historically problematic areas.
The NR Database Information

Network Rail have a written agreement with the Environment Agency and Water UK to protect drinking water, surface water and groundwater. This agreement also protects SSSIs.

Annually the EA gathers geographical information on which areas need protection and feed it through to JSD. JSD then update the database which writes the task sheet.
Example of information on restrictions

This is data from the EA and is used to calculate the route mileage, this is then added into the database Restricted Sites list. From there the Dictionary tables are made up, which is the base information for the task lists instruction to the operator.

<table>
<thead>
<tr>
<th>Site 2011</th>
<th>Water Company/Private Abstractor</th>
<th>Agency region</th>
<th>Ground/Surface water</th>
<th>Restriction NGR (start)</th>
<th>Restriction NGR (finish)</th>
<th>Track length (km)</th>
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Where treatment is permitted

Soft Surface
- Selective weed control only after a specific risk assessment is completed and instructions issued
- Woody scrub is not desirable but grasses encouraged

Hard surface
- Total weed control required 95% free of all vegetation

Soft Surface
- Selective weed control only after a specific risk assessment is completed and instructions issued
- Woody scrub is not desirable but grasses encouraged

Risk Assessed Scrub Treatment Zone
Flail Strip Cess Strip Track Centre Track Centre Cess Strip Flail Strip Risk Assessed Scrub Treatment Zone

jsd rail
How we manage these responsibilities

• Nationally we have 19,500 miles track.
• The NR Weed-spray database is split into 25,000 items
• Task sheets are a specific instructions for the Spray Train Operator.
• Record of applications are made and the details kept for;
  1. Who.
  2. What.
  3. When.
  4. Where
  5. How much
  6. Weather conditions during application.
Weed – Spray Task sheet

Network Rail
2015 First Spray
Circuit No.: SCO132

Date: Wed 03 June 2015
Booked Departure Time: 14:00
Actual Departure Time: 14:00
Booked Arrival Time: 21:29
Actual Arrival Time: 21:34

Team Leader: Jim Muir (116675)
Operator(s): 1st Spray - Not Required (0000)
Driver: D cowan mossend

MPV No: 98911
Headcode: 6Z06

Weather: Dry
Wind: Light Air

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<tr>
<th>Tank No</th>
<th>Contents</th>
<th>Usage</th>
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<th>Application Rate</th>
<th>Quantity Used</th>
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<td>Diflufenican</td>
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Comments:

Track Spray | Planned (mi) | % of Planned | Actual (mi) | % of Actual | % Done of Planned |
-----|-------------|--------------|-------------|-------------|-------------------|
Scotland | 83.3250 | 100.00 | 83.3250 | 100.00 | 100.00 |
TOTAL    | 83.3250 | 100.00 | 83.3250 | 100.00 | 100.00 |

Done (miles) | A | B | C | D | E | I | N | O | P | R | T | X | Z
---|---|---|---|---|---|---|---|---|---|---|---|---|---
24 | 83.3250 |   |   |   |   |   |   |   |   |   |   |   |   |
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<th>End</th>
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Done - Treatment Complete  
A - Awaiting Spares  
B - Not Required by Area  
C - Cancelled before penalty period  
D - Driver (None, Late, Error)  
E - External (Weather, Fatality)  
I - Infrastructure Failure  
(T: Track Circuit Fault, Points Failure, Broken Rail, Emergency Possession etc.)  
N - Wrong route/diverted  
O - Operator (None, Late, Error)  
P - Booked Possession  
R - Replenishment  
T - MPV Failure  
X - Not in timings  
Z - Spray Equipment Fail

Printed: 04 June 2015 11:06:35
Starting in 2016 will see the introduction of a simple user friendly GPS technology in the Weed-spray module. This will verify that the treatment has been delivered with accuracy and is adjustable to within 5 meters. We hope to achieve a 6 channel system reporting way points every 500 meters as standard, also recording and reporting change of status i.e. when a nozzle is switched on or off.

The information recorded would be which track zone is treated - 4ft, left and right cess in both directions and BSM left and right.
Hand-Spray areas

Not all areas of the infrastructure are accessible to the train borne treatment, sites such as sidings and up to buffer stops in bay platforms. These are treated by hand.

• Through the Weed-Spray database we are able to operate an enhanced reporting and monitoring system for the Hand-spray that compliments the train-spray reporting.

• Each hand-spray site will be pinned on a map with all its details,
  1. Name,
  2. Treatment type
  3. ELR mileage
  4. DU responsible
  5. Task sheet
  6. Photographs of monitoring.

• Access to the information would be through database login on a cloud based system.

• This will be developed and introduced through the 2016 season.
Example of the Hand-Spray site map web link from the database.
Example of map site photograph in the database
Example of site task list in the database

Hand spray England
- Site list: 28 views
- All changes saved in Drive

- LNE
  - Uniform style
  - All items (83)

- LNW
  - Uniform style
  - All items (165)

- Sussex
  - Uniform style
  - All items (34)

- Wessex
  - Uniform style
  - All items (56)

Location: 51.282214, -0.078539
Area: Sussex
Site Name: CATERHAM
Hand-spray team GPS mapping

- It is important to monitor hand spray treatments so that they can be located in live time to aid the mapping data.
- Over the coming seasons each Hand-spray team leader will carry a simple tracker device, this will;
  1. Be linked to the data base
  2. Automatically record the treatment event
  3. Log date and time
- This information can then be displayed into the map system in live time and would enable stakeholders to log in and view current status of the treatment.
This is the standard we strive to attain