

## Wheeling and Tramline Disruption Machinery

*Free Trials available in Broadland, CamEO and Norfolk River Catchments*

Through the Water Sensitive Farming Initiative, 3 pieces of wheeling equipment are available to trial in the Broadland, CamEO and Norfolk catchments. The equipment is owned by the Broads Authority.

Many studies have shown that compacted wheelings and tramlines are a major cause of runoff and soil and nutrient losses within arable, vegetable and potato fields. Previous studies have shown as much as 80% of runoff is down wheelings and tramlines, MOPS Silgrim (2013).

### Bye Engineering Wonder Wheel ‘Wheeling Disruptor’ – Vegetables/Potatoes/



The Wonder Wheel developed by Bye Engineering intercepts rain and irrigation water; greatly reduces water run-off and soil erosion; reduces losses of soil, nutrients and agrochemicals; conserves water and alleviates bed compaction. Leading tines generate a suitable route for wheeling water, as well as heaving the edge of the bed to increase water infiltration. Secondary tines generate free soil ready for moulding and the moulding wheels shape and consolidate the soil in the wheeling. The profiles generated are “heaps and hollows” which continuously catch and dam running water in small quantities.



The profile also directs the water from the centre of the wheeling's to the edges where it then infiltrates into the crop rooting zone. The Wonder Wheel is rear-linkage mounted and the wheel-mounting arms are set to the appropriate row or bed width. The machine was funded by Tesco in 2016.

The machine has been used across the Broadland Rivers Catchment by several growers on potato fields across North and East Norfolk in the last two summers.

### Creyke Wheel Track Combi – Cereals/Sugar Beet/Maize/Potatoes and Vegetables





The Wheel Track Roller reduces water run-off in crop tramlines by holding water in mini reservoirs. Infiltration takes place down drainage channels directed under the adjoining crop. The centre of the tramline remains compacted to maintain trafficability.

The machine is adaptable for operation in combinable crops (cereals) AND ridge / bed grown crops (potatoes / vegetables). A self-cleaning, high-slip, low soil adherence plastic Roller forms angled elongated reservoirs. The oblique angled Roller self-cleans by the slip and scour movement. A 100% longer indent than tooth length creates fissures in the soil surface to further aid absorption. The concave shaped centre section of the Wheel Track Roller gives a necessary, compacted convex centre of the tramline pathway that ensures water flows into reservoirs to maintain a dry pathway that facilitates traffic and the extra arms allow for passes on multiple beds/ridges.

The centre bed and arms can be folded and adjusted depending on bed/ridge or tramline set up. Angled tines divert the water through the soil and into the crop.

This machine has been trialled at Thelveton Farms in potatoes and in cereals in the autumn after the last sprayer pass. It delivered successful results through the wetter winter months on light soils prone to runoff.

Next spring will see it used in potatoes and vegetables, sugar beet, and maize.

#### Llandho Earthwake – Cereals, Sugar Beet and Maize.



The Earthwake has corkscrew blades, drawn along the ground like a roller, which cut diagonal drainage channels across the tramlines every two metres, dispersing the accumulation of water into areas where it can drain more freely.

It has been trialled in winter cereals and plans for this autumn involve trialling at 3 farms in the Broadland Rivers Catchment on differing soils drilled with winter cereals.

<http://www.lland-ho.com/>

<https://www.youtube.com/watch?v=5XkZBYJQ1o>



## **Elveden Wheeling**

In 2017 through the AHDB SPot Farm Project, a partnership was formed with funding and expertise provided by Elveden Estate, Norfolk Rivers Trust, The Rivers Trust, AHDB, Broadland and CamEO catchment Partnerships, WWF/Coca Cola, McCains, Anglian Water, EU Topsoil project, Cranfield and NIAB to investigate 3 different wheeling pieces of machinery (Briggs Tied Ridger, Bye Engineering Wonder Wheel and Creyke Wheel Track Roller) with Boom and Gun Irrigation in different treatments including wheelings and formed beds.

The results showed significant runoff can be seen without wheeling mitigation measures on gentle slopes, especially where trafficking occurs. The results can be found here in the final report.

[https://norfolkriverstrust.org/wp-content/uploads/2018/07/Cranfield\\_CUF\\_Tramline-Management-and-Runoff-Report\\_FINAL-3-1.pdf](https://norfolkriverstrust.org/wp-content/uploads/2018/07/Cranfield_CUF_Tramline-Management-and-Runoff-Report_FINAL-3-1.pdf)

Other Links to media and reports on wheeling work through WSF.

<https://www.edp24.co.uk/business/farming/farm-adviser-launches-innovative-solution-to-soil-erosion-problems-1-4623947>

<http://broadlandcatchmentpartnership.org.uk/wp-content/uploads/2018/05/BA-Tesco-WSF-Final-Report-2017.pdf>