

## Upper Aire Reverse Auction Specification

# Soil aeration

### Why?

#### Soil aeration provides the following NFM benefits:

- Uncompacted soil retains more water, reducing the volume entering waterways during periods of high rainfall, reducing the flood peak.
- Greater soil permeability reduces surface water runoff and lessens local flood risk.
- Soil aeration improves connectivity with groundwater to increase the soil's water storage capacity by promoting strong root growth.



Soil aeration. ©Yorkshire Wildlife and Farming Partnership

#### Additional benefits include:

- Improves water quality - with less surface runoff, soil and sediment remain on the land reducing the amount of diffuse pollution getting into waterways.

#### Specifics for intervention:

What	Soil compaction is caused by using heavy machinery or leaving livestock out when the ground is waterlogged. High stocking densities can also cause soil compaction. The aerator blades cut through the compacted layers of soil to open up fissures. This improves water infiltration into the ground, meaning better drainage, more efficient use of fertilizers and healthier grass.
Where – site selection	Suitable for all fields below the moorland line. Particularly important on waterlogged fields, this is indicated by: areas of pooling surface waters and where water flows across the field during high rainfall events; on areas where topsoil has a slimy finish or algal growth; where the soil is boggy or where there is yellowing of pastureland or crops. Aeration is also necessary on fields used for grazing during winter.
When	Aeration of grasslands is dependent on weather and should be carried out ideally when the soil is moderately dry and non-plastic. This is generally in Spring and Autumn.
How	Before work is carried out, a hole roughly 40cm deep should be dug to assess the condition of the topsoil and subsoil – looking at the depth of compaction, soil texture and number of earthworms. There are a range of different grassland slitters and aerators which all have a similar principle - to increase surface water infiltration, achieved by cutting the soil surface with thin blades. Choice of cut would be field specific, dependent on depth of compaction, soil structure, soil moisture level, forward speed and angle of the blades. If compaction is below 10cm sward lifters/ subsoilers can be used.
Must knows	There is a possibility that archaeological surface or subsurface features may be lost during aeration of the soil – particularly if this intervention has not been previously carried out on site. If there is a prolonged period of dry weather after slitting, this can temporarily reduce sward productivity. Consideration must be given to the amount of farm traffic crossing fields – reduction or variation in the vehicles can reduce soil compaction and surface water runoff – especially along tramlines, and of livestock stocking, which also causes soil compaction. If possible, fields should not be stocked or used for 10 weeks following aeration as the soil's capacity to bear weight is reduced.

**Benefits for your farm:**

- Promotes strong root growth as aerated soils allow for greater movement of oxygen between soil and air, which can increase yields and improve grass' ability to compete with rushes in fields.
- Reduction in surface water runoff decreases soil and fertiliser loss.
- Improves fertiliser and water uptake on fields to improve soil fertility.
- Increased number of grazing days as improved soil infiltration reduces risk of ground becoming waterlogged.
- Soil aeration benefits earthworms which enhance thatch breakdown.
- Improved water retention increases resilience of land and ability to deal with drought and stress conditions.

**Please note: All works must be completed by 1<sup>st</sup> March 2023.**

*If you have any questions or require any more information please contact*  
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