



**AN ROINN TALMHAÍOCHTA, BIA AGUS MARA**  
**DEPARTMENT OF AGRICULTURE, FOOD AND THE MARINE**

**MINIMUM SPECIFICATION FOR TILLAGE MACHINERY**

**The receiving of this specification does not imply approval of a grant application.** However, if written approval is issued, then this specification becomes part of the contract between the applicant and the Department of Agriculture Food and the Marine.

This is a minimum specification. Where the word “SHALL” is used, then that standard (at least) **must** be followed in **all** grant-aided **equipment and machinery**. Where a procedure is “RECOMMENDED”, this is advice only on good practice.

Note that all references to other Department Specifications are to the current edition of that specification [available on the Department of Agriculture, Food and the Marine website ([www.agriculture.gov.ie](http://www.agriculture.gov.ie)) under Building Specifications]. Similarly, references to Standards are to the current edition of the Irish, British or European Standard, as appropriate.

This specification covers the minimum requirements for tillage machinery under the TAMS 3 grant-aid scheme.

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# **1 Safety**

## **1.1 Responsibility for Safety**

Applicants are reminded that they have a duty under the Safety, Health, and Welfare at Work Act 2005 to provide a safe working environment on the farm, including farm buildings, for all people who may work on that farm. There is a further duty to ensure that any contractor, or person hired to do building work, provides and/or works in a safe environment during construction.

## **1.2 Maintenance**

All farm machinery requires regular maintenance to ensure the health and safety of personnel. All machinery should be periodically checked, and all defective items replaced.

# **2 GPS Machinery Control**

## **2.1 Tractor Steering Control**

All GPS control systems shall be of proprietary manufacture. The GPS steering control systems may be fitted to either a new tractor or retrofitted to an existing tractor.

The units shall be able to control the location of the tractor to within a distance of 200mm of the intended location. Systems with higher accuracy are permitted. The system shall be able to automatically guide the tractor along the correct path down the field parallel to the previous pass at the required distance. It is not required to be able to turn the tractor on the headland.

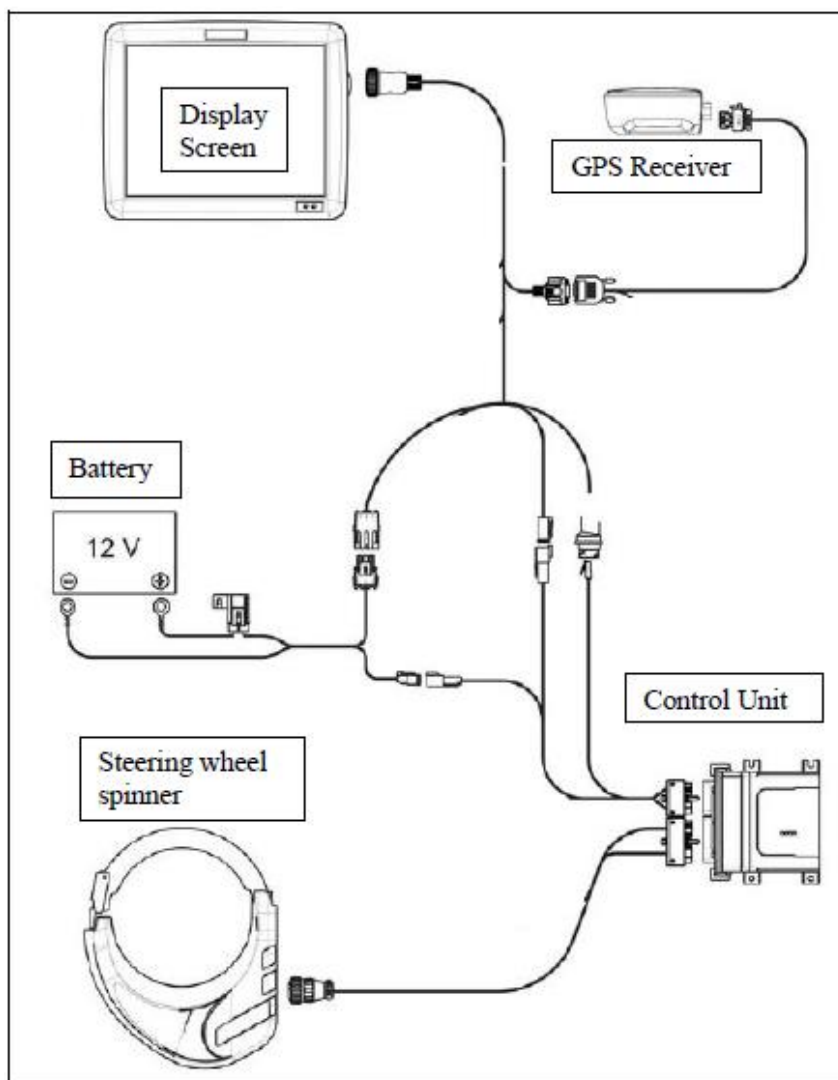
The GPS Steering control unit shall include a display screen, GPS receiver, control unit and tractor steering control. The tractor steering control shall be either a “steering wheel spinner” system or connect directly into the tractor’s power steering system. Figure 1 shows the components of a steering wheel spinner system.

A steering wheel spinner is a unit that is connected to the steering wheel of the tractor and causes the steering wheel to turn.

For systems connected directly to the power steering system, the steering wheel will not rotate during operation.

The control unit shall be able to record the path of the tractor and be able to link to external devices to upload relevant data, such as the path of the tractor and field details.

Lightbar systems, or systems that do not control a tractor to within 200mm of the intended location are not acceptable for grant-aid.



**Figure 1:** Components of a typical GPS steering control system.

## 2.2 Yield Monitors for Combine

All yield monitors for combines shall be of proprietary manufacture. The yield monitor systems may be fitted to either a new combine or retrofitted to an existing combine.

The units shall be able to record the location of the combine to within a distance of 200mm of the actual location and record the mass of grain being harvested. Systems with higher accuracy are permitted.

The yield monitor unit shall include a display screen, GPS receiver and control unit.

The control unit shall be able to record the path of the combine, width of cutting head and be able to link to external devices to upload relevant data, such as the path of the combine, field shape and dimensions, and crop yield.

## 2.3 GPS Standalone Unit

This is a unit for the control of “GPS Ready” machines, or for the tracking of work undertaken by the tractor to which it is fitted. It shall be able to be connected to a machine’s existing control unit and be able to record the location of the machine to within a distance of 200mm of the actual location. Systems with higher accuracy are permitted.



The GPS Standalone Unit shall include a display screen, GPS receiver and control unit. **The display screen and control unit may be a single combined unit.**

The control unit shall be able to record the path of the tractor and be able to link to external devices to upload relevant data, such as the path of the tractor and field details.

### 3 Sprayers

All sprayers shall be fully compliant with the European standard EN ISO 16119-2 and also EN ISO 4254 and shall be fully CE marked. The CE mark shall be shown on the sprayer identification plate.

In addition, all sprayers shall have the following elements:

- **GPS** control from within the cab (at minimum it shall control spray pressure, turn on/off individual boom sections, turn on/off the entire boom)
- **Adjustment of boom height, folding / unfolding booms and adjustment of boom level shall be electronically controlled from within the cab.**
- Hydraulic boom height control.
- Wash tank with minimum 10% capacity of main tank, **or 10 times the residual liquid volume stated in the user manual. For example, a 6,000 litre sprayer instead of needing a 600 litre clean water tank, if the residual liquid volume is 40 litres (taken from sprayer operators manual, copy to be provided) the minimum tank size needed would be 400 litres.**
- Clean water hand wash tank of minimum 15 litre capacity.
- Chemical induction bowl with container wash.
- Internal rinsing nozzle, for cleaning the inside of the spray tank after spraying is completed.
- Minimum of 3 boom segments.
- The actual overall volume of the tank shall exceed the nominal volume by at least 5 %.

All sprayers shall be GPS controlled and shall have boom segments not exceeding 3m in length. For sprayers with a boom width greater than 24m, the central two boom sections may be up to 4.5m in length.

The GPS system shall be capable of turning individual sections on and off during operation to prevent overlap of spraying. The GPS Unit shall be able to record the path of the sprayer to within 200mm of the actual location, and the control unit shall be able to record and upload information on application rates and locations to external devices.

All self-propelled sprayers shall be GPS controlled.

It is strongly recommended that all sprayers are fitted with triplet nozzle holders and lo-drift nozzles.

All sprayers shall be fitted with suitable road lighting as per clause 14 below.

A front mounted spray tank may be present, however, is not covered by grant-aid.



## **4 Fertiliser Spreaders**

All new fertiliser spreaders shall be GPS controlled. Fertiliser spreaders may be either trailed or mounted. The fertiliser control unit shall be able to control the rate of fertiliser application and the width of spread of the fertiliser to both left and right independently, or have a system that achieves the same effect. In addition, the system shall control the turning on and off of the fertiliser spreader when approaching and leaving a headland. The unit shall be able to undertake all controls while the fertiliser spreader is in operation in the field.

All fertiliser spreaders shall be fitted with a GPS control unit, weigh cells or mass metering sensors, automatic rate control, variable width spreading capability and headland control. The fertiliser spreaders shall have at least 4 nominal applications widths, which can be switched between while in motion.

All accepted fertiliser spreaders shall be listed on S.195A.

All GPS control systems shall be of proprietary manufacture. The GPS control unit shall include a display screen, GPS receiver, control unit which shall be able to control the fertiliser spreader. **The display screen and control unit may be a single combined unit.** The control unit shall be able to record the location and path of the fertiliser spreader to within a distance of 200mm of the actual location and record the application rate and spreading width across the field. Systems with higher accuracy are permitted. The system shall be able to upload relevant data to external devices so that a record of the fertiliser application rate and location may be made.

Mounted fertiliser spreaders are those that are designed to be mounted directly onto a tractor, even if they are placed on a bogey. They shall have a capacity of between 1,000 litres and 4,500 litres.

Trailed fertiliser spreaders shall be specifically designed as trailed machines and shall have a minimum capacity of **5,000 litres**.

All fertiliser spreaders shall be fitted with suitable road lighting as per clause 14 below.

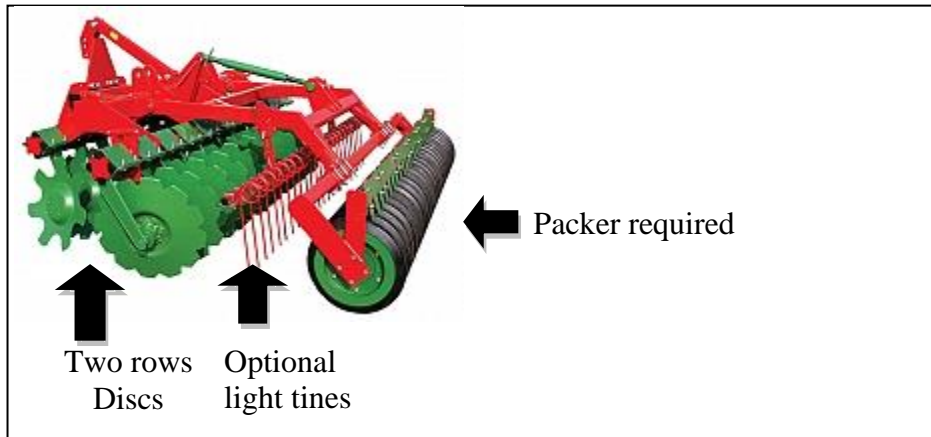
## **5 Minimum disturbance tillage**

The use of PTO driven cultivation equipment is not permitted for grant-aid under any aspect of the minimum disturbance tillage investments. In the case of pneumatic drills, the fan may be PTO driven, however, it is recommended that it be hydraulically driven.

Tine and disc cultivators shall be designed so that following one pass with the machine the full required cultivation has been completed.

### **5.1 Disc stubble cultivators**

All discs shall be suitable for primary cultivation. Systems designed for secondary cultivation are not permitted. There shall be a minimum of two rows of discs fitted to each machine, with a minimum clearance of 450mm between the underside of the frame and the lowest point of the discs. Discs shall be heavy discs capable of deep cultivation. Light discs are not permitted. Each disc stubble cultivator shall be fitted with a packer or cage roller at the back of the machine. A row or two of levelling paddles or light tines may be included on the disc cultivator, as an optional extra.



**Figure 2:** Sample disc cultivator with two rows of heavy discs.

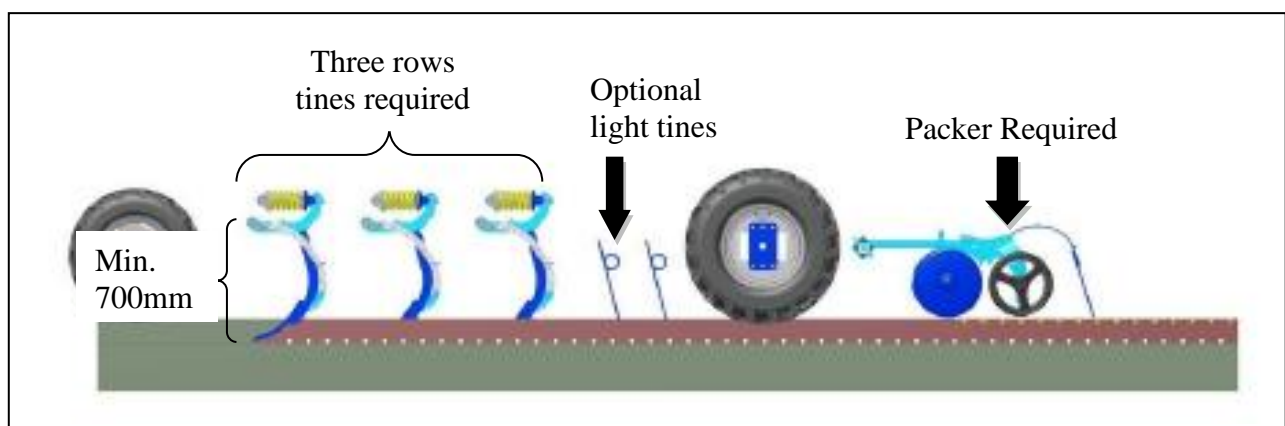
The disc stubble cultivators may be either mounted or trailed. All cultivators shall be fitted with suitable road lighting as per clause 14 below.



**Figure 3:** Examples of acceptable types of discs.

## 5.2 Tine stubble cultivator- Trailed and Mounted

All tines must be suitable for primary cultivation. Systems designed for secondary cultivation are not permitted. Tines shall be heavy tines capable of deep cultivation; light tines are not permitted. There shall be a minimum of three rows of tines fitted to each machine, with a minimum clearance of 700mm between the underside of the frame and the lowest point of the tines. Each tine stubble cultivator shall be fitted with a packer or cage roller at the back of the machine. A row or two of levelling paddles or light tines may be included on the tine cultivator, as an optional extra.

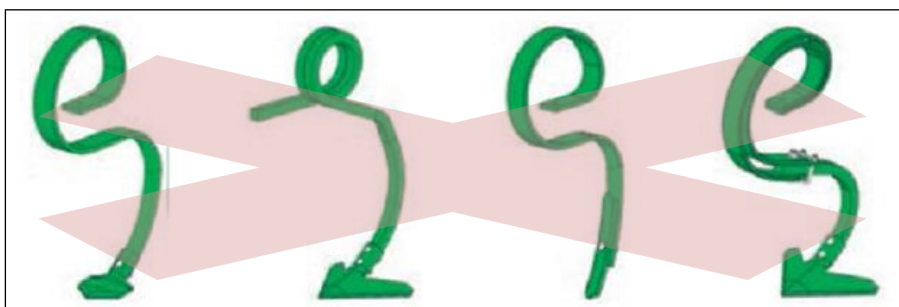


**Figure 4:** Example layout and workings of tine cultivator





**Figure 5:** Examples of acceptable types of tines for stubble cultivators.



**Figure 6:** Examples of tines that are not acceptable for stubble cultivators.

The tine stubble cultivators may be either mounted or trailed. All cultivators shall be fitted with suitable road lighting as per clause 14 below.

### 5.3 Combined Tine and Disc Cultivator – Trailed and Mounted

All discs and tines must be suitable for primary cultivation. Systems designed for secondary cultivation are not permitted. Tines and discs shall be capable of deep cultivation. Light tines or discs are not permitted. The tines and discs shall be the same as for the individual tine or disc cultivators. There shall be a minimum of **2 rows of tines and one row of discs, or one row of tines and two rows of discs fitted** to each machine, with a minimum clearance of 700mm between the underside of the frame and the lowest point of the tines and a minimum of 450mm clearance between the frame and lowest point of the discs. Each combined tine and disc stubble cultivator shall be fitted with a packer or cage roller at the back of the machine. A row or two of levelling paddles or light tines may be included on the combined tine and disc cultivator, as an optional extra.

Combined Tine and Disc cultivators shall be designed so that following one pass with the machine the full required cultivation has been completed.

The tine and disc stubble cultivators may be either mounted or trailed. All cultivators shall be fitted with suitable road lighting as per clause 14 below.

### 5.4 Seed Broadcasters

#### 5.4.1 Seed Broadcaster to Mount on Cultivator

These are to be used to establish green cover following on from primary cultivation. They shall be mounted on a cultivator. **They may be mounted on any type of soil cultivation equipment.** The units **shall** be able to be controlled directly from the cab of the tractor.



**Figure 7:** Example of seed broadcaster with control unit.

#### 5.4.2 Pneumatic Seed Broadcaster with Seed Distribution Pipes to Mount on Cultivator.

These are to be used to establish green cover following on from primary cultivation. They shall be mounted on a cultivator. They may be mounted on any type of soil cultivation equipment. The units shall be able to be controlled directly from the cab of the tractor.



**Figure 8:** Example of min till tine and disc drill.

#### 5.5 Min Till Tine and Disc Drill – Trailed and Mounted

These are drills designed to undertake sowing in a min-till process. They shall be designed to enable sowing in a two-pass min-till system. If it is desired to operate in a single pass min-till system the drill shall be added to a stubble cultivator specified in sections 5.1, 5.2 or 5.3 with discs and tines suitable for primary cultivation.

There shall be a minimum of either two rows of tines or two rows of discs fitted to each machine, or a combination of tines and discs. These shall be followed by disc or tine coulters. There shall be a minimum of 450mm clearance between the frame and lowest point of the tines and discs. The tines and disc may be designed for secondary cultivation





following initial tine or disc cultivation of the stubble. Tines shown in Figure 6 are acceptable to be fitted to a min-till tine and disc drill.

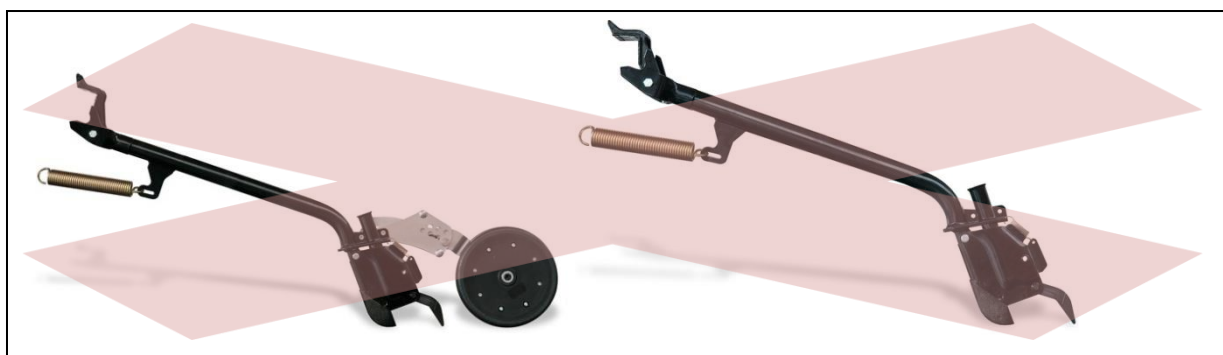
Each min till tine and disc drill shall be fitted with a packer or cage roller at the back of the machine. A row of levelling paddles or straw harrow tines may be included on the min till drill, as an optional extra.

Min till tine and disc drills shall not be connected to a power harrow (harrow driven by tractor PTO).

All primary cultivation tines shall be in front of the coulters.

The min till tine and disc drill may be either mounted or trailed. All drills shall be fitted with suitable road lighting as per clause 14 below.

All coulters shall be either tine or disc type. Suffolk coulters are not permitted on any seed drill for direct drill work.



**Figure 9:** Examples of Suffolk coulters that are not permitted.

The min till tine and disc drill may be designed to place seed only, or seed and fertilizer into the seed bed.

Machines that are designed so that they may be set-up or adjusted or modified by the operator as either min till, direct drill or strip drill depending upon the circumstances are classified as min-till drills for grant-aid under the TAMS 3 scheme.

## 5.6 Direct Drill

Direct drills shall be designed to place seed into the soil causing minimum disturbance to the soil surface. Direct drills are to be designed for sowing crops into stubble ground. The direct drill may be designed to place just seed or seed and fertilizer into the seed bed.

There shall be a minimum clearance of 450mm between the underside of the frame and the lowest point of the tine coulters and a minimum of 450mm clearance between the frame and lowest point of the disc coulters. The seed shall be placed by the tine or disc that is used to open the soil. It is not permitted to have both a line of tine or discs and a line of separate coulters. Each direct drill shall be fitted with a packer at the back of the machine to compact the soil around the seed – the packer is not required to be continuous and may be designed to run individually behind each coulter.

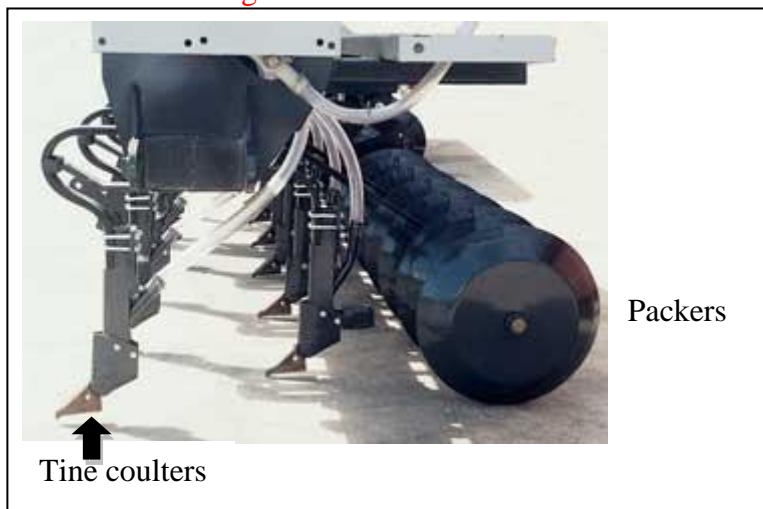
The cultivation, seed and fertiliser placement shall be undertaken using the same tine or disc coulter per drill row. There shall be no cultivation tines or discs present that are not also used as seed coulters.

Grant-aided direct drills shall not have any cultivation tines or discs mounted on the machine that are not required for direct seed placement. There shall be no levelling paddles or light tines fitted to a direct drill.



All direct drills shall be fitted with suitable road lighting as per clause 14 below.

Machines that are designed so that they may be set-up or adjusted or modified by the operator as either min till, direct drill or strip drill depending upon the circumstances are classified as min-till drills for grant-aid under the TAMS 3 scheme.



**Figure 10:** Example of a direct drill

### 5.7 Strip till drill

Strip till drills shall be designed to cultivate only the narrow strip of soil where the seed is to be placed. A strip till drill has a lead cultivation tine, with a seeding tine / coulters behind as a second row. The coulters are then followed by a packer to compress the seedbed around the seed. Fertiliser may be placed using the lead tine, with seed placed by the second row of tines.



**Figure 11:** Example of a strip till drill

There shall be a minimum clearance of 450mm between the underside of the frame and the lowest point of the tine coulters. Each strip till drill shall be fitted with a packer at the back of the machine to compact the soil around the seed – the packer is not required to be continuous and may be designed to run individually behind each coulters.



Grant-aided strip till drills shall not have any cultivation discs or additional rows of tines mounted on the machine that are not either the lead tine or tine coulter. A row of levelling paddles or light tines behind the tine coulters is not permitted.

All strip till drills shall be fitted with suitable road lighting as per clause 14 below.

Suffolk coulters are not permitted on any seed drill for strip till work (Fig. 9).

Machines that are designed so that they may be set-up or adjusted or modified by the operator as either min till, direct drill or strip drill depending upon the circumstances are classified as min-till drills for grant-aid under the TAMS 3 scheme.

## 6 Heavy Cambridge Roller / Furrow Press for Pesticide Reduction

All rollers shall be of steel or cast-iron rings, designed to compact the seedbed in order to control leather jackets. All rings in both furrow presses and Cambridge rollers shall be a minimum of 500mm diameter, **except where the rings consist of two parts in which case the inner part of the ring shall be not less than 450mm and the outer part shall be not less than 500mm.** A row of levelling paddles or light tines may be included on the Cambridge roller / furrow press, as an optional extra.

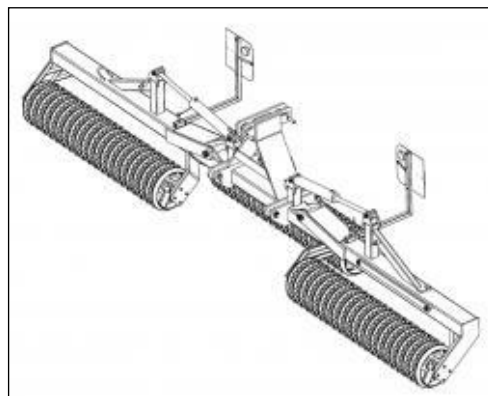
Both heavy Cambridge rollers and furrow presses are acceptable for grant-aid. The furrow press may be either tractor mounted or trailed from a plough.

All Cambridge rollers shall be designed to be directly towed by / mounted on a tractor. Cambridge rollers that are designed to be connected to the back of a stubble cultivator shall also be capable of being towed by / mounted on a tractor.

All Cambridge rollers shall be fitted with suitable road lighting as per clause 14 below.



**Figure 12:** Example of a furrow press



**Figure 13:** Example of a Cambridge roller

## 7 Weather Station

All weather stations shall be capable of remotely sending data back to a base station at regular intervals not exceeding 4 hours.

Weather stations shall be able to measure air-temperature and relative humidity at 1.5m above ground level. All weather stations shall also record windspeed at 2.0 m above ground level and shall record rainfall.

It is recommended that weather stations also record solar radiation, absolute pressure and, temperature and relative humidity at 0.3m above ground level and, soil temperature and humidity at both 0.1 m and 0.3 m below ground level.





It is recommended that the data is stored in such a form that it may be used by decision support systems for the prediction of disease development and supporting spraying advice.

## 8 Inter Row Cultivators

### 8.1 Inter Row Cultivators

These are a key piece of equipment in the establishment of horticultural crops in an organic production system. They work by passing over the planted rows and harrowing or grubbing in between the rows of plants. Their mode of action is to till the weeds and leave them to desiccate on the surface. The row space can be adjusted by sliding the units on the main frames. The working depth is adjusted by the displaceable wheels located on the main frame.

All inter row cultivators shall be fitted with suitable road lighting as per clause 14 below.



**Figure 14:** Example of Inter Row Cultivator



**Figure 15:** Example of laser guided hoe system

### 8.2 Laser Guidance Weeder Hoe System

The Laser Guidance System scans lines of crop using laser and camera technology and forwards the information to the hydraulic steering system, which then moves the slide frames of the inter row cultivator so that none of the crop is damaged while weeding is going on.



This is a step up from the conventional inter row cultivators. The laser guided hoe system is generally operated from the tractor cab with a digital display screen and controls. These systems may also be GPS controlled.

All laser guided weeder hoe systems shall be fitted with suitable road lighting as per clause 14 below.

## **9 Pasture Management**

### **9.1 Mulcher (Trailed or Mounted)**

Crops, grassland, weeds and scrub can be cut with a mulcher. The mulcher chops up material into small particle sizes using flails on a drive shaft horizontal to the ground, powered by a PTO at high speed or hydraulically driven. The mulcher can mulch anything from grass and rushes to scrub or small trees. These machines are available in varying widths, in line, semi offset or fully offset.

The mulcher shall be designed to be mounted on the three-point linkage of a tractor, or on the end of a tracked digger arm or on the end of a hedge cutter arm.

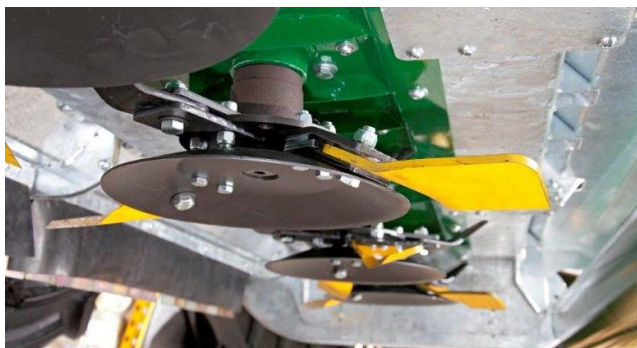
Mulchers that operate with vertical drive shafts are acceptable, however, such systems shall have a minimum of 4 flails per shaft.



**Figure 16: Mulcher flail topper**



**Figure 17: Flails on a mulcher topper**



**Figure 18: Mulcher with vertical drive shaft.**





## 9.2 Soil aerator (Trailed or Mounted)

Soil aerators shall be either trailed or mounted on a tractor's 3-point linkage. Soil aerators shall be designed to open the top of the soil to allow water and air penetrate the upper layers of the soil structure.

Soil aerators shall consist of a rotating shaft mounted with blades, spikes or paddles to penetrate the surface. Alternatively, the soil aerator shall consist of angled, notched or corrugated discs to open the top of the soil. The blade, spike, paddle or disc of all aerators shall be able to penetrate at least 150 mm into the soil surface.

All trailed soil aerators shall be fitted with suitable road lighting as per clause 14 below.



**Figure 19:** Acceptable aerator types

## 9.3 Spring Tine Grass Harrow

There are two types of spring tine grass harrow that can be grant-aided. These strengths of tines fitted will depend on the tasks to be carried out, with tines typically being between 6 mm to 12 mm diameter.

Type 1 spring tine grass harrows shall have a minimum of 5 rows of spring tines and shall be fitted with tines between 4 mm and 10 mm diameter.

Type 2 spring tine grass harrows shall have a minimum of 2 rows of spring tines and shall be fitted with spring tines between 8 mm and 12 mm diameter. All type 2 machines shall be fitted with either levelling bords or levelling paddles in front of the spring tines. Type 2 machines shall also be fitted with a packer at the back.

All spring tine grass harrows shall be fitted with suitable road lighting as per clause 14 below.





**Figure 20:** Example of a type 1 spring tine grass harrow

## 9.4 Rear Dung Spreaders

Dung spreaders are used for spreading farmyard manure and other organic waste material onto the land as a source of fertiliser. It is driven by the PTO and spreads the material using a rotating shaft or shafts. The material is fed to the spreading shaft or shafts by either a belt system, chain system, auger system or hydraulic ram to keep a constant feed of manure to the spreading shafts. The spreading shafts are usually, but not always, to the rear of the machine and are fitted with augers, alternatively the spreading shaft may be to the side of the machine at the front end. All dung spreaders shall be fitted with a door either between the spreading shafts and the manure storage bay, or outside of the spreading shafts so that any liquid in the machine can only be released during the spreading operation.

The traditional side discharge rotary spreader with chains and beaters is not eligible for grant-aid as a rear discharge dung spreader.

All rear discharge dung spreaders shall be fitted with suitable road lighting as per clause 14 below.



**Figure 21:** Example of a rear discharge dung spreader

## 10 Combine Attachments

### 10.1 Pea Header for Combine

This is a header for a combine that can be used to directly harvest a standing pea crop. The header may also be capable of harvesting other standing crops.



## **10.2 Harvest Weed Seed Control Attachments for Combine**

This is a system to attach to the seed tailings output of the combine. The system shall be designed to crush any weed seeds present to prevent them from germinating.

## **10.3 Straw Chopper for Combine**

These straw choppers for combines are designed to attach to the straw outlet at the rear of the combine. The straw chopper shall both finely chop and spread the straw. This is for the retrofit of a straw chopper to an existing combine. The straw chopper shall be designed so that it can be turned off to enable uncut straw to fall to the ground in a swath behind the combine.

# **11 Crop Handling**

## **11.1 1 Tonne Bag Filler c/w Weigh Cells (Loader Attachment)**

This is an attachment for a front loader that enables the filling of 1 tonne bags. The attachment consists of a suitably sized bucket that is fitted with bag hanging points and hydraulically operated door to enable filling of the bags. The system shall be fitted with weigh cells so that the weight of material in the bag is known.

The bucket may be designed for filling bags from 0.6m<sup>3</sup> to 3.0m<sup>3</sup>.

## **11.2 Beet Cleaners**

These are for the cleaning and washing of beet in one operation. The cleaners may be fitted with a chopper, however, this is optional. They may be designed to be either mobile or stationary. The machine shall be fully automatic when in operation. It may be driven by either from the PTO of a tractor, standing engine or suitably sized electric motor. The beet cleaner shall remove soil, stones and debris from the beet and then wash the beet. The wash water shall be collected within the beet cleaner.

All mobile beet cleaners shall be fitted with suitable road lighting as per clause 14 below.

## **11.3 Weighbridge – Fixed**

These are full length weighbridges that will enable the weighing of a tractor and trailer combination. They shall be at least 10 metres long and preferable 18 metres long. All weighbridges shall have a proprietary manufactured deck and weigh-cells. The deck may be either concrete or steel, or composite.

The weighbridges shall be either surface mounted or sunken to ground level. Where the weighbridge is surface mounted, there shall be an access ramp at each end to enable vehicles to access the weighbridge.

All weighbridges shall have a digital display that can record the time and weight of each measurement. The systems shall be able to record weights to the nearest 10 kg and be able to provide measurements from 100kg up to the maximum capacity of the weighbridge.

Weighbridges shall be designed to enable, at a minimum, a vehicle of 40 tonnes (40,000 kg) to be weighed and at a maximum a vehicle of 60 tonnes (60,000 kg) to be weighed.

All weighbridges shall be permanently fixed in position. Mobile weighbridges are not acceptable.



### **11.4 Weighpads - Mobile**

These are proprietary manufactured pads that contain load cells. They are sized so that one wheel will fit on each pad. Two pads are always required so that a single axle load can be determined. They shall always be purchased as a minimum of a pair, and it is strongly recommended that a minimum of 4 are purchased, to enable the weighing of a vehicle in one go.

The weighpads shall be designed to enable, at a minimum, an axle loading of 12,000 kg (12 tonnes), or 6,000 kg per wheel, to be weighed. The actual capacity of the weigh cells will depend upon the expected weight of the vehicles being weighed.

All weigh pads shall have a digital display that can record the time and weight of each measurement. The systems shall be able to record weights to the nearest 10 kg and be able to provide measurements from 100kg up to the maximum capacity of the weighpads.

The weigh pads shall be designed so that a vehicle can be driven on and off the pads.

## **12 Grain treatment Equipment**

### **12.1 Grain Mill (Roller/Crimper)**

Grain mills may be either fixed or mobile and shall be designed to roll or crimp grain. Each mill shall consist of an intake hopper, roller / crimper and discharge auger.

Grain mills may be either electrically powered or driven directly from a tractor PTO.

### **12.2 Liquid Treatment Applicator**

The liquid applicator shall be attached to a grain mill and apply the liquid treatment immediately after rolling of the grain. The system shall be designed to thoroughly mix the liquid and grain. The system shall include a meter to record the rate of application of the liquid to the grain.

### **12.3 Powder Treatment Applicator**

The powder applicator shall be attached to a grain mill and apply the powder treatment immediately after rolling of the grain. The system shall be designed to thoroughly mix the powder and grain.

### **12.4 Grain Elevator / Augers (not for Grain Dryers)**

These may be either fixed or mobile, and shall be electrically driven. The electrical wiring of fixed elevators / conveyors shall be certified in accordance with clause 16.

## **13 Potato Machinery**

### **13.1 Potato Harvesting Webs, Separator Segments and Dolmens.**

Only webs and separator segments / dolmens suitable for lifting salad potatoes shall be grant-aided.

For all webs the maximum spacing between the centres of the bars shall not exceed 35mm and the bars in the webs shall be at least 10mm diameter. The webs shall be for either single row or 2 row harvesters. All webs shall be of proprietary manufacture.



Separator segments / dolmens – these may be spiral or plain. They shall be sized and spaced to retain salad potatoes. All separator segments / dolmens shall be of proprietary manufacture.

### **13.2 Potato Haulm Toppers**

Potato Haulm Toppers are used pre-harvest to mulch potato haulm and foliage to facilitate the mechanical harvesting of the crop. Potato haulm toppers are typically available in the following configurations:

- Fixed/rigid model - front or rear mounted;
- Hydraulic Folding All-Rear model;
- Rear mounted folding Straddle model (which combines with a fixed/rigid front mounted model)

Optional extras such as Ridge Wheels or Hydraulic Depth Wheels are permitted but are not grant aided. Potato Haulm Toppers can be powered via the PTO or hydraulic options.

All potato haulm toppers shall be fitted with suitable road lighting as per clause 14 below.

### **13.3 Potato Planters**

Both mounted and trailed potato harvesters are eligible. They shall be designed for placing seed potato into cultivated ground at the required depth and forming ridges around the seed potato. All potato planters shall be fully automatic.

All potato planters shall be fitted with suitable road lighting as per clause 14 below.

### **13.4 Potato Planting Chemical Applicator**

These are to apply pesticides to either the seed potato during planting or apply pesticides to the seed bed to control weeds and insects at the time of planting. Chemical applicators shall be either mounted on the front of the tractor or on, or over the potato planter. All chemical applicators shall be fully electronically controlled from the tractor cab and shall be fitted with a pressure gauge.

Additionally, all chemical applicators shall have the following:

- Clean water hand wash tank of minimum 15 litre capacity.
- Wash tank with minimum 10% capacity of main tank
- Chemical induction bowl with container wash,
- Internal rinsing nozzle, for cleaning the inside of the spray tank after spraying is completed.
- The actual overall volume of the tank shall exceed the nominal volume by at least 5 %.

All Specialised Fertiliser Applicator for Potatoes shall be fitted with suitable road lighting as per clause 14 below.

### **13.5 Specialised Fertiliser Applicator for Potatoes**

These machines shall be fully automatic and shall place fertiliser in the seed bed during the potato planting process. They shall be designed so that fertiliser is only placed in the formed ridges as the planting operation is performed. They may be either front mounted on the tractor or fixed on or over the potato planter. These systems may be used for liquid or granular fertiliser.



All Specialised Fertiliser Applicator for Potatoes shall be fitted with suitable road lighting as per clause 14 below.

### **13.6 Eco Tiller for Potatoes**

These are for the mechanical control of weeds in potato crops. The eco tiller shall be designed to remove the weeds from the ridges and then reform the ridges. The weeds may be removed by either a tine system, hoe system or rotary hoe system. The eco tiller shall consist of leading hoe / tine or rotary elements, followed by a system to reshape the ridges.

All eco tillers for potatoes shall be fitted with suitable road lighting as per clause 14 below.

### **13.7 Bed Tiller for Potatoes**

Bed tillers shall cultivate the soil to the required depth (150 mm to 180 mm) and form beds for subsequent processes in a single pass. The cultivation element may be PTO driven.

All bed tillers for potatoes shall be fitted with suitable road lighting as per clause 14 below.

### **13.8 Destoner for Potatoes**

All destoners shall be fully automatic. They shall be designed to separate soil, clods and stones to provide a well-mixed seedbed. The destoner shall form ridges ready to enable the planting of potatoes. The separated stones shall be deposited so that they will be between planted rows of potatoes.

All destoners for potatoes shall be fitted with suitable road lighting as per clause 14 below.

## **14 Road Lighting**

All trailed equipment being grant-aided shall be fitted with full lighting systems, including side lamps, rear lamps, stop lamps, indicators and number plate lighting. The lighting may be provided by a fixed lighting board on the machine. The lighting is required at all times and not only during lighting up hours.

All trailed equipment shall also be fitted with a marker lamp on their right-hand side if, when coupled to an agricultural tractor, the overall length of the combination is more than 10 metres.

All mounted equipment that blocks the lighting and reflectors on the tractor to which they will be mounted shall be equipped with full lighting systems as set out above.

## **15 Wheel Changing Equipment**

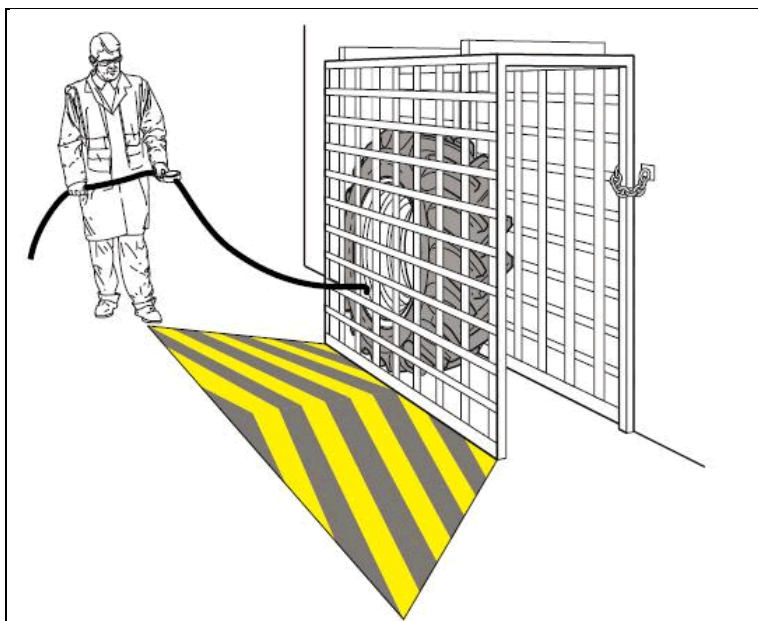
### **15.1 Wheel Changing Crate**

This is a crate for lifting a wheel to remove / replace onto an axle. The system shall be designed to securely hold the wheel and remove the need for manual lifting. The system shall be adjustable so that it can move a range of wheel sizes.

### **15.2 Wheel Pumping Crate - Manual Pumping**

This is a cage into which a wheel may be placed for inflation. The cage shall be a steel frame and suitably sized for the tyres that need to be inflated. Doors at the ends are optional.





**Figure 22:** Example of a manual wheel pumping crate.

### 15.3 Wheel Pumping Crate - Fully Automatic

This is a cage into which a wheel may be placed for inflation. The cage shall be a steel frame and suitably sized for the tyres that need to be inflated. The cage shall have doors at both ends and be covered over the top. It shall be designed so that a wheel may be rolled into and out of the cage.

The unit shall be fitted with a control system that will enable the automatic inflation of the tyres to the required pressure. The control system shall be designed so that it inflates the tyre in stages to give time for the pressure in the tyre to equalize. The fittings on the unit shall be designed so that the operator does not need to remain in the area of the cage during the inflation of the tyre.

The electrical wiring of automatic wheel pumping crates shall be certified in accordance with clause 16.

## 16 ELECTRICAL INSTALLATION

Wiring and fittings shall be installed, and all work shall be carried out in accordance with the Fourth Edition of the National Rules for Electrical Installations, **IS 10101** specifically Part 7-705: Requirements for special installations or locations - Agricultural and horticultural premises. An ETCI completion certificate shall be required, signed by the Electrical Contractor(s) or a person duly authorised to act on his/her behalf to certify that the electrical installation has been constructed and/or has been tested according to the National rules of Electrical Installations and has been found to be satisfactory. An associate certificate, specifically for agricultural work, the "Supplementary Agricultural Certification Form" shall also be signed by the Electrical Contractors or authorised persons and the number of the main ETCI completion Certificate clearly marked on it. If no valid numbered ETCI Certificate is available for the completed installation, then the Electrical Contractor shall complete a new numbered ETCI Certificate indicating that the new installation has been tested for safety and compliance and note that number on the Supplementary Form. The signed printed "Supplementary Agricultural Certification Form" together with a copy of the ETCI





Completion Certificate shall be given to the Department of Agriculture, Food and the Marine before grant-aid can be finally certified.

## **17 Certificates**

The following certificates shall be collected, and given to the Department before grant-aid can be paid:

“Electrical” Certificate (Clause 16)

## **18 Related Department Specifications**

Copies of other relevant Department specifications are available on the department website at: [www.agriculture.gov.ie](http://www.agriculture.gov.ie) under ‘Building Specifications’ or by contacting the one of the local offices of the Department of Agriculture, Food and the Marine.

**Version: February 2018 (published 12<sup>th</sup> February 2018)**

Clauses modified: 4.1, 4.2.

**Version: January 2022**

New Clauses: 8.1

**Version: November 2023 (published 21<sup>st</sup> November 2023)**

New clauses: 5.4.2, 7, 8.1, 8.2, 9, 9.1, 9.2, 9.3, 9.4, 10, 10.1, 10.2, 10.3, 11, 11.1, 11.2, 11.3, 11.4, 13.3, 13.4, 13.5, 13.6, 13.7, 13.8

Clauses modified: 2.3; clause 3.1 renumbered to clause 3 and revised; clause 4.1 renumbered to clause 4 and revised; clause 5.4 renumbered to clause 5.4.1 and revised; 5.5; 5.6; 5.7; 6; clause 7 renumbered to 12; clause 7.1 renumbered to clause 12.1; clause 7.2 renumbered to 12.2; clause 7.3 renumbered to 12.3; clause 7.4 renumbered to 12.4; clause 8 renumbered to 13.1 and revised; clause 8.1 renumbered to clause 13.2 and revised; clause 9 renumbered to 14; clause 10 renumbered to 15; clause 10.1 renumbered to clause 15.1; clause 10.2 renumbered to 15.2; clause 10.3 renumbered to clause 15.4; clause 11 renumbered to 16 and revised; clause 12 renumbered to clause 17; clause 13 renumbered to clause 18.

Clauses deleted: 3.2; 4.2