



## **National Unit specification: general information**

**Unit title:** Horticultural Machinery: Operation and Maintenance

**Unit code:** H1JE 11

**Superclass:** SE

**Publication date:** August 2012

**Source:** Scottish Qualifications Authority

**Version:** 02

## **Summary**

This Unit is intended as a general Unit which covers the basic operation and maintenance of horticultural machinery. Candidates will develop the skills necessary to select, carry out pre-use checks, operate and carry out basic repairs to a wide range of horticultural machinery.

## **Outcomes**

- 1 Select appropriate machinery.
- 2 Carry out pre-use checks.
- 3 Operate and clean horticultural machinery.
- 4 Carry out basic servicing and repairs.

## **Recommended entry**

Entry is at the discretion of the centre.

## **Credit points and level**

1 credit at SCQF level 5 (6 SCQF credit points at SCQF level 5\*)

*\*SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

## **National Unit specification: general information (cont)**

**Unit title:** Horticultural Machinery: Operation and Maintenance

### **Core Skills**

Achievement of this Unit gives automatic certification of the following Core Skills component:

Complete Core Skill            None

Core Skill component        Critical Thinking at SCQF level 4

There are also opportunities to develop aspects of Core Skills which are highlighted in the Support Notes of this Unit specification.

## **National Unit specification: statement of standards**

### **Unit title:** Horticultural Machinery: Operation and Maintenance

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

#### **Outcome 1**

Select appropriate machinery.

##### **Performance Criteria**

- (a) Identify the main differences of 2 stroke, 4 stroke, diesel and electric powered horticultural machinery.
- (b) Identify the major components of each machine to be used.
- (c) Select machinery for specified operations.
- (d) Briefly describe the advantages and disadvantages of each machine.

#### **Outcome 2**

Carry out pre-use checks.

##### **Performance Criteria**

- (a) Select appropriate Personal Protective Equipment for a specified task.
- (b) Carry out pre-use checks as per manufacturer's instructions including all safety devices and guards.
- (c) Carry out risk-assessment for EACH task including safe lifting and handling.

#### **Outcome 3**

Operate and clean horticultural machinery.

##### **Performance Criteria**

- (a) Safely operate a range of different machines.
- (b) Clean machines after use.
- (c) Carry out post-use checks as per manufacturer's instructions.
- (d) Store machinery in a safe manner.
- (e) Complete machinery log and report any faults.

#### **Outcome 4**

Carry out basic servicing and repairs.

##### **Performance Criteria**

- (a) Carry out basic servicing as per manufacturer's instructions.
- (b) Carry out basic repairs to machinery.

## National Unit specification: statement of standards (cont)

**Unit title:** Horticultural Machinery: Operation and Maintenance

### Evidence Requirements for this Unit

Evidence is required to demonstrate that candidates have achieved all Outcomes and Performance Criteria.

For Outcome 1 the candidate will be required to select horticultural machinery for at least four different operations from as wide a range of powered machinery as possible, including the advantages and disadvantages of each power source. The candidate will be required to identify the main components of each machine. The candidate is also required to identify the main differences between the four main types of motor.

For Outcome 2 the candidate will carry out pre-use checks and conduct a full risk assessment for each of the four tasks to be undertaken in Outcome 3. The candidate should be provided with a pro-forma to complete the risk assessment for each task.

Outcome 3 requires the candidate to produce practical evidence of their ability to safely operate four different machines. These could include but are not limited to:

- ◆ rotovator
- ◆ hedge cutter
- ◆ mower
- ◆ cement mixer
- ◆ vibro-plate
- ◆ stone cutter

Please note candidates **MUST NOT** be expected to operate a chainsaw.

The candidate must also produce practical evidence of their ability to clean, carry out post-use checks, and store the machinery after use.

For Outcome 4 the candidate is required to produce practical evidence of their ability to safely carry out basic servicing and basic repairs to four machines. The candidate should not be expected to carry out major repairs or overhauls of machinery, this Outcome should focus on the routine servicing and repairs required to maintain machinery in good working order.

## National Unit specification: support notes

### Unit title: Horticultural Machinery: Operation and Maintenance

This part of the Unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

### Guidance on the content and context for this Unit

This Unit is designed to suit all candidates and centres. It should be taught as a general introduction to machinery selection, operation and maintenance.

The types of machines are those that would be used to build or maintain a garden and should include mowers, trimmers, rotovators, cement mixers, vibro-plates, hedge cutters and stone cutter but NOT chainsaws. Given the obvious dangers involved in using powered machinery, all relevant Health and Safety requirements and procedures should be emphasised and strictly adhered to throughout this Unit.

### Guidance on learning and teaching approaches for this Unit

#### Outcome 1

In this Outcome candidates will be given a range of horticultural situations and horticultural machinery that they would normally be expected to use in their work situation. An explanation should be given on the uses of a range of horticultural machinery and the type of situations they would normally be used. The candidate will be expected to select the appropriate machine for the appropriate area, taking into consideration the size of the area, health and safety considerations, topography of site and the area the machine can cover per hour/minute.

#### Outcome 2

It is recommended that the candidates will work in pairs and carry out pre-start checks on a wide range of horticultural equipment as per the operator's manual. Assistance should be given until candidates become familiar with each piece of machinery. The pre start check should include selecting the correct fuel for each machine including correct storage, transport and filling.

#### Outcome 3

It is recommended that candidates work in pairs and operate a wide range of horticultural equipment as per operators manual.

Safely operate at least four different machines that could include:

- ◆ rotovator
- ◆ hedge cutter
- ◆ mower
- ◆ cement mixer
- ◆ vibro-plate
- ◆ leaf blower
- ◆ stone cutter.

## National Unit specification: support notes (cont)

**Unit title:** Horticultural Machinery: Operation and Maintenance

### Outcome 4

It is recommended that candidates work in pairs to carry out basic repairs to as wide a range of horticultural servicing and repairs in accordance with operator's manual.

These could include, but is not limited to, the following:

- ◆ pull cord
- ◆ strimmer cord
- ◆ air filter
- ◆ belt/chain adjustment
- ◆ idle speed
- ◆ new blades.

### Guidance on approaches to assessment for this Unit

Due to the practical nature of this Unit it lends itself to assessment through the completion of practical checklists with the assessor observing and recording candidates carrying out the various task as detailed in the Evidence Requirements. There are clear opportunities to integrate assessment of this Unit across the four Outcomes. Where possible this will allow candidates to select appropriate machinery for Outcome 1, carry out the pre-use checks on the selected machinery for Outcome 2 and then to safely use and maintain that machinery for Outcomes 3 and 4.

If this Unit is delivered as part of the National Certificate in Horticulture there may also be opportunities to integrate the assessment of this Unit with other practical Units in the award. This will allow candidates to apply the use of the machines to real horticultural practices.

### Opportunities for the use of e-assessment

Given the highly practical nature of this Unit it does not easily lend itself to e-assessment.

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*, *SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

### Opportunities for developing Core Skills

There is no automatic certification of Core Skills or Core Skill components in this Unit, however there may be opportunities to develop the Core Skills of *Problem Solving* and *Working with Others* both at SCQF Level 5, through the practical aspects of this Unit.

## **National Unit specification: support notes (cont)**

**Unit title:** Horticultural Machinery: Operation and Maintenance

This Unit has the Critical Thinking component of Problem Solving embedded in it. This means that when candidates achieve the Unit, their Core Skills profile will also be updated to show they have achieved Critical Thinking at SCQF level 4.

### **Disabled candidates and/or those with additional support needs**

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website [www.sqa.org.uk/assessmentarrangements](http://www.sqa.org.uk/assessmentarrangements)

## History of changes to Unit

Version	Description of change	Date
02	Core Skills Component Critical Thinking at SCQF level 4 embedded.	06/08/2012

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