



## Main changes resulting from the review

- All NZC Level 7 (NZQF Level 2) outcomes derived from the NZC are now assessed using achievement standards, and there are no longer any unit standards linked to the NZC.
- Existing achievement standards were reviewed and new achievement standards were developed to align with the NZC. See [table](#) below.
- Grading criteria for achievement standards were reviewed in accordance with the Standards Review Guidelines.
- Unit standards that recognised similar outcomes as achievement standards were recommended for expiry. See [table](#) below.
- An exclusion relationship has been established between AS91291 and Horticulture ITO standard 20556.

For a more detailed description of the review of, and the changes to, the Agricultural and Horticultural Science standards see the appendix at the end of this report.

## Impact on Consent and Moderation Requirements (CMR)

(Formerly known as AMAP)

All new achievement standards have been registered on CMR 0233.

## Impact on registered qualifications

Key to type of impact	
<b>Affected</b>	The qualification lists a reviewed classification (domain or subfield) in an elective set The qualification lists a standard that has changes to level or credits The qualification lists a C or D category standard
<b>Not materially affected</b>	The qualification lists a standard that has a new title The qualification lists a standard that has a new classification

The following table identifies a qualification developed by another SSB that is affected by the outcome of this review. The SSB has been advised that the qualification requires revision.

Ref	Qualification Title	ID	SSB Name
1013	National Certificate in Horticulture (Introductory) (Level 2)	90451, 90456, 7086	New Zealand Horticulture Industry Training Organisation

## Impact of changes on [NCEA Exclusions List](#)

For transition purposes, the following exclusions will apply for new achievement standards.

Achievement standard	Excluded against each of these standards
91289	7080, 90450
91290	90451
91291	90453, 20556*
91292	90454
91293	90453

Achievement standard	Excluded against each of these standards
91294	90454
91295	7085, 90455
91296	90456

\* This is a Horticulture ITO standard – see ‘Main changes resulting from the review’ for an explanation.

### Review Categories and changes to classification, title, level, and credits

The following summary shows the changes made to the standards as a result of the review. All changes are in **bold**. Where a new or a new version of an externally assessed achievement standard is registered, the following designation appears after the title **[Externally Assessed]**.

Key to review category
<b>A</b> Dates changed, but no other changes are made - the new version of the standard carries the same ID and a new version number
<b>B</b> Changes made, but the overall outcome remains the same - the new version of the standard carries the same ID and a new version number
<b>C</b> Major changes that necessitate the registration of a replacement achievement standard with a new ID
<b>D</b> Achievement standard will expire and not be replaced

Externally assessed achievement standards categorised as category C or D expire at the end of	December 2011
---	---------------

Internally assessed achievement standards and unit standards categorised as category C or D expire at the end of	December 2012
--	---------------

Sciences > Science > Agricultural and Horticultural Science

ID	Ref	Title	Level	Credit	Review Category
7080	-	Carry out a practical investigation, with supervision, of a primary production practice	2	6	C
90450	2.1	Carry out a practical agriculture or horticulture investigation with supervision	2	4	C
<b>91289</b>	<b>2.1</b>	<b>Carry out an extended practical agricultural or horticultural investigation</b>	<b>2</b>	<b>4</b>	
7081	-	Explain the principles of environmental control in a primary production system	2	4	D
7082	-	Explain the effect of a nutritional husbandry practice within a primary production system	2	4	D
7083	-	Explain the effect of a pest or disease husbandry practice within a primary production system	2	4	D
7084	-	Explain the effect of a reproduction or propagation operation within a primary production system	2	4	D

ID	Ref	Title	Level	Credit	Review Category
7085	-	Explain the effect of livestock behaviour within a primary production system	2	2	C
90455	2.6	Describe how livestock behaviour impacts on productivity	2	4	C
<b>91295</b>	<b>2.7</b>	<b>Demonstrate understanding of interactions between livestock behaviour and NZ commercial management practices</b>	<b>2</b>	<b>4</b>	
7086	-	Explain the effect the application of a growth regulator has on plant productivity	2	2	D
9769	-	Explain the principles of soil properties in a primary production system	2	4	D
90451	2.2	Describe physical factors of the environment and techniques used to modify them for plant production	2	4	C
<b>91290</b>	<b>2.2</b>	<b>Demonstrate understanding of techniques used to modify physical factors of the environment for NZ plant production [Externally Assessed]</b>			
90452	2.3	Describe how techniques used to modify soil water content optimise primary production	2	4	D
90453	2.4	Describe modification of livestock reproduction or plant propagation to improve productivity	2	4	C
<b>91291</b>	<b>2.3</b>	<b>Demonstrate understanding of advanced plant propagation techniques used for commercial production in New Zealand</b>	<b>2</b>	<b>4</b>	
<b>91293</b>	<b>2.5</b>	<b>Demonstrate understanding of livestock reproductive techniques in commercial production in New Zealand</b>	<b>2</b>	<b>4</b>	
90454	2.5	Describe manipulations to influence growth and development, and productivity, in livestock or plants	2	4	C
<b>91292</b>	<b>2.4</b>	<b>Demonstrate understanding of how management practices influence plant growth and development in NZ commercial production</b>	<b>2</b>	<b>4</b>	
<b>91294</b>	<b>2.6</b>	<b>Demonstrate understanding of how NZ commercial management practices influence livestock growth and development [Externally Assessed]</b>	<b>2</b>	<b>4</b>	
90456	2.7	Describe and redesign landscaped sites	2	4	C
<b>91296</b>	<b>2.8</b>	<b>Produce a landscape plan</b>	<b>2</b>	<b>4</b>	
<b>91297</b>	<b>2.9</b>	<b>Demonstrate understanding of land use for primary production in New Zealand [Externally Assessed]</b>	<b>2</b>	<b>4</b>	<b>New</b>

ID	Ref	Title	Level	Credit	Review Category
91298	2.10	Report on the environmental impact of the production of a locally produced primary product	2	4	New

## Appendix

### Development of Level 2 Agricultural and Horticultural Science Standards

#### Addressing Duplication

Internally assessed achievement standard Agricultural and Horticultural Science 2.3 (90452), *Demonstrate understanding of techniques used to modify soil water content* has been discontinued due to its significant overlap in techniques with Agricultural and Horticultural Science 2.2 (91290) and 1.3 (90919).

All curriculum-based Level 2 unit standards have been recommended for expiry due to significant overlap of teaching and learning outcomes with achievement standards.

#### Addressing Credit Parity

There has been no change to existing credit values of any standards.

#### External and Internal Assessment

Each level of a subject may only have a maximum of three externally assessed standards. This required a reduction from four externally assessed standards, where two papers had dual contexts. To ensure a balance between agriculture and horticulture the three new externally assessed standards comprise one from a livestock context, one from a plant context and one which may be used for either agriculture or horticulture. Those chosen for internal assessments provided opportunities for a range of assessment methods, with possible practical applications in either Agriculture or Horticulture.

#### What has changed?

The knowledge base of Agricultural and Horticultural Science aligns with achievement objectives from the Science, Social Science and Technology Learning Areas of the NZC, which reflects its applied nature. Some of the detail from the Explanatory Notes has been moved to the Teaching and Learning Guidelines. Conditions of Assessment provide guidelines on the assessment of the internally assessed standards. Assessment Specifications on the NZQA website provide guidelines on the assessment of externally assessed standards.

Any standards with multiple criteria were revised to provide a single criterion that allows for more holistic assessment decisions.

Two new standards have been developed that reflect the intent of the NZC and ideas expressed by the sector. These standards provide continuity within the Physical Environment and Agribusiness strands of the subject matrix, and support the principle of Future Focus within the NZC.

#### Commentary on the Achievement Standards

Agricultural and Horticultural Science 2.1 (91289), *Carry out an extended practical agricultural or horticultural investigation*

- No change from previous achievement standard 90450.
- Conditions of Assessment emphasise the requirement for this extended investigation to be undertaken individually by students.

Agricultural and Horticultural Science 2.2 (91290), *Demonstrate understanding of techniques used to modify physical factors of the environment for NZ plant production*

- The two criteria from the previous standard (90451) have been collapsed into one.
- Techniques used to modify physical factors have been moved to the Teaching and Learning Guide for Agricultural and Horticultural Science.
- This removal of techniques from the standard allows for the modification of the list of techniques over time as new techniques emerge.

Agricultural and Horticultural Science 2.3 (91291), *Demonstrate understanding of advanced plant propagation techniques used for commercial production in New Zealand*

- This standard derives from achievement standard 90453 and has been split into two separate standards – this one with a plant focus and another with a livestock focus (new Agricultural and Horticultural Science 2.5 [91293]).
- The three criteria of achievement standard 90453 have been collapsed into one.
- The new standard now focuses on specific advanced propagation techniques to reflect their level of complexity.

Agricultural and Horticultural Science 2.4 (91292), *Demonstrate understanding of how management practices influence plant growth and development in NZ commercial production*

- This standard is derived from achievement standard 90454, which covered livestock or plants.
- The mode of assessment has changed to internal.
- The three criteria from the previous standard have been collapsed into one.
- The standard now focuses on management practices affecting plant growth.
- Explanatory Notes clarify that the interactions are in the context of commercial production.

Agricultural and Horticultural Science 2.5 (91293), *Demonstrate understanding of livestock reproductive techniques in commercial production in New Zealand*

- This is the other new standard resulting from the splitting of achievement standard 90453.
- The three criteria from the previous standard have been collapsed into one.
- The mode of assessment has changed to internal.

Agricultural and Horticultural Science 2.6 (91294), *Demonstrate understanding of how NZ commercial management practices influence livestock growth and development*

- This is a new standard resulting from the splitting of achievement standard 90454.
- The three criteria from the previous standard have been collapsed into one.
- There has been no change to the external mode of assessment of the standard.

Agricultural and Horticultural Science 2.7 (91295), *Demonstrate understanding of interactions between livestock behaviour and NZ commercial management practices*

- This standard has been developed from the previous achievement standard 90455.
- The two criteria of the previous standard have been collapsed into one.
- The title now reflects the focus of the standard on the interaction between livestock behaviour and management practices.
- Explanatory Notes clarify that the interactions are in the context of commercial production.

Agricultural and Horticultural Science 2.8 (91296), *Produce a landscape plan*

- This standard has been developed from achievement standard 90456.
- Only one plan now needs to be produced for achievement.
- Explanatory Notes have been amended to better clarify the intent of the standard.

Agricultural and Horticultural Science 2.9 (91297), *Demonstrate understanding of land use for primary production in New Zealand*

- This is a new standard developed in response to demand from the sector.
- This standard provides linkage between Levels 1 and 3 of the AgriBusiness strand of the matrix.
- This standard is externally assessed.

Agricultural and Horticultural Science 2.10 (91298), *Report on the environmental impact of the production of a locally produced primary product*

- This is a new standard developed in response to demand from the sector.
- This standard provides linkage between Levels 1 and 3 of the Physical Environment strand of the matrix.
- This standard is internally assessed.