



Australian Government

AMPQUA406 Apply meat science

Release: 1

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Modification History

Release	Comments
Release 1	This version released with AMP Australian Meat Processing Training Package Version 8.0.

Application

This unit describes the skills and knowledge required to apply meat science to the eating quality of meat and to interpret scientific data to predict probable impacts on meat eating quality.

It is a Meat Standards Australia (MSA) requirement that workplaces with a licence Level 1(b) have an MSA Coordinator who has completed this unit or an MSA approved equivalent unit.

This unit applies to individuals who work in the red meat industry in a quality assurance or management role. The skills and knowledge specified in this unit enable an individual to interpret meat processing data and to recommend improvements to control and enhance the eating quality of meat products.

All work must be carried out to comply with workplace procedures, according to state/territory health and safety, food and meat safety regulations, legislation and standards that apply to the workplace.

MSA requirements include adherence to the MSA Standards Manual for Grading, MSA Standards Manual for Saleyard Consignment and MSA Standards Manual for Trade Mark Usage.

As well as MSA requirements, legislative and regulatory requirements apply to meat inspection and meat safety and are enforced through state/territory jurisdictions. Users must check with the relevant regulatory authority before delivery.

Pre-requisite Unit

Nil

Unit Sector

Quality Assurance (QUA)

Elements and Performance Criteria

Elements	Performance Criteria
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<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Apply knowledge of muscle structure and biochemistry to meat quality and the factors that affect it	1.1 Identify and explain biological mechanisms (both pre- and post-slaughter) that affect meat quality in beef 1.2 Identify the pattern of tissue development in the body and the pattern of deposition within the muscle and fat deposits, including the extent to which the composition of fat deposits can be manipulated by production factors 1.3 Identify structure of skeletal muscles in terms of the myofibre and connective tissue components and the effect these structures have on eating quality 1.4 Identify biochemical events that occur in muscle early post-mortem and their significance in subsequent meat quality
2. Identify production and pre-slaughter factors that affect meat quality	2.1 Identify impacts of production factors on meat quality 2.2 Describe pre-slaughter factors that affect meat quality
3. Identify processing factors that impact eating quality	3.1 Explain pH/temperature window and how it impacts palatability 3.2 Describe role of electrical stimulation in controlling the rate of glycolysis in the carcass 3.3 Identify and explain the impact of stretching muscles pre-rigor on palatability 3.4 Describe process of ageing, its impact on tenderness, and methods for extending the storage life of fresh meat, including the application of packaging technologies 3.5 Describe impact of cooking on palatability of meat
4. Describe quality attributes of meat	4.1 Identify factors that control changes in colour of fresh meat 4.2 Describe development of marbling fat and its impact on palatability 4.3 Explain impact of drip on both the appearance and palatability of meat
5. Identify and evaluate the MSA cuts-based grading scheme	5.1 Explain Palatability Analysis Critical Control Points (PACCP) approach to meat grading 5.2 Describe principles behind the development of the MSA carcass pathways system, including tasting protocols 5.3 Establish impact of various production, processing and value-adding inputs on the palatability of beef using the MSA model 5.4 Evaluate potential benefits of a cuts-based grading system to

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	various industry sectors 5.5 Analyse alternative grading schemes and their various attributes
6. Interpret and analyse data to predict probable impacts on meat eating quality	6.1 Access meat processing data 6.2 Analyse data and predict probable impacts of production and processing on meat quality 6.3 Identify potential solutions for eating quality problems

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Oral communication	- Use industry terminology to describe meat quality - Explain scientific principles simply and clearly
Numeracy	- Analyse data to recognise trends - Collect data using objective measurement technologies

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AMPQUA406 Apply meat science	AMPA403 Apply meat science	Unit sector code updated Performance Criteria clarified Foundation Skills added Performance Evidence, Knowledge Evidence and Assessment Conditions revised	Not equivalent

Links

Companion Volumes, including Implementation Guides, are available at VETNet: -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5e2e56b7-698f-4822-84bb-25adbb8443a7>

Assessment Requirements for AMPQUA406 Apply meat science

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Performance Evidence

An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit.

There must be evidence that the individual has applied meat science methodology to identify the impact on meat quality on at least two different occasions, including:

- explained the processing factors that impact on eating quality, including pH, electrical stimulation, ageing and stretching
- collated and analysed eating quality data
- identified and recommended improvements that could be made to improve meat eating quality.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- consumer taste testing protocols and how they have been used to set grade standards and develop the cuts-based grading system
- Palatability Analysis Critical Control Points (PACCP) approach to meat grading
- Meat Standards Australia (MSA) carcass pathways system
- MSA Standards Manuals
- factors that control changes in colour of fresh meat, and other quality factors, including drip and marbling, which impact on both appearance and palatability
- factors that occur between the knocking box and chiller assessment, and their impact on meat palatability
- visual and palatability attributes of meat quality that are important to customers
- objective measurement technologies that measure traits influencing meat eating quality
- physical and chemical changes that occur when meat is cooked
- anatomical and biochemical determinants of meat palatability
- factors in animal husbandry, transport, lairage, slaughter, carcass storage, packaging, further processing and cooking that will impact on tenderness and palatability
- minimum standards of workplace performance as specified in relevant regulations

- how to maintain currency of knowledge related to meat science.

Assessment Conditions

Assessment of the skills in this unit of competency must take place under the following conditions:

- physical conditions:
 - skills must be demonstrated in a meat processing workplace or an environment that accurately represents workplace conditions
- resources, equipment and materials:
 - reporting and monitoring systems
- specifications:
 - workplace procedures, including advice on safe work practices, meat safety and quality
 - MSA Standards Manuals.

Assessment for this unit must include at least three forms of evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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