The potential application of HACCP based management systems

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Summary

With an increasing demand for products to meet safety and quality standards and a corresponding increase in the availability of a range of QA programs, many producers are confused and frustrated when it comes to making decisions about the type of QA system to implement. Considerable time can be spent to identify which system is the most appropriate for individual circumstances. One option is to examine the underlying approach used. The Hazard Analysis of Critical Control Points (HACCP) is one system that has been globally recognised and offers a rigorous, logical approach. A case study of a woolgrower who has implemented a HACCP based QA system provides an opportunity to examine the potential of this system for the wool industry as a whole.

Keywords

HACCP, quality assurance, wool, residues, pesticide

Introduction

There is an increasing demand for suppliers of goods and services to be accountable and to provide assurance of the quality of their products. Concerns mainly relate to food safety but there is also an increasing demand for production systems to not cause environmental harm (Backshall, 2000). Quality assurance programs are the main tools used to increase consumer confidence. Some quality assurance (QA) systems are very complex, time consuming and expensive and are more suited to tightly controlled manufacturing processes, others are better suited to smaller operations, such as farming.

Hazard Analysis Critical Control Point (HACCP)

HACCP is a methodology that identifies, evaluates and controls hazards that are significant for food safety (AgWEST, 1999). In addition to food safety, HACCP based systems are also being used to address food quality parameters such as environmental and animal welfare standards.

The HACCP system was first developed in 1959 by the Pillsbury Company to ensure that food produced for the National Aeronautics and Space Agency (NASA) would be safe for their astronauts to eat. In 1985, the United States National Academy of Science (NAS) recommended that the food industry adopt the HACCP system particularly to reduce the incidence of microbiological hazards in foods. Ten years later, the Joint Food and Agriculture Organisation of the United Nations (FAO) and the World Health Organisation (WHO) Codex Alimentarius Commission formally adopted the HACCP system. The food industry in Australia, Europe and the US must adopt HACCP systems by law (in Australia this is the National Food Hygiene Standard).

HACCP is preferred by many to the ISO 9000 series for third party audited quality systems as it is generally more flexible and easier to implement. HACCP also offers a more robust and credible approach than the ‘care’ (e.g. Flockcare, Cattlecare) series of agricultural QA systems. This is because the 'care' systems are risk based and process focussed, using a Code of Practice to demonstrate good agricultural practice. HACCP systems are hazard based and outcome focussed. So long as the business can demonstrate they are producing safe quality food, it doesn’t matter how they go about doing it. The ‘care’ systems also do not require the same level

of verification as a fully HACCP compliant system. Both types of systems require a third party audit, however the HACCP system requires the HACCP plan to be signed off by a suitably qualified HACCP Practitioner in addition to the external audit.

During the last ten to fifteen years, there has been a rapid development in industry QA systems leading to much confusion and frustration by primary producers, particularly those involved in more than one enterprise. In 1999, Agriculture, Fisheries and Forestry Australia (AFFA) moved to address this by establishing a *Working Group on Safety and Quality Systems' Equivalen*ce to develop a strategy for QA systems in Australia to achieve mutual recognition (Todd, *pers. comm.*). The process used to compare different systems, involved defining the scope of the system or standard, assessing this against a QA equivalence template as well as assessing implementation and auditing requirements.

HACCP Principles

The advantage of using a system that incorporates HACCP in food production is that it identifies critical points in the production process that have the greatest impact on product safety and quality. In addition, should a business be accused of causing food poisoning, then the system can be used to demonstrate due diligence.

In simple terms, the key steps of the HACCP approach are to firstly identify those critical control points (CCPs) which are steps at which control can be applied to prevent or eliminate a food safety hazard or reduce it to an acceptable level. After identifying all the CCPs in the system, the next step is to develop and implement appropriate control measures to apply to the CCPs. The third step is to conduct appropriate monitoring and have effective corrective action if there appears to be loss of control at a CCP. And finally, relevant, accurate and current records must be maintained.

The HACCP standard, which contains seven principles is managed by the Codex Alimentarius Commission.

Principle 1
Conduct a hazard analysis.

Principle 2
Determine the critical control points.

Principle 3
Establish critical limits.

Principle 4
Establish a system to monitor control of the critical control points.

Principle 5
Establish the corrective action to be taken when monitoring indicates that a particular critical control point is not under control.

Principle 6
Establish procedure for verification to confirm that the HACCP system is working effectively.

Principle 7
Establish documentation concerning all procedures and records appropriate to these principles and their application.

Codex also outlines a series of 12 steps for implementing the seven principles. Key documentation includes a process flow diagram (See Appendix 1) and a HACCP table (See

Appendix 2) which outlines the seven principles for each hazard including immediate and preventative, corrective action.

Safe, Quality Food (SQF)

In 1995, Agriculture Western Australia launched SQF 2000^{CM}, a HACCP based quality assurance system for food and fibre businesses as an alternative to the more complex and costly ISO 9000 series. In 2000, SQF 1000 ^{CM}, a simpler and less costly system was launched. It is designed for primary producers that supply food and fibre that requires further processing and does not require the full Codex HACCP to be implemented. Individual industry sectors (e.g. wool, beef or wheat production) develop a fully Codex compliant master HACCP plan, which is used by individual businesses to tailor a Food Safety Plan to suit their production system.

Currently, nearly 2000 businesses nationally are certified under the SQF system. The SQF 2000^{CM} Quality Code is supported by many industry organisations including the Pork Council of Australia, Quality Society of Australasia, Grains Research and Development Corporation, Australian Horticultural Corporation and retailers Woolworths, Coles and Franklin's Australia.

In Western Australia, the WA Grain Pool with support from Pulse Australia and Cooperative Bulk Handling is embarking on a major initiative to support the adoption of the SQF 1000 system by at least 3000 grain growers over the next five years.

In April this year, a management contact was signed with the SQF Institute in Switzerland to manage the SQF quality system. The SQF Institute has a licence to operate the SQF systems for five years with AgWEST still retaining ownership of the codes and the intellectual property. The licence agreement includes performance criteria to ensure the system continues to expand in WA and Australia. It is envisaged that around 30,000 businesses globally will be using the system by the year 2010 (Love, *pers. comm.*).

To implement and maintain an SQF 2000 ^{CM} system, it must be signed off and checked (validated and verified) by an accredited Skilled HACCP practitioner registered with the Quality Society of Australasia (QSA) and AGWEST for the appropriate industry sector. Alternatively, producers can become a Skilled HACCP practitioner by undergoing the appropriate training and becoming registered with QSA.

An integral part of the SQF program is developing and complying with standard operating procedures such as introduction of new stock, or applying a backliner chemical etc. and also the keeping of an approved supplier list. The approved supplier list is very useful for documenting purchases of breeding stock and replacement stock from suppliers that meet specified criteria e.g. breeder must select for worm resistance and replacement stock to be sourced only from properties that are known to be lice-free.

Case Study

Producer Profile - Chris Norton

Location:	Narrikup, Great Southern Region of WA
Property size:	1000 Ha
Livestock numbers:	5000 sheep, 300 cattle
Primary enterprise:	Wool production
Date SQF 2000 ^{CM} certified:	28th September 1999 (for both sheep and cattle enterprise)
Initial costs:	Not available, as a pilot farm
Ongoing costs:	$1200 per year for two external audits

This farmer, who had Dalcare (wool QA system operated through Wesfarmers Dalgety) accreditation, viewed the SQF program as having merits over the industry based 'care' systems.

This included it being able to cover beef, wool and sheep meat in one program rather than requiring separate QA programs and it was considered to be more flexible. In addition, SQF is becoming a globally recognised QA system. The farmer accepts that there is unlikely to be short term financial gains from being SQF 2000 CM certified, especially for wool but he believes that all farm produce will need to QA certified in the near future.

A requirement to become SQF accredited is to either work with a qualified HACCP practitioner who must sign off the HACCP plan or for the business operator/farmer him/herself to complete a three day HACCP workshop to achieve registration with Quality Systems of Australasia. This farmer completed the three day course and found it very interesting and useful for developing his SQF program.

The time taken to implement a SQF system varies but it is normally between two months to two years, depending on the size of the business, its complexity and number of product lines. In this case, it took about 12 months from the time the decision was made, to achieve certification. The farmer believes that undertaking the program has increased his understanding of his farm operation.

It has been estimated that about 80 hours is required to fully implement a SQF program. In Western Australia, most producers have worked as part of a small group with a qualified HACCP facilitator to minimise costs on an individual basis.

The main criticisms of the system are the excessive costs of external auditing and a requirement for some perceived unnecessary record keeping. Despite this, the farmer intended to continue with the system and would recommend it to other wool growers, especially as there is currently a major push on wool quality.

Discussion

There are numerous quality assurance programs available to wool growers as there is for other agricultural producers. However, the difficulty for farmers is to make an informed choice about the type of system that suits their needs.

Only one brief case study is provided here but there does appear to be advantages in using QA systems that are HACCP based because of international recognition by the WHO and FAO and the sound principles that are applied. With the recent introduction of the voluntary vendor declaration scheme for pesticide residues on wool, a HACCP based system would give an assurance to buyers that procedures were in place to prevent the occurrence of excess residues but this would not negate the need for testing completely. An important component of HACCP is to verify that the system works by undertaking end product testing. However, once the system is verified, the need for testing should reduce. Changes in climatic conditions such as summer rain leading to an increase in flystrike treatments might affect the testing regime.

SQF 1000 CM, a HACCP based business quality certification system, is one approach that wool growers might consider to improve product quality and market access. SQF 1000 CM involves the same principles and steps as SQF 2000 CM but has lower auditing costs as it only requires a single annual audit rather than two per year. An SQF 2000 CM system would only be required by a wool producer who wished to use the SQF logo on wool bales. In addition to business certification, the 2000 system also gives quality assured product.

Conclusion

With increasing consumer pressure for high quality products and an increasing trend towards litigation and legal challenges relating to duty of care, agricultural producers are leaning strongly

towards quality assurance as a means for maintaining market access and protection against allegations and prosecution for failing to meet minimum standards.

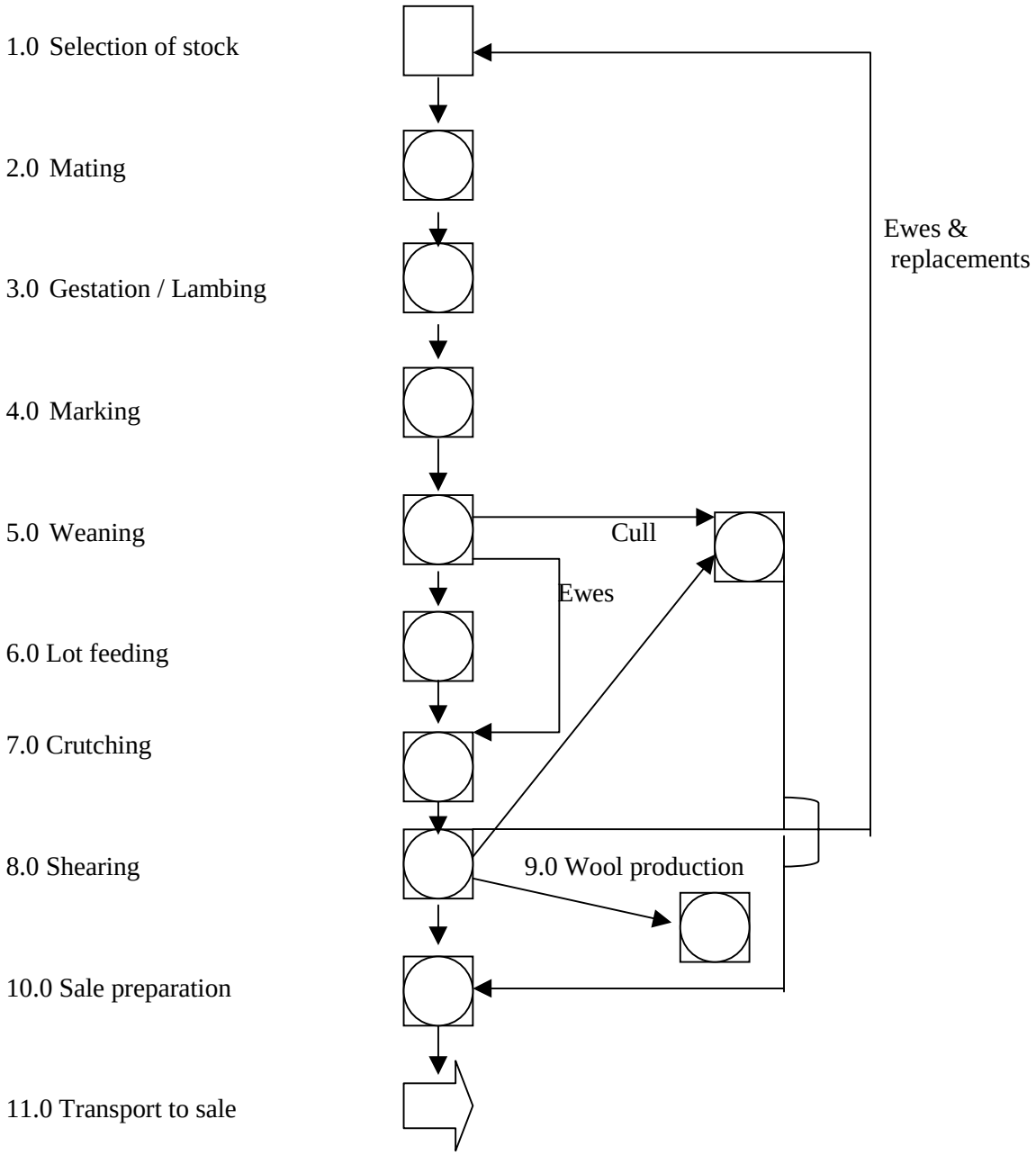
References

AgWEST Trade and Development (1999). HACCP Principles Guidelines for Implementation and Use – Introduction; Participant Guide.

Backshall, P. (2000). Environmental Accreditation System: Market Analysis Project, Agriculture Western Australia, South Perth.

APPENDIX 1: Process flow diagram

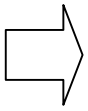
SHEEP and WOOL PRODUCTION



Flow chart symbols

Inspection step

Operational step



Transfer step

APPENDIX 2 – HACCP Table

Step / Input: 2.3a Treatment if necessary

⇐	P1 ⇒	P2	P3		⇐	P4	⇒		P5	P6	P7
Hazard	Control Measure (6)	CP Type	Critical Limit (8)	Monitoring (9)					Corrective Action (10)	Verification (11)	Records (12)
		(7)		*What*	*Where*	*How*	*When*	*Who:*	***What & Who***	***What & Who***	
Chemical residues in wool	*Follow SOP#15 for the treatment of flystrike*	QP	*100% compliance with SOP #15 and label instructions*	*Label rates and application are used*	*Yards*	*Visually*	*At treatment*	*Stockman*	Immediate: *Mark sheep and remove treated areas from wool clip at shearing* Preventative*: Train staff, use chemicals only according to label*	*Review: Stock treatment records Flystrike treatment procedures Manager*	*Stock treatment record*