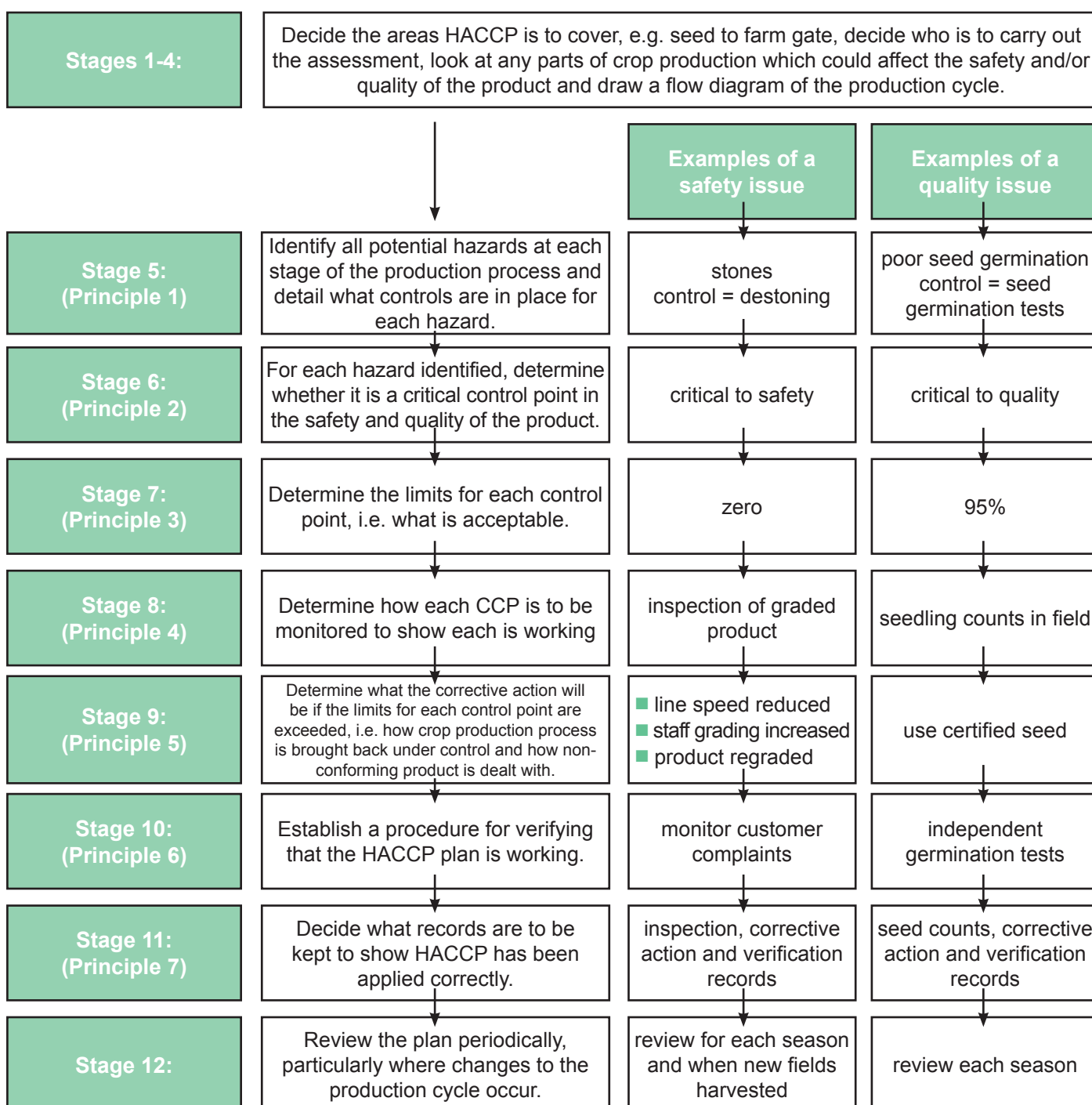


An Introduction to HACCP

The Assured Produce Scheme expects its members to identify and prevent problems occurring with respect to food safety. An approach to this is to identify hazards and their points within the production process, and to implement procedures to prevent or minimise them. This approach is known as hazard analysis critical control point (HACCP). HACCP involves the systematic assessment of all steps involved in a food production operation to identify all microbiological, chemical and physical hazards. HACCP identifies critical control points, where, if control is not achieved the safety and quality of the product can be compromised. The HACCP technique is based on 7 principles applied as 12 stages; the planning stages of 1-4 and the application stages of 5-12.



Many organisations can help with the implementation of HACCP. Campden BRI offer guidance publications as well as specific courses for crop production.

An Introduction to HACCP

Note: The following text is reproduced from “Assured Crop Production – a practical guide to developing a quality management system for primary food production” by kind permission of Campden and Chorleywood Food Research Association and as such is their copyright. Assured Produce believe members will find this brief introduction to HACCP useful and interested members are encouraged to obtain the full document.

“Assured Crop Protection” (ACP) is a quality management system that has been developed for farmers and growers to control food safety problems and crop quality aspects. It is based upon the system widely used in food manufacturing called Hazard Analysis Critical Control Point (HACCP); its approach is logical and it is a cost effective basis on which to control hazards in primary crop production.

The ACP manual is designed to guide the reader through the logical sequence of setting up a system but in order to appreciate the rationale behind the system, it is helpful to understand the philosophy and mechanisms of HACCP.

What is “HACCP”?

HACCP originated in the 1960s and the adoption of the HACCP approach to food safety has increased in recent years. HACCP is now nationally and internationally recognised by the food industry and government organisations as the most effective means of assuring food safety. HACCP also provides a powerful method of laying the foundations of an effective quality assurance programme and interfaces with other quality systems such as ISO 9000.

The successful introduction of HACCP into a wide range of food manufacturing operations has demonstrated its benefits and flexibility. HACCP is a straight forward and logical system of control based on the identification and prevention of problems with documented evidence: in effect a common sense approach to food safety and quality management.

It is often a misconception that HACCP is difficult, complicated and bureaucratic, and requires a high degree of expertise. Some knowledge of HACCP is helpful in carrying out a HACCP study but the main requirement is for a thorough understanding of the production process and the products, including those factors which cause concern to the customers.

Principles of HACCP as applied to the food industry

As mentioned previously, HACCP is a systematic approach to the identification of specific hazards associated with all stages of a food operation, defining the means of their control and the identification of so-called ‘Critical Control Points’ (CCPs). In addition, a system must be established to demonstrate that each CCP is under control.

The HACCP system is based on seven principles (CCFRA, 1992; Codex Alimentarius Commission, 1993):-

- Principle 1** Conduct a hazard analysis by identifying and listing the hazards associated with each step in the production process and specifying the control measures.
- Principle 2** Identify the critical control points.
- Principle 3** Establish critical limits which must be met to ensure that each CCP is under control.
- Principle 4** Establish a monitoring system to ensure control of the CCP by scheduled testing or observations.
- Principle 5** Establish the corrective action to be taken when monitoring indicates that a particular CCP is moving out of control.
- Principle 6** Establish documentation concerning all procedures and records appropriate to these principles and their application.
- Principle 7** Establish verification procedures which include supplementary tests, together with a review which confirms that HACCP is working effectively.



Appendix RC.2 (continued)

An Introduction to HACCP

Stages in the implementation of HACCP

In food manufacturing, a number of stages have been identified to fulfill these seven basic principles. These stages, outlined below, provide the basis on which to apply the principles of HACCP to crop production.

Stage 1. Define terms of reference

Stage 2. Select the HACCP team

Stage 3. Describe the product

Stage 4. Identify intended use

Stage 5. Construct a flow diagram

Stage 6. On-site verification of the flow diagram

Stage 7. List the hazards associated with each step

Stage 8. Identify CCPs

Stage 9. Establish critical limits

Stage 10. Establish a monitoring system

Stage 11. Establish a corrective action plan

Stage 12. Establish record keeping and documentation

Stage 13. Verification

Stage 14. Review the HACCP plan

Further details of HACCP and its application are given in CCFRA's Technical Manual No. 38 (CCFRA, 1992).

Principles of HACCP as applied to horticultural production.

A HACCP system may be implemented by the farmer or grower but could be developed in collaboration with consultants, marketing organisations or the customer.

Most crop production operations follow a basic pattern of selection of raw material inputs, crop production operations carried out, harvesting, post harvest handling operations, storage, through to transport to customer. There may be other steps or variations but most crop production operations are very similar.

The HACCP approach starts by breaking down the crop production operation into steps, e.g. selection of crop variety, cultivations, crop protection measures, harvesting, and post-harvest handling. The hazards associated with each of these steps are then considered. A hazard in terms of food safety is anything that may cause harm to the consumer. Hazards may be biological (e.g. microbiological pathogens), physical (e.g. stones) or chemical (e.g. pesticide residues). However, the approach can also be used to identify hazards associated with quality of products or demonstrate a particular method of crop production.

Next, all appropriate control measures are listed. From these control measures, the steps in the crop production process which are critical to control the hazards are identified (the CCPs). In practice, in a crop production operation, many if not all controls will be critical because, in general, the hazards associated with crops cannot be eliminated or reduced to acceptable levels at any later step in the crop production operation. The decision is then taken on the most appropriate way to check or monitor that these critical controls are working.



Appendix RC.2 (continued)

An Introduction to HACCP

Implementation of a HACCP study to horticultural production

The system is suitable for small, medium or large crop production operations. It is a flexible management tool which can be applied to a wide range of simple or complex operations including arable crops, field vegetables, protected crops, soft fruit and top fruit production.

The system can be used for food safety problems as well as quality aspects. It is a business decision as to what is or what is not included, in terms of the crop production operation and the hazards identified, and will depend on the resources of the business, the intended market of the crop or the customer requirements. However, it is important that the correct focus of the study is identified. In terms of the crop production there are a number of questions to help with these decisions.

1. Do you want to cover all types of hazards or just selected hazards?

In some situations it may be easier to limit the number of hazards considered, at least initially. It will be simpler to revisit the study to look at additional hazards than try and do everything at once. It may also be more important to consider the highest priority hazards in the initial study, but this will depend on the intended market.

2. Will the study cover the whole crop production operation or one specific part?

It may be appropriate to consider the length and complexity of the crop production operation. Does a long process subdivide logically into several distinct phases which can be evaluated independently (e.g. crop production, harvesting, storage)? These phases can be considered separately if this is easier.

Similarly, the crop may be grown on several different sites (e.g. fields or glasshouses at different locations). A study may be carried out for the crop at all sites, or at individual farms, fields or glasshouses. The approach will depend on the similarity of the production operation and marketing arrangements.

3. Will the study cover a specific crop or a crop type?

If the production operation being studied is common to a number of related products (e.g. winter cereals or wheat) then these can be included in one study. Alternatively each crop may be considered in separate studies.

4. Where should the study start and stop?

Although it is recommended that the study should include all raw materials and inputs (e.g. site, seed/planting material, pesticides, fertilisers), the study should also clearly specify where responsibility for the crop ends in terms of the production process (e.g. at harvest, after storage or after dispatch of the harvested product from the farm). It is generally recommended that for food crops the study ends at the point of delivery to the customer. In this way on-farm hazards are covered.

5. What hazards should be covered?

HACCP was originally designed for food safety aspects and this is its primary use. However, quality aspects are often of fundamental importance in primary agricultural products and many may need to be included in a study. As a general rule, however, safety aspects should take precedence over quality issues.

6. What level of monitoring is required?

At the most basic level, records such as pesticide records required by the Control of Pesticide Regulations (1986) and crop diaries are sufficient but it may be desirable to review the records taken and if necessary develop and implement a specific system. The sophistication of the system will depend to a large extent on the resources of the business.

The scope of a study and its implementation will, therefore, be a decision for each business depending on their own resources, the production operation, the intended market for the crop and the customer requirements. As long as any legal requirements are met it is up to the business to set the hazards, controls and monitoring procedure