

Waste management: planning and practice

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Waste management: planning and practice

- Background
- Campden BRI studies
 - GAP and environmental welfare
 - HACCP in composting
 - Cost reduction and efficiency in the food industry
 - Greenhouse gas impacts of food preparation
 - Supply chain and consumer potato waste
- Planning and practice

Background – environmental welfare

- Sustainability and environmental impacts of food production are of concern
 - governments, industry and consumers
- Much greater attention given to practices that relate to environmental criteria
 - e.g. pollution, waste management, biodiversity
- Focus is on management practices to ensure high standards of waste management

Background – waste management

- Standards include objectives of management that relate to
 - planning and practices for waste management
- Waste (and by-product) management is about ensuring waste is
 - Properly managed, identified, minimised, and reused or recycled

GAP for waste management

- The intrinsic qualities of food and feed raw materials that relate to the way it is produced are an important feature of good agricultural practice (GAP).
- Exemplars of GAP include private voluntary technical standards (PVS)
 - Key element of governance in agriculture (UK and internationally)

GAP for waste management

- Objective: Evaluate GAP in relation to key environmental criteria and provide a guide to good practice as defined by industry standards.
- Focus: Crop production, Environmental welfare, Private Voluntary Standards (PVS),
 - Waste management and PVS compliance clauses

GAP principles and practice

- **Components** of good practice
 - object of management, i.e. planning, resource related issues and practices.
- **Indicators** of good practice
 - objectives of what should be accomplished with regard to the component.
- **Attributes** of good practice
 - typical measures implemented to achieve the objective of the indicator of good practice as exemplified by PVS compliance clauses.

Waste management – PVS compliance clauses

Good Practice Criteria (components and indicators)	Global GAP (AF, CB, FV)	RT Produce	RT Farm Assur'e	LEAF	Nurture	Cons'n Grade	GFSI Primary Produc'n	SQC
Waste management planning								
A waste management plan is established to ensure waste is properly managed	AF 5.2.1	EC 12 EC 13.6	EC 12 EC	4.2 4.8	6.1 6.3 6.14	2.3		
Waste is identified and documented	AF 5.1.1	EC 13.6		4.7			IB 11.1	
Resource management								
Waste management practice								
Waste is properly handled, stored and disposed of.	AF 5.2.2				6.15			
Organic material is recycled and reused.	AF 5.2.3				6.2			
Non organic waste is properly handled and disposed of.	CB 8.5 CB 8.9 CB 8.10	EC 13	EC EC 5 EC 13	4.6	6.5 6.9			2.7
Waste management practice is verified.	AF 5.2.2						IB 11.2	

Waste management – GAP principles and practice

Component of good practice	Indicator of good practice	Typical good practice measures
Waste management planning	A waste management plan is established to ensure waste is properly managed.	<p>A waste and bi-product management plan is put in place, implemented and maintained.</p> <p>The management plan should specify measures to</p> <ul style="list-style-type: none"> • minimise waste including processes adopted • reduce waste (waste reduction strategy) • recover, recycle and reuse waste where feasible • monitor wastes and practices • keep the plan up to date (typically review annually)
	Waste is identified and documented.	Potential waste materials and by-products should be identified and listed, including production wastes and residues, chemicals and physical materials.

Waste management – GAP principles and practice

Component of good practice	Indicator of good practice	Typical good practice measures
Waste management practice	Waste is properly handled, stored and disposed of.	Waste is removed in a timely manner from and handled separately to production facilities. Adequate and suitable storage facilities are provided. Wastes are disposed of without risk to water and the environment. Air, soil and water contamination should be considered.
	Organic material is recycled and reused.	Residues from production and product handling should be re-used/recycled effectively. Organic material including vegetable waste should be composted and used for soil conditioning (either on or off site) If organic waste and manure is utilised a manure management plan is used.
	Non organic waste is properly handled and disposed of.	Wastes are stored and disposed of (including recycling) in an environmentally responsible manner and in accordance with relevant legislation / recognised codes of practice, <ul style="list-style-type: none"> •Chemical wastes include surplus pesticides, oils, other chemicals and empty chemical containers. •Physical materials include plastics, glass, metal and wood.
	Waste management practice is verified.	Waste management practice is checked, including visible assessment of actions and measures (e.g. handling, storage and disposal). Wastage reduction is reviewed.

Compost and anaerobic digestate safety depends on

- Legislation that lays down minimum requirements
- Official controls to check operator compliance
- Operators take measures or adopt procedures to achieve a high level of safety
 - Good manufacturing and hygiene practice (GMP and GHP)
 - Safety management systems (HACCP)

HACCP and composting

- PAS 100:2011 Specification for composted materials
 - requires a composter to carry out a HACCP plan
- Regulation 1774/2002 laying down health rules concerning animal by-products not intended for human consumption
 - Plants must put in place, implement and maintain a permanent procedure developed in accordance with the principles of HACCP

Codex HACCP principles

- Preliminary steps
 - terms of reference (product, process and hazards), team, product description and intended use, process description (flow diagram)
- Principles
 - hazard analysis (1), critical control points (2), critical limits (3), monitoring (4), corrective actions (5), verification (6), documentation (7)

Campden BRI guidance

- Composting HACCP case study
 - Based on Codex preliminary steps and principles
- Composting safety control measures are integrated into good practice (GMP, GHP)
 - GMP relates to control and sustainability of operations
 - GHP addresses the conditions and measures to ensure safety of products

Composting HACCP

- In HACCP based safety management systems some GMPs and most GHPs are prerequisite programmes (PRP)
- Where the hazard analysis identifies significant hazards that need to be controlled by targeted control measures these may be categorised as Critical Control Points (CCP)

Composting HACCP case study

- HACCP is underpinned by PRPs
 - e.g. waste supplier assurance, cleaning, pest control, equipment maintenance, training
- Significant hazards controlled by targeted measures
 - Intake checks (presence of hazards)
 - Feedstock preparation (particle size – efficiency of pasteurisation)
 - Pasteurisation (survival of pathogens) - **CCP**

Cost reduction and efficiency increasing standards in the food industry

- Objective
 - Provide guidance for food producers (SMEs) on successful practices of cost reduction and efficiency improvement techniques
 - Summary of experiences in IMSFood_EU_Coronet project for the development of an Innovative Management System for a Sustainable Food Industry

Cost reduction and efficiency increasing standards in the food industry

- Rational is for competitive production
 - Limited facilities to compete
 - One solution is to reduce different types of costs
- Focus is on efficient use of resources
 - Reduction of production wastes, energy, water, materials and human resources
 - Aim is to act in a sustainable manner

Cost reduction and efficiency increasing standards in the food industry

- The guide provides a description of a management system – SusFood
 - Based on hazard analysis system (HACCP approach)
 - Identifies areas where reduction of losses, wastes and costs can be achieved
 - Includes a procedure for building a waste analysis system and a tool for analysing the production flow

Understanding greenhouse gas impacts of food preparation and consumption in the home

- Objective
 - Evaluate methodology in PAS 2050 by assessing greenhouse gas emissions associated with the use phase and disposal of food products
 - Defra funded project (Campden BRI, University of Bristol and Cardiff University)
- Baseline data was assessed for several meals (ready meal v. home made)
 - Cottage pie, apple crumble, bread and apple juice

Cost reduction and efficiency increasing standards in the food industry

- Variability of consumer GHG emissions assessed using range of cooking appliances
 - Overall microwave oven gave lowest emissions
 - Gas hob emissions were substantially lower than electric hobs
 - Use of ovens showed a similar pattern

Cost reduction and efficiency increasing standards in the food industry

- Observations on cooking processes and consumer behaviour studies (focus groups) showed
 - Home processes were only 50% effective with losses due to under utilised appliances and food waste
- Conclusions
 - PAS 2050 methodology can be applied to the use phase with adjustments regarding boundary conditions and allocation methods

Reducing supply chain and consumer potato waste

- Objective
 - An evaluation of ways to reduce levels of fresh potato waste along the retail supply chain and in the households, including a consumer survey, storage trial, packaging trials and in-store training
 - WRAP funded project (Amcor Flexibles, Greenvale, Albert Bartlett's, Campden BRI)

Reducing supply chain and consumer potato waste

- Recommendations
 - Raising awareness of the need to prevent food waste, and providing tips that will help consumers avoid wasting food are essential
 - Solutions to reducing potato waste will come from changing behaviour through effective communications

Reducing supply chain and consumer potato waste

- Key points – raise awareness of
 - Portion correctly when preparing potatoes
 - Potential to freeze / use leftover cooked potatoes
 - Defects (greening, sprouts, rots, poor skin finish) do not affect eating quality
 - What ‘display until’ and ‘best before’ dates mean
 - WRAP’s home composting initiative for potato peelings

Planning and practice – waste management

- The focus is on high standards of waste management (farm to fork)
 - Components of management (planning, resource management and practice)
 - The objectives of what should be accomplished with regard to the components - principles
 - Measures that are implemented to achieve the objectives – best practice
- Waste management is about ensuring waste is
 - Properly managed, identified, minimised and reused or recycled

Contacts

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