

freshly made every day



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Management of *E coli* O157 in fresh fruit and vegetables: how can we be safe?

Kaarin Goodburn MBE
Chilled Food Association
cfa@chilledfood.org



RSPH, 13/5/09

Agenda

- **CFA and the unique UK chilled prepared food sector**
- **What is 'fresh produce' and its reach?**
- **UK supply chains & standards piggybacking**
- **Volumes and record**
- **What it takes to create consumer confidence & trust**
- **Comparing USA, (EU) and UK approaches**
- **How can we be safe?**

The Chilled Food Association

- **Chilled prepared food manufacturers supplying the UK retail market**
- **Competence based membership criteria:**
 - Compliance with CFA Best Practice Guidelines for the Production of Chilled Food and related guidance; **AND**
 - Successful UKAS-accredited audit v. BRC Global Standard – Food, **OR**
 - Compliance with International Food Standard, **AND**
 - Supporting reference from an existing member, **AND**
 - Statement of qualifications and experience of the person responsible for food safety

UK Retail Chilled Prepared Food

- **Market**
 - *ca.* £500m in 1989
 - >£8,500m in 2008
- **Consumer confidence and trust**
- **Best hygienic practice – CFA Guidelines: HACCP**
 - **Field controls**
 - **Hygiene systems**
 - **Food contact surface hygiene**
 - **Intake/processed physical segregation**
 - **Raw/cooked physical segregation**
 - **Personnel**
 - **Screening, selection, training**
 - **Stipulated thermal process minima v. shelf life**
 - **Short shelf life**

UK Retail Chilled Prepared Food

- 95% retailer own label, no manufacturer contracts
- Largely RTE – hygiene critical
- 9,000 SKUs made by members at any one time
- Factories produce 30-40 different foods each day
- Just in time manufacture
- Year-round production
- Dedicated supply chain (own/contract growers), integrated control





UK Retail Chilled Prepared Food

- Dressed salads
- Leafy salads
- Prepared Vegetables
- Prepared fruit
- Stir fry kits
- Sandwiches
- Sandwich fillings
- Quiche/flans
- Pizza
- Recipe dishes/kits
- Meal Accompaniments
- Sushi
- Filled fresh pasta
- Soups
- Sauces
- Desserts

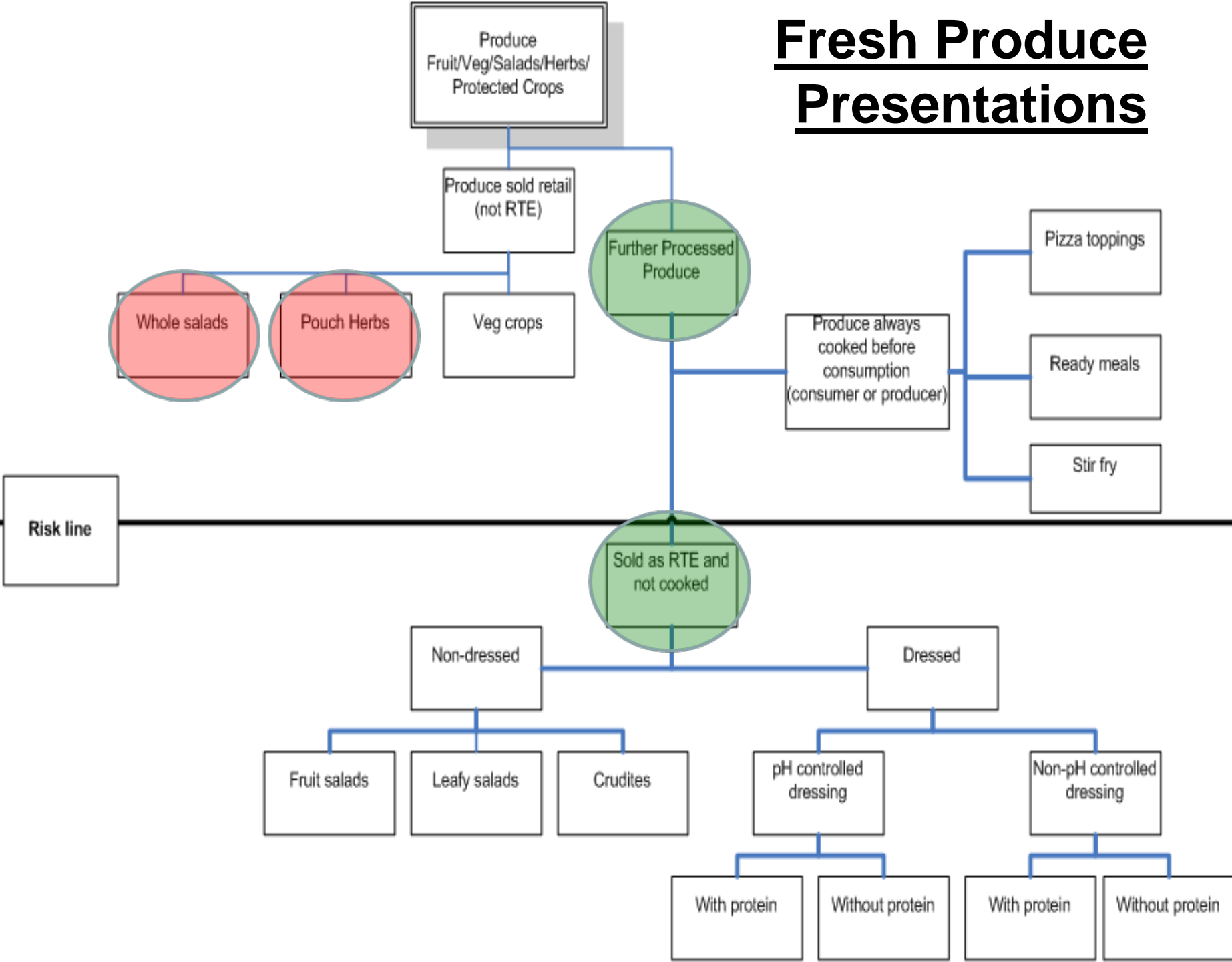
2008 retail value ~£8.5bn, equating to ~3.5Mte

What is Fresh Produce?

- **Fruit, vegetables, herbs, [seeds, nuts]**
- **Whole:**
 - Not pre-cut/size-reduced after harvest
- **Prepared:**
 - Pre-cut/size-reduced after harvest, e.g. leafy salad
- **Ready to eat:**
 - Designed to not require further prep before eating
- **Dressed:**
 - pH controlled or not



Fresh Produce Presentations





UK Chilled Prepared Food

- **Dressed salads**
- ***Leafy salads**
- **Prepared Vegetables**
- **Prepared fruit**
- Stir fry kits
- **Sandwiches**
- **Sandwich fillings**
- **Quiche/flans**
- Pizza
- **Recipe dishes/kits**
- Meal Accompaniments
- **Sushi**
- **Wraps**
- Filled fresh Pasta
- Soups (some RTE)
- Sauces
- **Desserts**

Items in green can include raw ready to eat produce inc garnishes

***Leafy salads (1990-2007):** UK: 2.7×10^9 packs, Worldwide: 2×10^{10} packs



UK Leafy salad volumes

- **Volumes (1990-2006)**
 - UK: 2.6×10^9 packs
 - Worldwide: 1.8×10^{10} packs
- + ***other presentations of prepared produce***
- **Retail 3 week period summer *2006 (mean)**
 - Leafy salads: 24M bags, 70M servings
 - Wholehead: 20M units = 100M servings
 - **Total retailed:** 48M units = 170M servings
 - **Foodservice:** est 1/3 of retail vol: 35M servings
- **Grand total average 3 weeks: 205M servings**
 - ~50:50 Retail:Wholesale (servings)
 - ~1 serving per person per day (summer)

Leaf-related VTEC outbreaks

- **USA** 26 outbreaks (>900 cases)
(lettuce + spinach) 1993-2006
- **Europe** 2 outbreaks (>200 cases)
(wholehead, Sweden)
- **UK** 1 outbreak (12 cases)
(imported herb?) 2007

Root causes commonly gross basic field hygiene breaches
(FSA B17007, 2009)



UK Fresh Produce Safety

- **Incidents**
 - extremely rare
 - primarily linked to imported/wholesaled/herbs, not prepared
 - pattern does not mirror that overseas
- **Why?**

CFA Produce WG



- **1996:**
 - *E. coli* O157 and lettuce, USA; radish sprouts, Japan
- **1998:**
 - ECFF VTEC & Agriculture WG → Report
 - Presented to EC 1999 and EC SCF 2000 → 2001 EC produce risk assessment
 - ADAS Safe Sludge Matrix
- **2000-**
 - FSA farmyard manure guidance activity began
- **2002**
 - CFA growing controls (micro guidance for growers, MGG1) published
 - Field controls - critical to assuring safety
 - Assured Produce (elements), retailers' protocols
 - CODEX leafy vegetables + sprouted seeds



CFA Produce WG

- **2005-8:**
 - CFA/Defra/IFR attachment research
- **2007**
 - CFA Micro Guidance for Growers 2nd ed, supported by
 - Health Protection Agency
 - BLSA, FPC, HDC, NFU (+FSA, ACMSF)
- **2008**
 - FSA FYM impact assessment consultation
 - UN FAO/WHO expert meeting: leafy veg + herbs
 - CODEX Committee on Food Hygiene
 - WRAP Confidence in Compost programme
 - Open University attitudinal research on recycling waste to land

CFA inputs into external work

- **Government-funded research**
 - Sewage sludge (WRc)
 - Farmyard manure (ADAS)
 - Applications of ozone (Bristol)
 - Irrigation water (UEA/Surrey etc)
 - Review of hazards, organic waste usage (Harper Adams)
 - Organic waste recycling to land: OU (Defra), WRAP risk profile
- **Nuffield Scholarship**
 - Water quality & quantity and its impact on food production
- **US FDA-funded research**
 - *E coli* O157 and produce
- **UN FAO/WHO**
 - Expert Group hazard review 2008
 - CODEX Committee on Food Hygiene

UK Retail Control Elements

- **Controlled market**
 - major retailers' dominance = commercial imperative for standards, audits
- **Over a decade of CFA proactive work**
 - CFA best practice guidance, protocols, compliance
 - Field controls established = **critical** to assuring safety
 - especially water, manure, people
 - Chill Chain Management
 - Full traceability
 - Incident alerts and resolution
 - Network of expertise internationally
 - Attachment research completed

FSA recognises 'stringent' standards and positive differentiation from the USA

Raw RTE food safety cannot be retrofitted.

It must be built into the system from the beginning.

What makes produce ready to eat?

- **Manufacturer's risk assessment and food design, i.e. HACCP plan**
- **Appropriate field controls**
 - Minimise potential for contamination by zoonotic organisms
 - CFA's Micro Guidance for Growers (2nd ed)
- **Hygienic preparation and packing**
 - Prevent re-/cross-contamination
 - Remove soil
 - CFA Best Practice Guidelines for the Production of Chilled Food (4th ed)
- **Limited shelf life**
 - Ensure peak quality and
 - Minimise opportunity for microbial growth
- **Chilled distribution and sale**
 - Minimise potential for microbial growth

CFA Guidelines

- **Fields**

- **Microbiological Guidance for Growers**

- English language versions (2007, 2002) – supported by major UK multiples
 - Spanish version (2004)
 - Finnish version (EVI) (2005)

- **Pesticides Due Diligence (2002)**

- **Factory**

- 4th ed CFA Best Practice Guidelines for the Production of Chilled Food (2006)
 - Washing protocols (when using chlorine)

- **General**

- 2nd edition Water Quality Management Guidance (2005)
 - Guidance on the use & interpretation of micro testing (2005)
 - CFA/BRC Guidance on the Practical Implementation of the EU Micro Criteria Regulations (2005)

FSA: ‘stringent’ standards applied by the UK retail industry

Audit Documentation

- **Supplier Code of Practice and Guideline Documents**
 - Available in English, Spanish, French, Italian
 - Detailed Audit Documentation
 - Same Technical Requirements for all suppliers - UK and Non UK
 - Records of inputs
 - Full traceability

Controls – in the field

- **Agronomists on-site**
- **Crop protocols**
 - **Growing site selection**
 - **Usage of organic waste in agriculture**
 - Human-derived (sewage sludge) – no use on RTE
 - Animal-derived (farmyard manures, abattoir waste) – long intervals even after composting. Not used in practice on UK retail prepared RTE
 - **Irrigation water quality**
 - **Animal access**
 - **Human hygiene**
- **Grower/processor contracts**
- **Grower/processor/retailer audits**



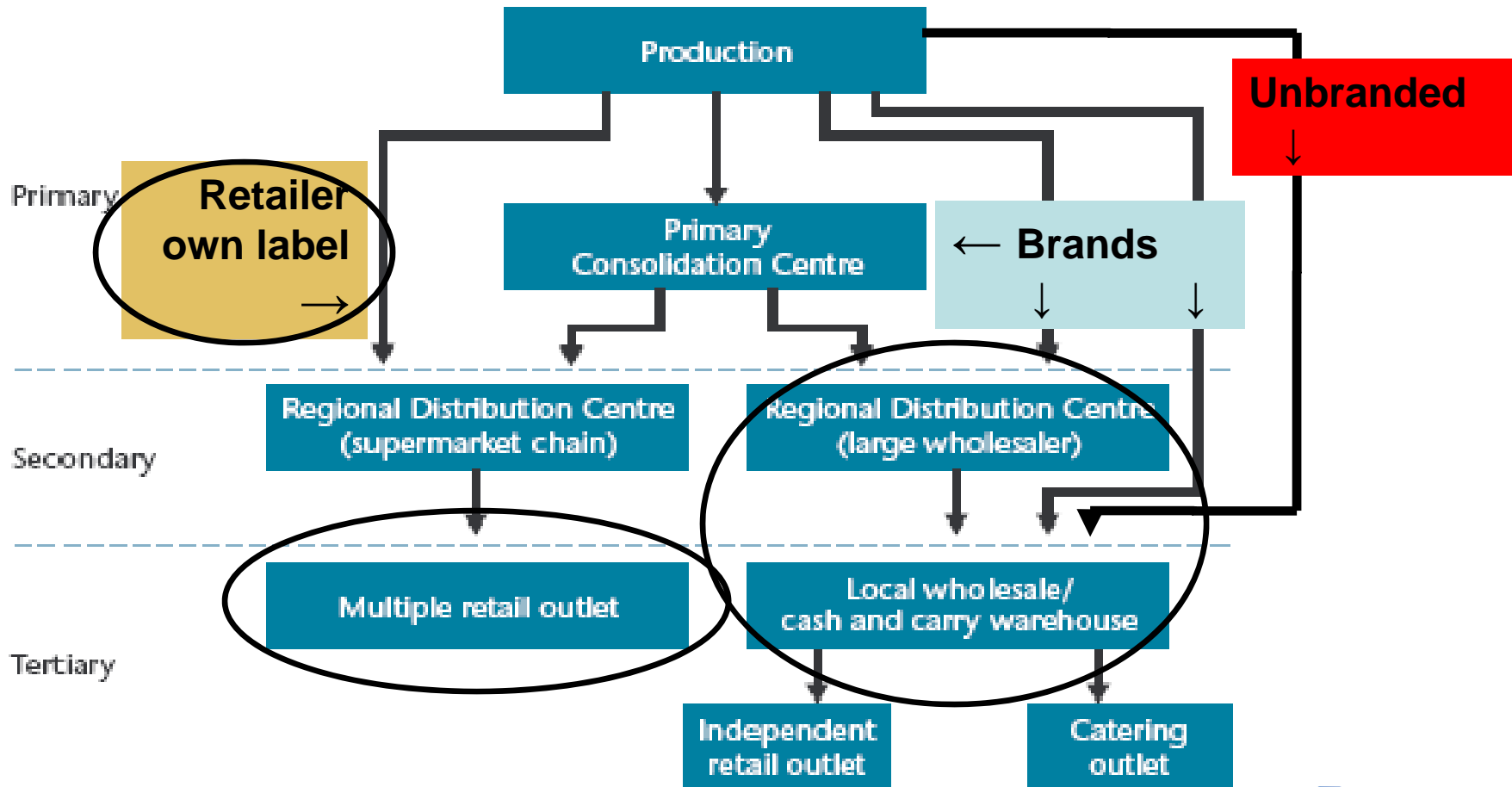
CFA Organic Material Intervals

Organic material	Usage on RTE crops
Farmyard manure	Raw FYM 24 month minimum interval between drilling/planting
	No limitation for industrially processed (e.g. AD, pelleting) with validated CCPs
	Validated composting: turn 3x to achieve 55°C internally for 3 consecutive days + store at least 3 months prior to use
Sewage sludge	No raw s/s allowed to be applied to agricultural land. 48 month interval if land is contaminated with raw s/s
	Digested s/s: 30 months interval between application to land before harvest of salad crops, 12 month interval for vegetables [none used in practice on RTE]
Livestock	12 months minimum between planned access and drilling/planting

(Leafy) Produce Safety Assurance

- **Comparing USA, (EU) and UK approaches:**
 - Market structure – the commercial imperative
 - Field controls/standards
 - Chill chain
 - Shelf life
 - Durability dates

UK food distribution channels



UK supply chain: piggybacking on leaders' standards

Required Scheme	Retail			Foodservice			
	Major Multiples	Farmers Markets	Farm shops	Wholesale	Fast food*	Airlines	S/wiches
AP	60-100%	0%	0%	0%	50%	0%	100%
None	0-30%	100%	100%	100%	50%	100%	0%

Reqd Scheme	ASDA	JS	M&S	Morr.	S/field	Tesco	Waitrose
AP	100%	100%	70%	70%	83%	60%	100%
Field 2 Fork	0%	0%	100%	0%	0%	0%	0%
GlobalGAP	86%	76%	50%	60%	67%	47%	67%
Nature's Choice	0%	0%	0%	0%	0%	100%	0%
None	0%	0%	0%	30%	17%	0%	0%

Major multiples served by a small number of large suppliers, with common standards

* Inc major chains
AP = Assured Produce

From FSA project B17007, 2009

Commercial Imperative – Market Structure

UK	EU	USA
<p>Retail leafy (bagged) salad ~100% major retailers. 95% of chilled prepared food = retailer branded (own label).</p> <p>Significant technical and commercial retail pressure on supply base.</p> <p>Dedicated growers. Small number of large suppliers.</p>	<p>Mainly major retailers with varying commercial influence, or discounters largely buying on price.</p> <p>Large number of small branded suppliers.</p> <p>Small number of large suppliers</p>	<p>Few major retail chains.</p> <p>Large grower base, largely detached from retailers.</p> <p>Little retailer quality + safety influence via supply chain.</p> <p>Large number of small branded suppliers. Small number of large suppliers.</p>


Field controls/standards

UK	USA
HACCP , assurance schemes, standards (e.g. CFA, retailers, AP/ EUREP GAP): growing + processing	<ul style="list-style-type: none">• HACCP being introduced, assurance schemes not yet fully established
<ul style="list-style-type: none">• Animal access/farm proximity restricted + organic fertiliser controls	<ul style="list-style-type: none">• Animal access/proximity problems commonplace. Raw FYM usage/contam
<ul style="list-style-type: none">• Irrigation water micro assessment	<ul style="list-style-type: none">• Being introduced
<ul style="list-style-type: none">• Field hand washing + toilet facilities	<ul style="list-style-type: none">• Being introduced
<ul style="list-style-type: none">• Harvesting/handling/chilling + despatch hygiene	<ul style="list-style-type: none">• Field coring reported.• Delays to despatch to chill
<ul style="list-style-type: none">• Traceability to/from seed/field + all application records (e.g. fertilisers, pesticides, irrigation)	<ul style="list-style-type: none">• Traceability back not sufficient to track outbreak sources. Forwards not well developed: branded sales to many outlets
<ul style="list-style-type: none">• Crops grown as close to processing facilities as possible. <p><u>Summer</u>: vast majority UK-produced.</p> <p><u>Winter</u>: southern Europe favoured.</p> <p>Imports from US only considered when essential to maintain supply continuity.</p>	Only certain US growers have the capability to consistently deliver product to UK standards.

Chill Controls

- **Remove field heat as quickly as possible to minimise microbiological and biochemical activity**
- **We adopt a “keep it cold – move it fast” philosophy**
 - E.g. measure degree hours from harvest to customer

Shelf Life & Date Marking

Issue	USA	EU	UK
Shelf life	<p>Long (to 21 d)</p> <p>No common protocol. Dictated mainly by market: slow + lengthy distribution</p>	<p>Short-med (7-14d)</p> <p>Various protocols (e.g. F, ECFF, Ire (=Campden)) used by professionals, but poor general enforcement</p>	<p>Short (4-8d)</p> <p>Campden protocol (+ CFA + major retailers)</p>
Durability dates	<p>‘Best if used by’ and other non-specific terms</p>	<p>‘Use by’, ‘best before’. 2073/2005 sets out durability study principles for ‘use by’</p> 	

Chill Chain

Issue	USA	EU	UK
Chill chain	<p>Long distances.</p> <p>Commercial and legal °C enforcement not reported.</p>	<p>Short-medium.</p> <p>No common legislation.</p> <p>Commercial enforcement by major retailers.</p>	<p>Short – medium (winter).</p> <p>Despatch & distribution to retail <5°C enforced commercially by major retailers = 100% leafy (bagged) retail market.</p> <p>Retail ≤8°C legally (England, Wales, NI)</p>

Spreading Best Practice



FSA recognises 'stringent' UK retail standards and positive differentiation of UK from the USA

• UK

- Retailer grower codes uptake in supply chain
- Assured Produce Crop Protocols enhancement
- Controls on organic waste recycling to land
 - Open University (Defra)
 - WRAP Confidence in Compost – risk assessment
- **FSA reviews**
 - Irrigation water hazards & control
 - Incident causes, best practice standards

• EU

- UK retailer grower codes uptake in supply chain

• United Nations

- FAO/WHO Leafy Veg & Herbs Expert Group 2008
- CODEX Committee on Food Hygiene



Conclusions



- **UK incidents**
 - Extremely rare, primarily linked to imported/wholesaled/ herbs, not prepared
 - Pattern does not mirror that overseas...because
- **Controlled market – major retailers**
- **Over a decade of CFA proactive work**
 - Best practice guidance and compliance schemes
 - Full traceability
 - Field controls established = critical to assuring safety
 - Incident alerts and resolution
 - Network of expertise internationally
 - Attachment research completed

How can we be safe?



- International uptake of proven (CFA) standards
- Commercial imperative to implement
 - **Growing (field) controls**
 - Location inherent suitability for RTE crops + basic hygiene
 - **Best practice harvesting/post-harvest standards**
 - Rapid field heat removal
 - Segregated low risk/high care processing
 - **Good chill control: distribution and storage**
 - **Appropriate (short) shelf lives**
- Traceability at UK retail standards
- Auditing/enforcement
- Cultural change in certain supply chains



***The centre of excellence for the
chilled food industry***

www.chilledfood.org

cfa@chilledfood.org

