Storage for processing: future challenges and opportunities

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Overview

• Potato Processors’ Association
• GB Potato Processing sector
• Key potato quality requirements
• Key potato storage requirements
• Future challenges and demands on storage
Potato Processors’ Association (PPA)

The PPA is the trade association for the UK manufacturers of frozen chips and potato products, potato crisps, potato based snack products and dehydrated potato.
The GB Potato Processing Sector

- 63% of GB potato consumption is in processed form.
- 30% of the GB crop is purchased by processors. That’s circa 1.7 million tonnes annually.
- Consumer sales value of UK processed potato market circa £4 billion (retail and foodservice).
- In 2016 the savoury snack sector exported more than £116M worth of products

Source: AHDB Potatoes Market Intelligence
Key potato quality requirements

Specifics vary by market, product type, producer and product or customer specification

• Defects
• Dry matter
• Fry colour
Key potato storage requirements

- Efficient and safe store buildings and practices
- Store hygiene
- Good crop quality going into store
- Store environment control
- Pest and disease control
- Crop monitoring, sampling and QC
- Sprout suppression
- Processing quality out of store
Future challenges and demands on storage

People
• Available
• Trained
• Competent

Good business
• Cost management
• Waste reduction

Regulation and Stewardship
• Health & safety
• Employment
• Food safety
• Store treatments
Good business

Energy efficiency
• Store design; thermal insulation; fans; inverters; etc.
• Monitoring; auditing; benchmarking
• Renewable energy
• Operating procedures

Store monitoring
• Potato (processing) quality – know the crop going into store and then manage it the best way
• System run hours – when, why? Understand and manage for best crop quality and energy efficiency
• Diseases - earlier detection and management?
• Dormancy and sprout development
Regulation and Stewardship

Health & safety

Employment

Food safety:
  • Red Tractor
  • Plant protection products (PPPs)
    - In field; in store
  • Contaminants
    - Physical, biological, chemical

Store treatments:
  • CIPC
  • Alternatives to CIPC
  • Others
Sprout suppression

Processing quality management requires warmer storage temperature, which encourages sprout growth

Sprouting must be managed to:
- Maintain quality e.g. fry colour
- Avoid weight loss
- Maintain turgor
- Avoid compression bruising
- Prevent product contamination

Chlorpropham (CIPC) is the most widely used sprout suppressant
- Alternatives to CIPC must NOT affect other quality parameters
- Stewardship, research and label changes to ensure that CIPC remains available
Sprout suppression (cont.)

All PPA members support stewardship, encourage best practice in their supply chains and source potatoes from growers who are members of Red Tractor.

Ageing stores challenges
- Adaptions, upgrades and new stores for:
  - Efficient operation
  - Effective sprout control
  - Reduced waste
Challenges for new alternatives to CIPC

Examples: Ethylene, spearmint oil, 1,4-DMN, Smartblock…others?

A challenge to step from small laboratory trials to large, commercial stores

Chemical regulatory approval challenges

New chemicals should not:
- Give a taint to product (off or different flavour/smell)
- Impact on fry colour/sugars
- Reduce efficacy of sprout control

Need to develop new protocols
- Application management for optimal efficacy
- Effect of storage environment on efficacy after application
- Application in sequence with CIPC?

Higher costs?
Research & Knowledge Transfer Focus

**Sequential use of sprout suppressants** – how best to employ new actives; implications for taint and quality management

**Bulk storage** – solution: low speed recirculation of CIPC through the crop pile using inverters (VFDs)

**Box storage** is more challenging and optimal applications research is critical
  - Challenge to maintain even and effective air through boxes
  - Range of store design, box type and stacking pattern makes it more challenging
  - CIPC label changes

**Development of varieties with long dormancy or low temperature storage capability**
  - Breeders have a long list of objectives
  - May be a challenge to combine with other key desirable characteristics e.g. PCN resistance

**Novel technologies**
Any questions?

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