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## DNA as a Verification Tool for IT based Meat Traceability Systems



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Meat Traceability Seminar

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# The many facets of traceability



- Food Safety
  - Identify source of problem
  - Risk Management - more effective management of recalls
- Verify authenticity – consumers increasingly buying the product story (Welfare, Country of Origin, Sustainable Production)
- Consumer communication – building trust!
  - ‘We are proactive in managing product quality & safety’
  - ‘We stand behind the claims we make’
- Brand differentiation
  - We have the most effective traceability systems!
- Supports international trade
- Value chain alignment
  - Effectively communicating signals along the supply chain

# Traceability system key components

- Product Identification
- Premise Identification
- Data capture & management



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# DNA as an identifier

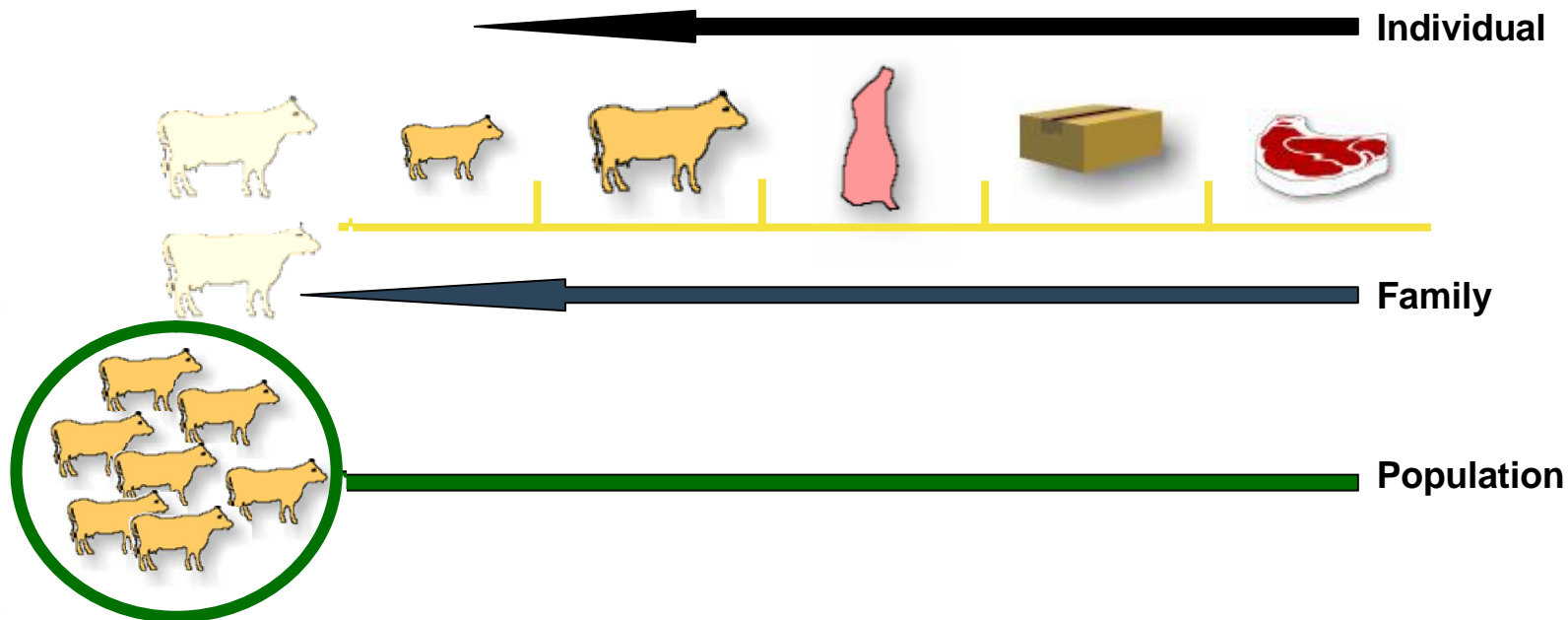
- DNA as a unique product identifier
  - Each animal (and its byproducts) is genetically unique
  - DNA profiling enables us to read the ‘DNA barcode’
- DNA ID is
  - Tamper proof
  - Accurate & Precise
  - Permanent
- Disadvantages
  - With current technology it cannot be read in real time
  - Potential expense in ‘reading the DNA’
  - Need to collect samples to read DNA barcode



# DNA Traceability concepts



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1. Traceability to the individual of origin

Comparison of meat & individual animal profiles

2. Traceability to the family of origin

Comparison of meat & sire/dam profiles

3. Traceability to a population of origin

Comparison of meat to population profile

Higher

Higher

Lower



Lower

Lower

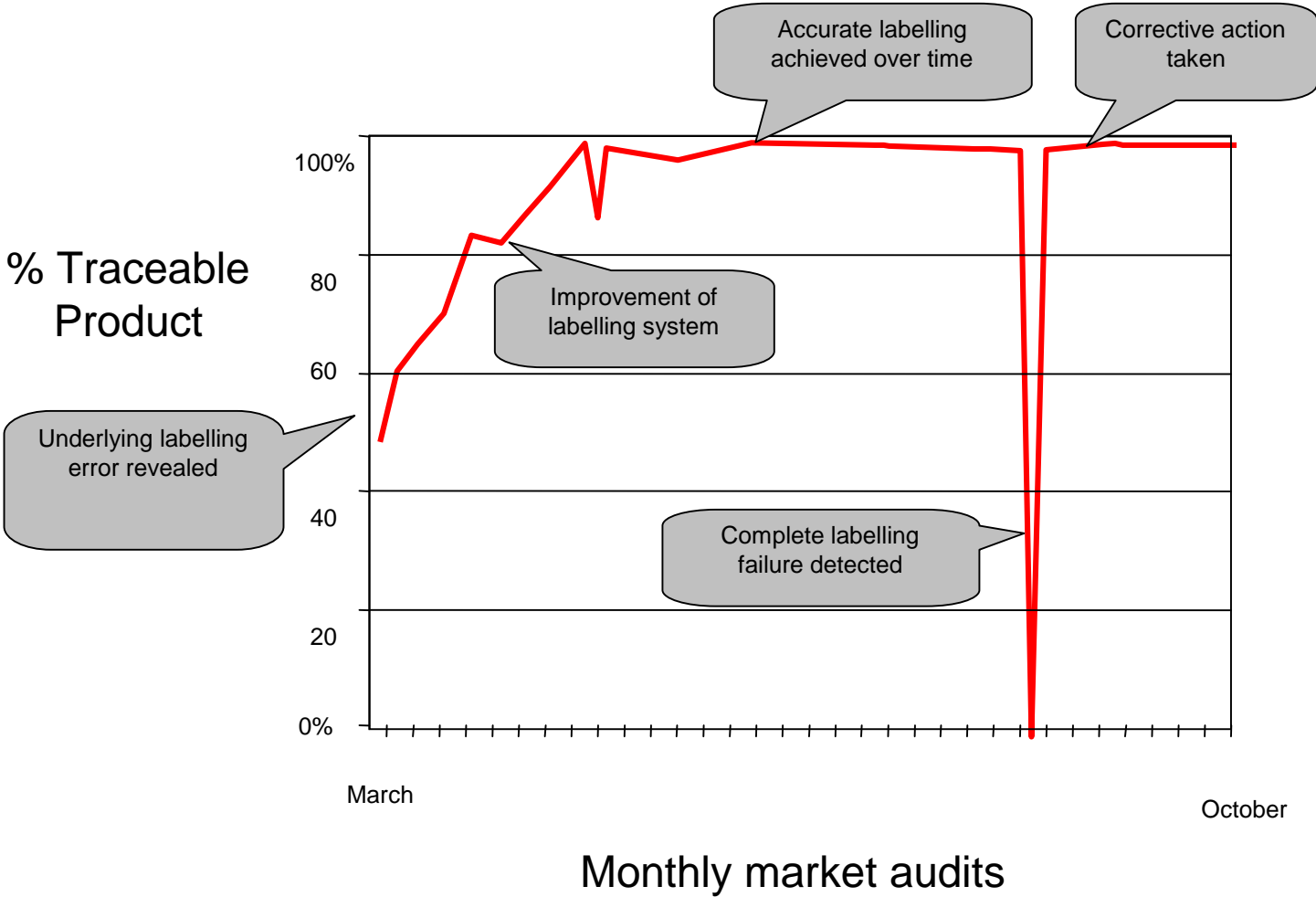
Higher

Precision

Price/  
Head

Test  
Complexity

# Traceable Product Vs Traceable Label



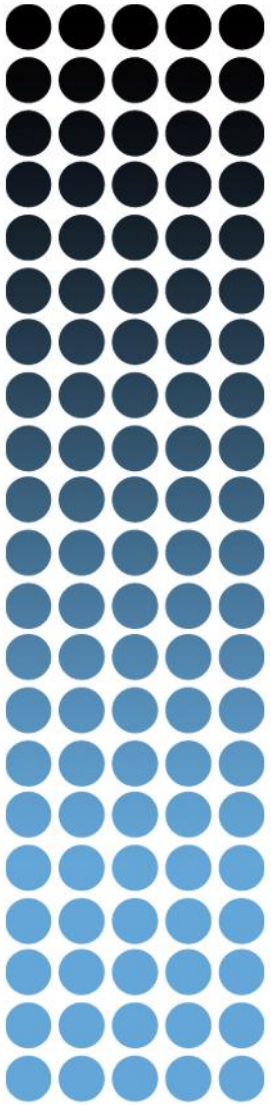
# DNA based traceability



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- DNA ID is most powerful when coupled with conventional data management systems to deliver full traceability
  - Very powerful ‘traceback’ capability – back to individual or farm
  - Monitor product rather than label flows
    - Verify product origins
  - Authenticate associated product attributes
- Key Features of DNA based systems
  - **Guaranteed** traceability to the animal/herd of origin
  - No modification to existing production practices
  - No legacy infrastructure – low cost of ownership

# Benefits of a DNA Approach



- DNA is the best biometric to identify/trace the product
  - Scope - Span the full meat-chain birth to final product
    - Works with cooked products
  - Precision – Potential to trace meat back to the animal/farm of origin
  - Accuracy - Trace products as distinct from associated labels
  - Verify accuracy of labeling
- Low-cost of entry – Doesn't require any in-plant infrastructure
- Consumer Marketing – DNA is understood by many consumers making it a potentially effective marketing tool

# DNA Certification program for Irish Pork

