Fresh Logistics: New Opportunities with an integral approach

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Agenda

• The agriculture supply chain
• Dominant Trends in agriculture
• Trends in agriculture logistics
• Fresh logistics: An impulse for Supply Chain – redesign
• Case descriptions
• Conclusions
Extending fresh borders

Modality shift: From airplane to reefer container

The Agriculture Supply Chain

Primary Production  Trade / Storage  Processing  Retailing / distribution
Dominant Trends in Agriculture Supply Chains

- Dominant power of big retailing companies
- Supply Chain Consolidation
- Outsourcing
- Increased focus on traceability
- Wider sourcing of supplies: more and more globally
  - Lower prices (low cost countries)
  - Diversification of the product range beyond what can be produced locally
  - Year round product availability
  - Advances in IT have increased the visibility of long supply chain and therefore easier to manage

Trends in Agriculture Logistics

- Global supply networks
  - Spatial concentration of production: economies of scale.
  - Inventory centralization
  - Longer distance movements: trunk/line – haul and local delivery operation.
  - Client order decoupling point: “To get closer to market”
Trends in Agriculture Logistics

“Efficiency”
- Demand push: forecast
- Floating stock
- Modularity
- Value added services
- Variety of transport modes

“Responsiveness”
- Demand pull from POS data
- Quick Response / ECR
- Break bulk / pre-pick and cross – dock via RDC’s
- Flexible production schemes
- Predominantly road transport

Product Quality

Fresh Logistics: Trade-off analysis

Costs

Service
Trends in Agriculture Logistics

• Technological innovation
  - Microporcessor Controller
  - Controlled Atmosphere
  - RFID

Trends in Agriculture Logistics

• Intermodality / modal shift
  - Wider sourcing of supplies: sea/air – road transport
  - Supply chain costs: intense competition commodities
  - Increased transaction - volume due to consolidation
  - Limitations road transport: congestion, pricing, regulation, …..
Fresh Logistics: An impulse for Supply Chain redesign

- Simulation and scenario – analysis: Aladin

Agents:
- Food factory or grower: biological variation
- Transportation unit: type of transport + settings?
- Storing / distribution unit: climate control settings?
- Food product: specific product + quality decay model
- Demand controller

"Impact of different supply chain configurations / use of different transport modes on: shelf life, service, cost": Potential Solutions
Fresh Logistics: An impulse for Supply Chain redesign

• Testing

• Pilot scale testing
Fresh Logistics: An impulse for Supply Chain redesign

Case: From air cargo to deep sea shipping

Replace air by sea transport:
- Product: initial quality, cv’s
- Climate conditions
- Packaging
- Logistics:
  - lead time
  - organisation
Case: From air cargo to deep sea shipping

Case: Optimal fresh cut pineapple chain Ghana – Rotterdam

Scenario 1: Boat transport chain

Sea harbour Ghana → Rotterdam

Local production → Barendrecht (portioning and order picking) → Importer (storage)
Agro parks: A systems innovation in the concept of urban agrofood production and processing

- Spatial clustering of different agro-production chains
- Spatial combination of agro-processing and non-agro functions (building, industrial estate or region)
- Scale increase in production further enables industrial processing
- Application of principles of industrial ecology, i.e. mutual use of waste and by-products
- Reduction of transport and veterinary risks
- CRUX: clustering provides context for sustainable innovations
Basic principle: Systems redesign while focusing on issues that matter in sustainable development.

- **Planet**: From focus on production chain towards focus on flows of energy and matter.
- **People**: From focus on the technical system towards focus on organisation and knowledge management.
- **Profit**: Focus on integral production network for improved chain relations, cost reduction and quality management.
Enhancing Export Competitiveness of Asian Fruits 2006

Gehu Lake
Eco-Agro sightseeing district (Agropark)
Central residents and service district
Green environment industrial district
Ecological recreation district

- Park is part of suburban development plan for Changzhou City:
- Replacement existing agricultural holdings elsewhere in the polder.
- Recreation and sightseeing function for local residents.
- Theme in the park: Holland landscape and agriculture.

Agro Park: Examples
WAZ-Holland Park, Changzhou, China

WAZ-Holland Park (China)

- Spatial clustering of Chinese and Dutch Holdings.
- Intensive exchange of remainders and byproducts in central processing unit.
- Combination with market place and sightseeing park
- Planned start: 2007

Central processing of remainders and byproducts
Vegetables in multi-story greenhouse
Chicken
Turtles
Dairy
Composting facility
Pot plants
Mushrooms
Deer
Bonsai

Enhancing Export Competitiveness of Asian Fruits 2006
Conclusions

- Agrifood chains & networks are getting more dynamic, insecure and complex
- Robust logistic redesign needs a multidisciplinary and integral approach
- Modeling, visualization & simulation tools can connect different disciplines
- Type of cases: from pragmatic, business driven to visionary and ambitious
Thanks for your attention