

## The Royal League

# Air Technology and Tropical Fruits



Wir entwickeln und produzieren die  
effizientesten Ventilatoren für die Zukunft

# ZIEHL-ABEGG



## Die Königsklasse

*der Lufttechnik,  
Regeltechnik und Antriebstechnik*

Einzigartige  
Kunststoffproduktion  
für bionische Hightech-  
Ventilatoren

Movement by Perfection

**ZIEHL-ABEGG** 

## The Royal League

# Contents

- Tropical & Exotic Fruits; cycles
- Value Chain Stages and Ventilation
  - Air Technology in the supply chains
  - Stages and Ventilation Systems
- Ripening and Degreeding Tropical Fruits
- Storing and Preserving Tropical Fruits
- All in all
- ZIEHL-ABEGG: a visión of Food
  - Innovation
  - Sustainability





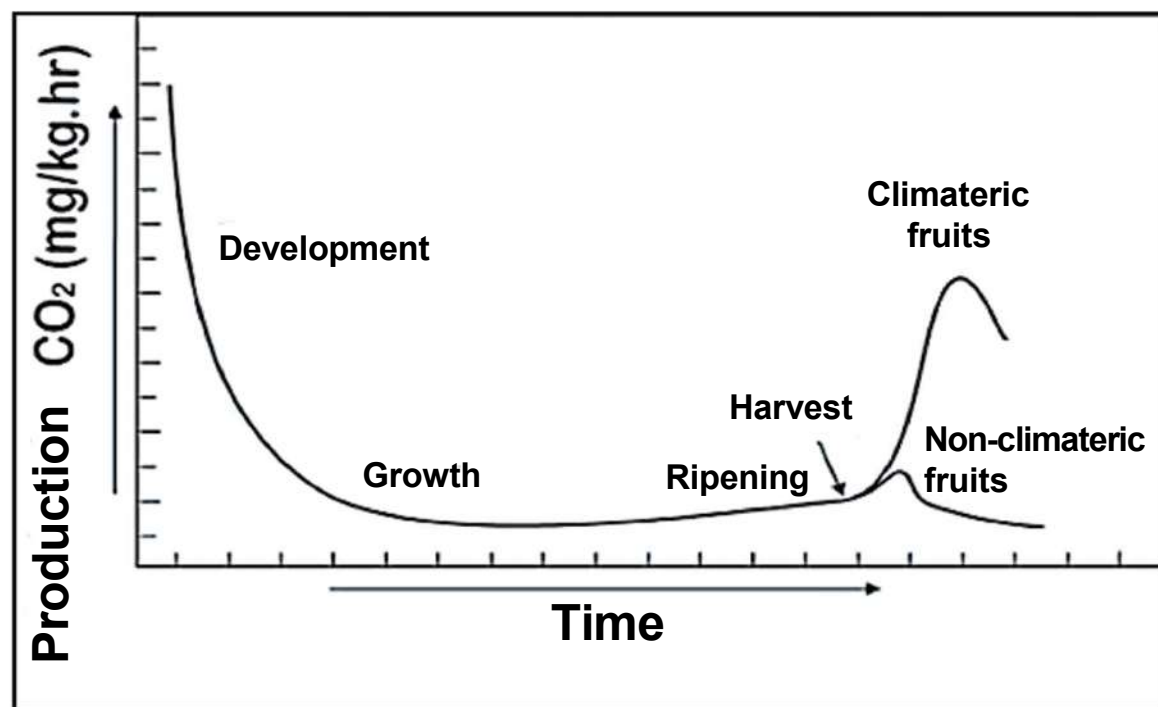
## The Royal League



### Tropical & Exotic Fruits

# Air Technology and Tropical Fruits

## Tropical & Exotic Fruits; cycles



Source: Yahía, 2017

Climacteric	Non-climacteric
Avocado	Pinapple
Banana	Litchi
Cherimoya	Carambola fruit
Guava	Tamarillo
Papaya	Mangosteen
Guanabana	Rambutan
Passion fruit	Pineberry
Sapote	Salacca/Snakefruit
Durian	Buddha's hand
Jackfruit...	Dragonfruit...

Source: Kitinoja and Kader, 2003

# Air Technology and Tropical Fruits

## Tropical Fruits: Value Chain Stages and Ventilation Systems

- Tropical fruits are delicate living beings, demanding care until their consumption
- Postharvest operations determine fruit quality, not only preserve, also enhance it
- Postharvest losses happen at each stage of the supply chain, aggravating with each operation: harvesting, handling, transport, packaging, storage, retail and consumption
- Average losses: 25% developed countries – 60% developing countries [5, 100]%
- Reducing the PH losses in the supply chain add value, in terms of quantity, quality and homogeneity of the tropical fruits

# Air Technology and Tropical Fruits

## Air Technology in the supply chain





# Air Technology and Tropical Fruits

## Air Technology in Tropical Fruits Supply Chain



# Air Technology and Tropical Fruits

## Ripening Climacteric Tropical Fruits

- Even gases distribution:  $O_2$ ,  $CO_2$ , Ethilene
- Monitoring, controlling, self-reactive smart ventilation systems
- Homogeneous batches, when and where they are needed
- High efficiency → energy saving
- Integrated management → value added





# Air Technology and Tropical Fruits

## Degreening Non-Climateric Tropical Fruits

- Destratification: T, RH, gases; even distribution
- Monitoring, controlling, self-reactive smart ventilation systems
- Homogeneous batches, when and where they are needed
- High efficiency → energy saving
- Integrated management → value added



# Air Technology and Tropical Fruits

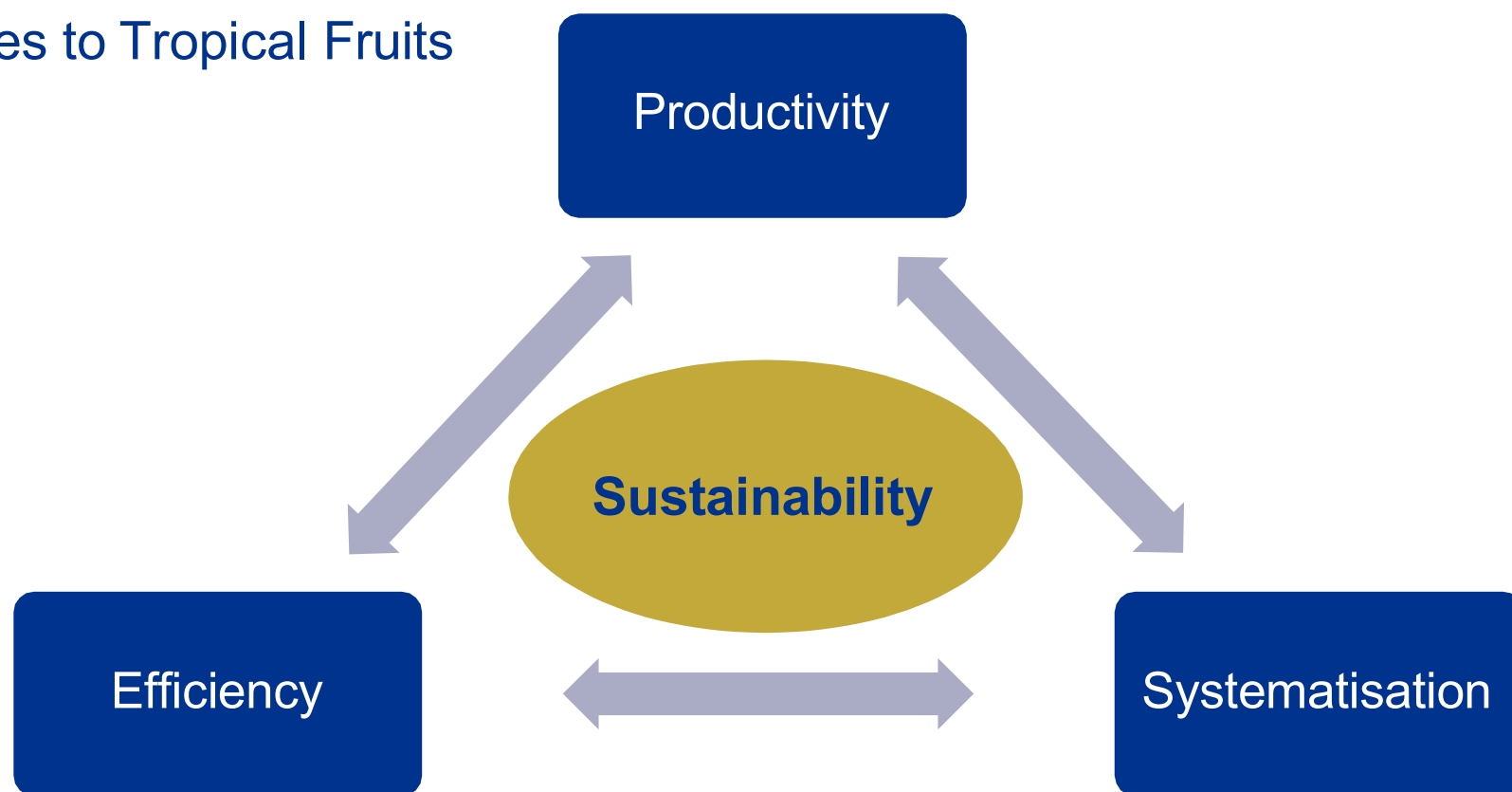
## Storing Tropical Fruits

- Cold Rooms – Cold Chain
  - Air Flow
  - Air Throw
  - Air Velocity
  - Homogeneous Temperature
  - Jammed fans
- Retailing tropical fruits cooling



# Air Technology and Tropical Fruits

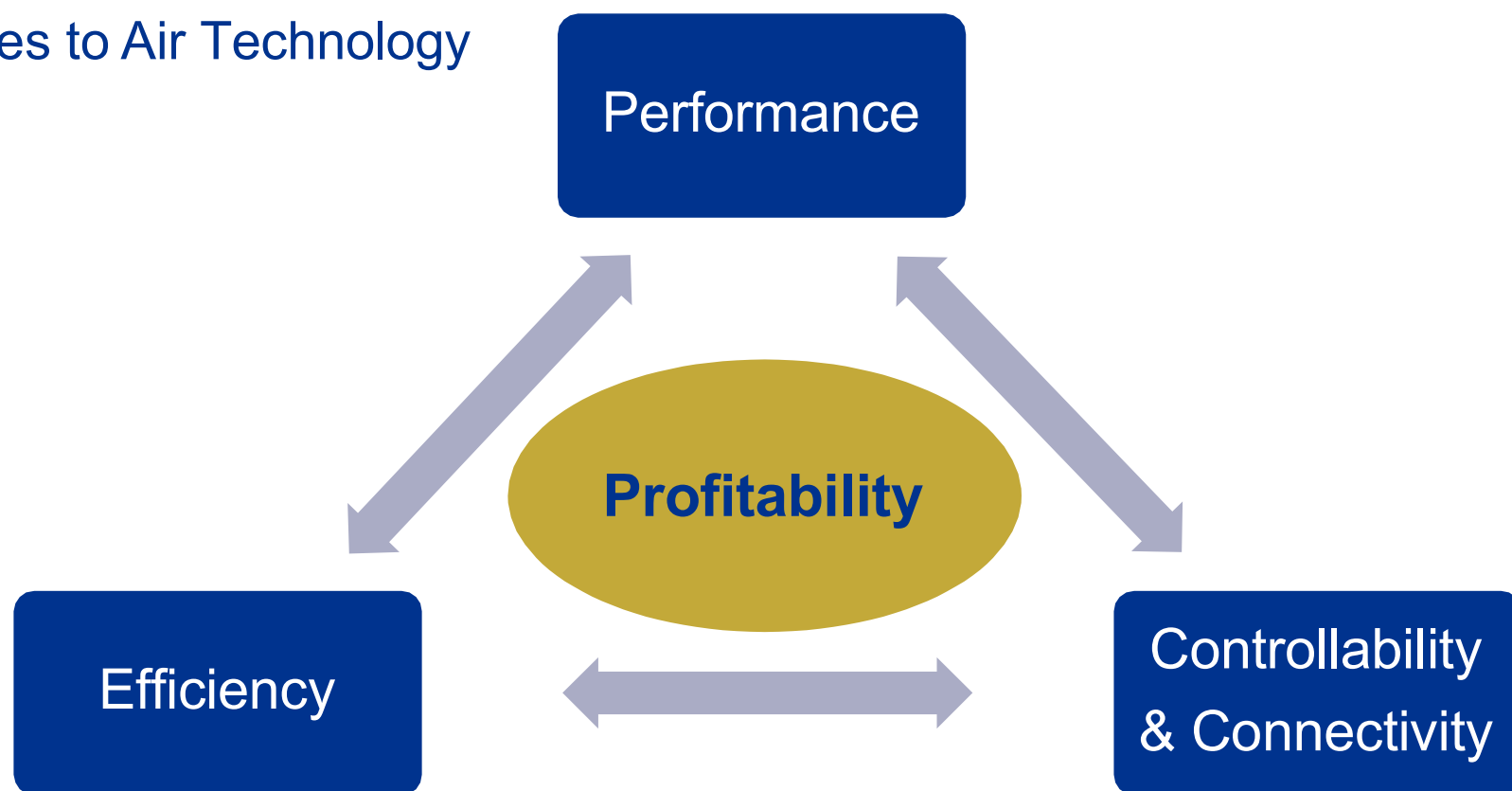
All in all, when it comes to Tropical Fruits





# Air Technology and Tropical Fruits

All in all, when it comes to Air Technology



## The Royal League



### ZIEHL-ABEGG intro

# Sustainable Innovations for Food

## ZIEHL-ABEGG intro

- ZIEHL-ABEGG group → supercentenary company
- Foundations:
  - Innovations
  - Sustainability





# Sustainable Innovations for Food

## Innovation

- Finding opportunities by solutions to unsatisfied needs, specially those unexpressed ones
  - Disruption

## Sustainability

- Ensuring profitability, environmental health, and social and economic equity

## Sustainable Innovations

- Pursuit of present needs without compromising the needs of future generations
- Systems thinking, holistic view; impact around (other companies, environment, stakeholders, communities,...)
- Vision deeply embedded in the company's culture

# Sustainable Innovations for Food

## ZIEHL-ABEGG Innovations

- Grounded on one idea: EFFICIENCY
  - Air movement efficiency → Aerodynamics
  - Driving systems efficiency → Electrical motors
  - Integration of both concepts effectively and keeping the idea of efficiency:

$$\eta_T = \eta_a \cdot \eta_d \cdot \eta_t$$

- Scenario of ZIEHL-ABEGG development, our argumentative line into our traditional markets, building, later IT or mobility solutions
- The ultimate frontier is FOOD

# Sustainable Innovations for Food

## Why Food?

- Because it is a major contributor to economy, in Europe and worldwide
- Because it is the background of any other human activity in this planet with ever-growing population and limited, over-exploited resources
- Because, historically, it has been the last target of the new technologies

Culture

Timing



## The Royal League



**KEEP FRUIT LIFE LONGER AND  
SAVE ENERGY ZIEHL-ABEGG  
TECHNOLOGY**

Paz García  
Head of Food Market Segment  
ZIEHL-ABEGG S.E.

[www.food.ziehl-abegg.com](http://www.food.ziehl-abegg.com)

**Thank you for your attention!**

<https://www.ziehl-abegg.com/en-de/market-segments/fruits-vegetables-flowers>



Movement by Perfection

**ZIEHL-ABEGG**