



Reaping the Fruits of Global Growth

Global Trends in the Fruit Sector and the
Implications for Breeding

Cindy van Rijswick – 15 April 2019



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Rabobank Services all Links in the Food & Agriculture Value Chain



Farm inputs

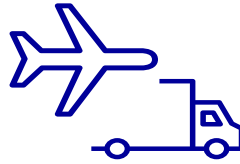
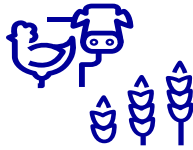
Primary
sector

Trade & export

Processing

Foodservice

Consumer



Financing, Knowledge, Networks and Innovation

Present in 40+
countries

Global F&A loan
portfolio of about
EUR 100 billion

Supporting access
to finance in
developing
countries

Supporting start-
ups with our own
events and funds

RaboResearch Food & Agribusiness



Agri
Commodity
Markets



Animal
Protein



Beverages



Consumer
Foods



Dairy



F&A Supply
Chains



Farm
Inputs



Fresh
Produce



Grains &
Oilseeds



Sugar

A true F&A bank

Rabobank is the world's **leading** financial services provider for F&A. **RaboResearch Food & Agribusiness** is our **dedicated F&A research department**, central to the bank's vision and strategy.

It's who you know

Our broad network gives us access to **all players in the market**—and unique knowledge of **innovation, local markets, and risk/reward balances** along the chain.

Strategic research and advice

Our analysts combine **in-depth market and sector research** with **strategic advice** to facilitate unique C-suite discussions on **strategic business development**.

A global network...



Global view, local insight

Our analysts have **comprehensive** agribusiness knowledge—from **farm to fork**, from **beef to beverages**, and from Melbourne to the Midwest.

Strength in numbers

With 90 analysts all over the globe, we are **one of the largest** commercial F&A research hubs **worldwide**, supporting **rural and wholesale** clients

A unique position

Our extensive links to **business, academic research, and government** allow us to fully leverage this 'golden triangle' for our clients.

of **local** experts

Variety Development Plays a Prominent Role in the Fruit Sector



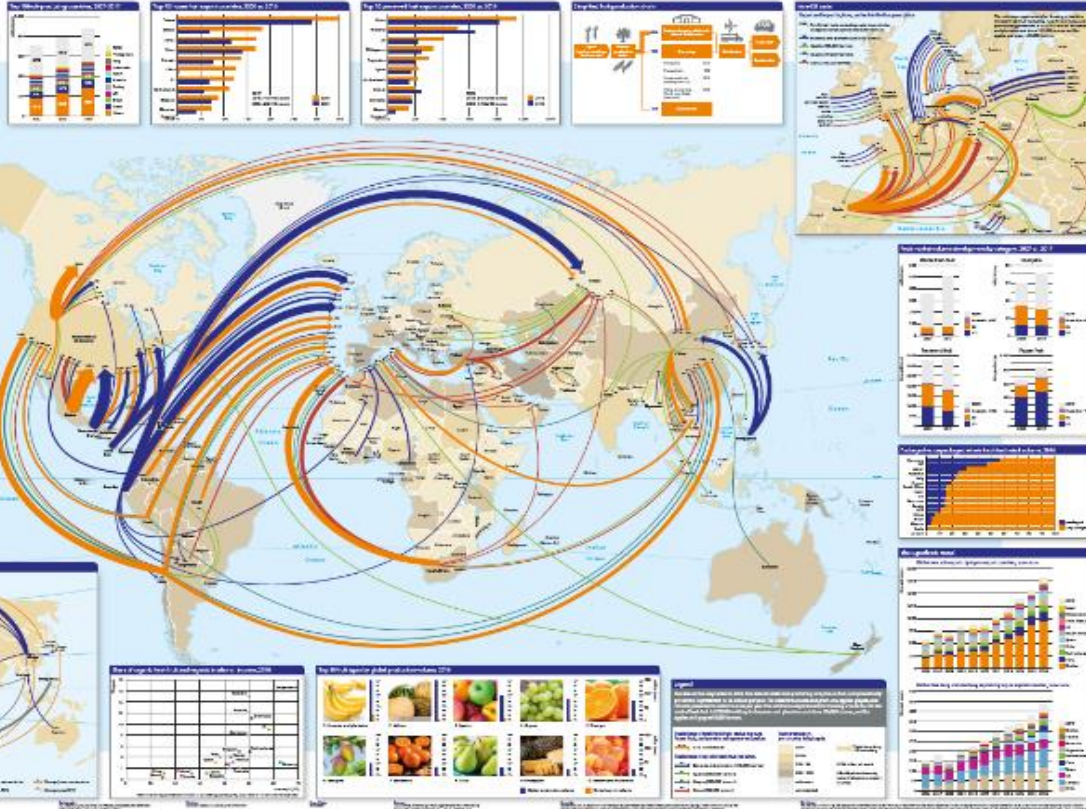
The Fruit Business is (Increasingly) a Global Business



World Fruit Map

World Fruit Map

The World Fruit Map is a comprehensive overview of the global fruit trade. It shows the main fruit export and import countries, the volume of trade, and the main trade routes. The map is color-coded by fruit type: bananas (yellow), grapes (purple), apples (red), and other fruits (orange). The map is also divided into regions: North America, South America, Europe, Africa, Asia, and Oceania.





Global fruit
production
+ 2% per year

Global fresh fruit
trade
+ 7% per year

Food retail

Market
access

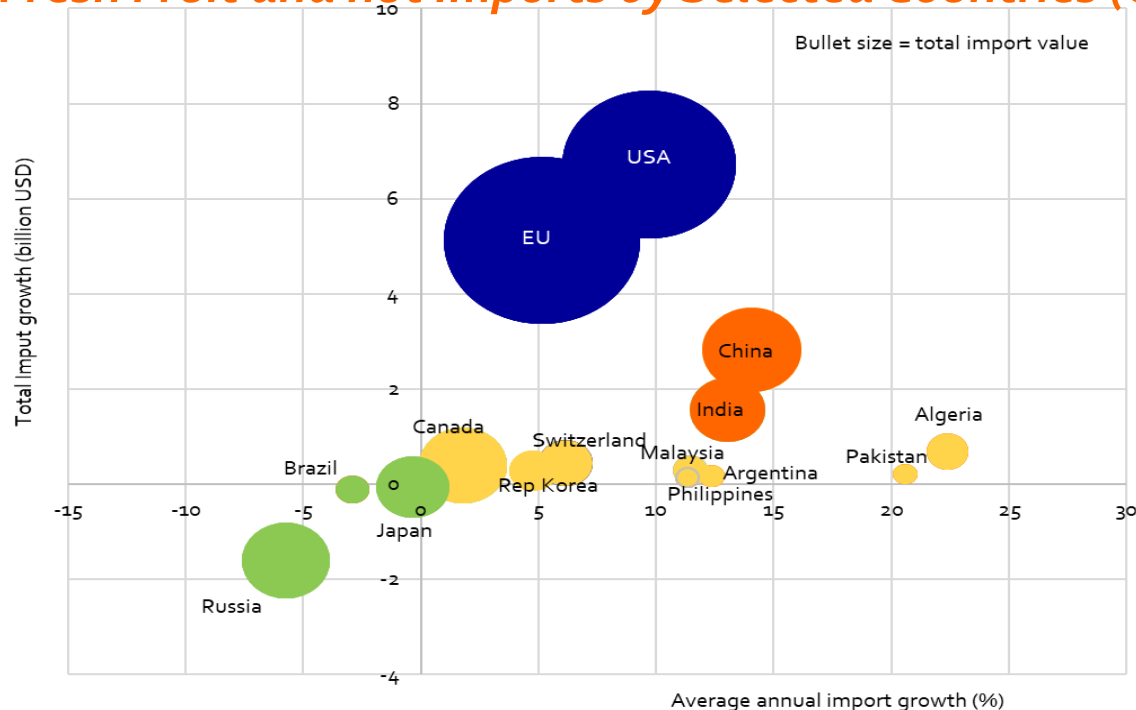
Logistics

Consumer
preferences

Few big (Import) Growth Engines and Many Small Ones in Global Fruit Trade



Fresh Fruit and nut Imports by Selected Countries (Growth Since 2010)

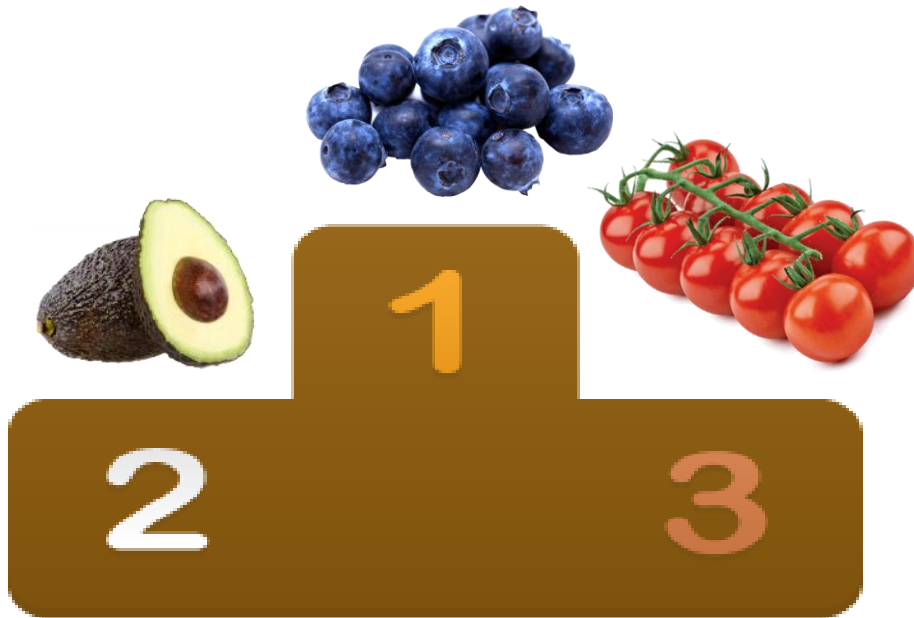


Source: Rabobank based on UN-Comtrade, 2018. Note: Circle size represents a country's total imports in 2017.

To Meet Shopper Preferences, International Trade is a Must



Top-3 Fresh Produce Growth Categories in Dutch Supermarkets



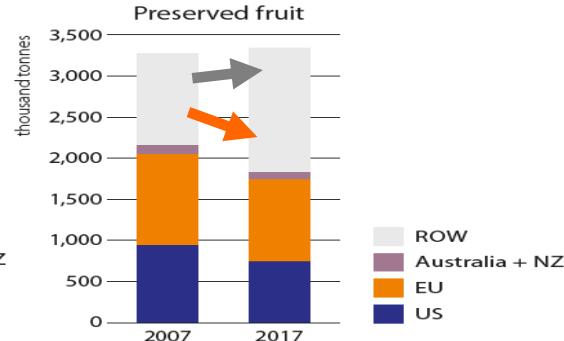
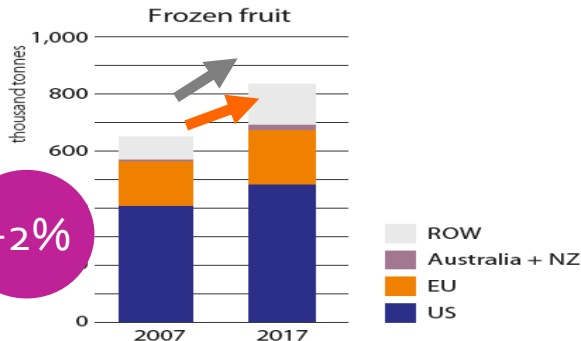
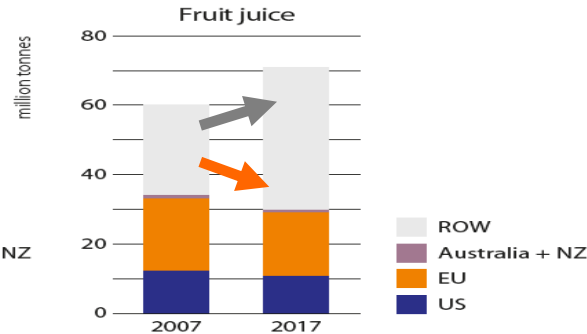
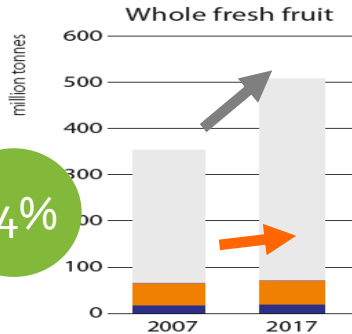
*Value growth is
outpacing
volume growth*

*Healthy, 'snackable',
photogenic, local, new,
niche, sustainable*

Growth in Fresh and Frozen Fruit Exceeds Canned Fruit and Juice Growth



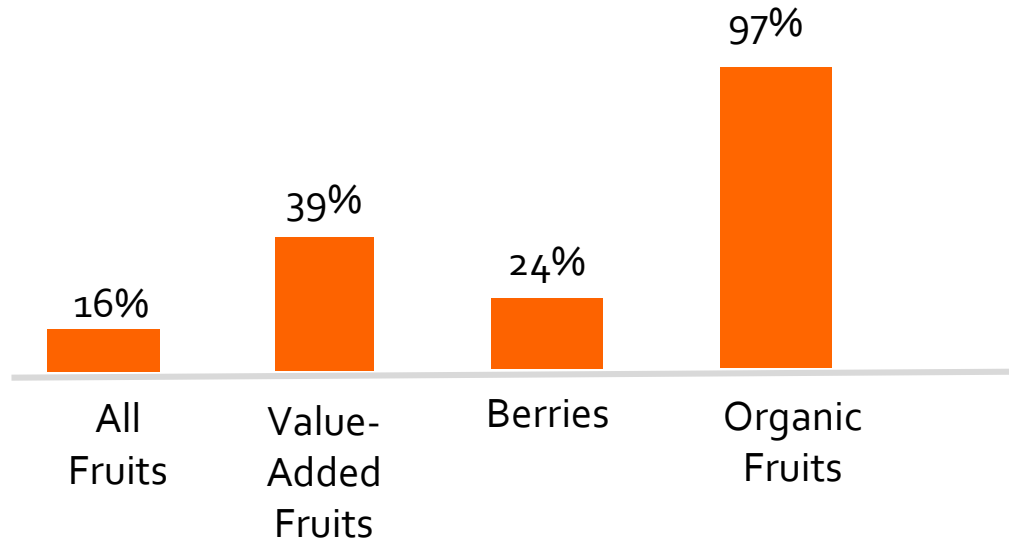
Fruit market volume development by category, 2007 vs. 2017



High Value, Prepared, and Organic Fruits are Outperforming in US Retail

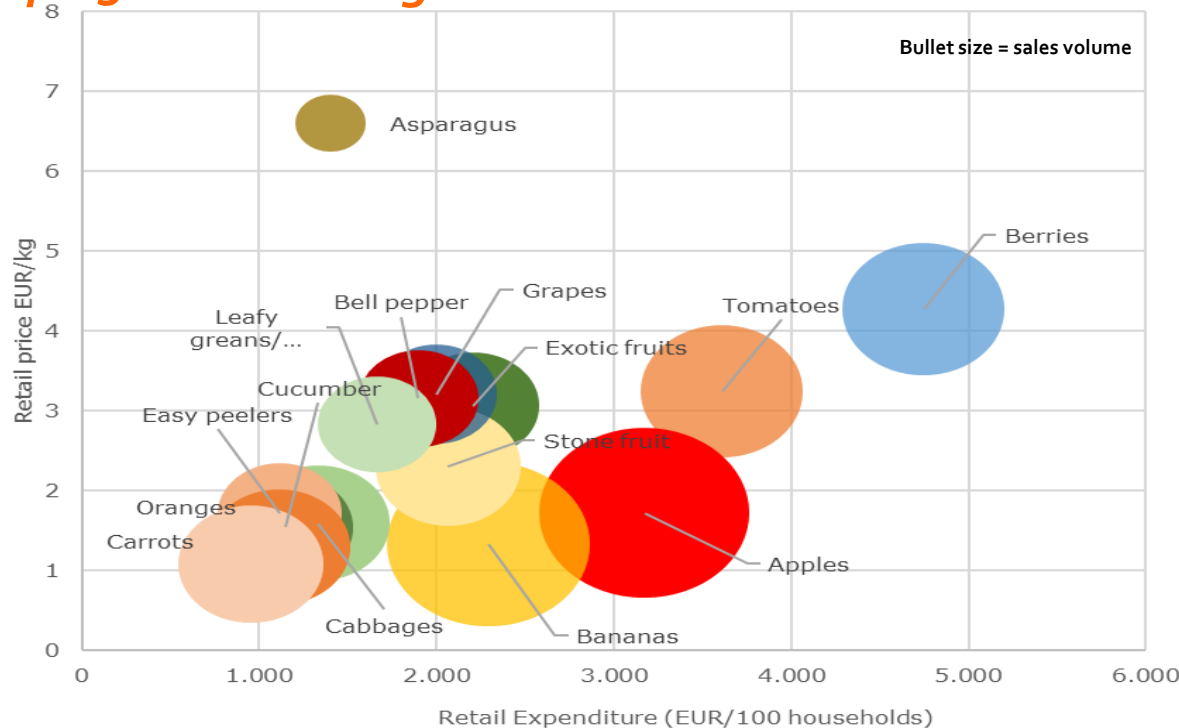


% Changes in Fresh Fruit Retail Spend, USA 2012-2017



High Volume and/or High Value Categories Important for Retail

Top-15 Fruit and Vegetables in German Retail Ranked by Value



Essentially 100% Perfection is required, but the Supply Chain is Challenged



Availability of resources:
labour, water, fertile land



Climate, weather

Geopolitics



Food safety



(Sustainability)
requirements

Stable income



Competition


Romaine lettuce E. coli outbreak traced to
California farm

An irrigation reservoir was found to be contaminated.



Sustainability is High on the Agenda

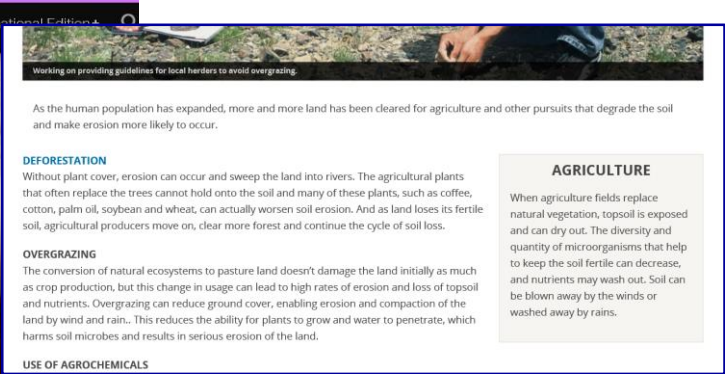




CNN Health » The 2019 pesticide 'Dirty Dozen' fruits and vegetables

Photos: The 2019 pesticide 'Dirty Dozen' fruits and vegetables

Strawberries – Strawberries topped the list in 2019 for the fourth year, remaining contaminated with pesticide residues, even after being washed.



Working on providing guidelines for local herders to avoid overgrazing.

As the human population has expanded, more and more land has been cleared for agriculture and other pursuits that degrade the soil and make erosion more likely to occur.

DEFORESTATION

Without plant cover, erosion can occur and sweep the land into rivers. The agricultural plants that often replace the trees cannot hold onto the soil and many of these plants, such as coffee, cotton, palm oil, soybean and wheat, can actually worsen soil erosion. And as land loses its fertile soil, agricultural producers move on, clear more forest and continue the cycle of soil loss.

OVERGRAZING

The conversion of natural ecosystems to pasture land doesn't damage the land initially as much as crop production, but this change in usage can lead to high rates of erosion and loss of topsoil and nutrients. Overgrazing can reduce ground cover, enabling erosion and compaction of the land by wind and rain. This reduces the ability for plants to grow and water to penetrate, which harms soil microbes and results in serious erosion of the land.

USE OF AGROCHEMICALS

AGRICULTURE

When agriculture fields replace natural vegetation, topsoil is exposed and can dry out. The diversity and quantity of microorganisms that help to keep the soil fertile can decrease, and nutrients may wash out. Soil can be blown away by the winds or washed away by rains.



BY TOM KYLE
Thursday 11th January 2018, 11:34 London



War on plastic heats up in UK

With pressure mounting on the UK government to act on plastic pollution, prime minister Theresa May has announced a plan to eliminate all avoidable plastic waste within 25 years

More than 220,000 people in the UK have signed a Change.org petition lobbying the government to force the country's retailers to cut out the use of plastic packaging on fruit and vegetables.

"The UK government rightly stopped the supermarkets from offering carrier bags for free and they also have the power to stop retailers from offering fruit and vegetables pre-packed in plastic packaging, which is not necessary and causes pollution," the petition states.

The debate over whether the benefits of packaging, especially in extending a product's shelf-life, outweigh the damage caused to the environment by waste and pollution has been raging for some time.

However, pressure has been steadily growing on the government to act since the hugely popular Blue Planet II documentary series highlighted the



Chilean villagers claim British appetite for avocados is draining region dry


UK demand for fruit increased by 27% last year alone, prompting accusations that growers are illegally diverting rivers and leaving locals without water



Availability of Labour is a Major Issue



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*More and more,
machine will take over
from man...*

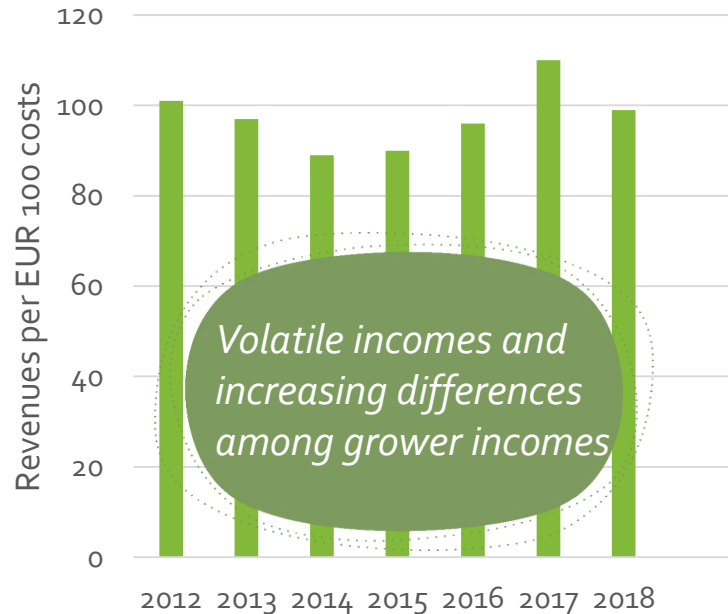
*...but production
systems and varieties
need to adapt*

For Many Fruit Crops Production Systems are Advancing



Fruit Farming Businesses are (Slowly) Changing

Profitability Dutch Fruit Growers



- Many small growers, few large ones
- Volatile profitability

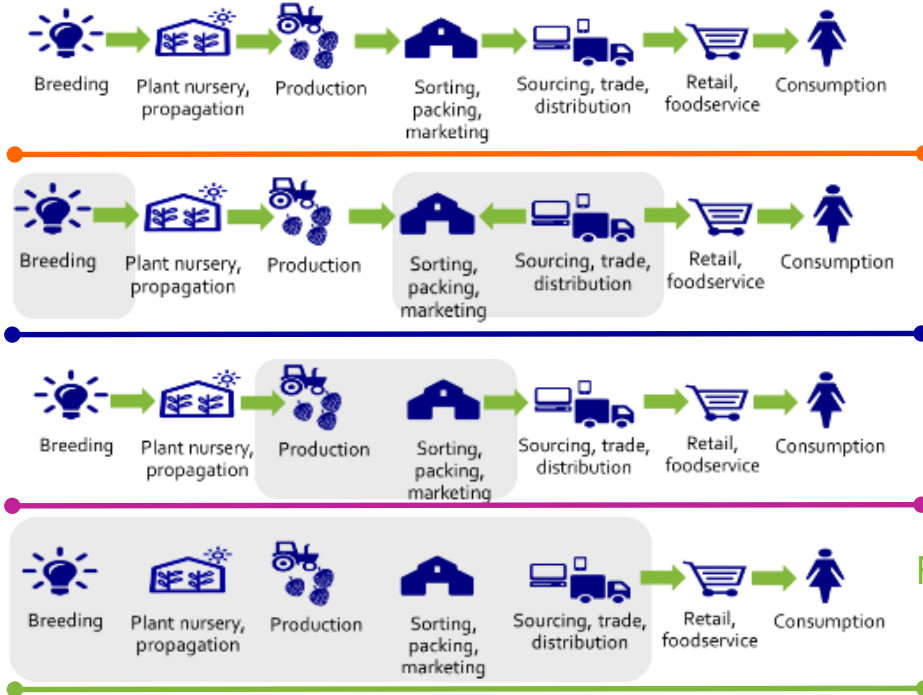


- (International) corporates
- Integrated companies
- (Flexible) partnerships
- More investor involvement

Supply Chains Become More Integrated, Shorter and Transparent



Current Supply Chain Models



Trading model

Semi-integrated supplier model

Semi-integrated grower model

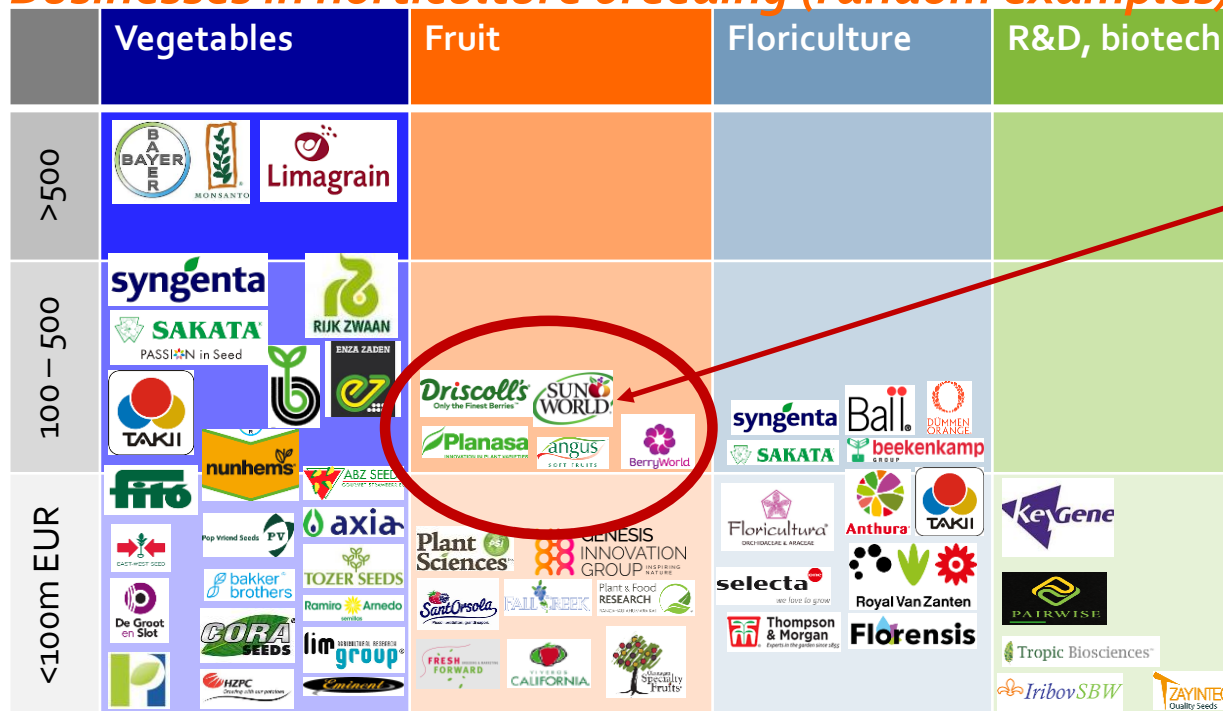
Fully integrated supply chain model

Future Supply Circle?



Fruit Breeding is Often an Integral Part of the Fruit Supply Chain

Businesses in horticulture breeding (random examples)



Characteristics:

- Fragmented playing field
- High dominance of universities
- Many integrated players
- Often very specialised
- Some consumer branding

Reaping the Fruits of Global Growth: not as Easy as Pie



Market value growth:
convenience, snacks, organic
(or other sustainable label),
superfoods, premium, tasty,
personalised etc.



Major challenges:
labour, water, crop
protection, soil, integrating
technology and innovation

Opportunities for breeders:

- Many opportunities consumer and retail
- Urgent grower needs (water, labour, crop protection)
- Vertical cooperation
- Building more scale and power

Challenges for breeders:

- Long period to commercialise
- Nursery stage essential
- Growers only replant occasionally
- Acceptance and regulation new breeding techniques



Thank you for Your Attention

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