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## Breakout Session Seeds & Traits

**Garth Hodges**

Vice President  
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Canola Seeds & Traits

**Dr. Andreas Sewing**

Vice President  
Research & Development  
Vegetable Seeds

BASF Capital Markets Day  
Ghent, Belgium, September 27, 2019

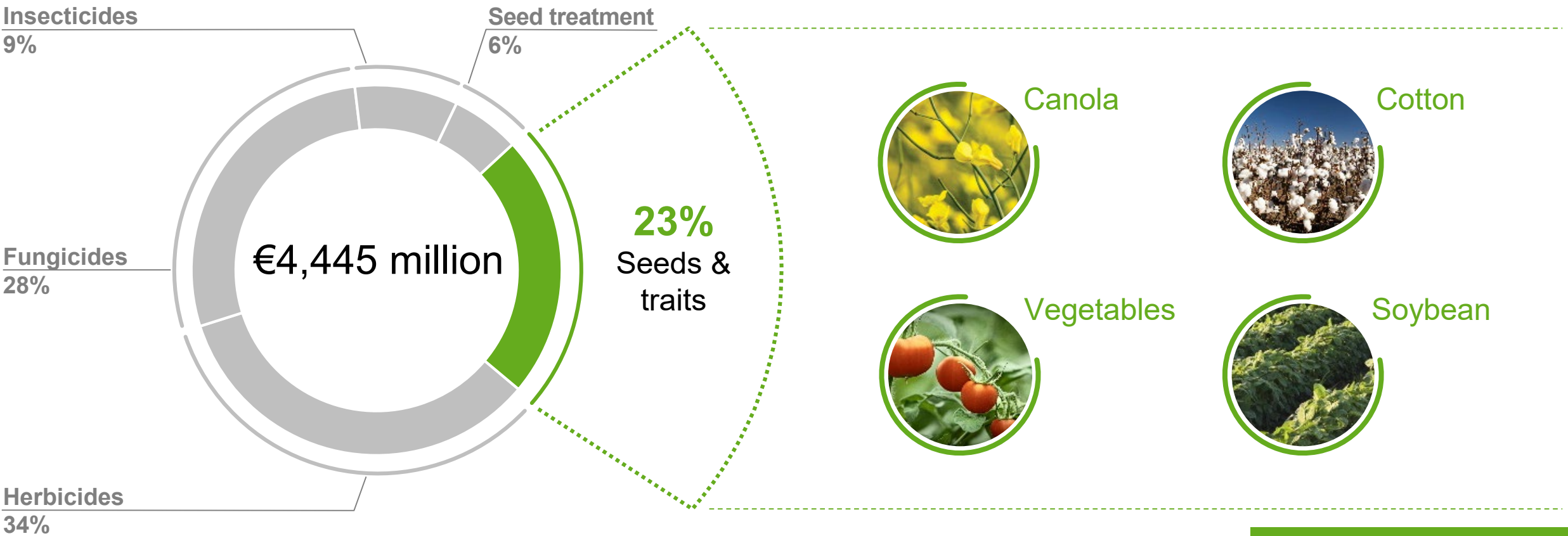
# Cautionary note regarding forward-looking statements

*This presentation contains forward-looking statements. These statements are based on current estimates and projections of the Board of Executive Directors and currently available information. Forward-looking statements are not guarantees of the future developments and results outlined therein. These are dependent on a number of factors; they involve various risks and uncertainties; and they are based on assumptions that may not prove to be accurate. Such risk factors include those discussed in Opportunities and Risks on pages 123 to 130 of the BASF Report 2018. BASF does not assume any obligation to update the forward-looking statements contained in this presentation above and beyond the legal requirements.*



# In H1 2019, seeds & traits accounted for around one quarter of the sales of BASF Agricultural Solutions

H1 2019 sales by indication and sector





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## InVigor<sup>®</sup> canola seeds business

**Garth Hodges**  
Vice President  
Global Business Management  
Canola Seeds & Traits



# Canola – heart-healthy oil crop low in saturated fatty acids



Developed in the early 1970's

~24 million acres in North America, primarily for food used in frying and cooking

~17 million acres in Europe primarily used for biodiesel

The meal is a **high-protein feed** for animals

Canada exports **over 90%** of its canola production to the U.S., China, Japan and Mexico

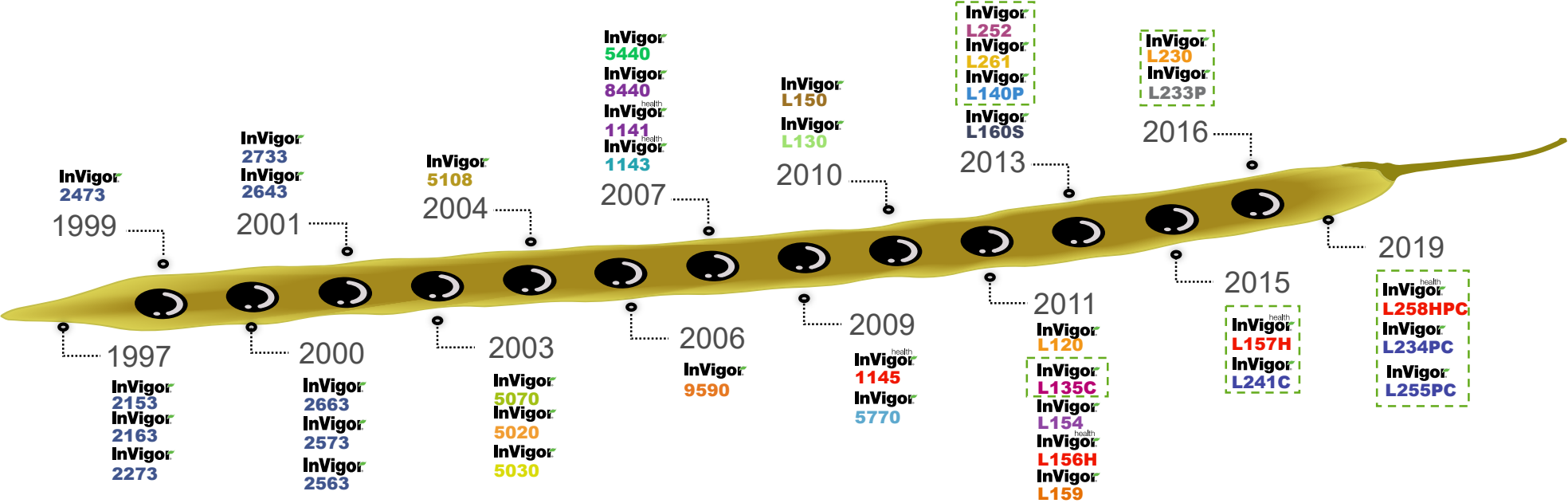
The canola industry generates **~€17 billion<sup>1</sup>** in value for the Canadian economy each year

# InVigor® is a brand promise of new (revolution) and improved (evolution) products with exceptional performance

**Revolution:** Technologies and advanced breeding capabilities

Herbicide tolerance      Hybridization      Pod shatter      InVigor® Health      InVigor® RATE

**Evolution:** Strong track record of product commercialization with exceptional performance

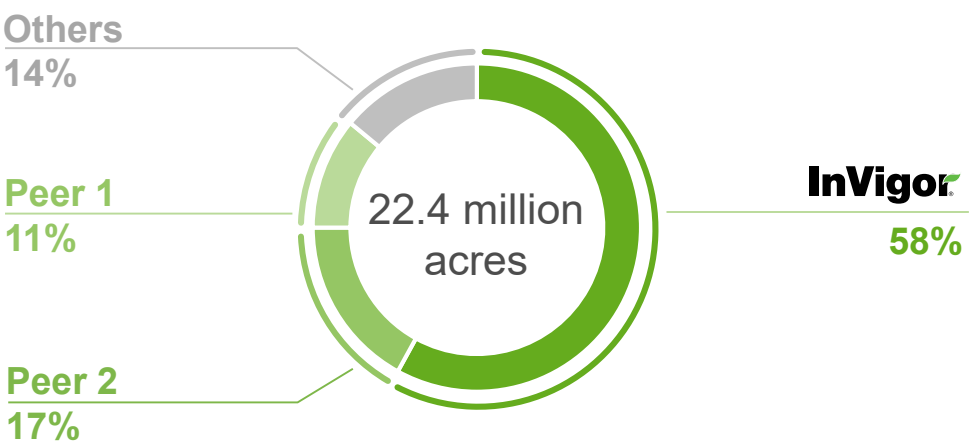


2019 Offerings



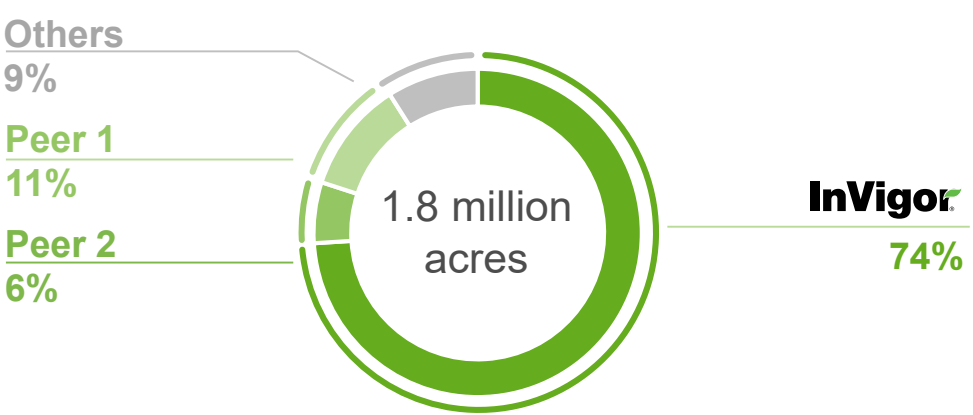
# InVigor® segment-leading canola seed business

2018 Canadian canola seed, segment share



Source: AGDATA Inc.

2018 U.S. canola seed, segment share



Source: AGDATA Inc.

# The continuum of the seeds business



Continued investment in breeding and research plus the operational and strategic interconnection and interdependency is the most important principle for a successful seed business



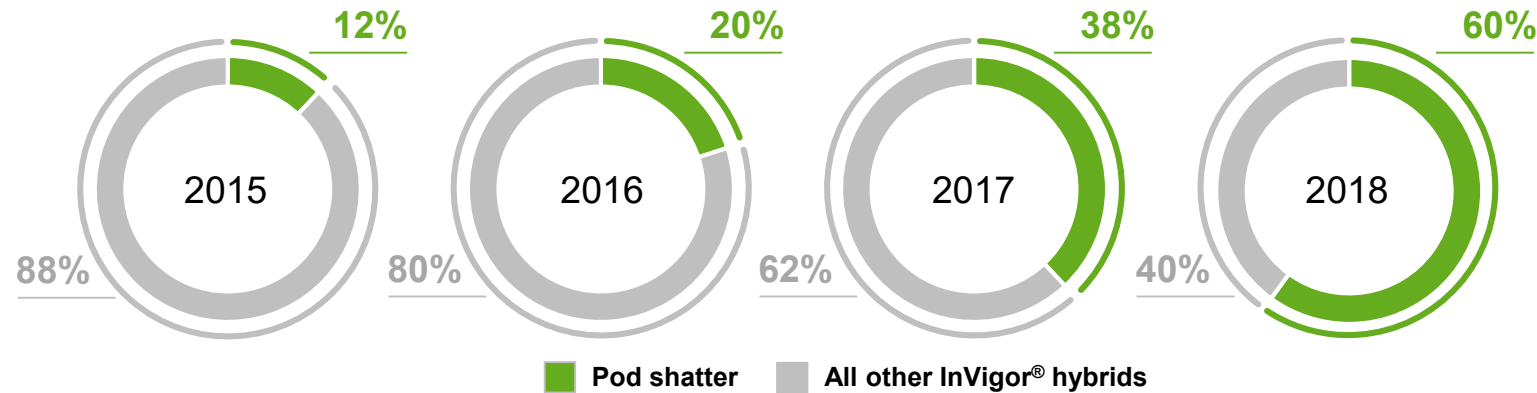
# Canola production: High-performance seeds benefitting from BASF's leading crop protection products

BASF solutions  
for canola in Canada



# Canola market drivers – impact of pod shatter reduction

## InVigor® hybrids with pod shatter reduction technology



- Canola pods naturally shatter upon ripening, thus causing seed losses and reduction of yield
- Growers need to cut the canola (swath) prior to full maturity to limit losses, but seeds are not fully mature and some losses still occur
- Shatter tolerance is a revolutionary feature bread into InVigor® hybrids which prevents premature shatter and yield loss
- Growers can leave the plants until full maturity and directly harvest without the intermediate swathing step
- Benefits: Saves time, eliminates cutting costs, greater yields, more oil content, harvest flexibility

## Pod shatter customers' Twitter testimonials



#SellTheSwather

*Straight cut over half the canola this year and couldn't be happier*  
#SellTheSwather

*4-5 bu better on straight cut vs. swath. Time to*  
#SellTheSwather

*First time straight cutting. Might have to*  
#SellTheSwather

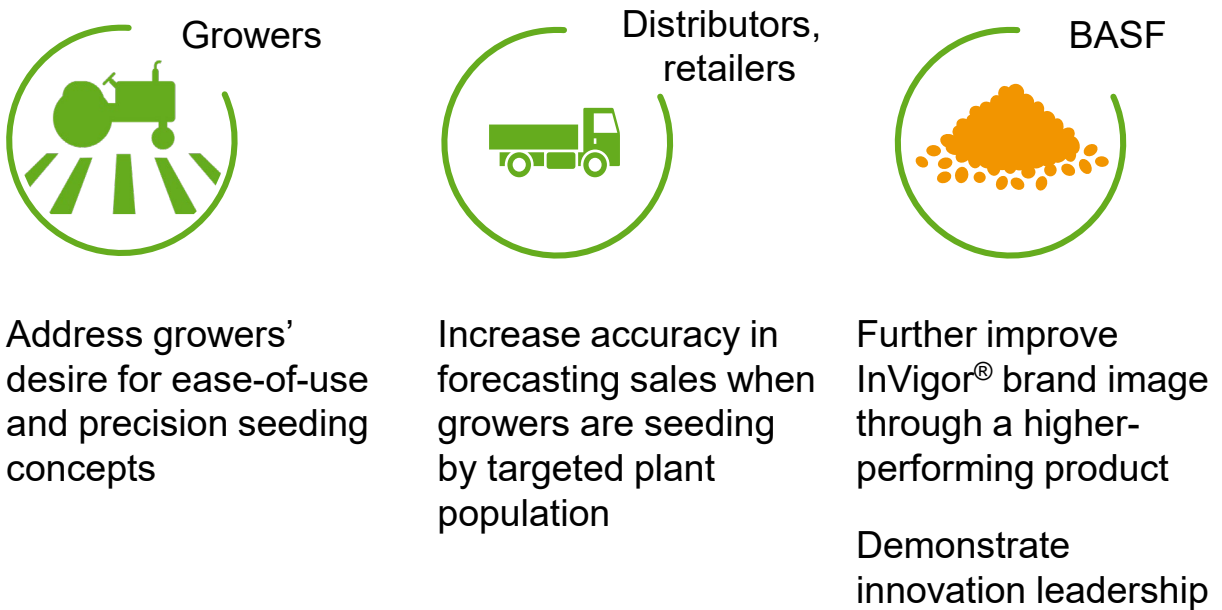
*Straight cutting some canola drown outs. I'm hooked*  
#SellTheSwather ;)



# Revolution: Technologies and advanced breeding capabilities

## InVigor® RATE

Optimizing yield, agronomic consistency and performance selling by seed count



Improved agronomy strategy

## InVigor® Health

Canola oil with no trans-fatty acids and low saturates



- Utilize existing infrastructure to increase customer reach and segment penetration
- Leverage existing infrastructure to supply inventory needs
- Capitalize on top-quality germplasm base
- Access to high omega-9 canola trait
- Cross-license agreement with Cargill

Specialty-oil canola strategy

# InVigor® – key takeaways

# **Seed** is one of the first decisions a grower makes

# **Proximity** to our customers means **direct accountability** – Keep promises and commitments

# **Yield** is a priority

# **Quality** is everything – Protect the brand promise

# **Seed** is a unique emotional and scientific decision

# **Growers trust InVigor®** on more acres than any other canola hybrid in North America





# Vegetable seeds

**Dr. Andreas Sewing**  
Vice President  
Research & Development  
Vegetable Seeds





# Vegetables as healthy choice for people and planet



## Benefits to society

Scientific evidence supporting health benefits of fruit and vegetables



## Convenience and eating as experience

Fostering healthy eating with flavorful vegetables and convenient formats



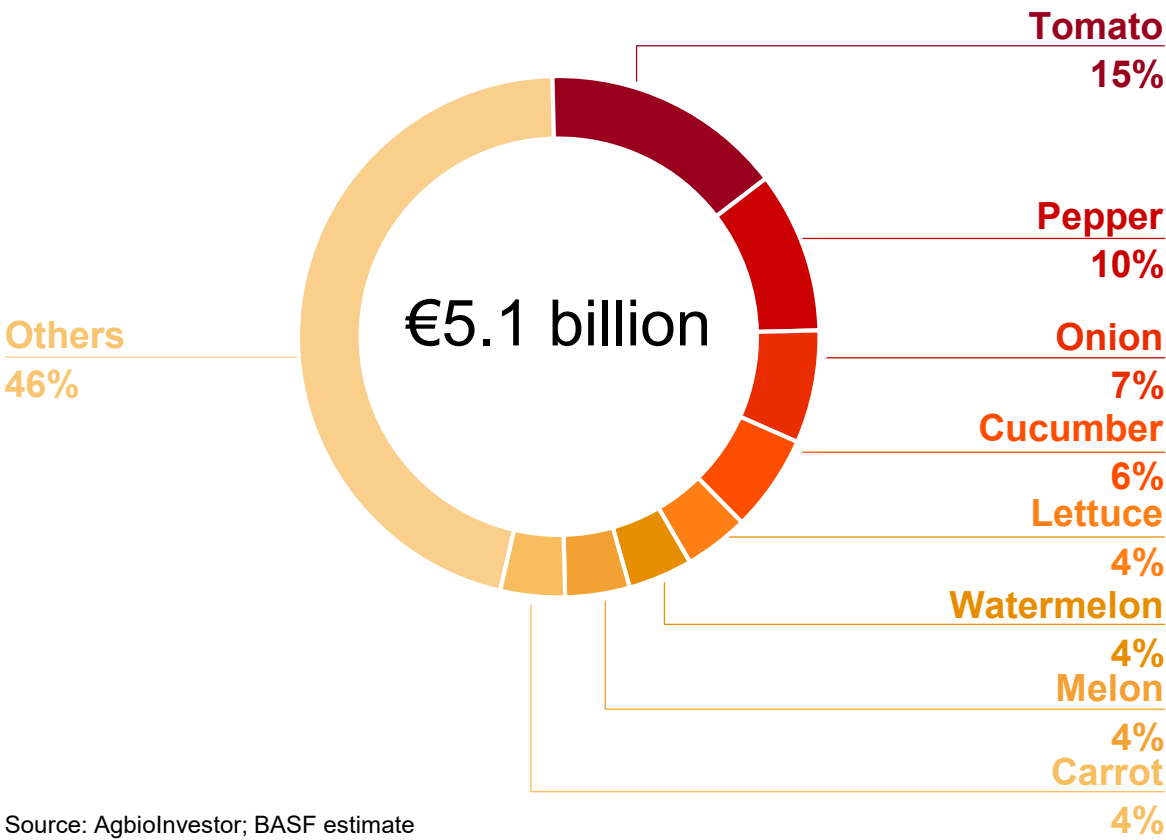
## Sustainable solutions

Closed growing systems optimizing resource use and enabling production close to consumer



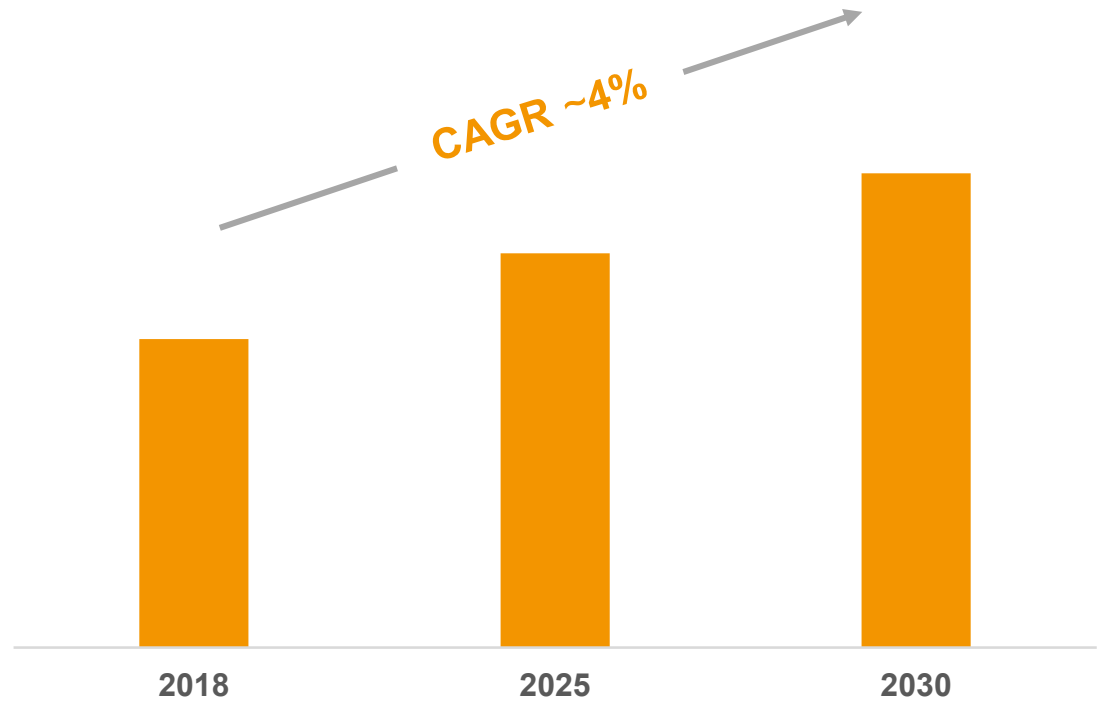
# Global vegetable seeds market

Vegetable seeds market by product 2018  
%



Source: AgbioInvestor; BASF estimate

Vegetable seeds market  
million €



# Vegetable market specifics



Row crops

↑	Acreage	↓
↓	Varieties	↑
↓	Output value	↑
↑	Price volatility	↓
↓	Consumer/retail power	↑

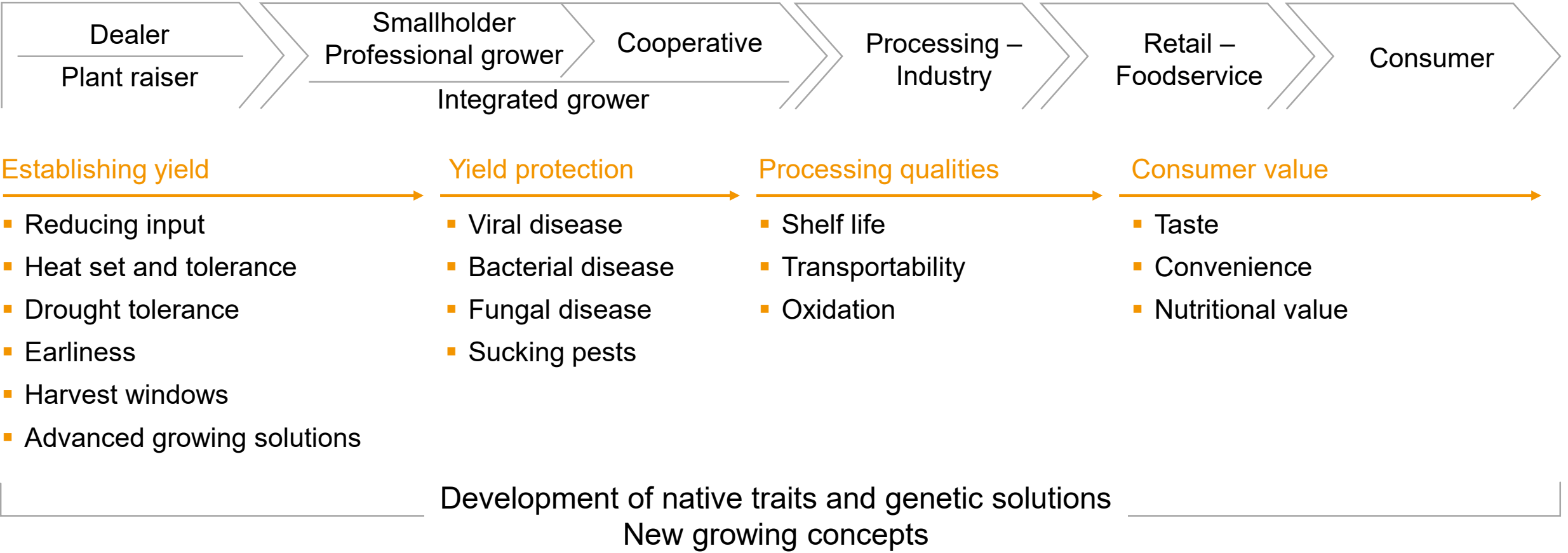


Vegetables

- Exclusively non-GM products
- Focus on genetic solutions (for disease and pest control)
- Highly fragmented market
- Non-processed consumption
- Complex value chain
- Consumer exposure



# Delivering solutions across the whole value chain



# Our contribution: Offering convenience with Kisy® – easy to eat and staying relevant to the consumer



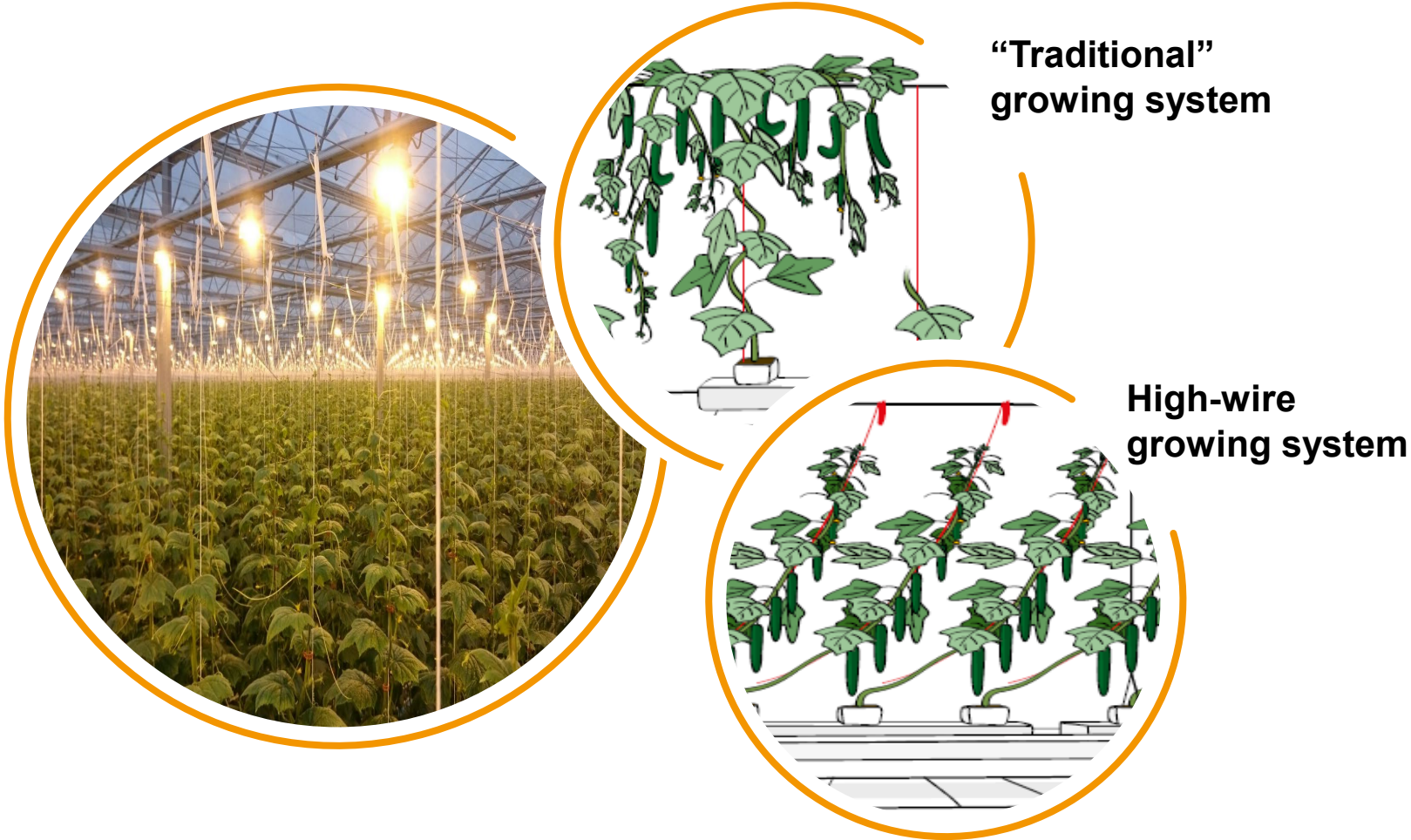
Changing our traditional understanding of yield



Kisy®



# Our contribution: Delivering value to growers by combining genetics and growing technologies



**Compact trait –  
More output with less resources for  
high-tech cucumber growers**

Trait results in open plant architecture,  
reduced leaves and compact growing  
habit requiring less space

- 20% more stems/plants per m<sup>2</sup> greenhouse
- Reduced labor for plant pruning
- Easier and automation amenable harvest

# Our contribution: Adding value with new growing technologies



## Indoor farming

- Reduction of product development timelines
- Seed production: more seed per m<sup>2</sup> and faster delivery times to customer



## Hydroponics – soilless growing

- Closed systems maximizing yield
- Automated harvesting
- Working with growers to match genetics with growing technologies



# Our contribution in the U.S. market: Sunions® – consumer solutions making the headlines

## Integrated product development

Combining high throughput  
technologies and  
consumer taste  
panels



*“VERY APEELING  
Farmers have created a  
new kind of onion that  
won’t make you cry when  
you chop them up.”*

*The SUN, January 9, 2018*



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