

30:00

1,4SIGHT®



Welcome at the Potato Storage Symposium

14GROUP
Dormfresh
BASF

Lelystad, September 4, 2025
Potato Europe



Agenda

- 12.30 Welcome & introduction
 - ▶ John Forsythe, Director 14GROUP
 - ▶ Bert Westhoff, Crop Advisor BASF Netherlands
 - ▶ Panel discussion with experts
- 14.00 Closing



Meerten Smit
Chair

Potato Europe

John Forsythe

4 September 2025



1,4GROUP Canada (1)
Manitoba, Canada



Our global presence
94 employees total

1,4GROUP Corporate Office (28)
Meridian, Idaho, U.S.



1,4GROUP Mexico (2)
Guadalajara, Mexico

DormFresh Ltd (12)
Perth, Scotland

Skyfall Biologicals (11)
Geismar, Louisiana, U.S.

Dataplex (40)
El Salvador



1965 Darol Forsythe founded the potato storage ventilation company, IVI

1995 The search for alternate chemicals leads to a new product: **1,4SIGHT®**. It received the first U.S. EPA registration as a biochemical.



2000 **DormFresh** was established by John Forsythe and Dr. Harry Duncan.

2008 After many years of R&D, the first electric applications machine was sold commercially as **E-Fresh®**.

2015 **1,4SIGHT®** received EU approval after a 17-year review process.

2022 **1,4SIGHT®** is registered in Brazil. DormFresh UK registration obtained.

2024 **1,4SIGHT®** receives established CODEX value.



1976 Darol was granted a distributorship for **Sprout Nip** (CIPC or chlorpropham) and began selling and applying it. CIPC inhibits potatoes from sprouting in storage.

1996 Our first packaging facility, **Dataplex**, is established in El Salvador.

2005 The company name **PIN/NIP** was changed to **1,4GROUP**.

2011 **1,4SIGHT®** is registered in Canada and Mexico.

2018 **1,4SIGHT®** is registered in Kenya.

2023 **Skyfall Biologicals**, a subsidiary of 1,4GROUP, began building a production facility in Geismar, Louisiana, U.S.



Global Storage Solutions

In Field Use

- Maleic Hydrazide (usage increased dramatically after the ban of CIPC in Europe)
- Renewed interest globally

Current Storage Treatments

- 1,4SIGHT®/DORMIR®
- BLOX M - mint oil
- Argos - orange oil
- Restrain - ethylene
- Talent - caraway oil
- Low temperature storage (refrigeration)
- CIPC
- 1,4Zap® (1-octanol)
- Clove Oil
- SmartBlock – 3-decan-2-one

Treatments Not in Practice

- Irradiation
- Hydrogen peroxide
- Ozone

Treatments Being Researched

- Gene editing
- Genetic Modification
- Essential oils
- Gibberellic acid
- UV/LED/Diffused light
- Methyl Jasmonate
- Chlorine dioxide
- Higher alcohols
- Aloe vera gel
- Imazethapyr
- Mustard seed extract
- Tree bark extracts
- Ozone



Global Developments & Trends

Alternatives to CIPC

- Researched for decades
- Renewed focus since EU ban

Regulatory Hurdles

- Constantly changing requirements
- Stricter safety & residue data is needed by regulatory authorities
- These requirements apply to both new and existing active substances
- Natural ≠ automatically mean a product will be approved

Research Gaps

- Academic trials often are not representative of commercial needs
- Many studies are too abbreviated for use in registration
- Often, they can misrepresent the effectiveness of active substances



Global Developments & Trends

Life After CIPC

- Last used in Europe in 2020
- 5 storage seasons have been managed with alternatives
- Better storage & crop management
- Millions of tonnes stored >6-8 months

GMO

- Tried since the 1990's
- Not commercially viable

Gene Editing

- 15+ years of research, still in development
- Key questions:
 - Impact on seed dormancy?
 - Effect on sugar metabolism?
 - Next generation of plants?
 - Long-term human safety?
- Caution: changing nature has risks

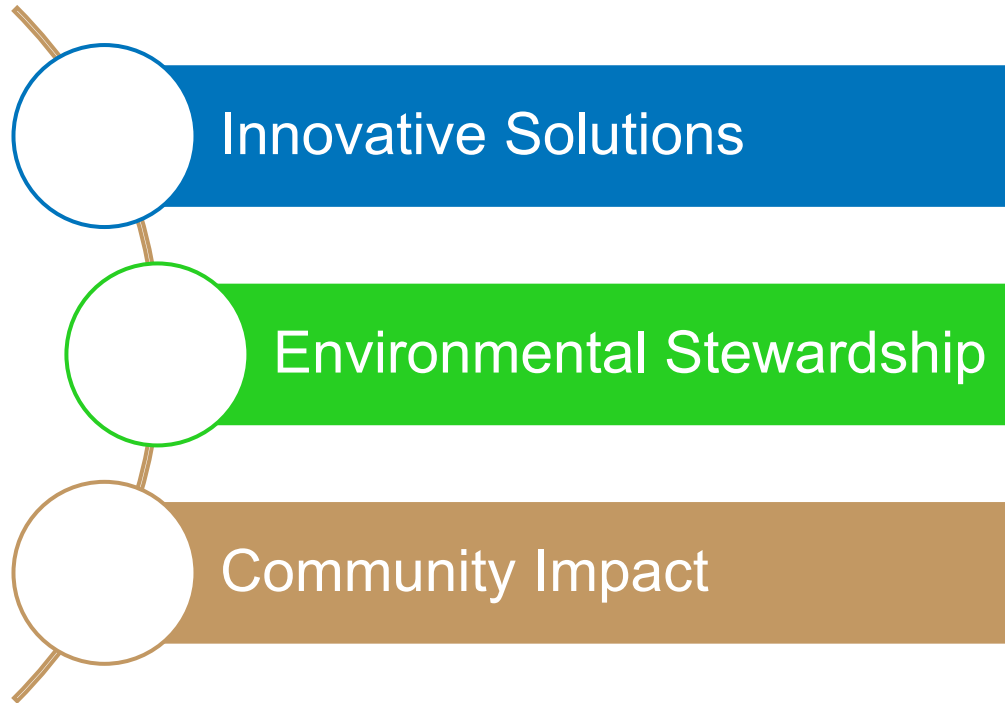


Path of Success for 1,4SIGHT®

- High quality product
 - Works with nature
 - Works consistently
 - Works on all types of potatoes
 - Excellent results in storage
- Support focused on needs of storage industry
- Value for the grower
- Storage managers now pay more attention to their crops in storage
- Minimum application rates for 1,4SIGHT® were quickly discovered



Skyfall Biologicals



Specialty Chemical Manufacturer
Geismar, Louisiana, USA



Skyfall Current Products

Manufacturer of :

1,4SIGHT® (1,4-DMN)



Hydrogenated Catmint Oil (HCO)

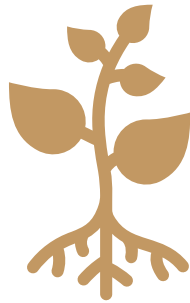


EU Registration Update

- The status of re-registration is the active substance approval has been extended to the end of November 2027
- PHI reduction from 30 days to 3 days is now in place in France, Germany, Austria and just last week in the Netherlands.
- 1,4SIGHT[®] for use on seed potatoes is now approved in one Member State and we are anticipating more approvals soon



Key Message for Potato Industry



Value added to potatoes

Less shrink coming out of storage
than any other product



Quality of stored potatoes

Firm coming out of storage
Sprout free is possible
Better than CIPC treatments



Conclusions

- 1,4SIGHT[®] resulted in the most effective **sprout control**
- **Shelf-Life** with 1,4SIGHT[®] was the best of the EU registered products tested
- **Weight loss** was significantly reduced when 1,4SIGHT[®] is used
- Best results if used within the first month of storage
- **Tubers firmer** after 1,4SIGHT[®] use
- Significant **energy savings** can be achieved using 1,4SIGHT[®] in EU





CONTACT

If further information is required to resolve any uncertainties, please contact us directly.

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The highest storage efficiency

Potato Storage Symposium

September 4, 2025

Bert Westhoff

Technical Crop Advisor Arable Crops

BASF Netherlands

Agenda

- Why research with 1,4SIGHT?
- Farmer experiences
- Trial results
- Conclusions
- Q&A

Research with 1,4SIGHT

■ BASF & Dormfresh initiated research in NL from 2009

- ▶ PPO/WUR Westmaas
- ▶ PPO/WUR Lelystad
- ▶ HLB Wijster

■ Checked parameters

- Sprouting ✓
- Frying quality ✓
- Firmness ✓
- Skin finish ✓
- Shelf life ✓
- Storage loss ✓



Farmers experiences

- Many farmers experimented with early 1,4SIGHT use and have perfect results
- Significant group of farmers is satisfied with storage results, but apply 1,4SIGHT late

Jaap Haanstra, Luttelgeest



William de Jonge, Swifterbant



Nico Rodenburg, Zwartewaal



Optimizing storage efficiency to benefit growers

Goal

- Reducing storage loss

Problem

- Bulk of storage loss is in the first month

Solution

- 1,4SIGHT is a dormancy enhancer
- Early treatment is key!

Two year study to the benefits of early 1,4SIGHT treatment



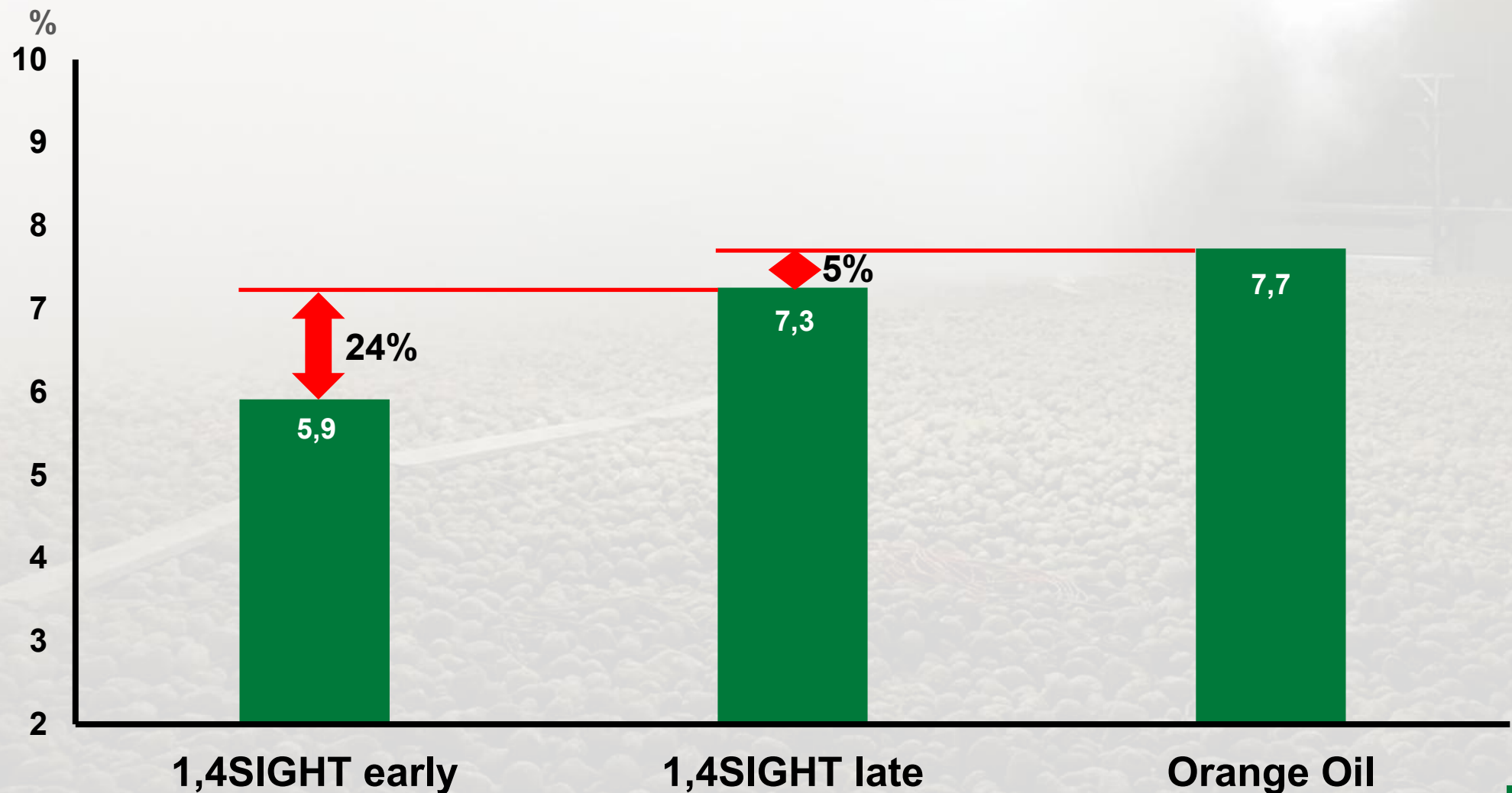
Storage strategies tested

2023/2024 & 2024/2025 season

All strategies MH treated and unloaded mid of june			
	1. Early start 1,4SIGHT	2. Late start 1,4SIGHT	3. Market reference Orange oil
T1			
T2			
T3			
T4			
T5			
T6			
Totaal volume			

Varities: Agria, Innovator, Melody, Milva, Fontane & Lady Claire
7.5°C Temperature

Storage loss findings on all 6 varieties



Return on investment (all varieties WUR)

Storage loss (ton)			
Store size (ton)	1,4SIGHT early	1,4SIGHT late	Orange Oil
1.000	59	73	77

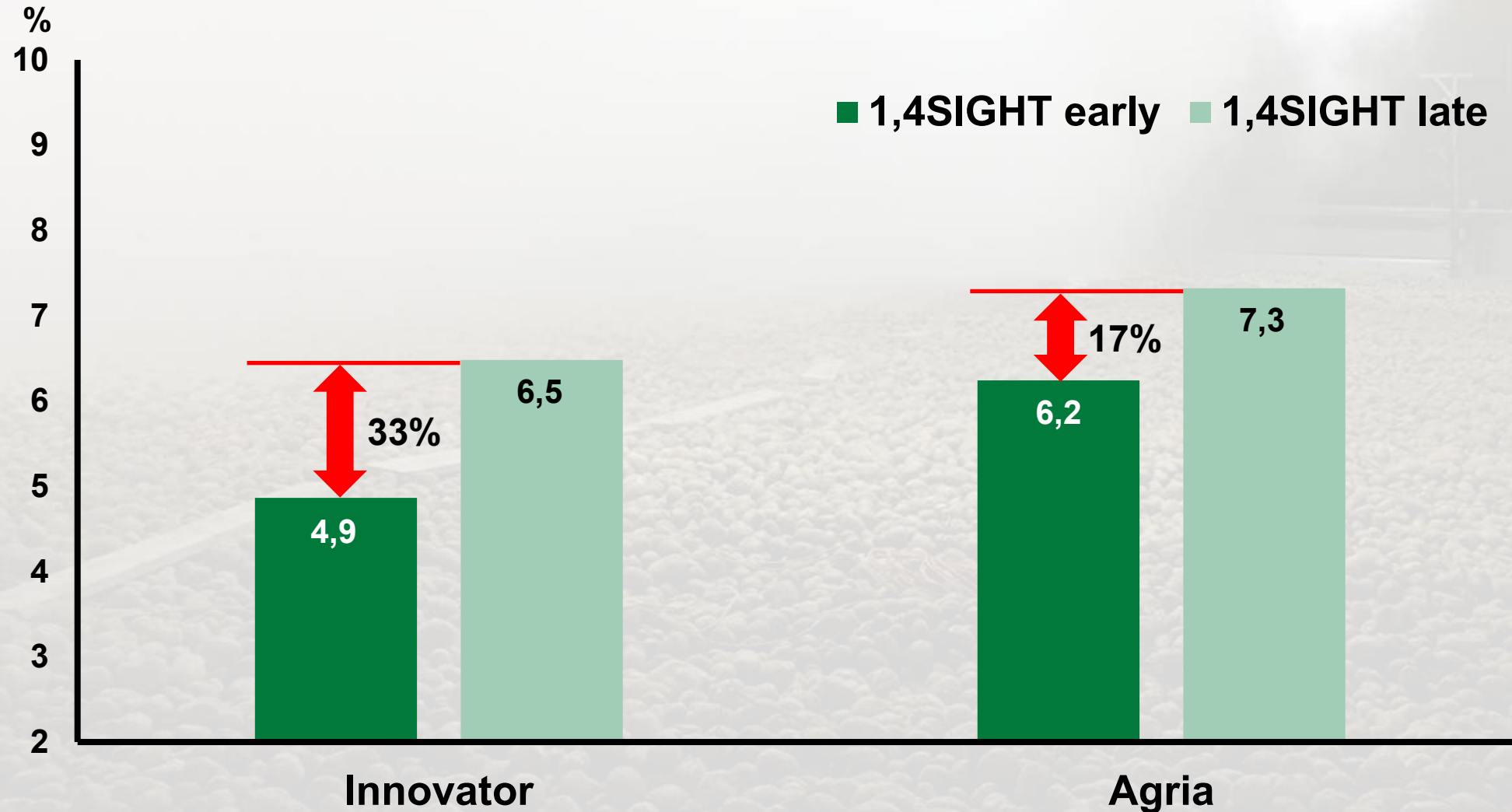
← ± 14 ton →

Financial Storage loss
(at a price of 250 €/ton)
=

± € 3.500

Using 1,4SIGHT early results in lowest (financial) storage loss

Storage loss Innovator & Agria



Return on investment for Innovator & Agria

Storage loss (ton)				
	Innovator		Agria	
Store size (ton)	1,4SIGHT early	1,4SIGHT late	1,4SIGHT early	1,4SIGHT late
1.000	49	65	62	73

← ± 16 ton →

← ± 11 ton →

Financial storage loss
(at a price of 250 €/ton)
=

± € 2.600

Using 1,4SIGHT early results in lowest (financial) storage loss

Lessons from 2 years storage research

- Always treat 1,4SIGHT as early as possible
- Early 1,4SIGHT treatment benefits all varieties
 - ▶ Even on MH treated!
 - ▶ You can start earlier as you think.....



Sustainability and energy use

- Early 1,4SIGHT applications ensures low respiration rates of tubers
 - ▶ Less ventilation hours and smart use of mechanical cooling
 - ▶ Lower carbon-footprint
- Complies with societal demand for less spilling/use of energy
- Clear evidence:
 - ▶ Westmaas WUR 2010-2013
 - ▶ Rusthoeve Delphy 2020
 - ▶ Wijster HLB 2009 & 2024
 - ▶ Lelystad WUR 2010-2013 & 2015 & 2024-2025

Conclusions and take home message

- 1,4SIGHT is a Dormancy Enhancer; start “**preventative**”
 - ▶ Less respiration > less ventilation & cooling > less energy use!
- MH in the field + 1,4SIGHT early applications are complementary
- Early treatment 1,4SIGHT most efficient for **all varieties**

A decade at the top



Thank you!

Questions?

Panel discussion with experts

Lelystad, September 4 2025
Potato Europe



Panel



Hilchard Waalkens
Potato grower



Leon Wisse
Contract applicator



Jozef Backx
Crop advisor & storage specialist

Thank you for attending our potato storage symposium

