

Innate™ potatoes

Driving Change with Technology

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Simplot Plant Sciences

Oxford Farming Conference, 2016





A History of Innovation

J.R. Simplot embraced new ideas and new challenges. His ingenuity fed a culture of innovation that included the world's first frozen French Fries.

BRINGING EARTH'S RESOURCES TO LIFE



Innate™ Technology – Improvements Possible Within the Potato Family



Wild and
Cultivated Potatoes



Desired
Potato DNA



Burbank
Potatoes



INNATE™
Burbank
Potatoes

Innate™ Gen 1 - Reduced Bruise and Black Spots



Source – 2013 Simplot Field Trial Data

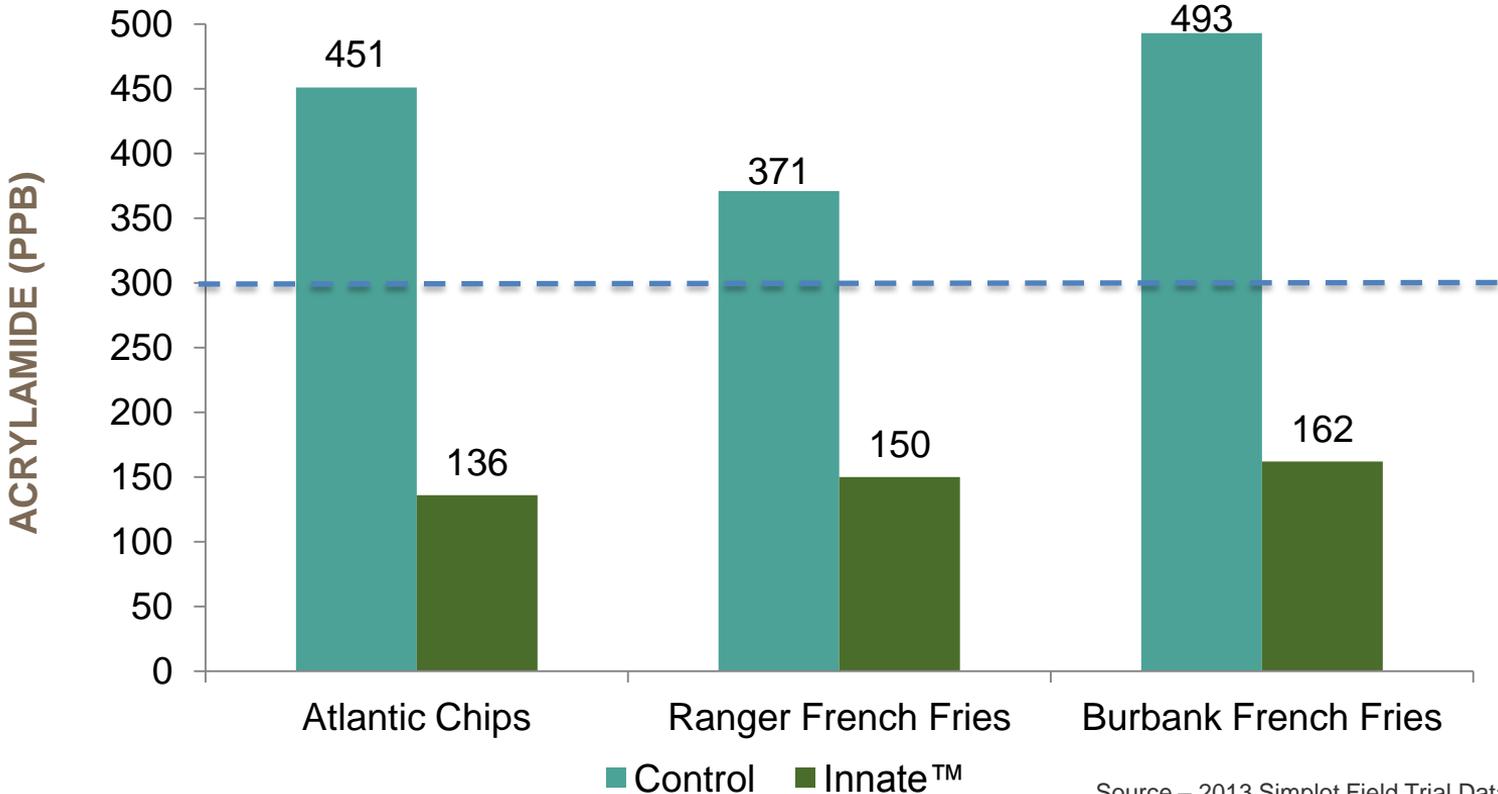
Innate™ Gen 1 - Bruise & Black Spots Impact Fresh and Process Industry



Source – 2013 Simplot Field Trial Data

Innate™ Gen 1 – Reduced Acrylamide for Safe Consumption

California level is approximately 300 PPB



Source – 2013 Simplot Field Trial Data



Simplot Plant Sciences Tech Pipeline

Goal: Raise potato yields by 50% in 20 years

Russet Burbank, Ranger Russet, Atlantic and Snowden Varieties

GEN 1

2015 LAUNCH

- Lower acrylamide
- Low bruise/browning

BENEFITS:

- Safer for consumers
- Less waste

GEN 2

2017 LAUNCH

- Lower acrylamide
- Low bruise/browning
- **Low reducing sugars**
- **Late blight resistance**

BENEFITS:

- More usable crop
- Better storage
- Less pesticide usage

GEN 3

2020+ LAUNCH

- Low reducing sugars
- Late blight resistance
- Lower acrylamide
- Low bruise/browning
- **PVY resistance**
- **Global late blight**

BENEFITS:

- Better acre yields
- Less pesticide usage

Thank You U.K. Universities for Making this Possible!

Innate™ Gen 2 Provides 24-Hour Resistance to Late Blight, the Top Potato Disease



Control

Innate™

Control

Innate™

Innate™ Gen 2 – Reduced Sugar Means Better Quality

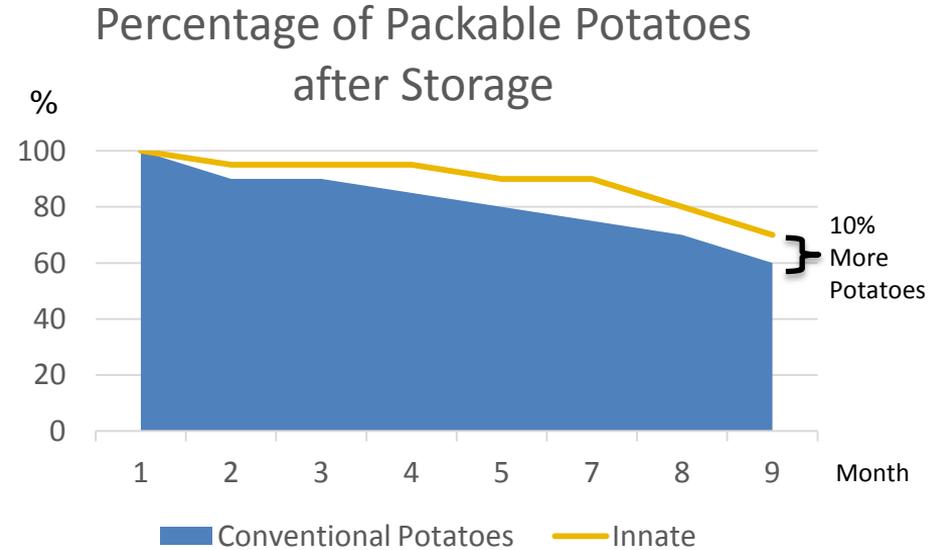
Non-GM

Innate™ Gen 2

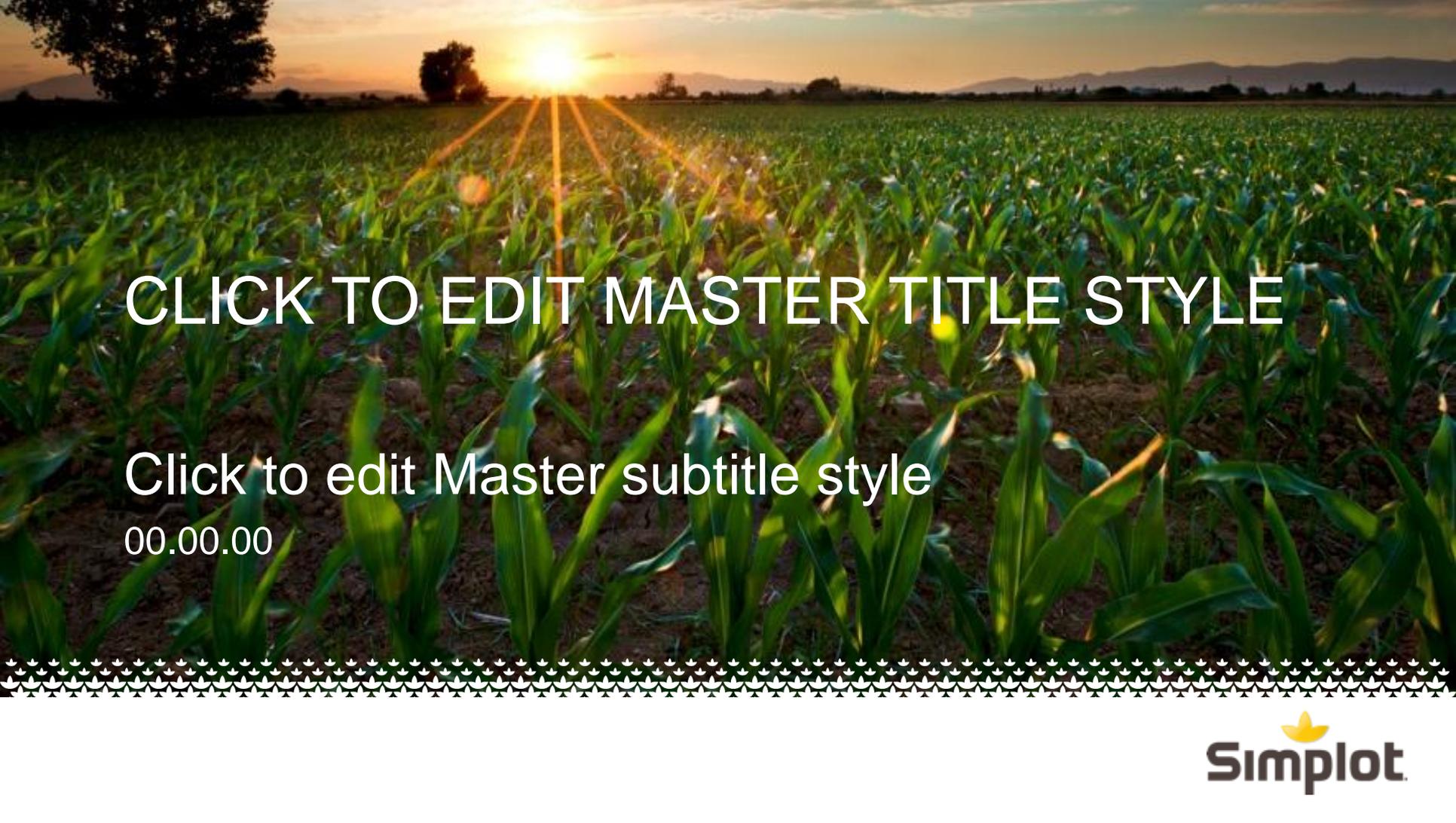


After 6 Months of Storage

Innate™ Gen 2 – Reduces Losses in Storage and Saves Resources



Source: 2015 Simplot Field Trials



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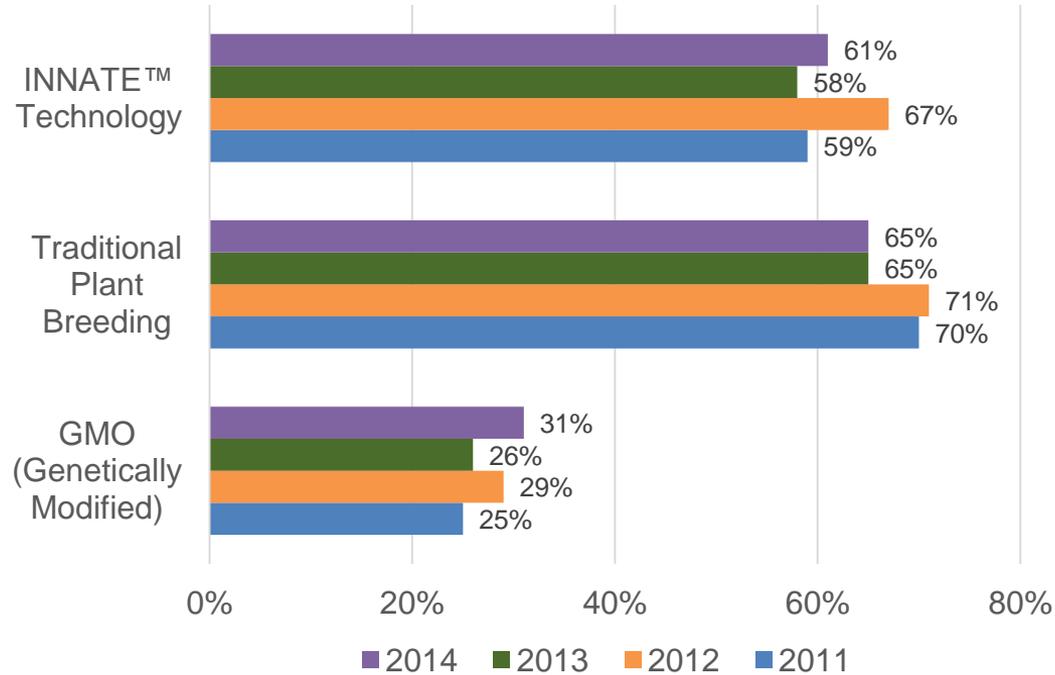
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“No Foreign Genes” Resonates With Consumers

PURCHASE INTENT -- % DEFINITELY/PROBABLY WILL - NATIONAL SAMPLE

QUESTION

How likely would you be to purchase fruits and vegetables that are improved using INNATE™ Technology?



Simplot Online Attitudinal Study, 2011-14

Sustainability – A More Efficient Crop and Less Consumer Waste

DIFFERENCES BETWEEN A CONVENTIONAL POTATO AND SIMPLOT'S INNATE™ POTATO

7.5 BILLION LBS

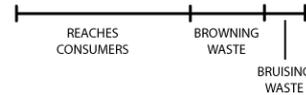
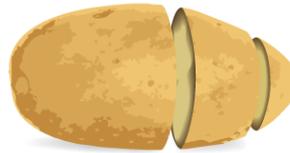
ANNUAL US PRODUCTION OF FRESH RUSSETS



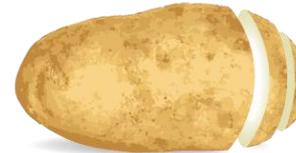
1.4 BILLION LBS

HOW MUCH POTATO WASTE THE US WOULD
SAVE EACH YEAR IF ALL FRESH RUSSET
POTATOES WERE SIMPLOT INNATE™ POTATOES

CONVENTIONAL



SIMPLOT INNATE



ADDITIONAL SAVINGS



\$90 MILLION IN PRODUCER COSTS



60 MILLION LBS OF CO₂ EMISSIONS



6.7 BILLION GALLONS OF WATER



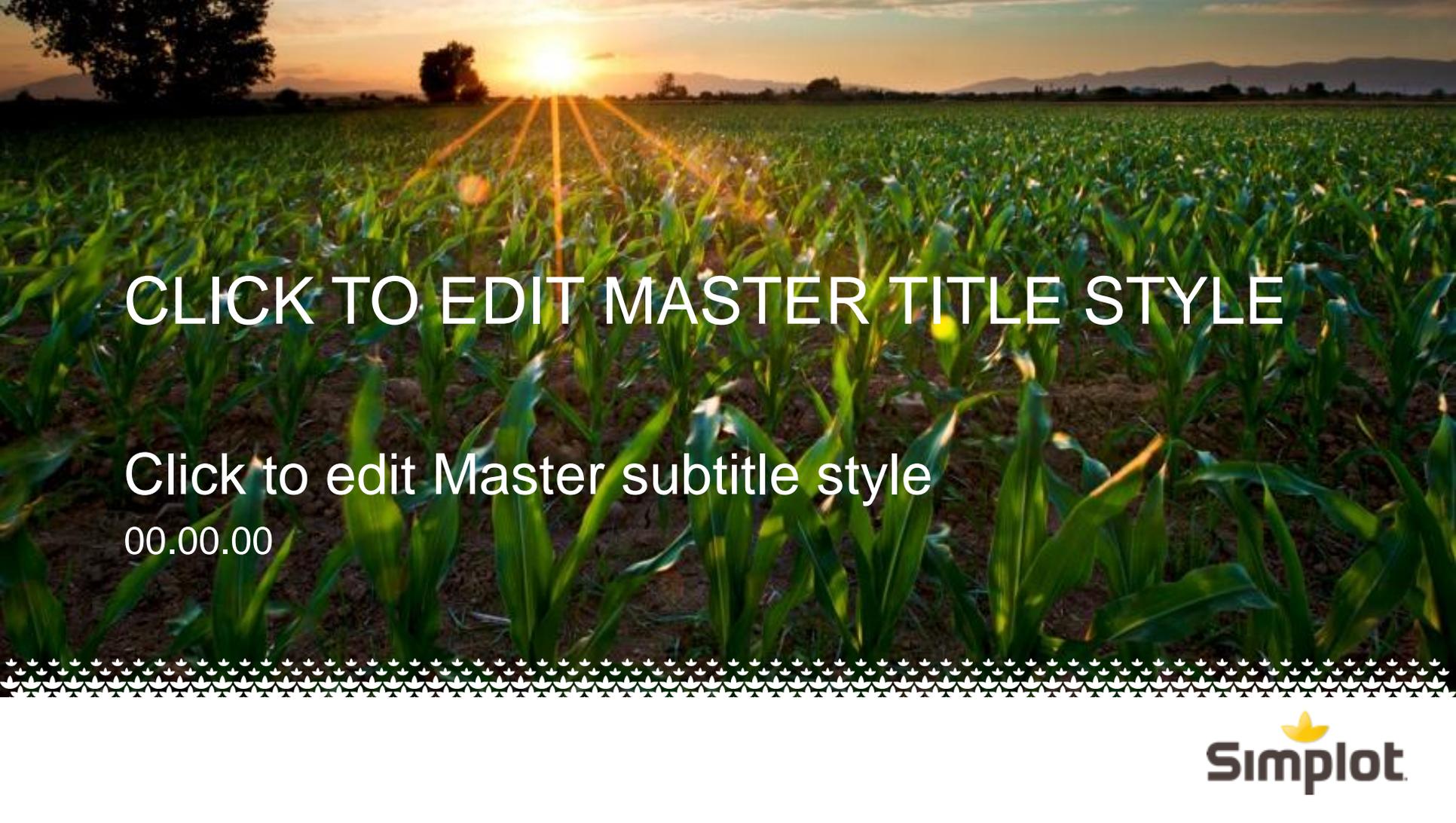
170,000 ACRES OF PESTICIDE SPRAYINGS

Thoughts on Bringing Biotechnology to Market

- **Some technology requires end-to-end coordination of the value chain.**
 - In our case, the industry loses money because of bruised potatoes so there is motivation to move the technology forward.
- **Everyone has a firm opinion of what they believe consumers think and want.**
 - Good market research is necessary to understand how we talk about technology.
- **Black swans: Experts in our industry have been surprised by some of our results.**
 - Keep an open mind about what is possible.
- **Our efforts would not be possible without quality public sector research.**
 - We stand on the shoulders of many university scientists.



THANK YOU



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Partnerships Key to Driving Innovation

UK BBSRC GRANTS

Parties: James Hutton, Sainsbury Lab, University of Dundee, Leeds, & Warwick

Commercial partner in all three grants

Collaborate with the top potato programs

Late Blight, PVY, Nematodes, and Processing Traits

Commercial rights to one UK variety and one global variety



USAID/MSU GRANT

Goal: Late blight resistant potato variety for subsistence farmers in Bangladesh and Indonesia

\$6.8M USAID Grant

Transform farmer variety with 3 late blight R-genes

2 new Asian varieties

International de-regulation package

