

Onions Australia Seminis[®] Presentation

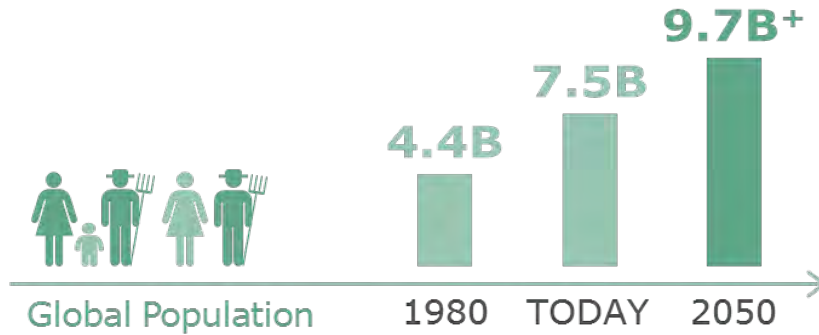
Darren Wood – Australia and New Zealand

17 June 2018



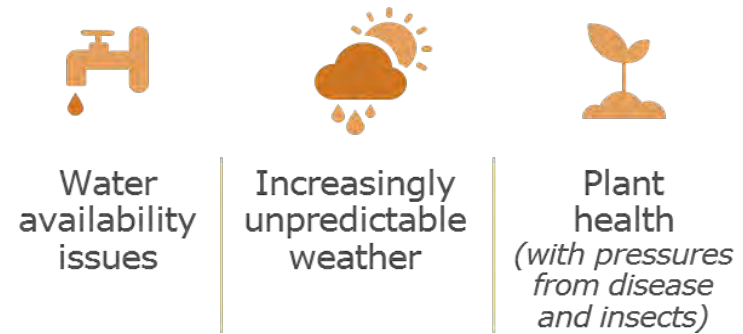
Agriculture is at the Center of Global Challenges

Rising Population



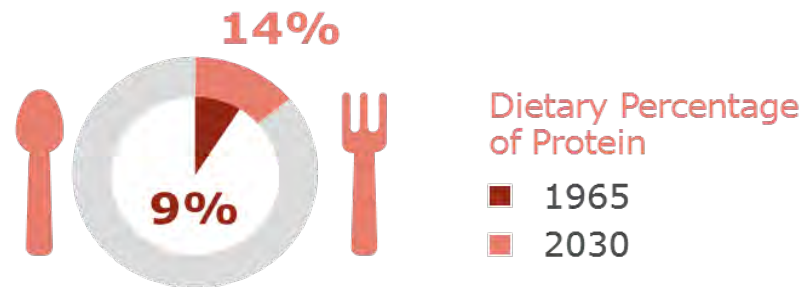
Source: <http://www.fao.org/3/a-16881e.pdf>

Changing Climate



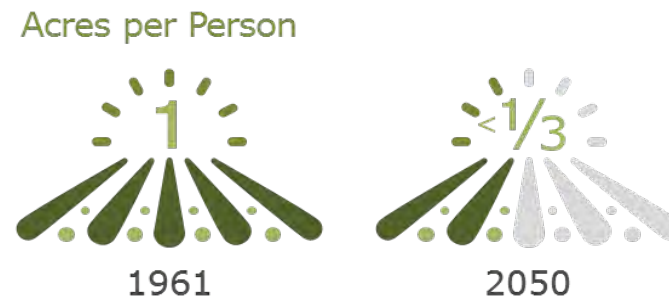
Source: U.S. Third National Climate Assessment (2013)

Changing Economies and Diet



Source: UN FAO Food Balance Sheet, World Health Organization Global and regional food consumption patterns and trends

Limited Farmland



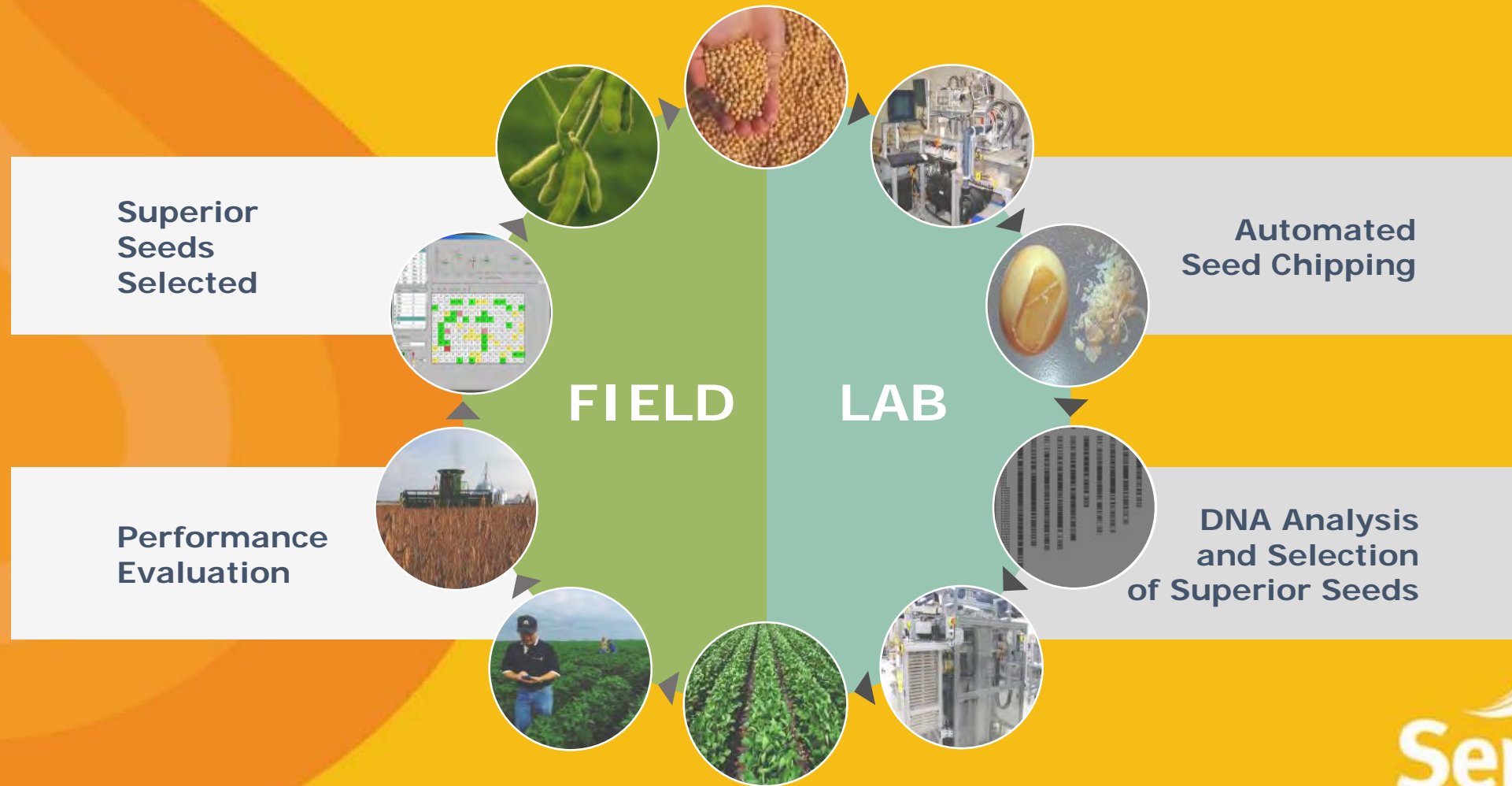
Source: The World Bank, Food and Agriculture Organization of the United Nations (FAO-STAT), Monsanto Internal Calculations



Driving Sustainable Agriculture Solutions



Today's Breeding is Powered by Our Knowledge of Genetics



Advances in Biology Accelerate Crop Improvements

Plant Breeding

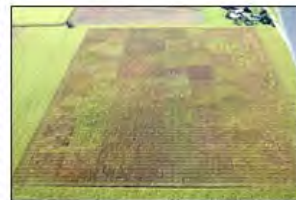
Soil Microbes

PRECISION BREEDING DRIVEN BY GENOMICS

HIGH-THROUGHPUT FINGERPRINTING AND SEQUENCING TECHNOLOGIES

Leveraging the power of analytics to accelerate yield gains and digitalize field testing

Yield Testing in the Field



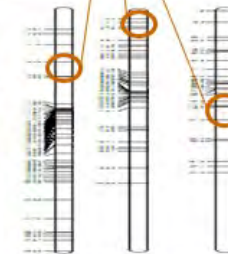
Sequencing cost has decreased dramatically

Yield Testing in the Lab

MOLECULAR BREEDING
is accelerating the rate of genetic gain over conventional breeding




Identifying molecular markers can unlock key genes in combating diseases



Advances in Biology Accelerate Crop Improvements

Gene editing tools can delete or edit a specific gene.



BENEFITS

Greater precision

Improved efficiency

Enables improvements not possible before

Uses genetic material from plant's own family

TYPES OF GENE EDITING


Genome Engineering



Gene inactivation
("knock out" gene for protein production)

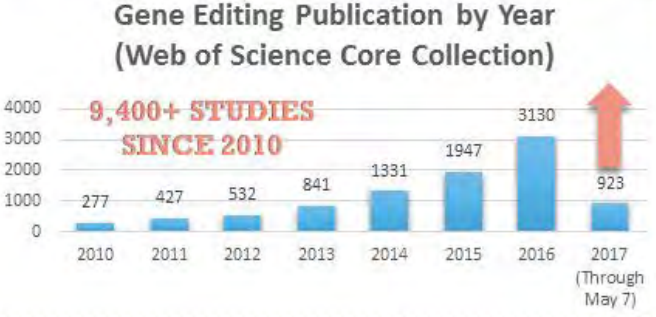
Gene modification
(improve or change protein activity)

Site-Directed Integration



Gene insertions at specific locations
(potential cost savings for breeding)

Gene Editing Publication by Year (Web of Science Core Collection)



Year	Number of Publications
2010	277
2011	427
2012	532
2013	841
2014	1331
2015	1947
2016	3130
2017 (Through May 7)	923

Modification

Gene Editing

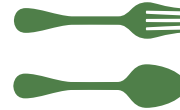


Potential Benefits of Gene Editing in Agriculture



Farmers

Another tool that improves the pace and scope of innovation to deliver better seed products



Consumers

An agriculture system that meets society's needs — like food variety and supply — while minimizing environmental impact



The Planet

Farming solutions that allow for smarter use of inputs like pesticides, and natural resources like water, energy and land

Potential Applications

Weed Management



Disease Resistance



Drought Tolerance



Quality Improvements



Enhanced Nutrition



Seminis[®] Onion Innovation Day

Seminis Pukekohe Research Station

January 2018

Darren Wood - Australia and New Zealand

17 June 2018

Onion Innovation Day 2018

24th January 2018



- Over 40 Growers from Australia and New Zealand
- Global Seminis Onion Experts from USA, South Africa and Brazil
 - Viewing of Seminis Pipeline
- Presentation on Precision Agriculture by Dan Bloomer
 - Field Mapping and Drone Demo by Will Bignell
 - Onion Farm Tours in Pukekohe region

Onion Innovation Day 2018



Onion Innovation Day

- Growers learned more about Fusarium Basal Rot and Pink Root Disease and how resistance helps to minimize inputs and increase potential yields
- SVNH1752 – Trial Variety was a stand out within the Seminis pipeline with sowings each month from May to September with no bolters. #wideadaptability
- Currawong – showing superior characteristics in the early sowing period. Good size, shape and colour with storage capability for export.



Onion
INNOVATION DAY 2018



Seminis
grow forward

Seminis Pukekohe Research Station Official Opening January 2018



Darren Wood - Australia and New Zealand

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Onion








Seminis
grow forward

Thank You

**For more information on varieties or the
Seminis Onion Portfolio
please see me after the meeting or at the
Seminis stand in the Hort Connections
trade show.**

Darren Wood - Australia and New Zealand

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