Coated Confection Sunflower Kernels for Precision Planting

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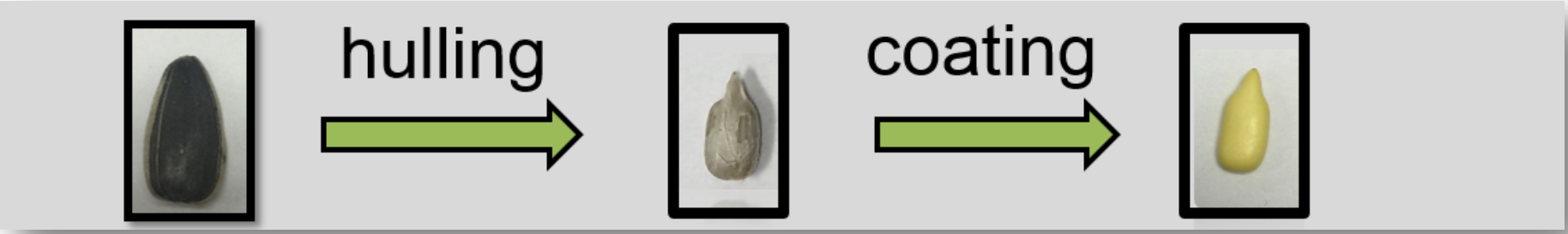
Outline:

- Introduction
- Progress: Nov. 2012-2015
- Progress: 2016
- Plans for 2017-2018

XL Hybrid Confection Seed:

- **Poor plantability**
- **Low germination**

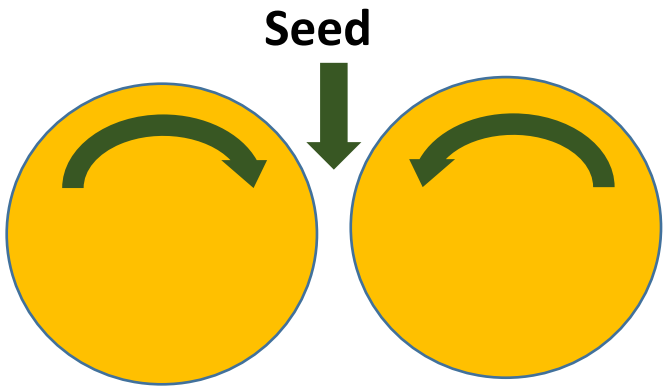
Proposed Solution:



- Maintain germination
- Consistent shape and size

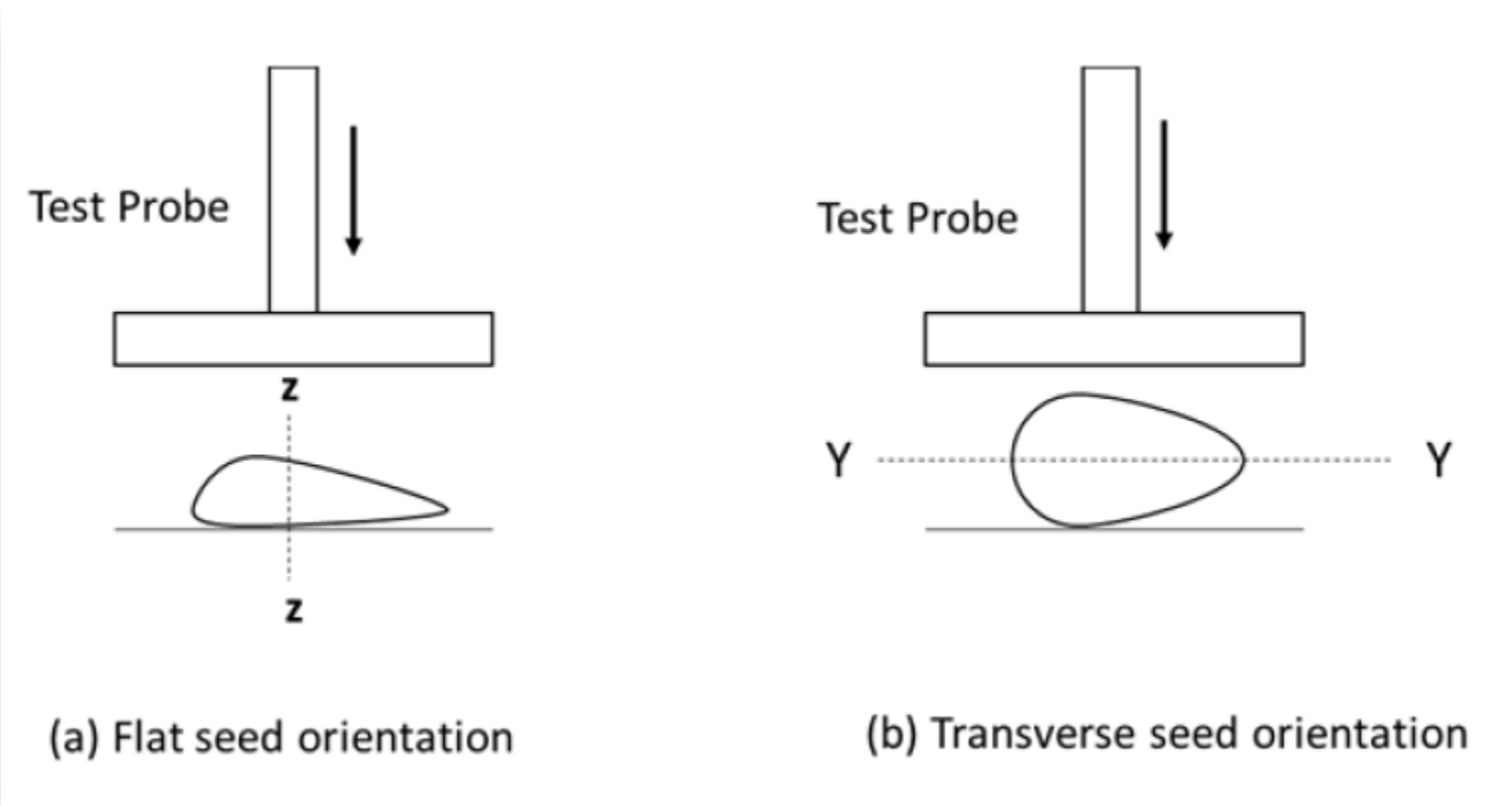
Progress: Nov. 2012 – 2015

Hulling: 1st year



Need 5 passes for >70% kernel release

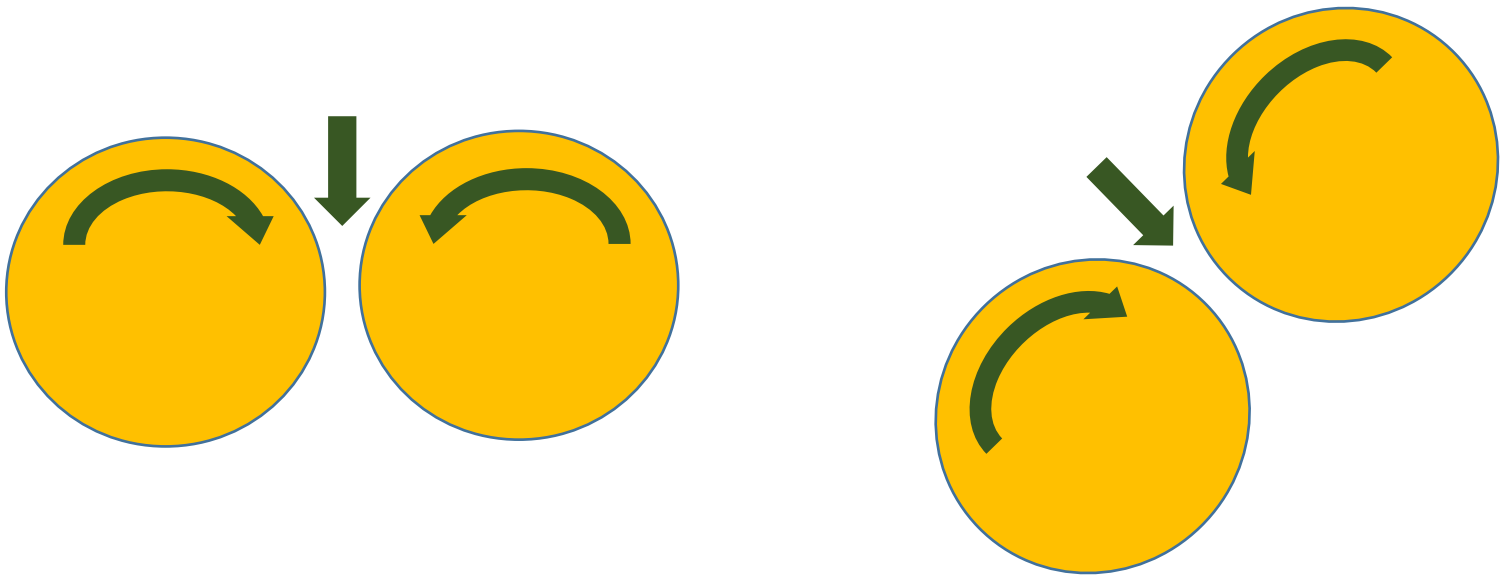
Effect of Seed Orientation



83% germination **92% germination**

Sidhu, et al., 2016

Effect of Seed Orientation



Effect of Seed Orientation-3 Passes

	No Control	Transverse
Kernel Release (%)	**41**	**75**
Intact Kernel (%)	83	85
Germination (%)	89	90

Hulling: 2nd Year

Capacity: 10 kg of intact kernels in 100 h

Coating Trials: 2014-15

COMPANIES

- Germains
- AgInnovation
- Seed Dynamics
- Summit Seed Coatings

COATING MATERIALS

- Cellulose
- Lime
- GroCoat
- Polymers

Coating Trial Results, 2015

Treatment	Germination %
XL Hybrid Seed	85
Kernels	92
Lime 20% +QS	92
25% Cellulose	84

Coating Trial Results, 2015

Treatment	Germination %	Singulation %
XL Hybrid Seed	85	64
Kernels	92	75
Lime 20% +QS	92	79
25% Cellulose	84	82

Objectives for 2016

- Improve coating
- Field test coated kernel

Commercial Coating Trials: 2016

COMPANIES

- AgInnovation
- Summit Seed Coatings
- Seed Technology Services
- Universal Coating Systems

COATING MATERIALS

- Cellulose
- Lime
- Pumice
- Zeolite
- Gypsum
- GroCoat
- Polymers (2 types)

In-house Coating (polymer): 2016

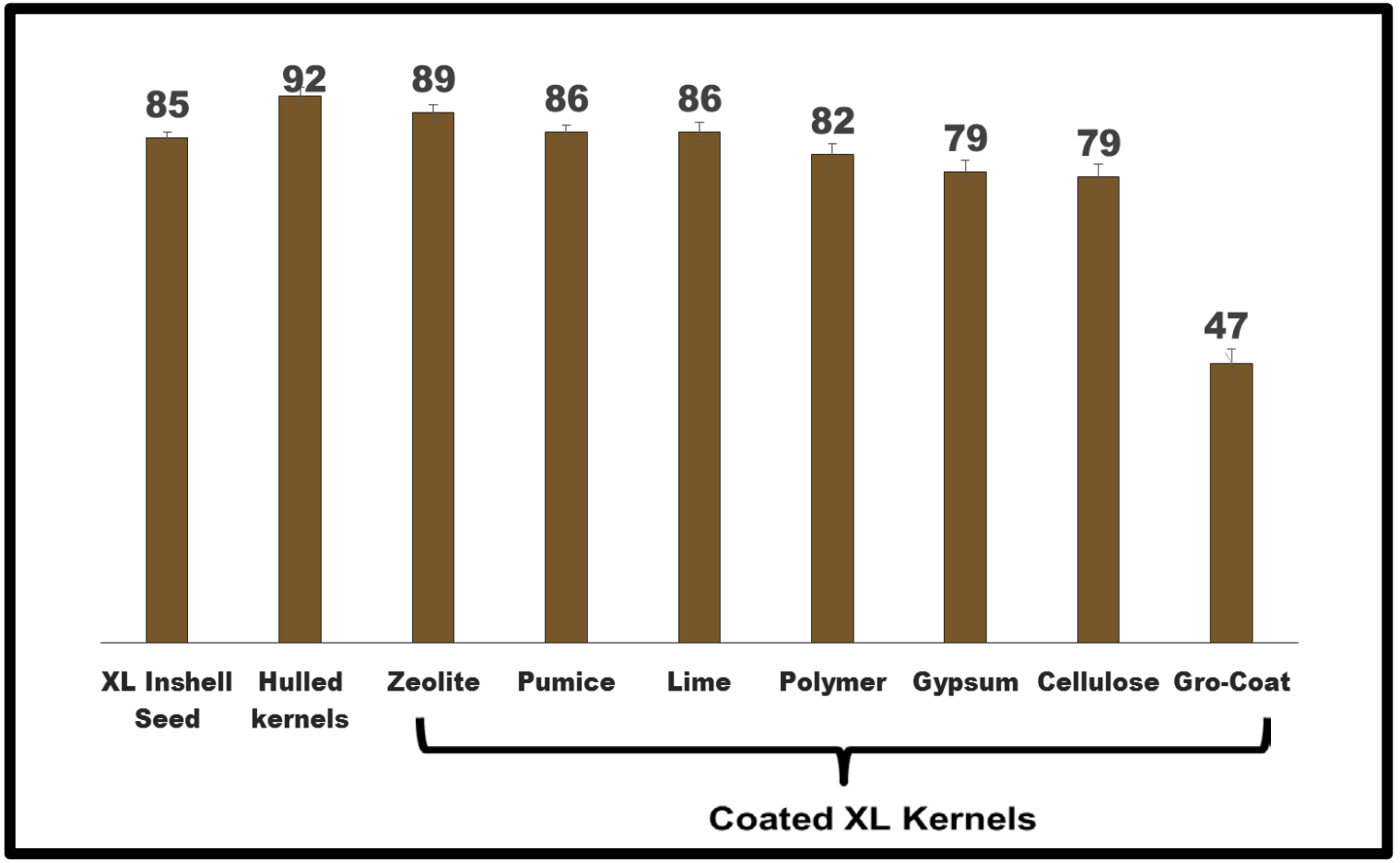
- Manually Coat
- Machine Coat (USC tabletop treater)

Evaluation of Coated Kernel: 2016

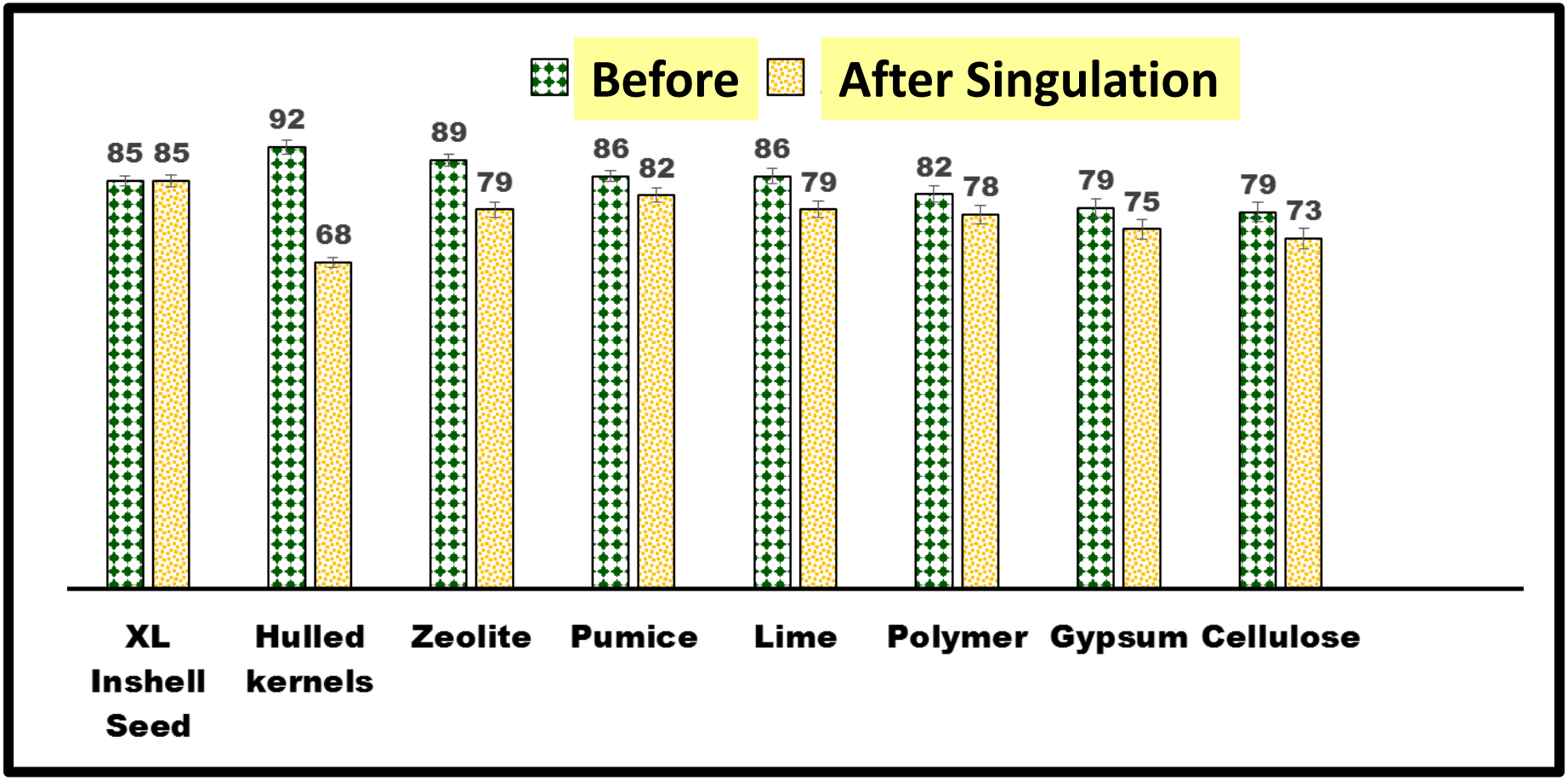
- Germination
- Plantability
- Field trials

Meter Max Test Stand

Germination (%):

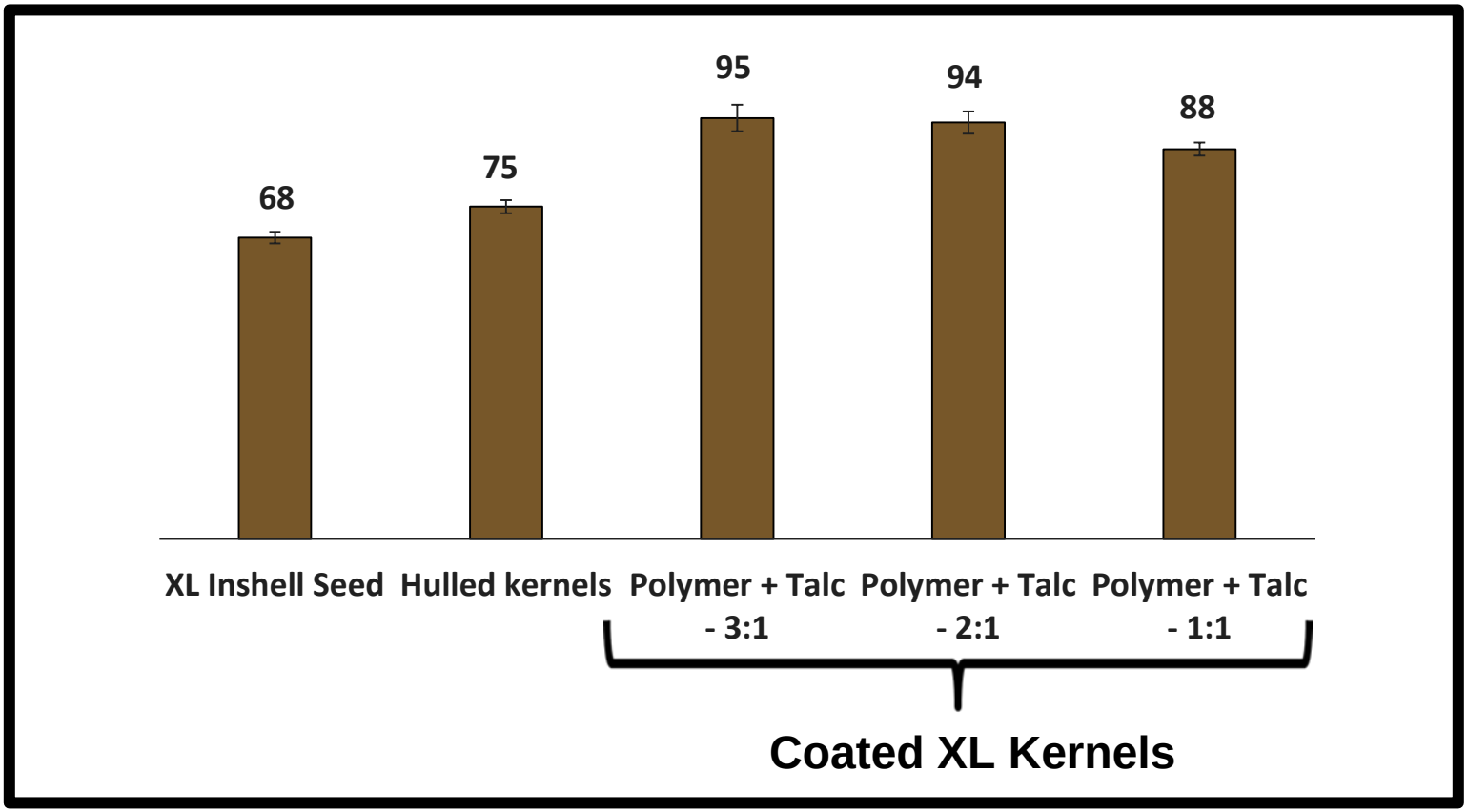


Germination after Singulation (%)

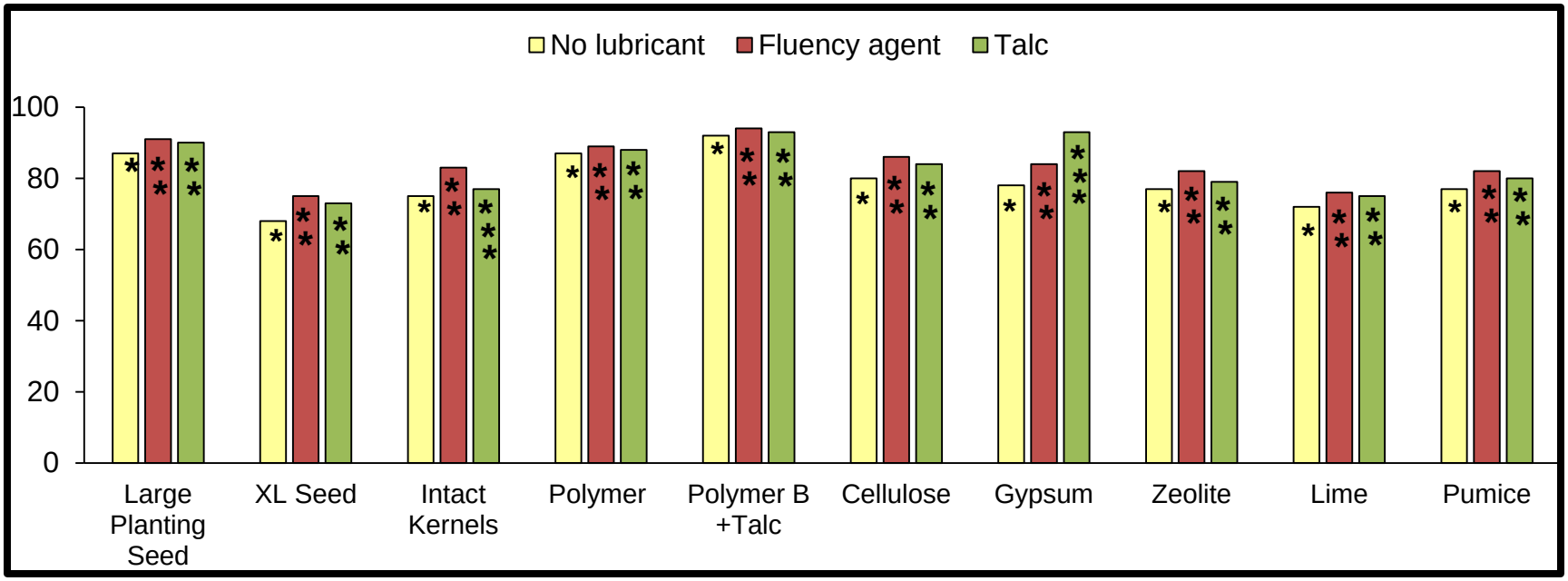


Values for coated seed were averaged across different buildup levels.

Singulation (%)



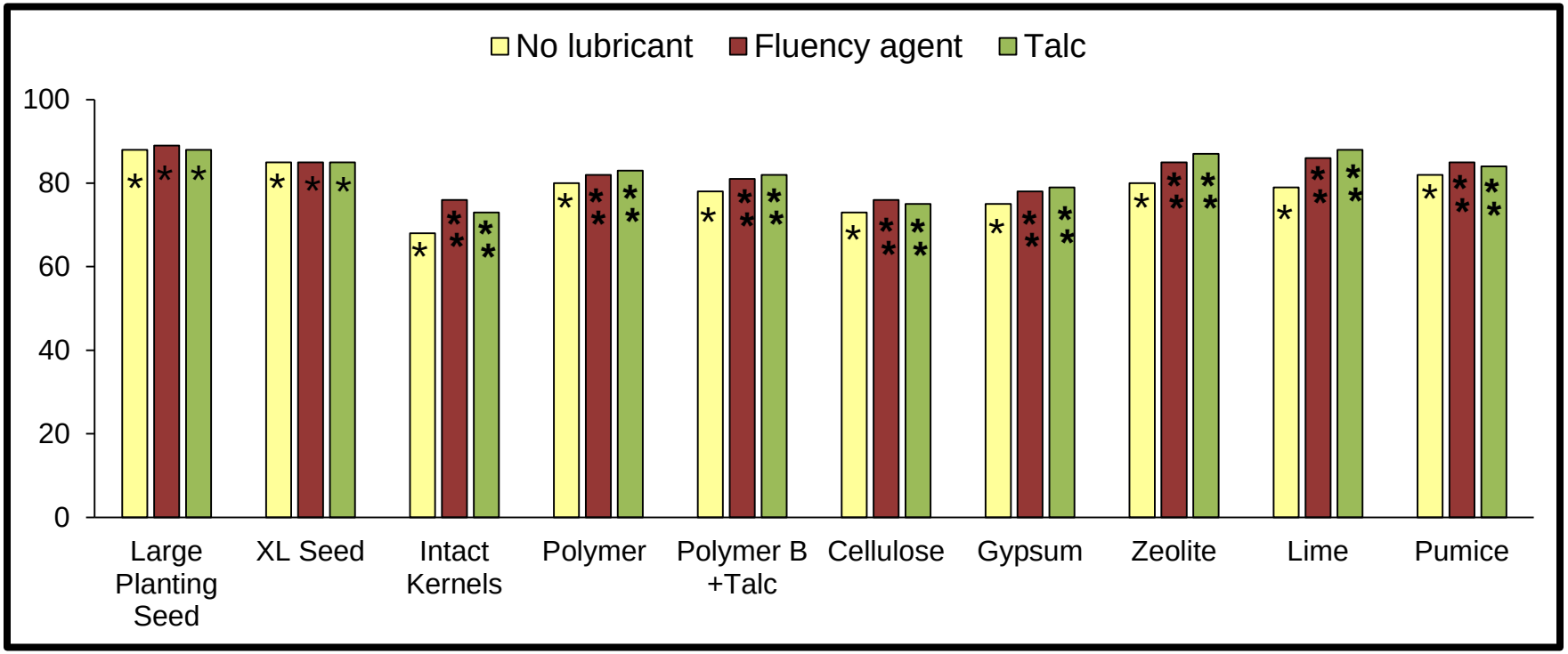
Effect of lubricants on singulation



-Means followed by the same level of *'s with in the same coating type are not significantly different at P ≤ 0.05.
-Used standard corn plate with Meter Max test stand

Both lubricants boosted singulation.

Effect of lubricants on post germination



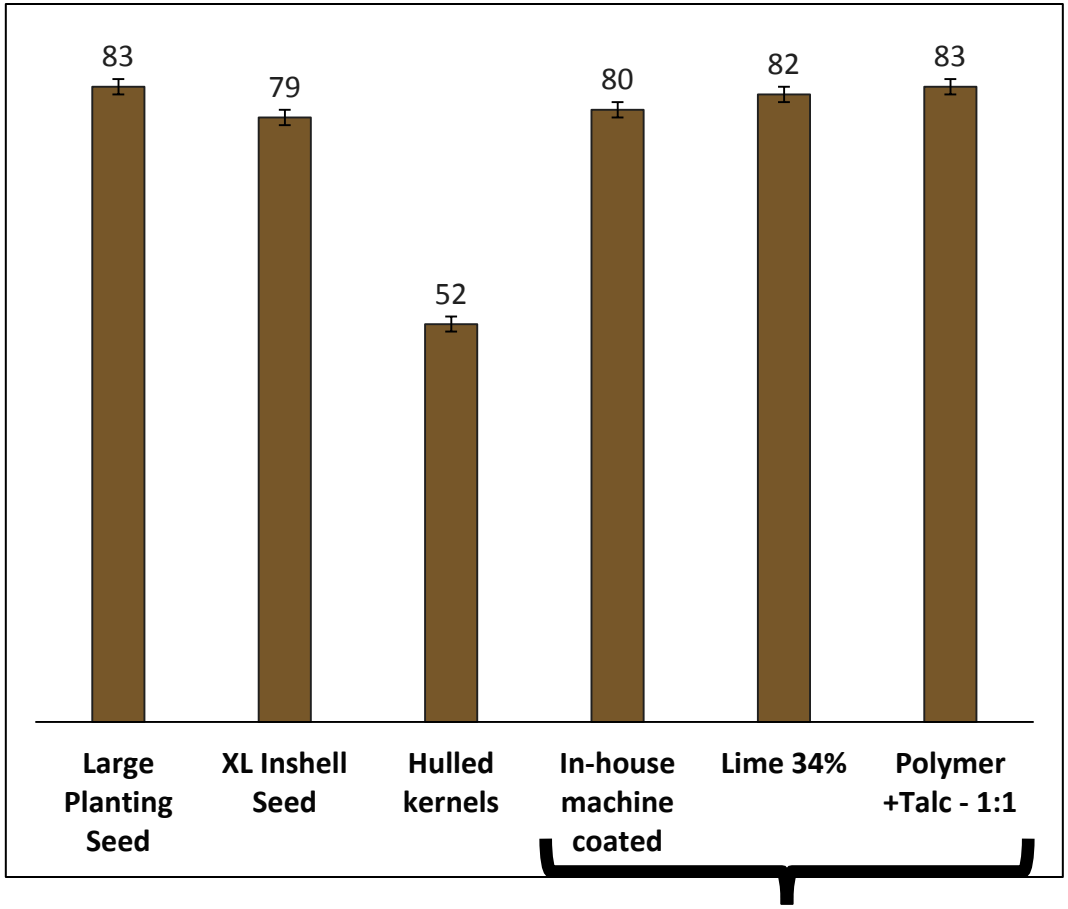
Means followed by the same level of *'s with in the same coating type are not significantly different at P ≤ 0.05.

Both lubricants boosted germination.

Field Trials, Prosper, June 2016

Almaco Grain Drill

Live Seed Emergence: 2016



Field Trials: R5 Stage & Near Maturity

Harjot Sidhu

Goals for 2017-2018

1. Improve germination & singulation
   - Use of seed lubricant
   - Optimum build up using in-house coated seed
   - Computer imaging for evaluation

2. Field test with precision planter

3. Scale-up hulling & separation

Wil Boehner, Andrew Whalen, James Radtke

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