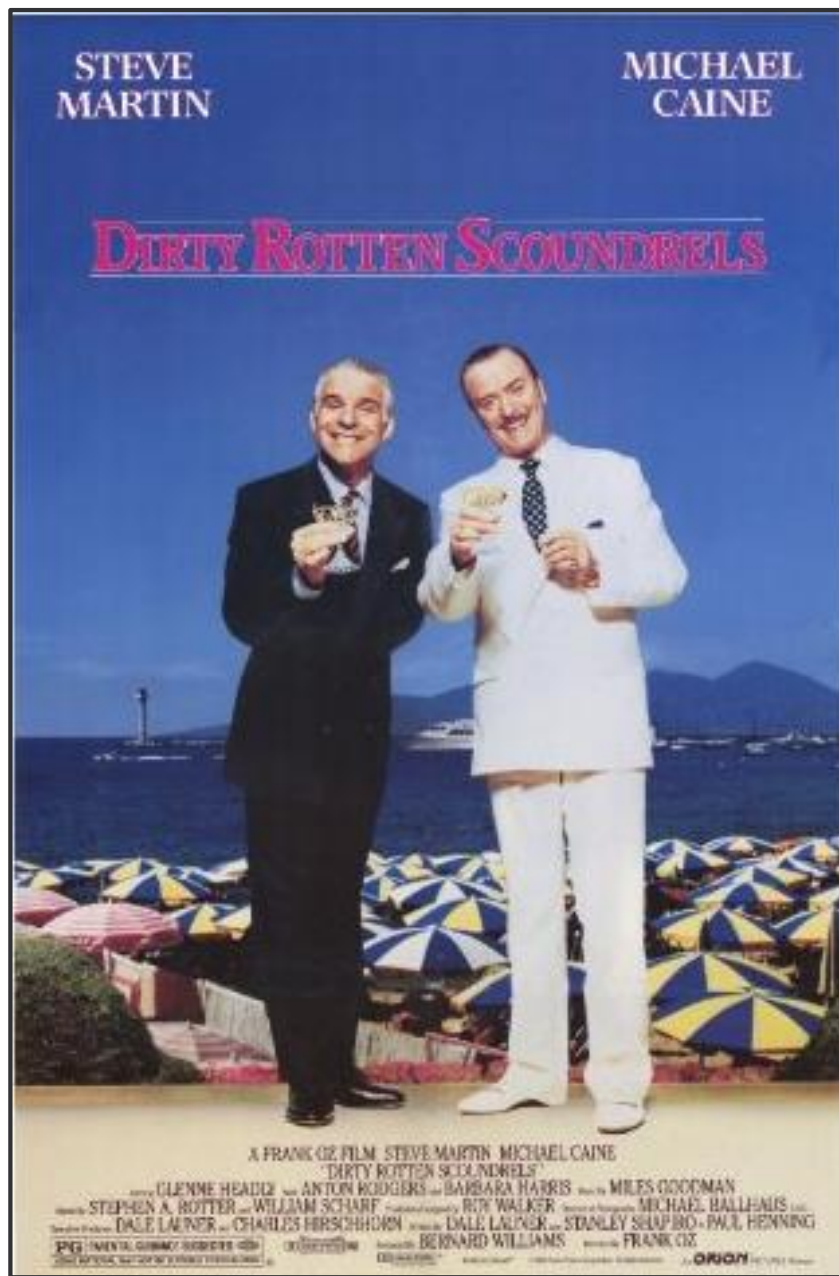




Dirty Rotten Seeds – Advances in Inoculation Methodology

D. Bruns, O. Fajolu, A. Holm, D. Ireland, R. Kuznia, G. Olaya, S. Payne and C. Weber



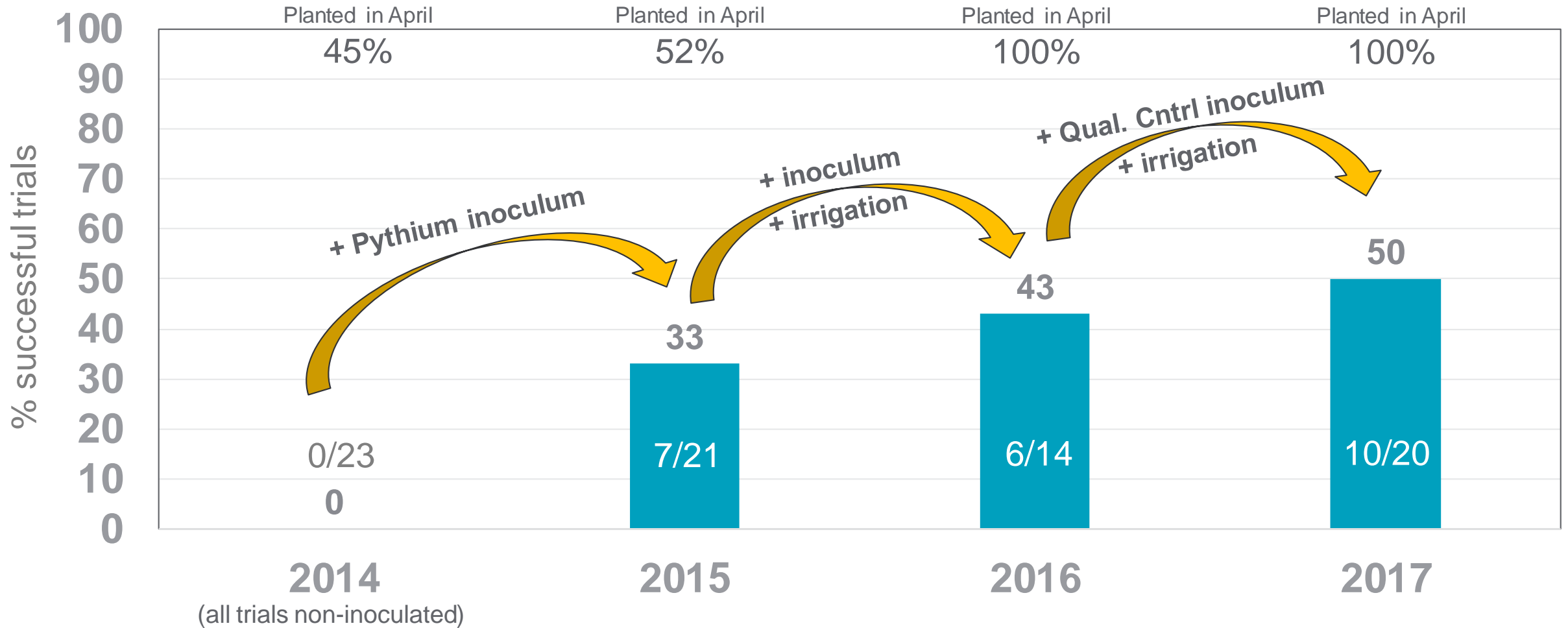
Pythium inoculated corn trials don't have to be painful!



Outline

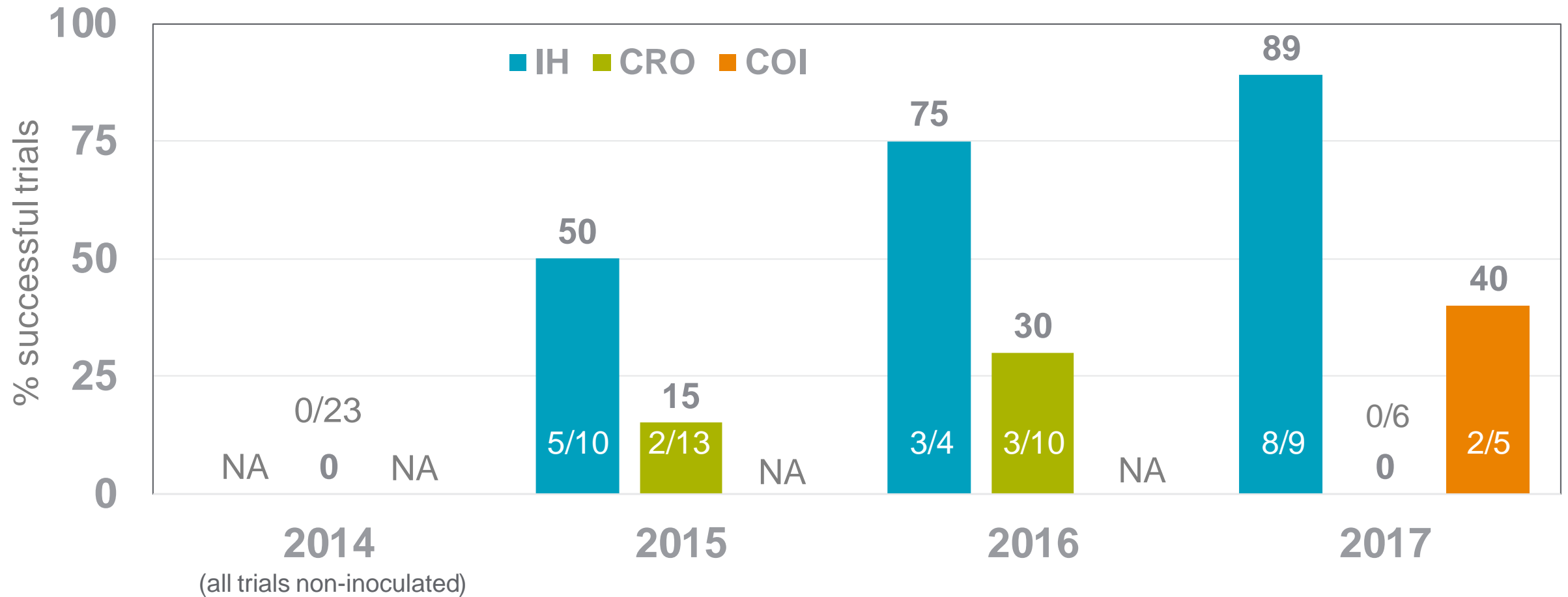
- 2014 to 2017 Progress
- Inoculum Quality Control
- Inoculum Encouragement
- Cost of Not Getting it Right

Success Rate (%)¹ of Pythium Inoculated Corn Trials in HL and N Regions (2014 – 2017)



¹ % of trials where stand counts of A20597B containing treatments were significantly greater than the inoculated check.

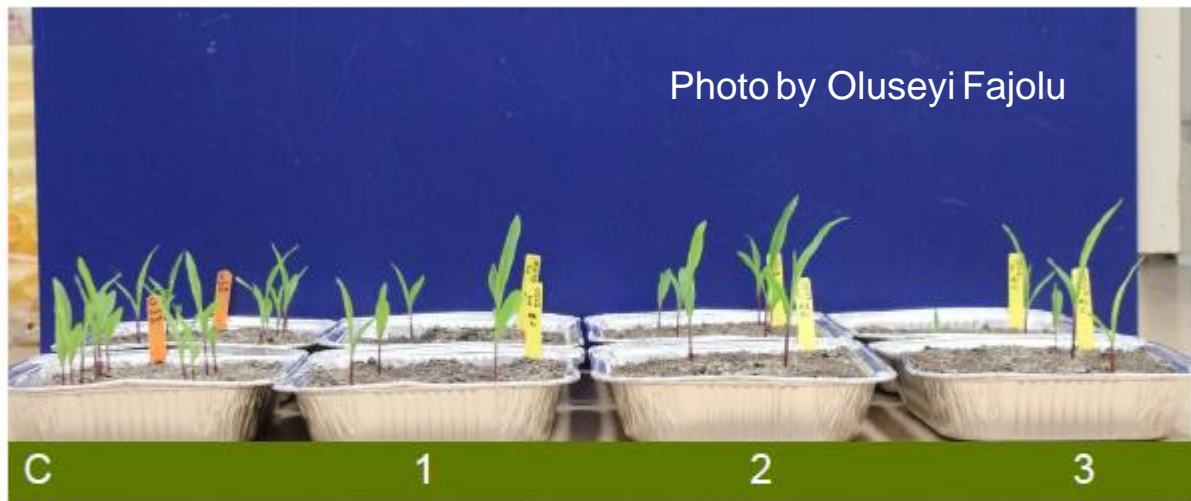
Success Rate (%)¹ of Pythium Inoculated Corn Trials by IH, CRO, and COI (2014 – 2017)



¹ % of trials where stand counts of A20597B containing treatments were significantly greater than the inoculated check.

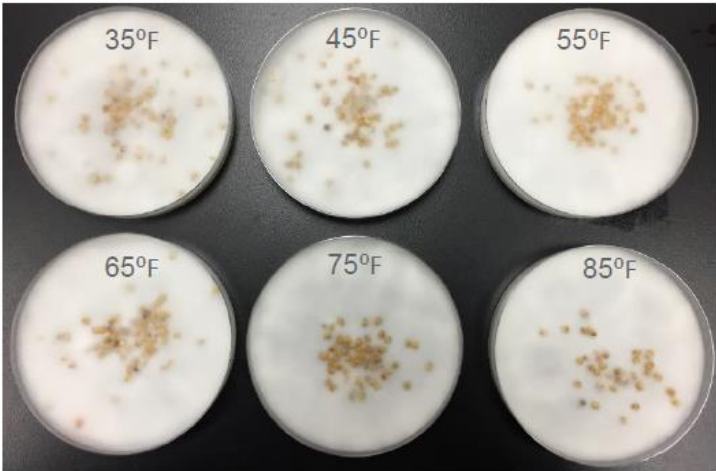
Inoculum Quality Control (Stanton & VBRC)

P. ultimum on corn
Test on 2/20/2017



#	Batch #	Isolate Name	Inoculum rate	Total stand of 2 reps (Max. 28)	Comment
C	Non-inoculated control	NA	NA	21	
1	IB20170023	P. ultimum (Pus16MNS032)	1g/foot of row	6	Provided to Deane J.
2	IB20170024	P. ultimum (Pus16MNS032)	1g/foot of row	7	Shipped to Buckeye- Ag (Dain B.)
3	IB20170025	P. ultimum (Pus16MNS032)	1g/foot of row	5	Shipped to Aaron F. and Scott P.

Agar test after 4 weeks of storage



Photos by
Rita Kuznia

- No loss of inoculum viability after 4 weeks in storage at these temperatures



**Pathogenicity after 4
weeks of storage**

- Seed inoculations done in soil resulted in none of the seeds emerging under the conditions used in this test.
- The corn plants in the center of each flat were un-inoculated but show that growing conditions without the pathogen were proper for plant growth.
- Inoculum remained viable at all six temperatures after 4 weeks of storage.



Inoculum Encouragement in Corn – Saturated Soil Conditions

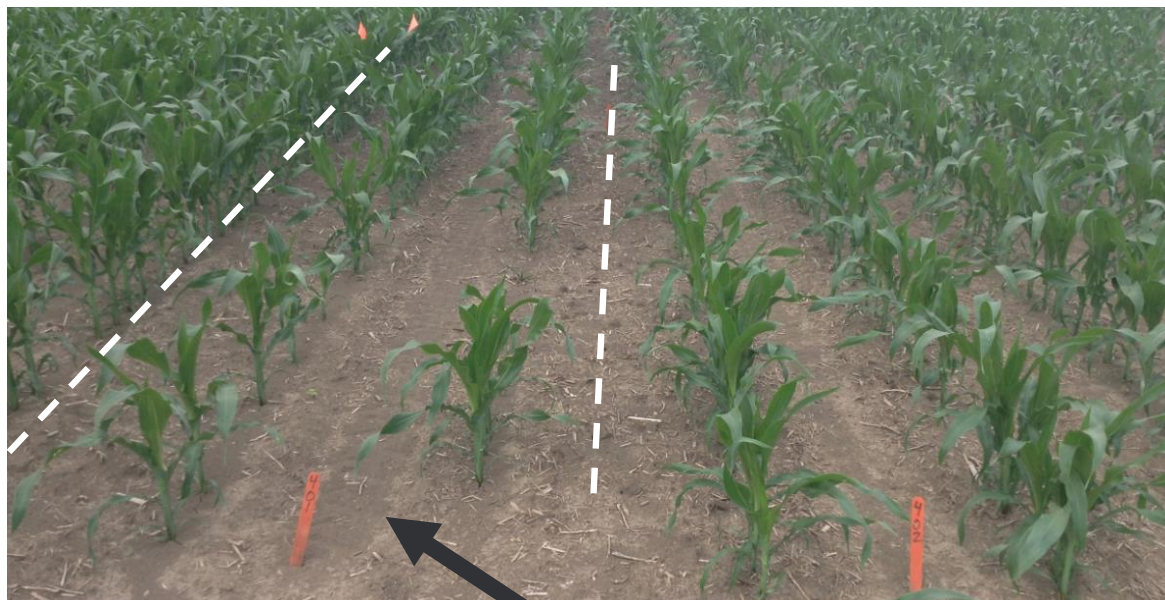


Double Drip Tape (Irwin, OH)



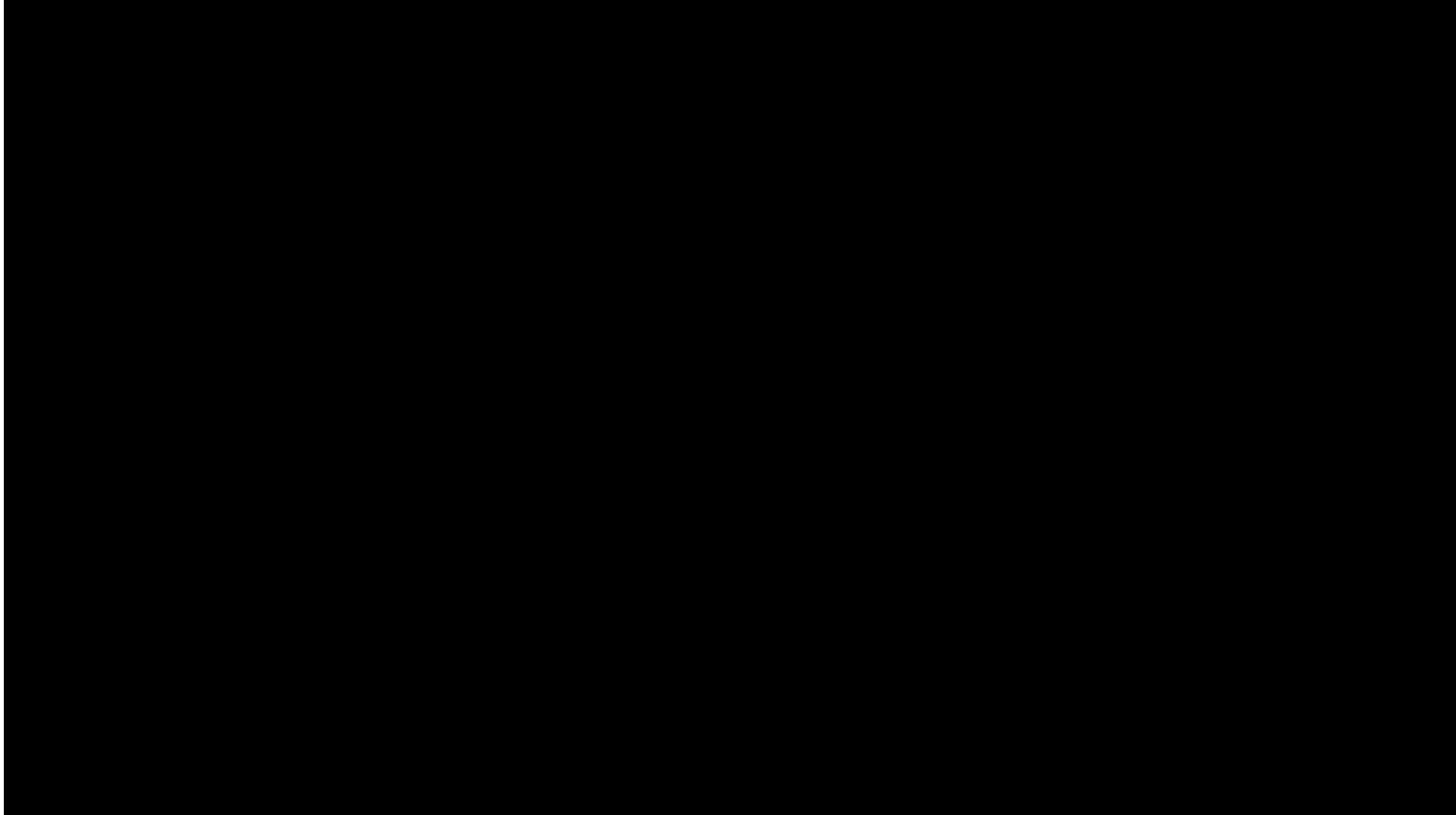
Sprinkler (Clinton, IL)

Inoculum Encouragement in Corn – Importance of Inoculum Placement



Same
Planting Date
Hybrid/Seed Treatment
Pythium inoculum (Stanton)
Irrigation
Different
Inoculum Placement in furrow

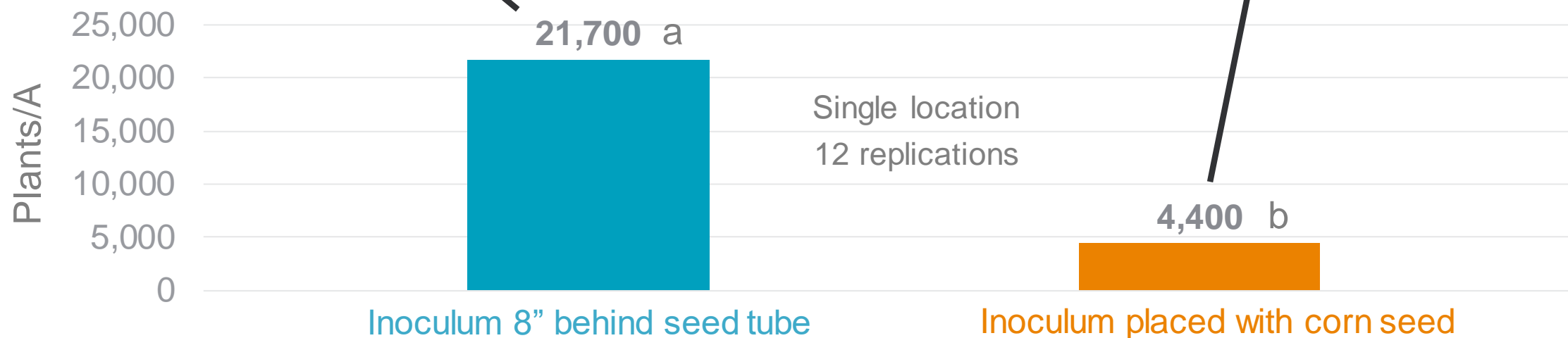
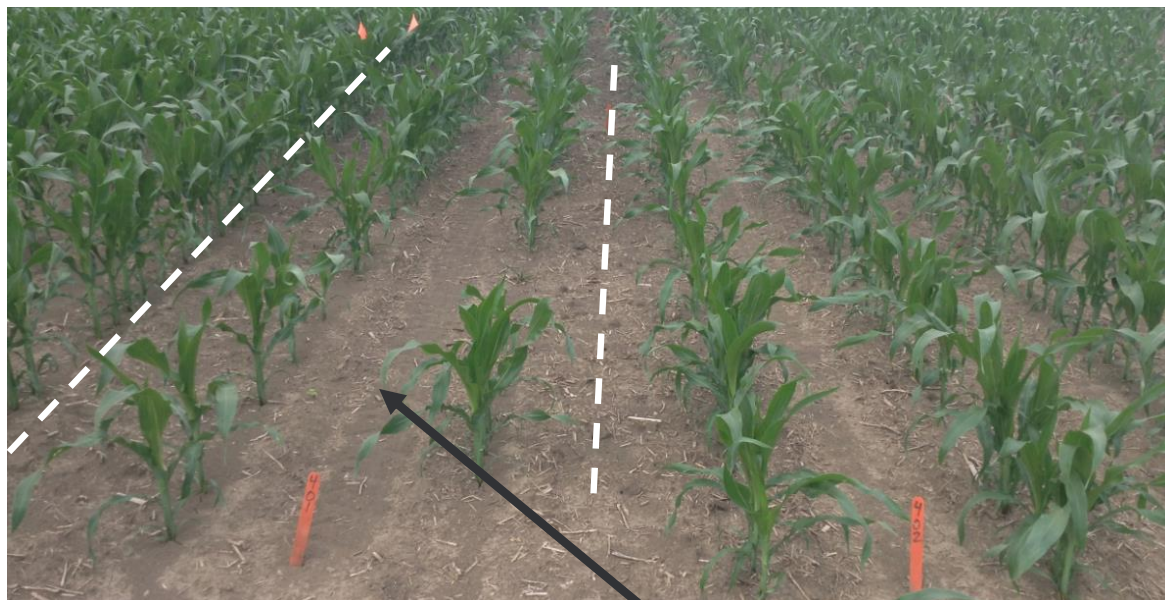
Inoculum Placement – Granular Insecticide Unit vs Monosem Planter Unit



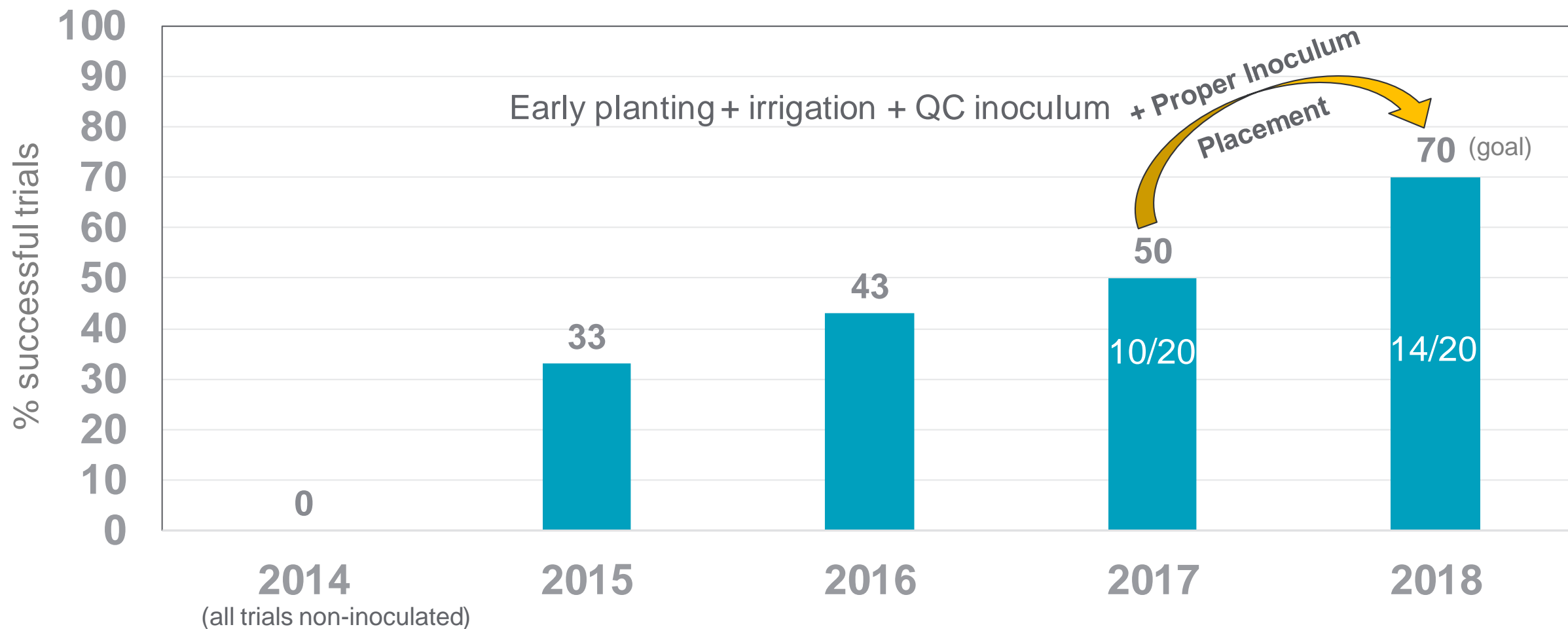
YouTube Videos

- First observation of inoculum placement effect
 - <https://www.youtube.com/watch?v=xfUNOMSCg-s&feature=youtu.be>
- Confirming importance of inoculum placement
 - <https://www.youtube.com/watch?v=H6hH2AWqfzo&feature=youtu.be>
- Confirming importance of saturated soil
 - <https://www.youtube.com/watch?v=Nto5CTw2qLc&feature=youtu.be>

Inoculum Encouragement in Corn – Importance of Inoculum Placement

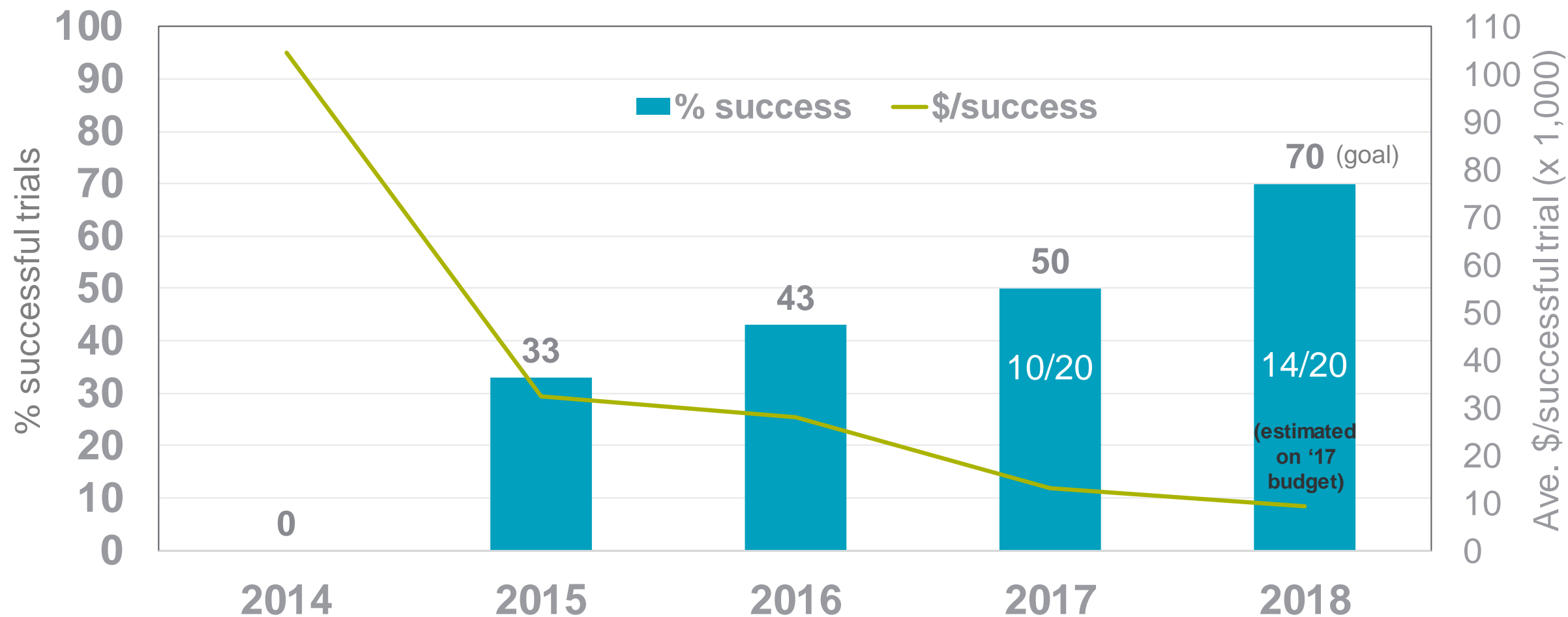


2018 Success Rate Goal = 70% for Pythium Inoculated Corn Trials



¹ % of trials where stand counts of A20597B containing treatments were significantly greater than the inoculated check.

The Cost of **Not** Getting it Right



Summary

- Success rate of Pythium inoculated corn trials has improved each year
- Virulent inoculum is key and we have a better understanding thanks to quality control by Stanton and VBRC
- Inoculum Encouragement
 - Right time – planted early
 - Right place – inoculum deposited simultaneously with corn seed at the seed tube
 - Right amount of water – saturated soil conditions by natural rainfall, irrigation or a combination of both
- Investing in methodology research by CPFD has increased the trial success rate and reduced \$ per successful trial.