Welcome everyone, it’s lovely to see all your shining faces. My name is Gina Nichols, and I’m here to present about work I’ve done as part of my dissertation for a PhD in Crop Physiology.

First, I’m going to tell you what I did. Then, I’ll tell you my motivation for doing the research I do. This is following advice from Melissa Marshall, who trains people to talk about science, and whom was recommended to me by Frank Dohleman, who some of you know.

I arrived at ISU in January 2018. On the left are my first-authored publications, and on the right my co-authored publications since I’ve arrived. I’m showing you this to tell you I have a lot of things I’ve done that I want to tell you about. But I can’t.

So I made a short list of some of the key take-aways I have from my work.

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This list is not exhaustive, but it is still too long for a presentation. So I’m going to focus on telling you about #1: the effects of longer crop rotations.

Here we go.

This is a document, that, with a slight change to the title, I love. It was shared with me by one of my advisors, Matt Liebman, who is the Henry A Wallace Chair for Sustainable Agriculture here at ISU. That may or not be connected to why he shared it, but I hope the name Henry A Wallace sounds familiar to many of you. He is from Iowa, and was truly incredible. He was the secretary of agriculture, he could be called the inventor of hybrid corn and started Pioneer, which is now Corteva.

He also saw agriculture as ….?

This entire book is basically an ode to crop rotation. Henry A Wallace loved crop rotation, and Iowa had one of the richest crop rotation cultures of anywhere. We have weather and soils that can support growing a lot of different crops.

Now remember this was in 1938, so a lot of the crop rotation benefit was fertility-based. But even today, this phenomenon holds true.

In today’s context, growing corn continuously on the same field might give you around 180 bu/ac, or roughly 9 Mg ha. If you put that field into a corn/soybean rotation, your corn yields bump up to around 200 bu/ac. Interestingly, we still don’t know why. SO that is one of the questions I sought to address during my PhD.

Now, often when I tell people I’m studying agronomy, they have no idea what that means. It’s not a word used in common vernacular, although our department is trying to make it an everyday word. They have had an ‘I’m an agronomist’ campaign going for a little while, you can actually see some posters at the Des Moines airport next time you’re there. So if you are unfamiliar with the term, here’s a definition that, if you’ve taken Dr. Ken Moore’s class you might be familiar with:

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