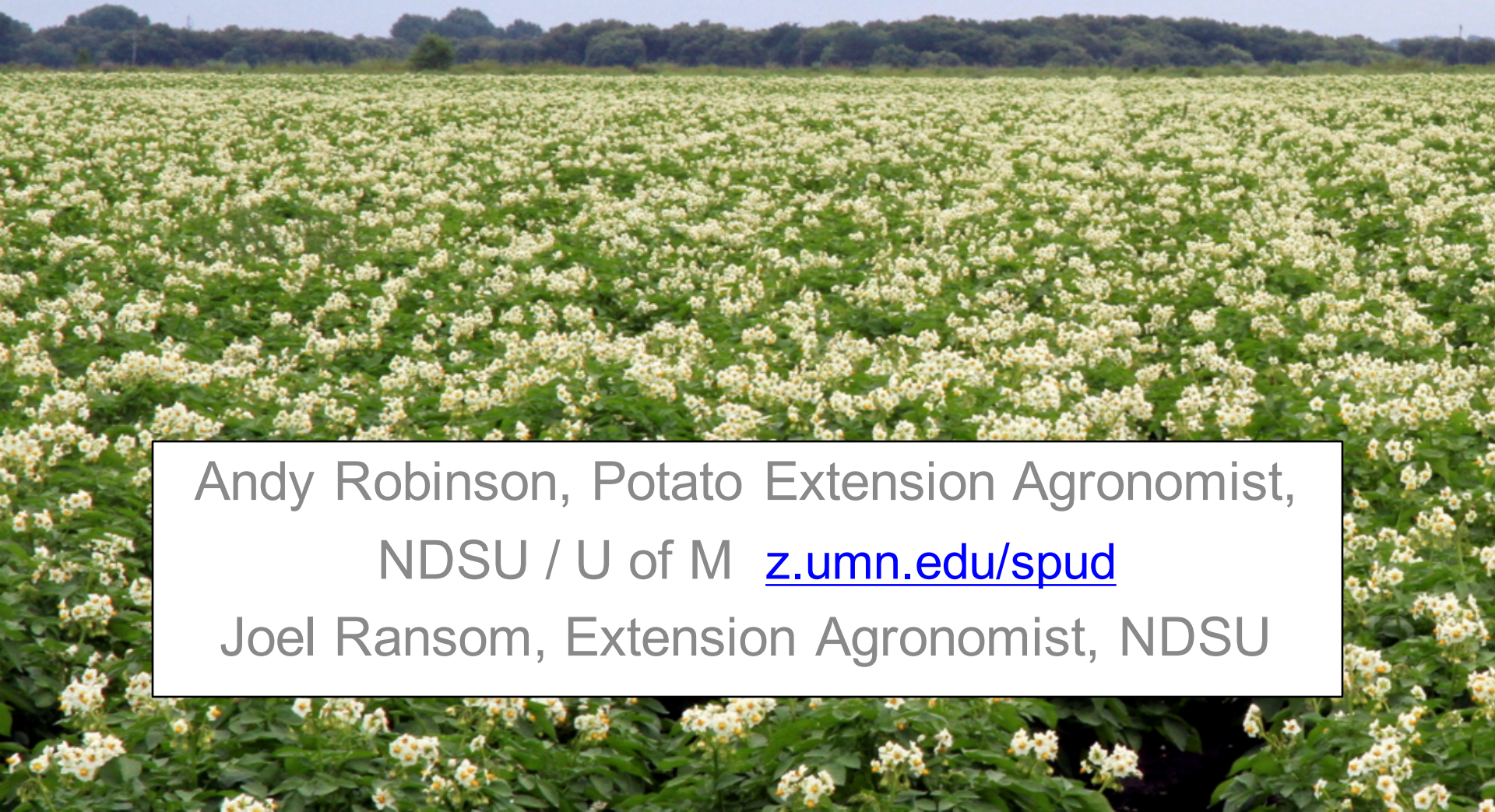
Rotational Crops Effects on Potato Production the the Red River Valley



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Potato Production Background

- 200+ years of potato production in RRV
- 82,000 acres of potatoes produced in ND in 2015
- 50,000 acres of potato are grown in the RRV
  - Chip, seed, and fresh
- Average yield estimated at 340 cwt/a in 2015

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Red River Valley potato pickers in the early 1920s. Photo courtesy of SHSND.

The prevalence of weeds existed in this 1922 potato picking scene near Park River, N. D. Photo courtesy of NDIRS.


E-Z Lart
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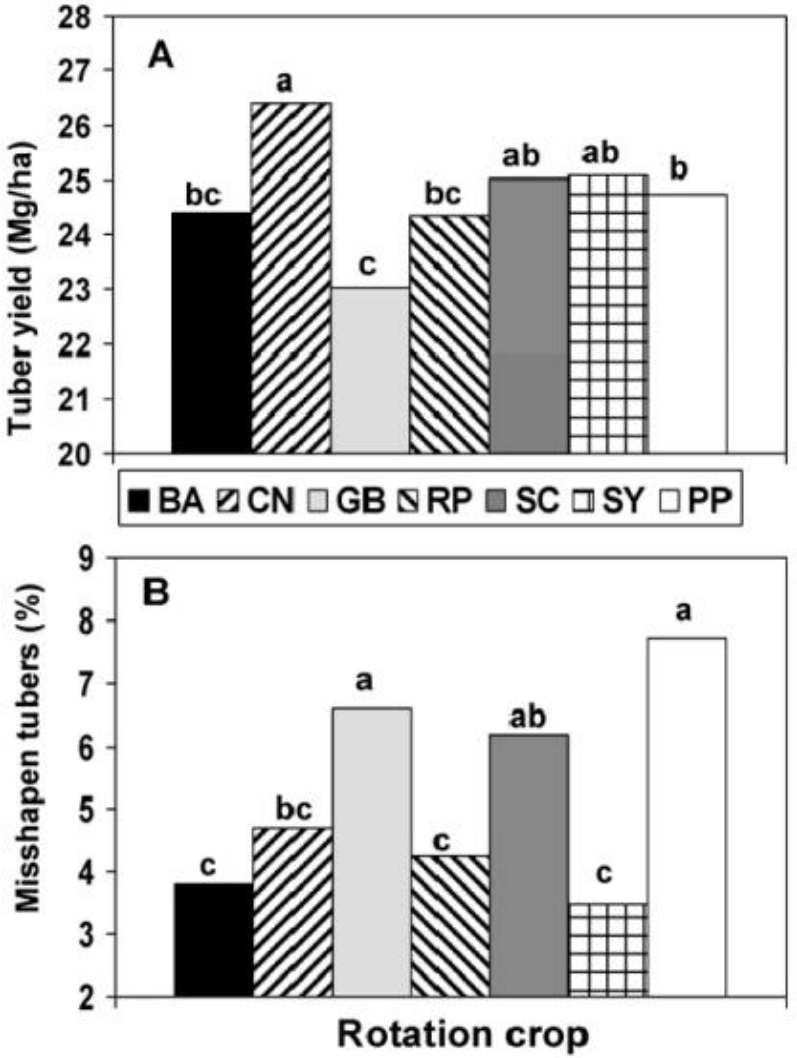
Canola in Rotation with Potato

- Study in Newport, ME from 1997-2006 had 7 2-year rotations on a sandy loam.
- Fields were chisel plowed in the spring, then disked twice.
- Potatoes yield better with canola the prior year
  - 14.7% higher than green bean
  - 8.2% higher than barley/clover



BA=barley, CN=canola, GB=Green bean, RP=millet/rapeseed, SC=sweet corn, SY=soybean, PP=potato-potato

(Larkin et al., 2010)

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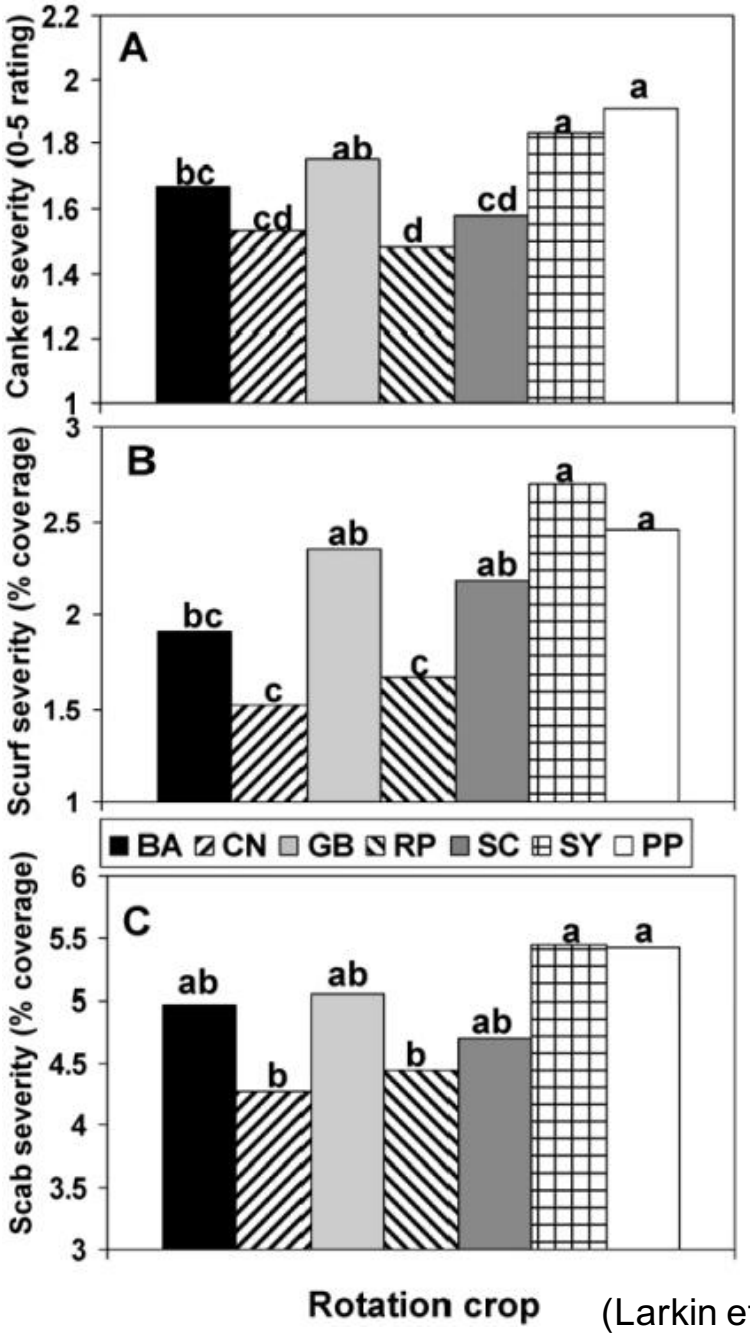
Canola in Rotation with Potato

- Canola in rotation with potato had a 18-38% reduction of Rhizoctonia canker, black scurf, and common scab.



(Larkin et al., 2010)

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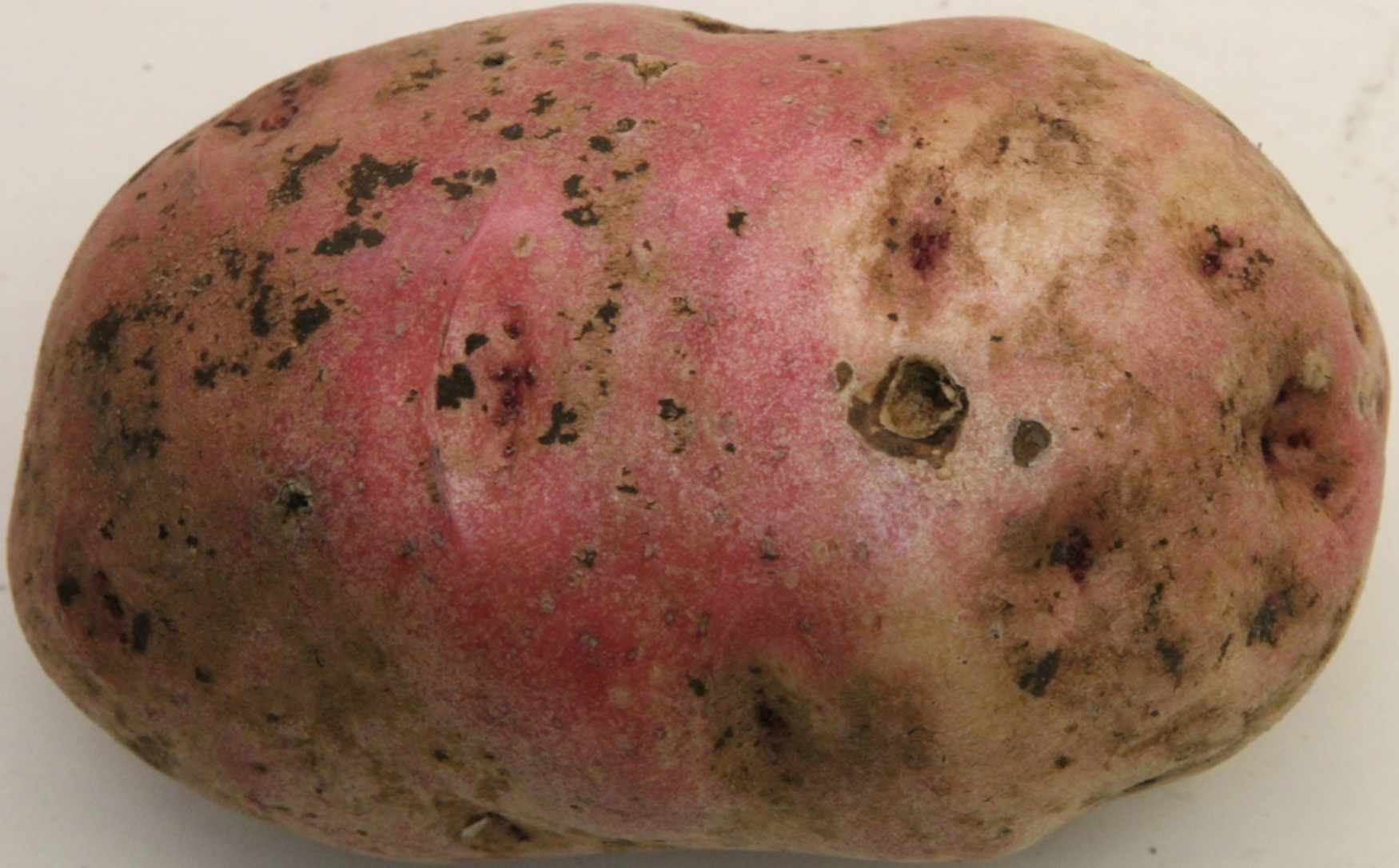


Red River Valley Study

- 1961-1963 study in Grand Forks, ND.
- Yield response of Pontiac potato was good with no tillage, and better than plowing.
- Clod weight was not consistent.
- Challenges: debris when planting, weed control

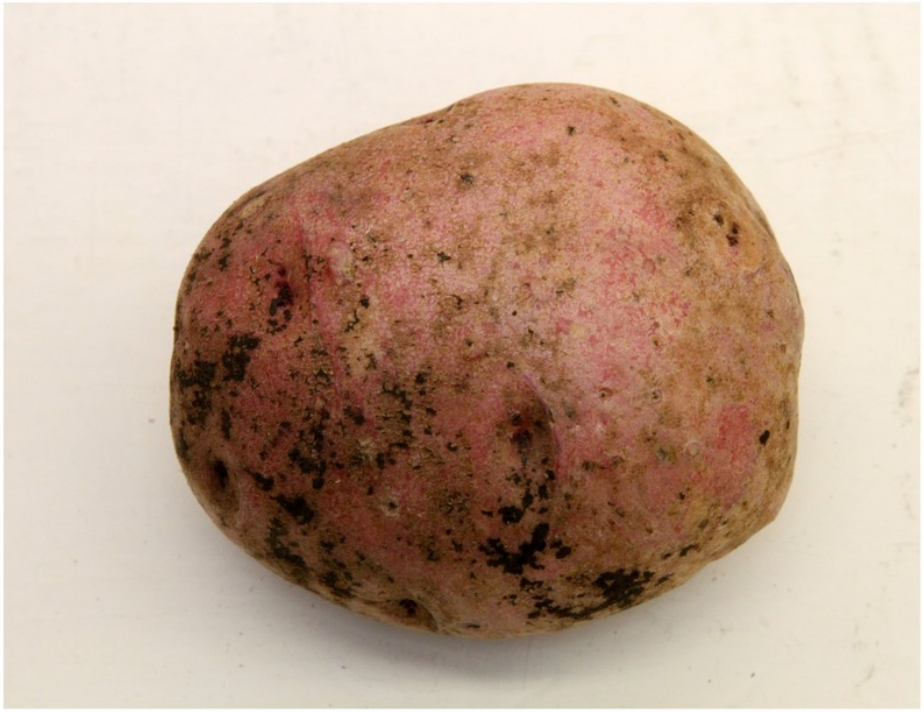
Treatment	Yield (3 year average)	
No tillage	163	a
Deep till, fall	155	ab
Plow, fall	150	b
Deep till, spring	156	ab
Plow, spring	139	c

(French and Blake, 1966)

Challenges in Production

- Dirt clods
  - Cause bruising, skinning, extra weigh to haul
  - Leads to increased fuel costs and entry of diseases in tubers.
- Potato diseases seem to be increasing
- Fresh potatoes: People Buy with Their Eyes
- Push for sustainable crop production


WARNING
MOVING PART HAZARD




Purpose of the Study

- Determine the effects of the previous crop (dry edible bean, canola, or wheat) on potato quality and yield.

What was Done

- Grand Forks, ND (2015)
  - RCBD with 4 replicates
    - 3 crops: canola (RR), dry edible bean (Avalanche – Navy), spring wheat (Faller)
    - 2 tillage types: minimal till and fall chisel plow

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What was Done

- Plots measured 10 x 40 ft
- Pre Plant incorporated 145 lb N/a, 40 lb P/a
- Seeded on May 26, 2015
- Harvested on September 9, 2015

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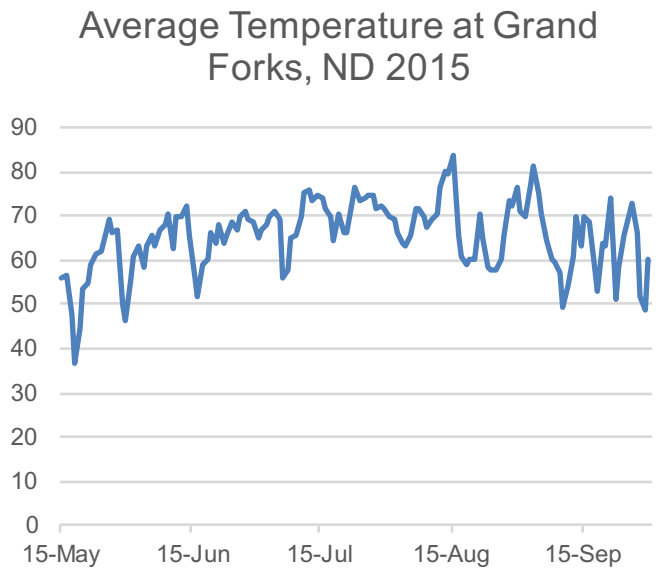
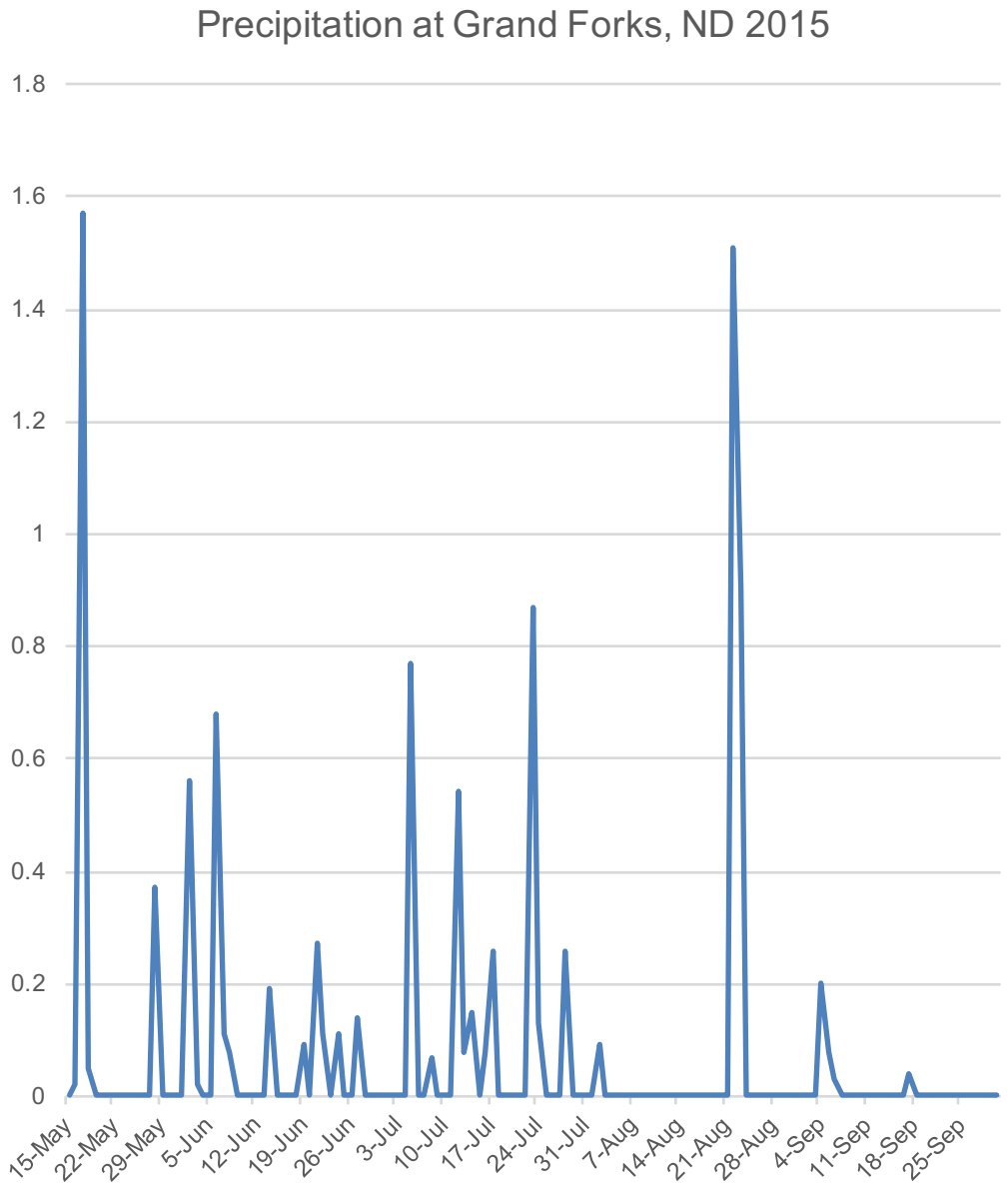
Weather at Grand Forks, ND

- 8.4 inches of rain from planting to harvest





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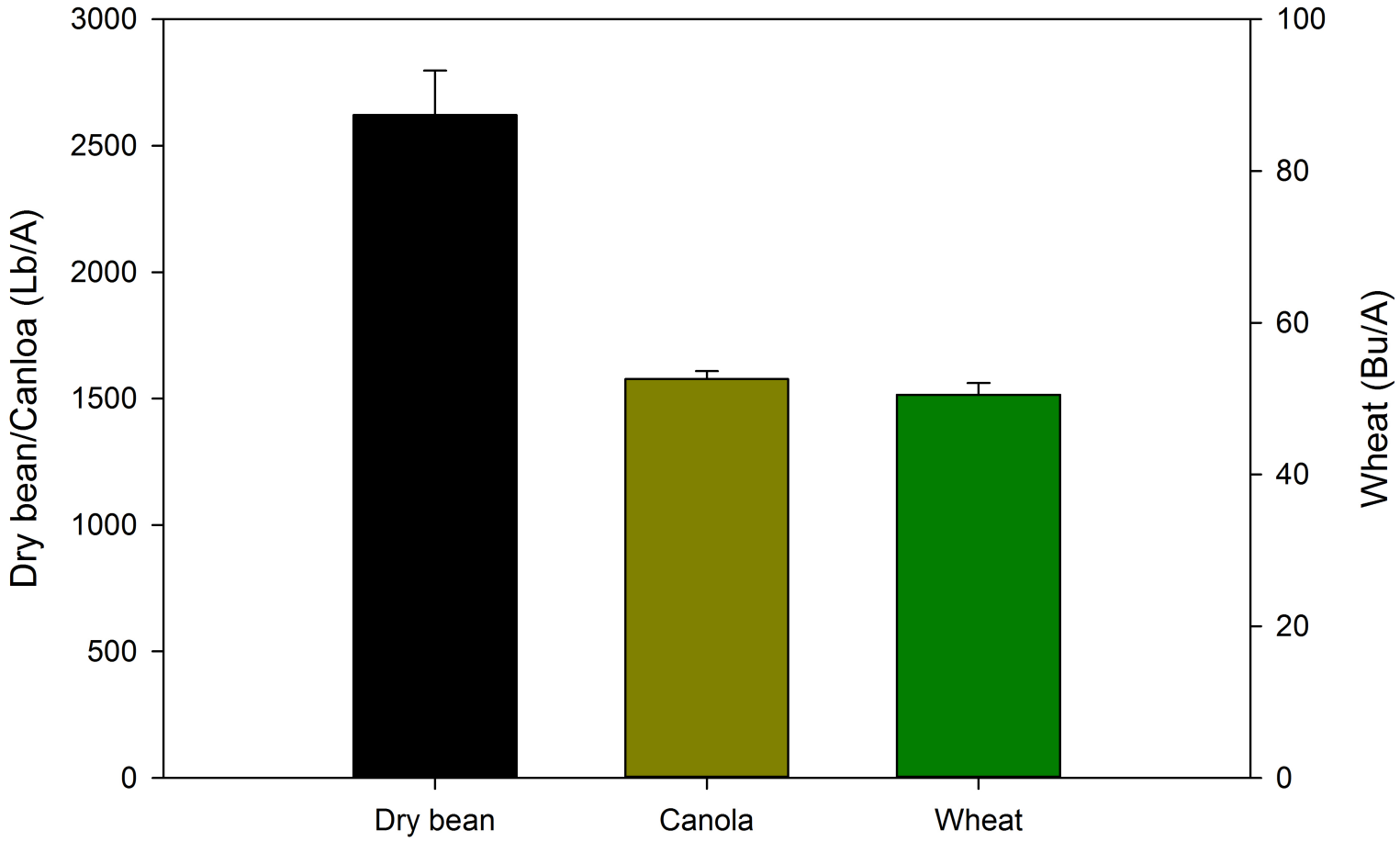
Yield Results



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Future Work

- Start a 2nd year of rotational crop study.
- Seek funding from the NPPGA for potato crop to follow 2015 plots.
  - Measure marketable yield, external blemishes, and clod weight.

Thank you

- Northern Canola Growers Association
- Northern Plains Potato Growers Association

Questions?

z.umn.edu/spud