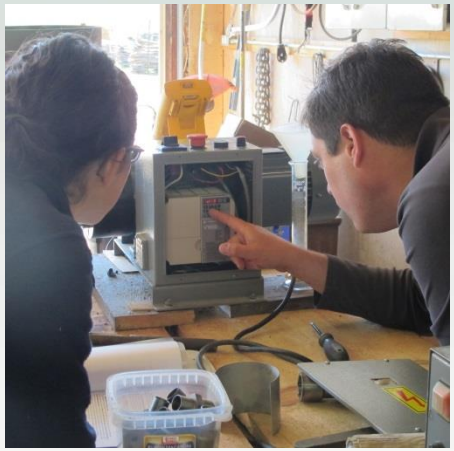
Small-Scale Oilseed Press Evaluations



Chris Callahan & Hannah Harwood

2014 Annual Oilseed Producers Meeting ~ March 3, 2014

Six presses

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Protocol

3 CROPS
- Canola
- Soybeans
- Sunflower

3 METHODS (RPM settings)
- Method 1: Operator's preferred tuning
- Method 2: Faster processing
- Method 3: More oil

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Note: in some cases, additional trials were conducted

Press setup

- Data represent one configuration of many possible nozzle and screw setups

PRESS	CROP		
	Canola	Soy	Sunflower
AgOil M70	7	7	7
Keller KEK P0020	N/A	N/A	N/A
KernKraft 40	6.5 Shallow, soft shell screw	9 Deep, hard shell screw	8 Deep, hard shell screw
Komet CA59G3	5	*Failed test*	5
Oil Prince / KernKraft 20	10	*Failed test*	10
Täby 70	5	5	8

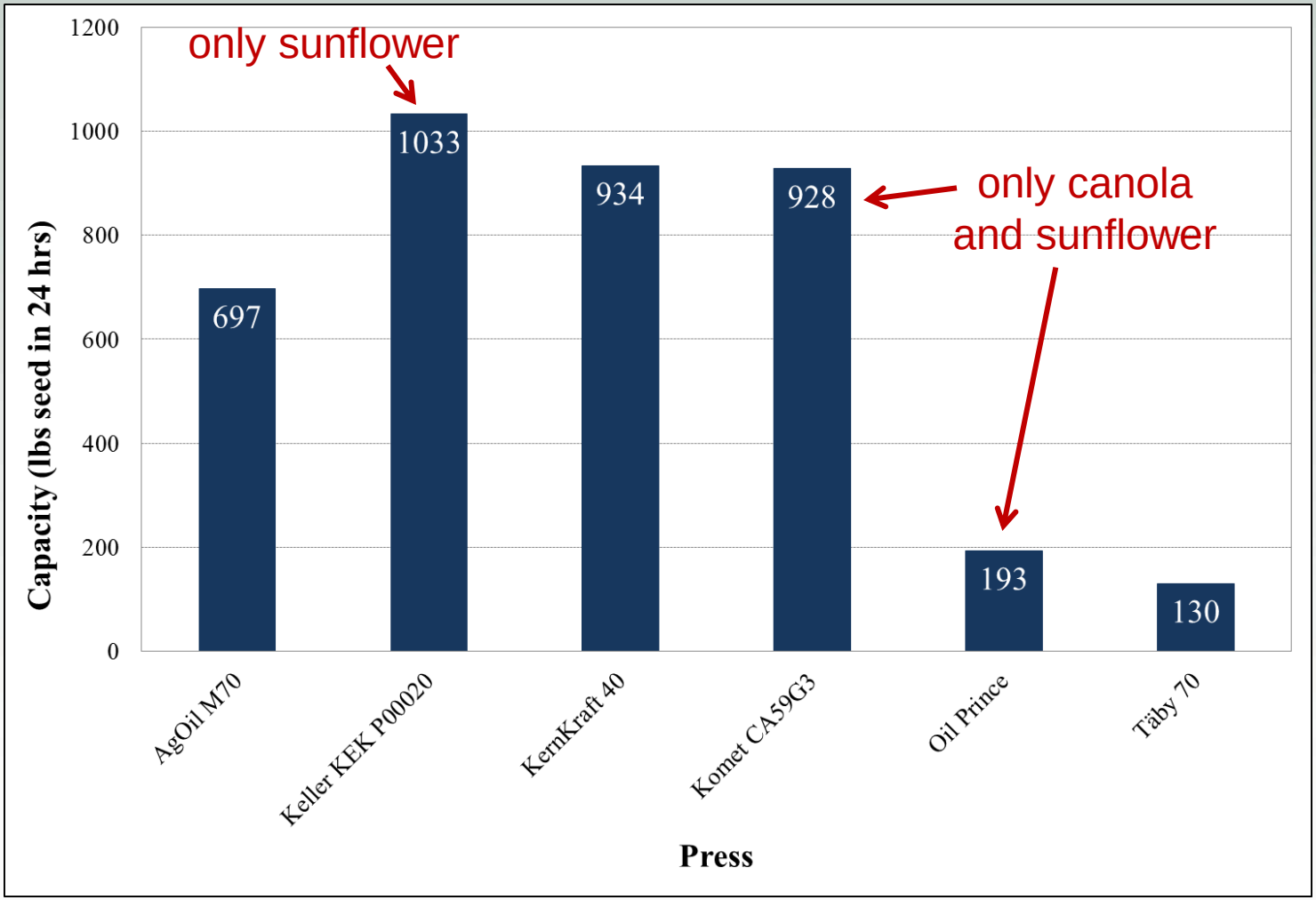
Capacity by speed

- All presses evaluated have variable speed

- Capacity increases with press speed

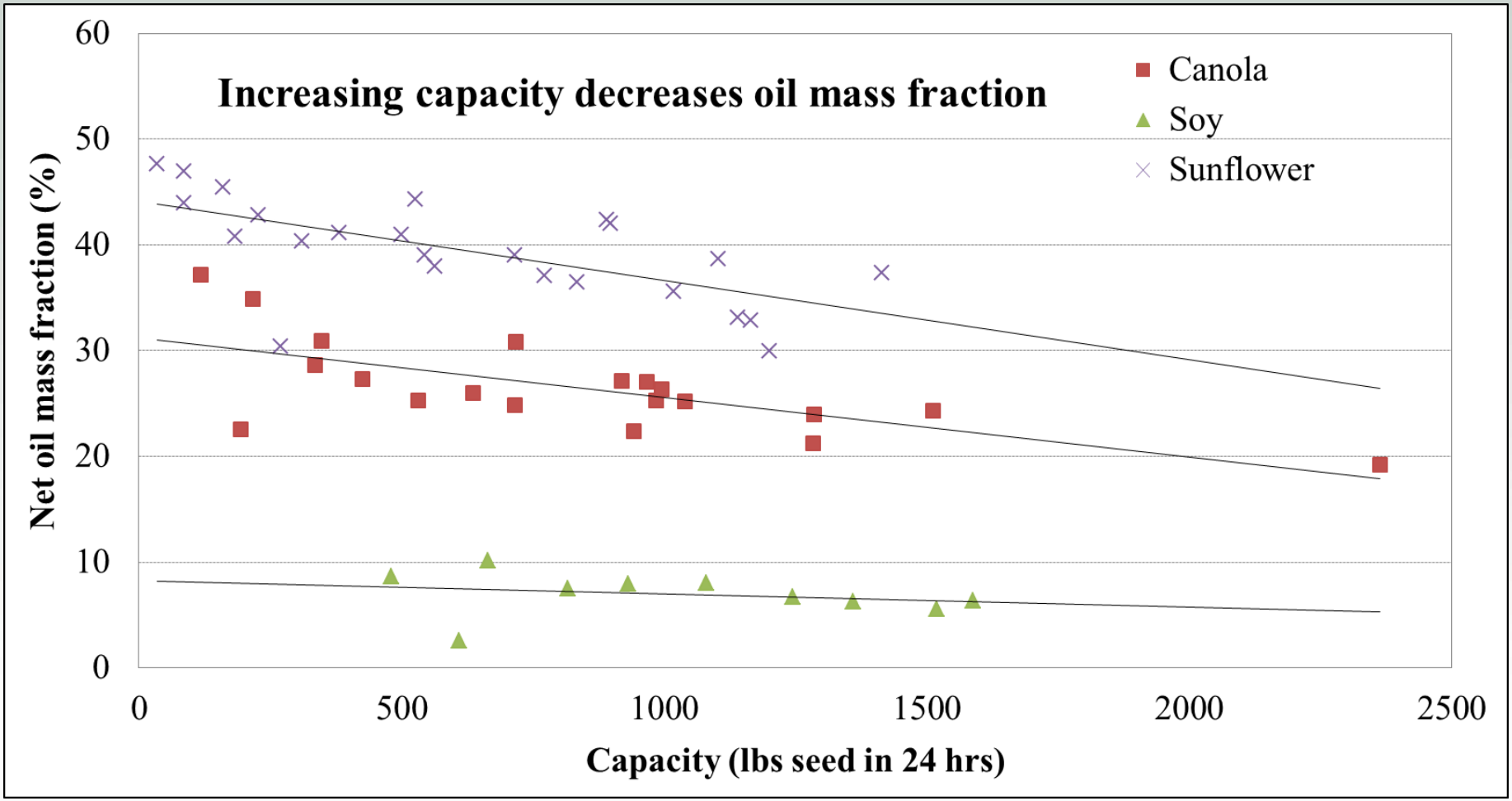
Press and Screw Speed (RPM)	Crop		
	Canola	Soy	Sunflower
AgOil M70			
18.75			184
25.00	335		
31.25	427		311
37.50	533		
50.00	716	609	545
62.50		932	
75.00	568	1245	773
100.00	1284	1520	1018
Keller			
16.00			35
32.00			86
46.00			270
KernKraft 40			
18.00			382
25.00	967	665	527
40.00	1041	1081	835
60.00	2365	1588	1201
Komet			
30.00			86
37.50	118		
67.50			161
72.50	348		
76.25	217		
95.00			228
Oil Prince			
31.25			899
37.50			891
56.25	718		500
112.50	997		1140
125.00	1136		1166
Täby			
40.00			565
50.00	636	482	717
80.00	920	817	1103
120.00	1513	1361	1415

Capacity by press



2013 press evaluation data

Oil mass fraction by capacity



2013 press evaluation data

Oil mass fraction by press

	AgOil M70	Keller KEK P00020	KernKraft 40	Komet CA59G3	Oil Prince	Täby 70
Canola	24.6%	-	23.8%	34.4%	26.6%	25.8%
Soy	5.7%	-	8.2%	-	-	7.5%
Sunflower	38.6%	40.7%	38.0%	45.1%	38.3%	38.3%
AVERAGE	24.2%	40.7%	24.8%	39.7%	33.1%	25.3%

only sunflower

only canola and sunflower

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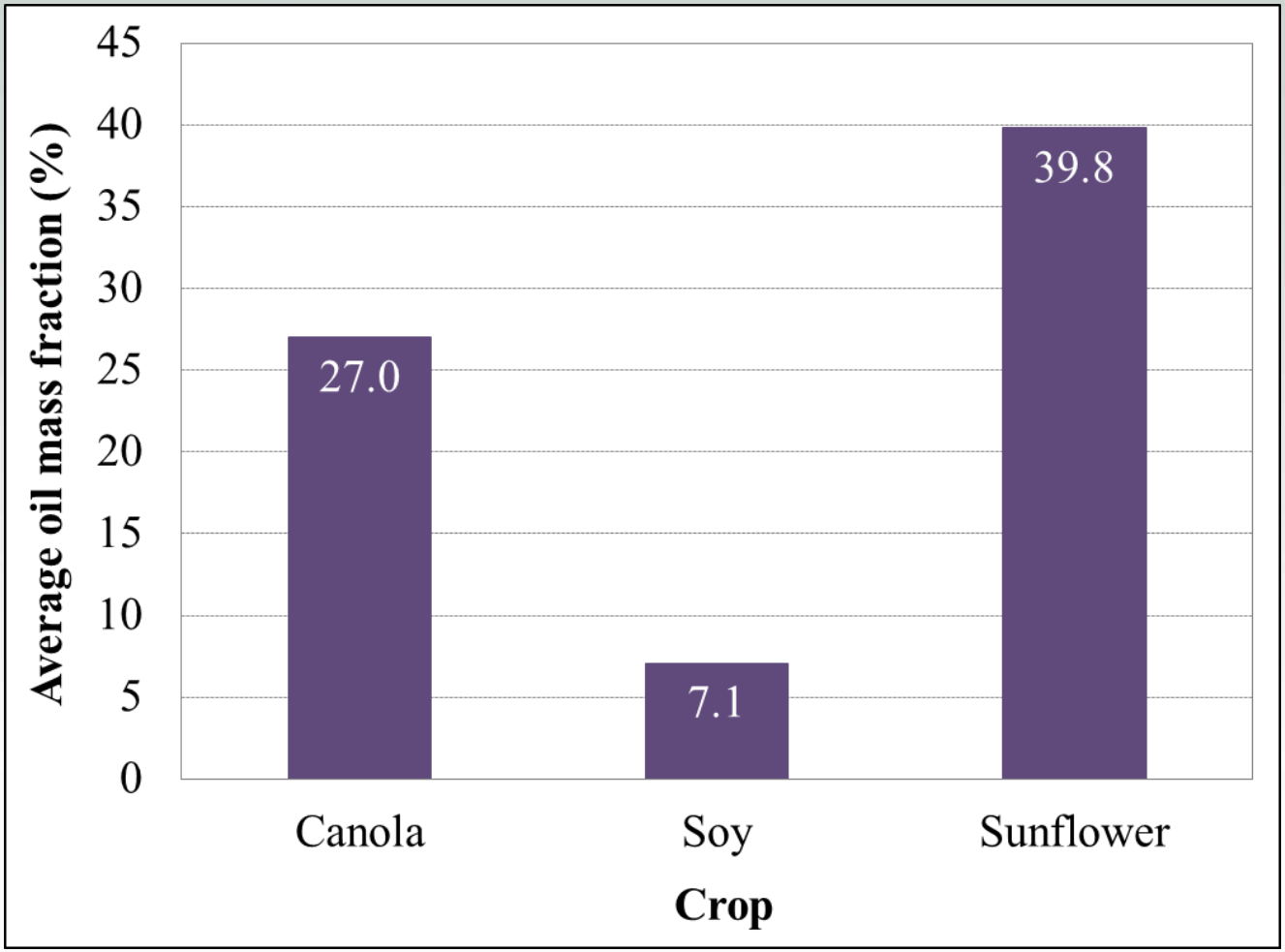
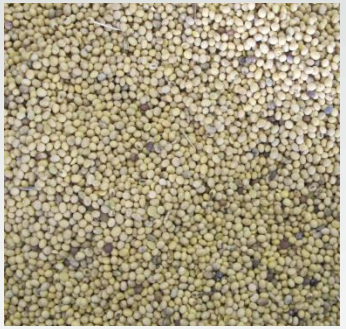
Oil mass fraction by crop




Canola


Soy


Sunflower

2013 press evaluation data

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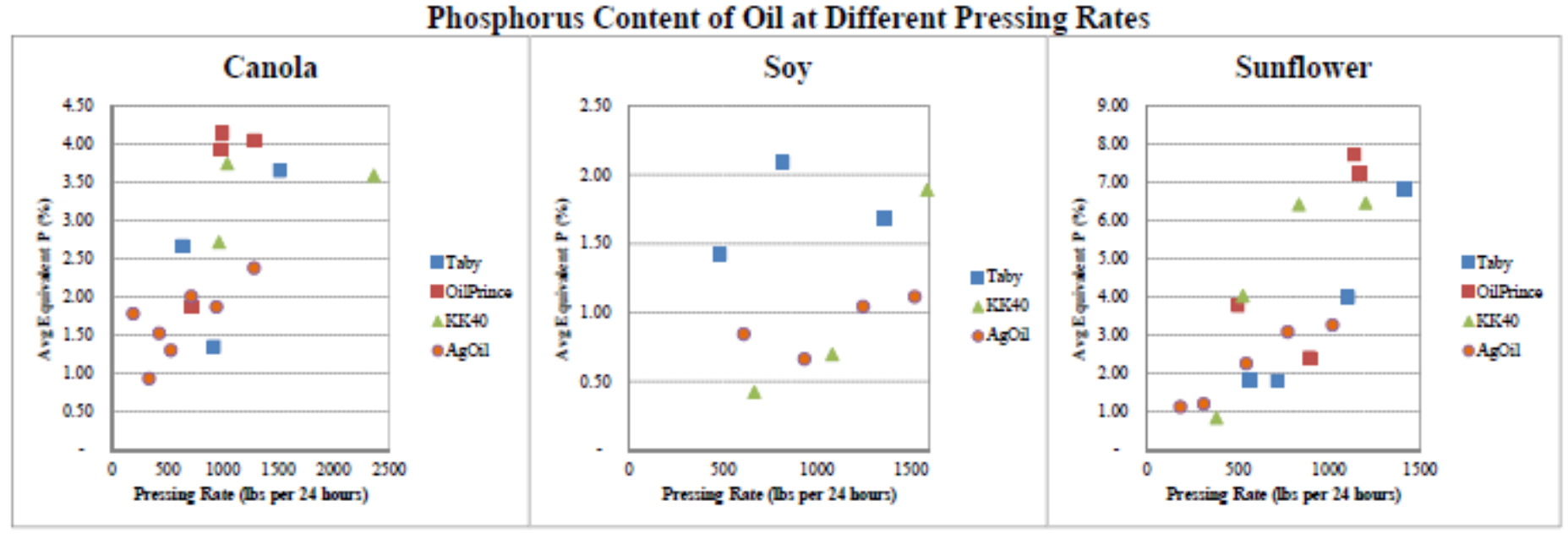
Phosphorus in oil

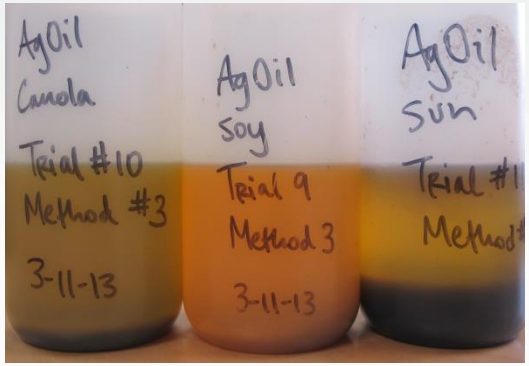


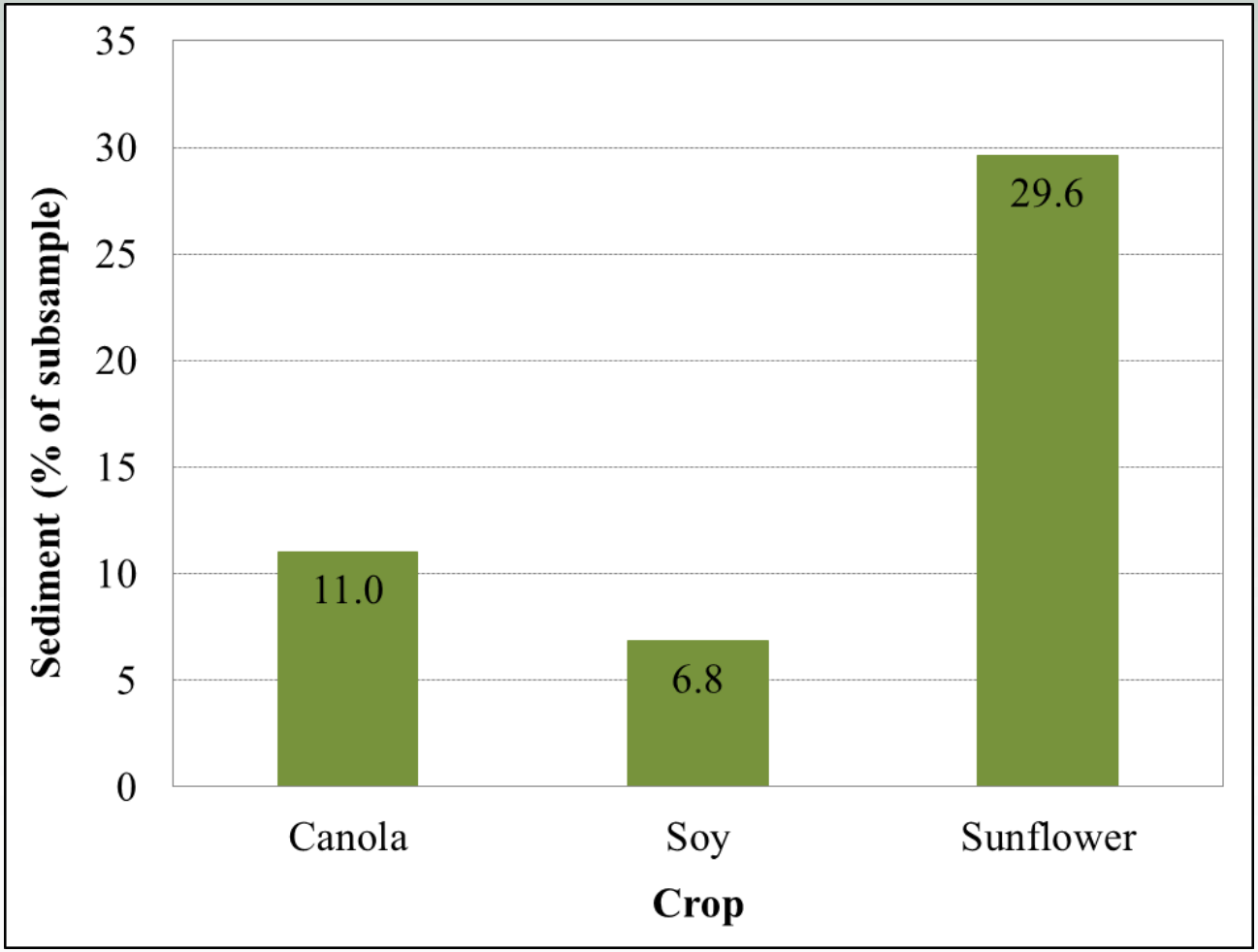
2013 press evaluation data

- P levels lowest overall in soy oil
- Variability, but trend towards increased P with increased speed
- Canola average 3.7% / Soy average 1.2% / Sunflower average 2.6%

Estimated sediment in oil

- Most sediment in sunflower oil
- Very minimal sediment in soy oil

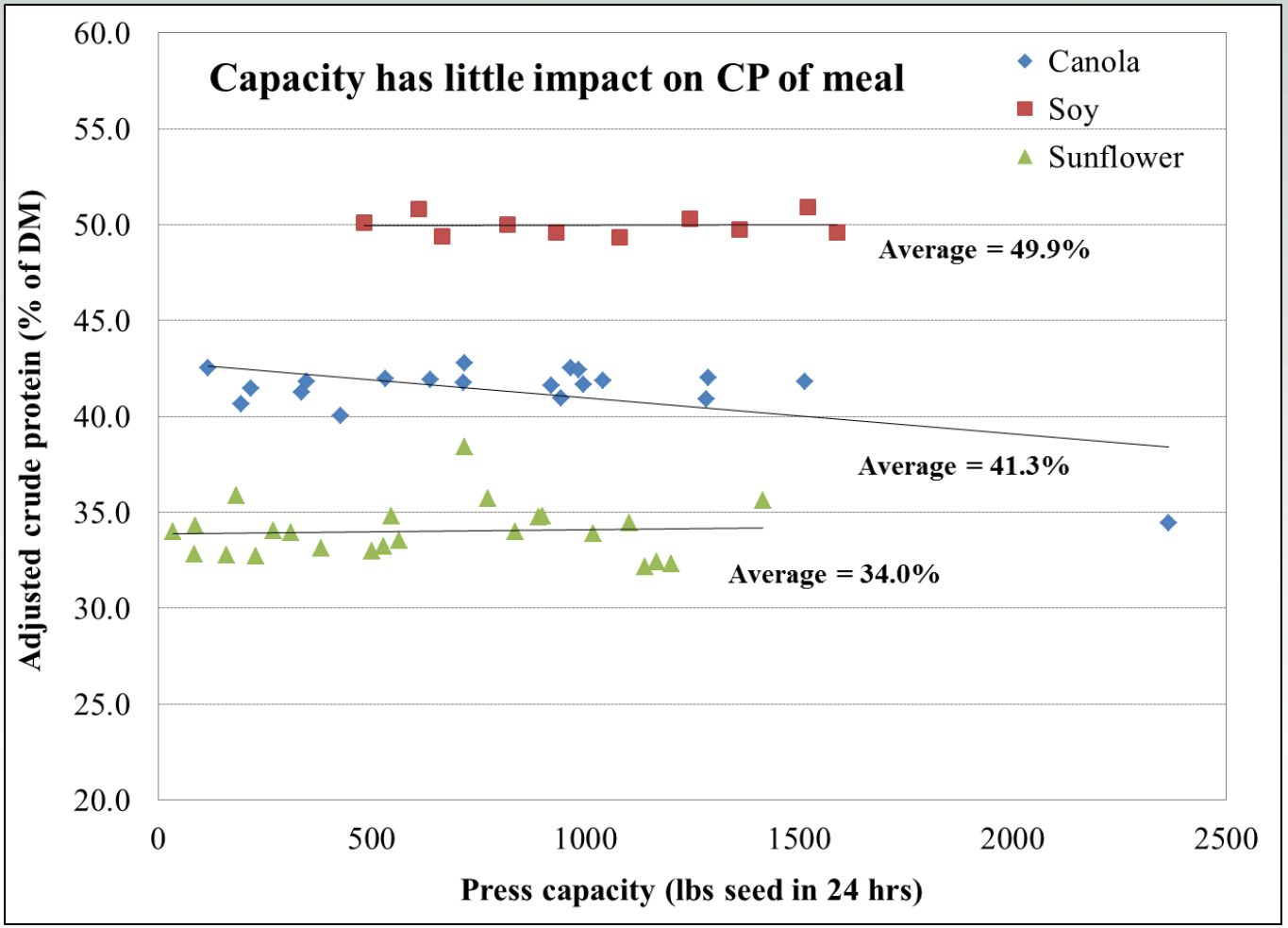




2013 press evaluation data

Crude protein in meal

- CP levels highest in soybean meal
- Protein levels remain mainly steady as press capacity increases



2013 press evaluation data

Thank you!

Heather Darby, UVM Extension

Doug Schaufler, Penn State University

Ryan Elias, Penn State University

Lloyd Byers, Byers Farms

John Hutton & Megan Boucher, Coppal House Farm

Roger & Natasha Rainville, Borderview Farm

John Williamson, State Line Biofuels

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