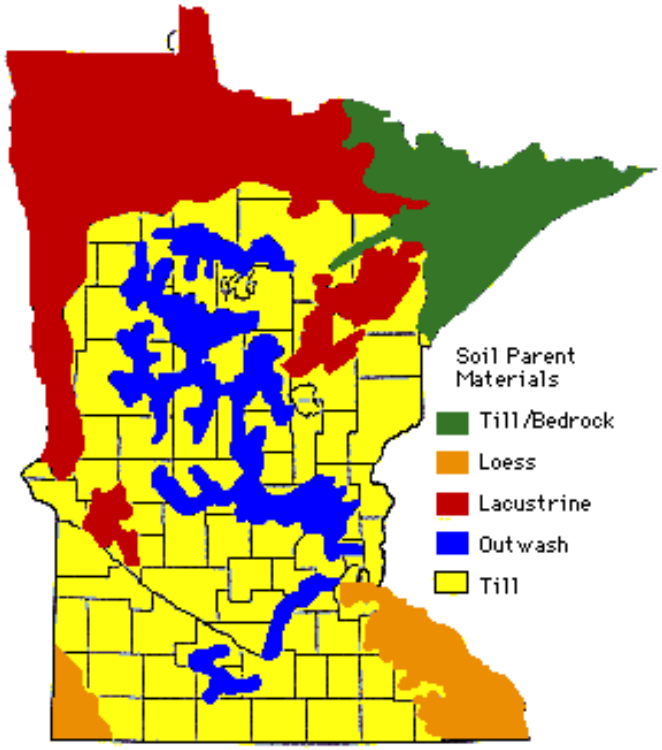
FRST Minnesota Project Update

Daniel Kaiser
Associate Professor
Department of Soil, Water and Climate

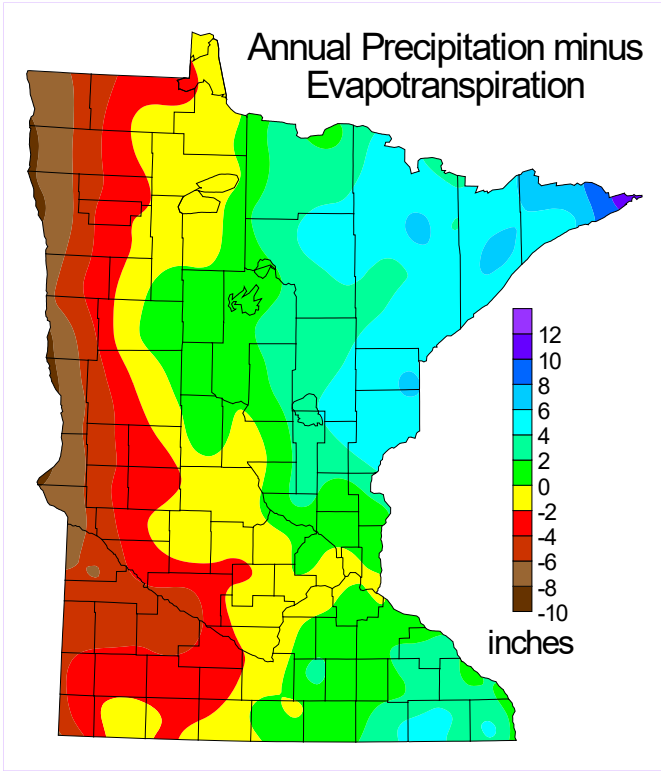
U of M Twin Cities
612-624-3482
dekaiser@umn.edu

MINNESOTA – A CROSSROADS FROM THE EAST TO THE WEST

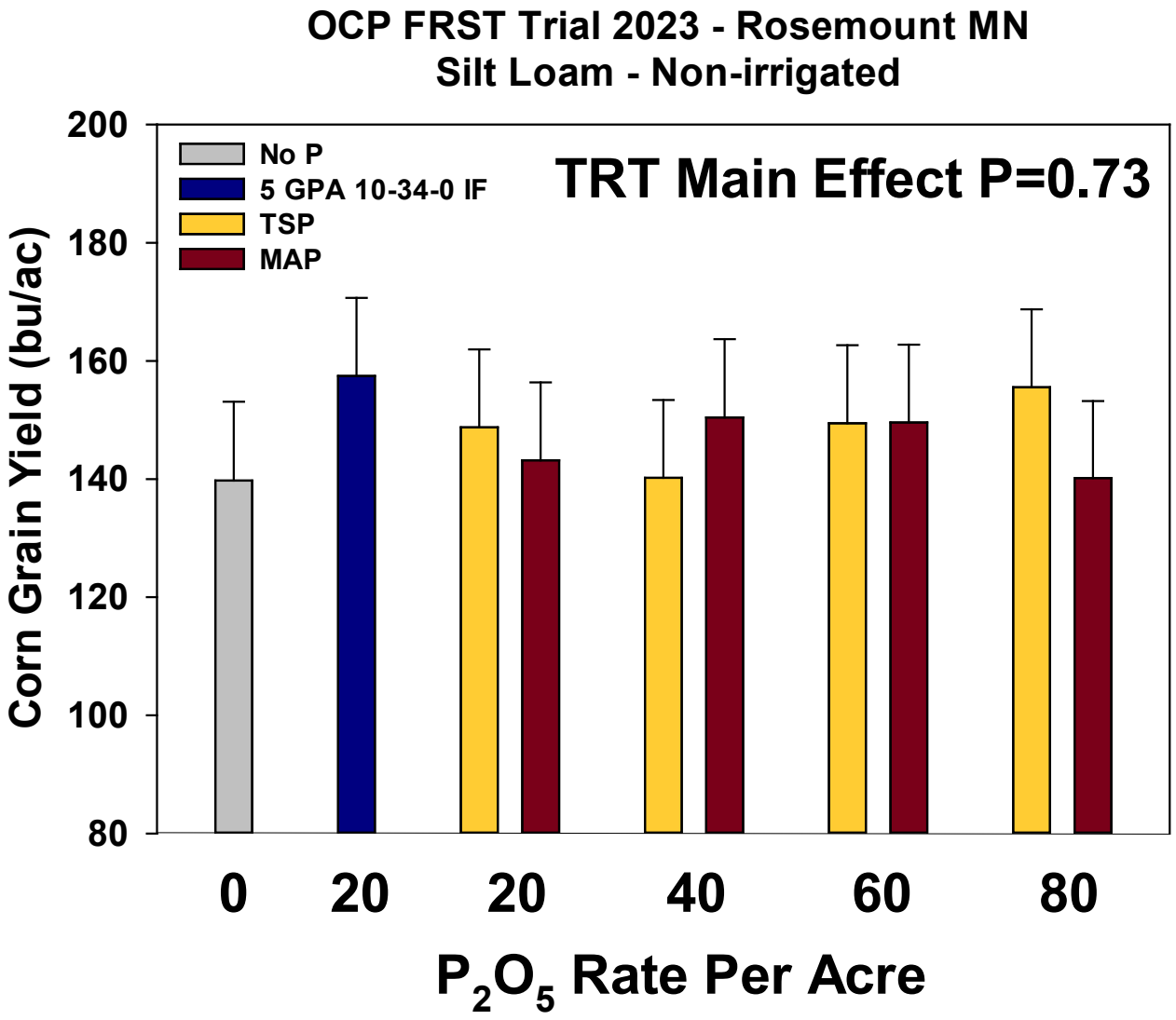
Parent Materials



Leaching Index

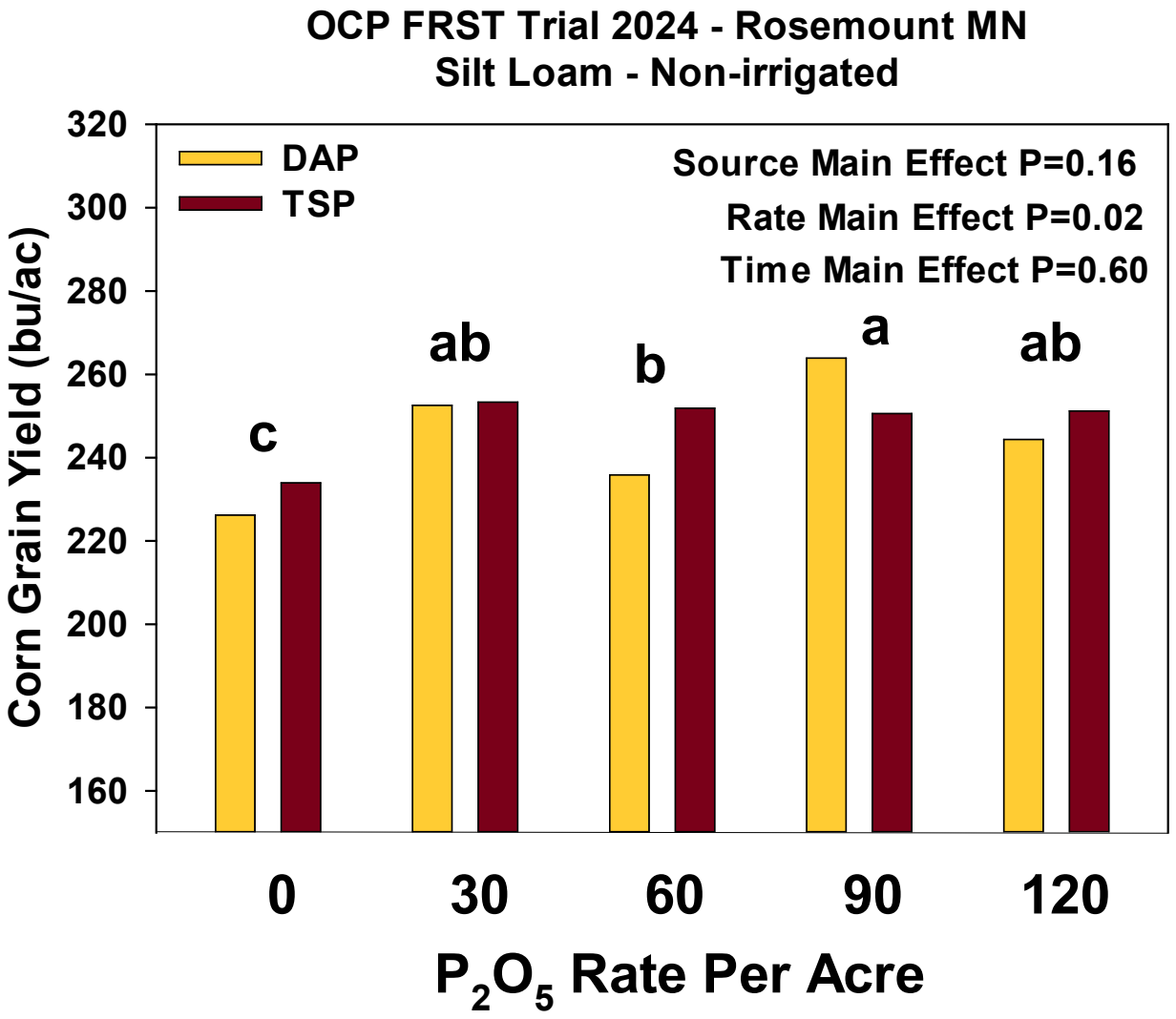


2023 CORN YIELD SUMMARY



	Mean	Min	Max
Bray-P1	8	6	14
Olsen	5	2	10
M3-ICP	11	7	18

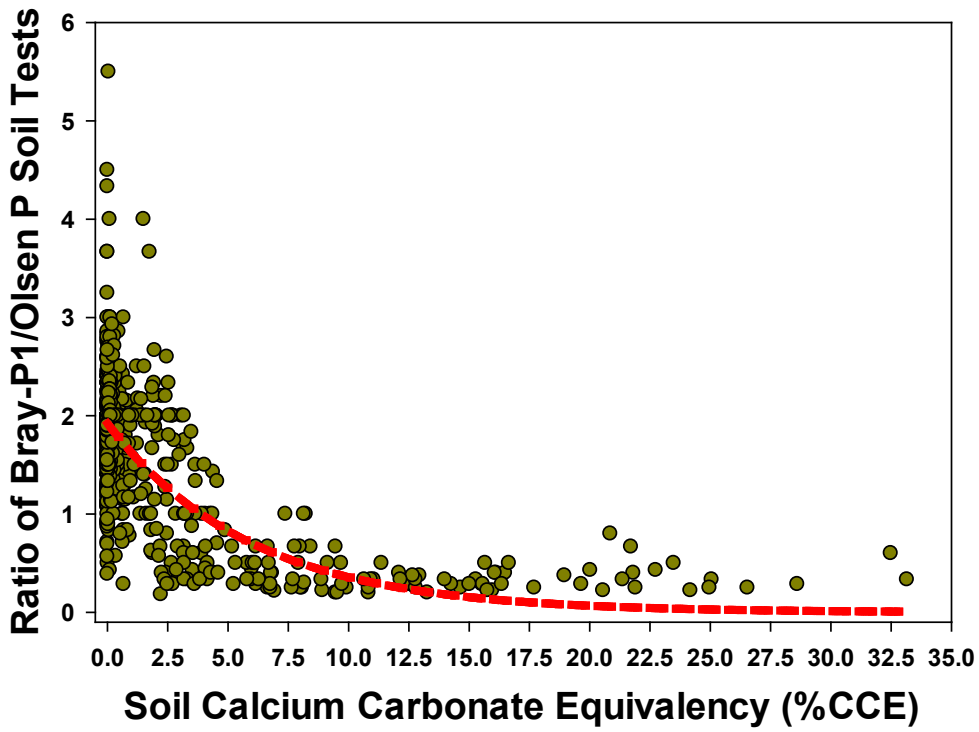
2024 CORN YIELD SUMMARY



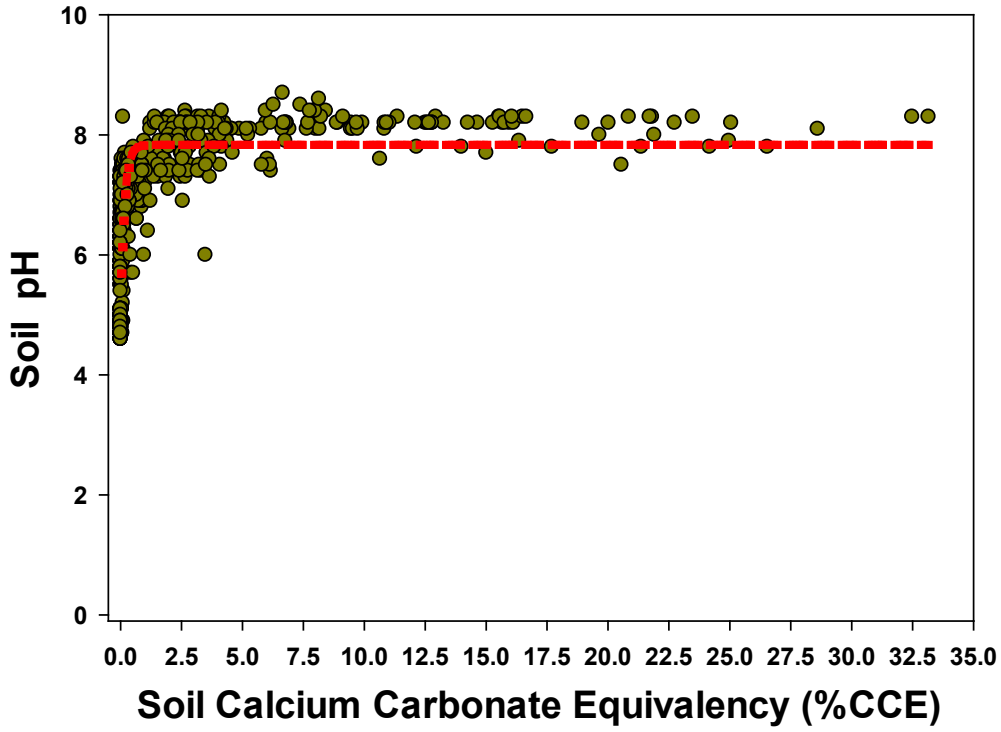
	Mean	Min	Max
Bray-P1	10	5	15
Olsen	4	1	9
M3-ICP	26	10	41

CARBONATE EFFECT ON THE BRAY

Bray vs Olsen vs %CCE

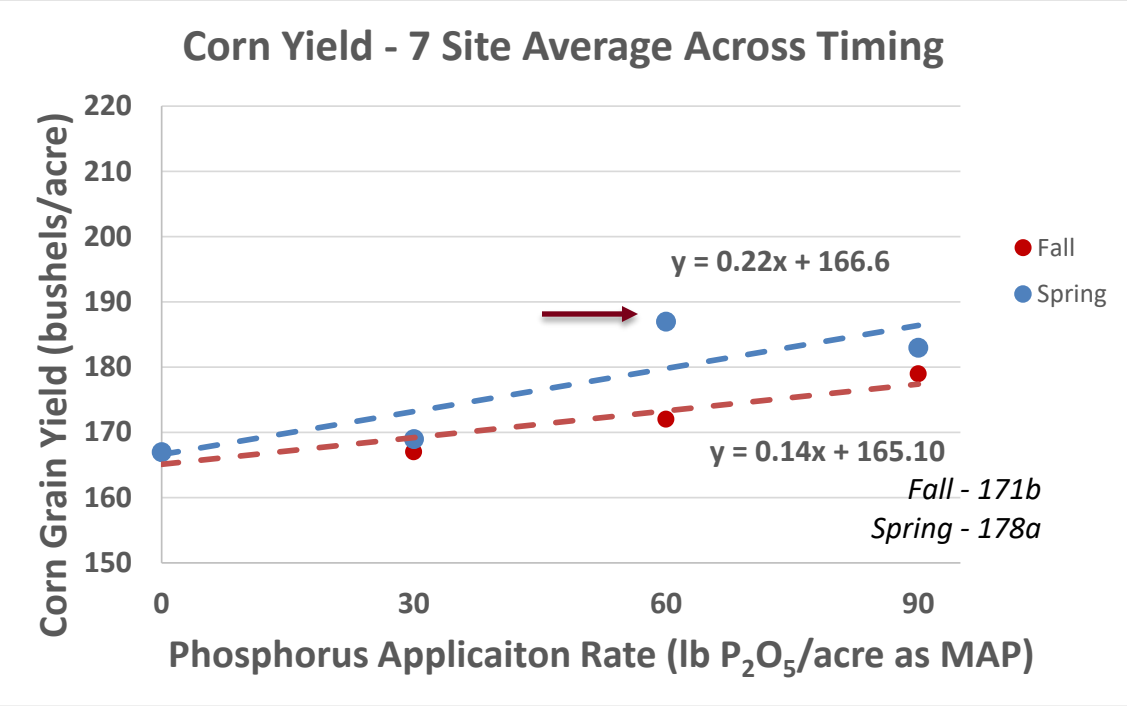


Soil pH vs %CCE

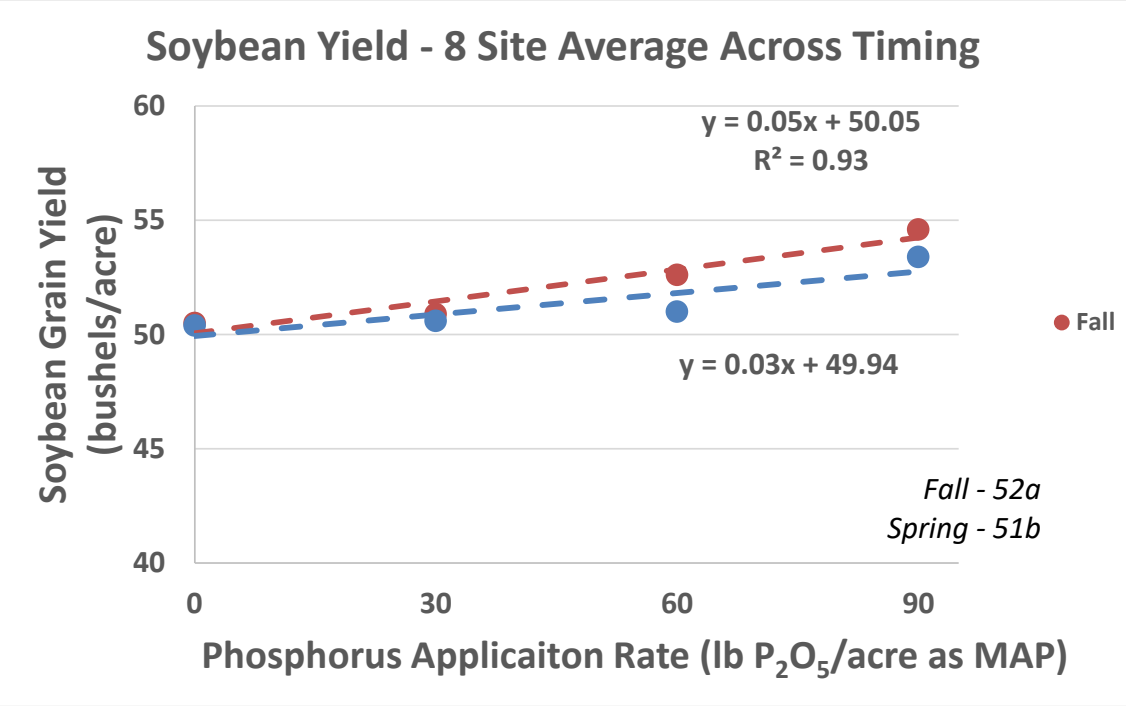


DO CROPS DIFFER IN THEIR RESPONSE TO P TIMING

Corn



Soybean

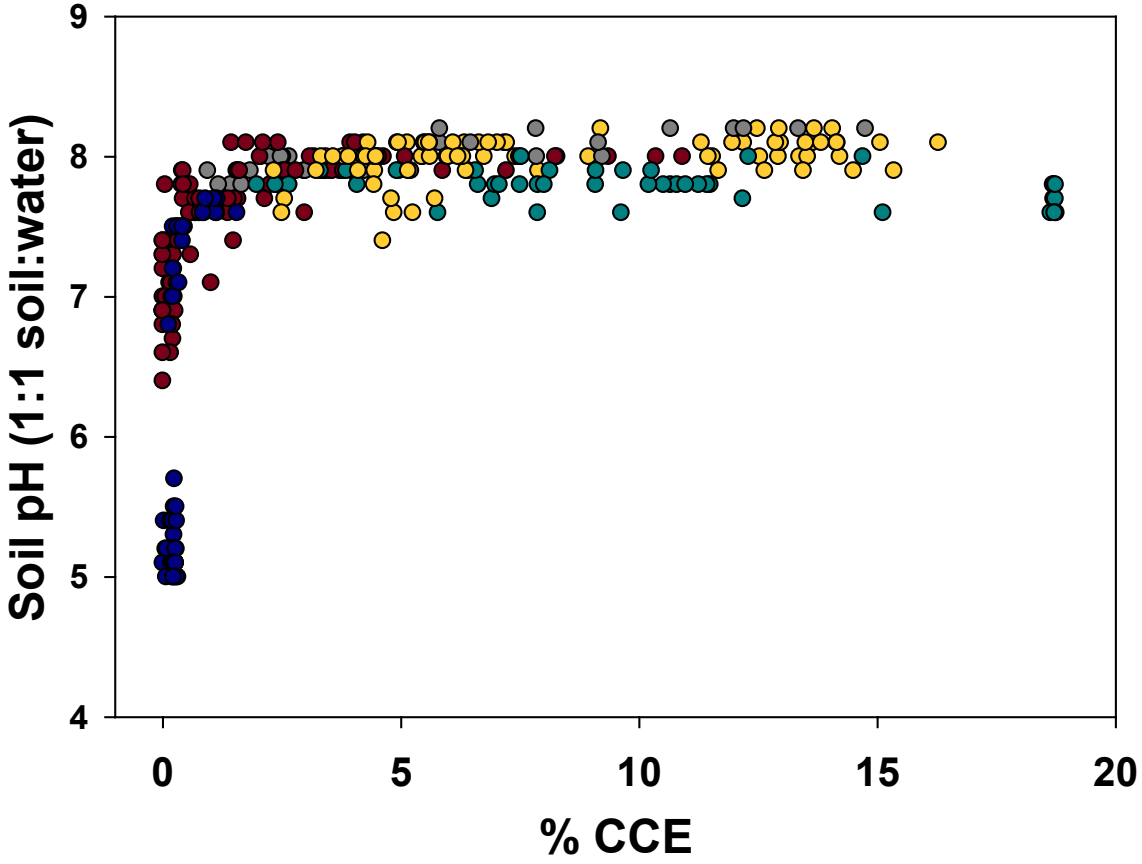


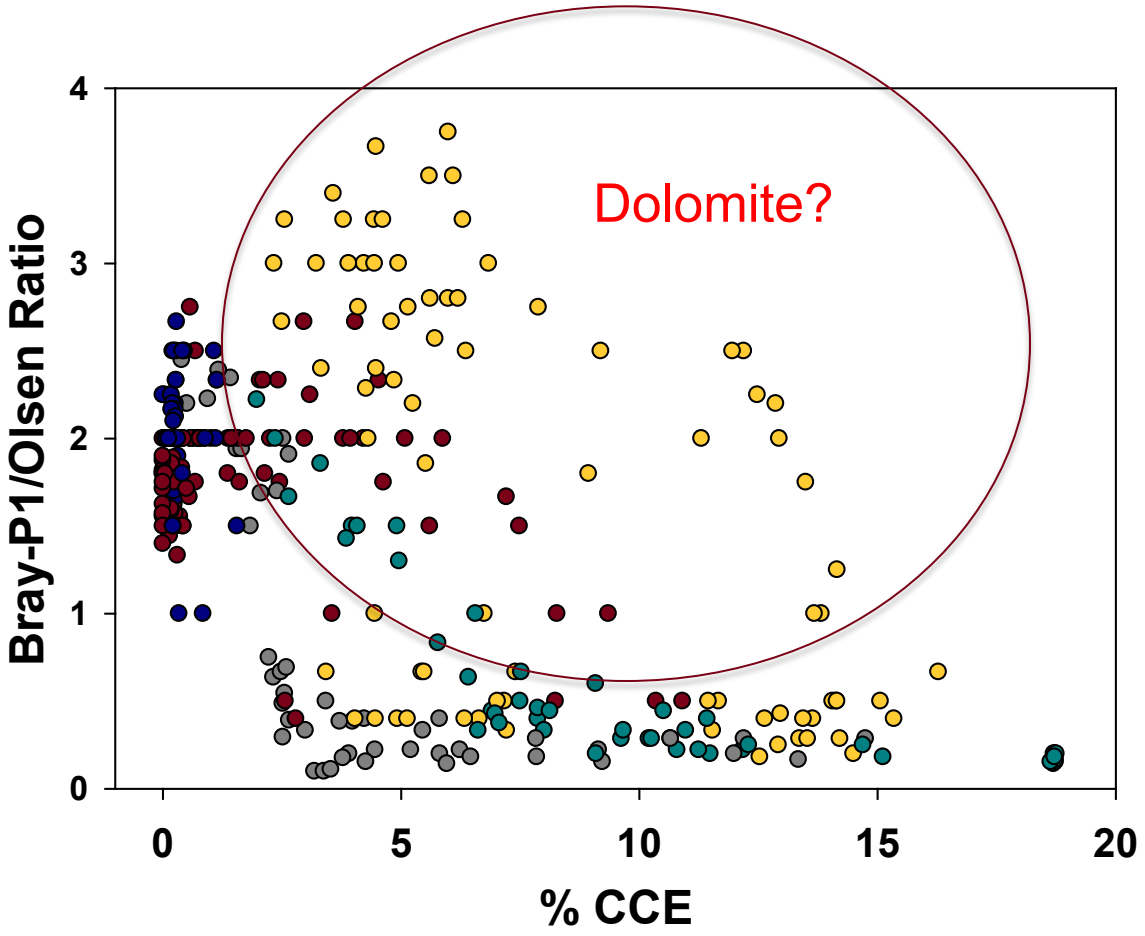
SOIL PROPERTIES – P TIMING TRIAL 2019-2022

AFREC
Agricultural Fertilizer Research & Education Council

			Soil Test P (colorimetric)			Soil Test†		
Year	Location	Crop	Bray-P1	Olsen	Melich-3	K	pH	CCE
			ppm					%
2019	Crookston	Corn	3	6	23	258	8.0	13.8
	Lamberton	Corn	11	5	11	147	5.3	0.2
	Morris	Corn	12	7	14	253	7.4	0.9
	Benson	Soybean	28	23	60	135	7.9	2.2
	Morris	Soybean	5	3	6	245	7.4	0.7
	Stewart	Soybean	2	10	26	183	7.7	16.2
2020	Crookston	Corn	3	4	18	262	8.1	2.1
	Lamberton	Corn	15	8	15	167	5.1	0.3
	Morris	Corn	8	4	9	164	7.4	1.3
	Danvers	Soybean	9	11	34	271	7.9	2.5
	Morris	Soybean	7	5	14	194	7.8	1.9
	Stewart	Soybean	3	8	37	245	7.8	6.7
2021	Crookston	Corn	7	4	17	248	8.1	13.2
	Lamberton	Corn	4	2	7	171	7.4	0.7
	Morris	Corn	7	4	6	129	8.0	3.0
	Holloway	Soybean	2	10	36	164	8.1	8.5
	Morris	Soybean	13	8	14	175	7.2	0.1
	Stewart	Soybean	10	10	46	210	7.9	6.2
2022	Crookston	Corn	14	5	17	199	7.9	4.5
	Crookston	Soybean	13	4	15	223	7.9	4.9

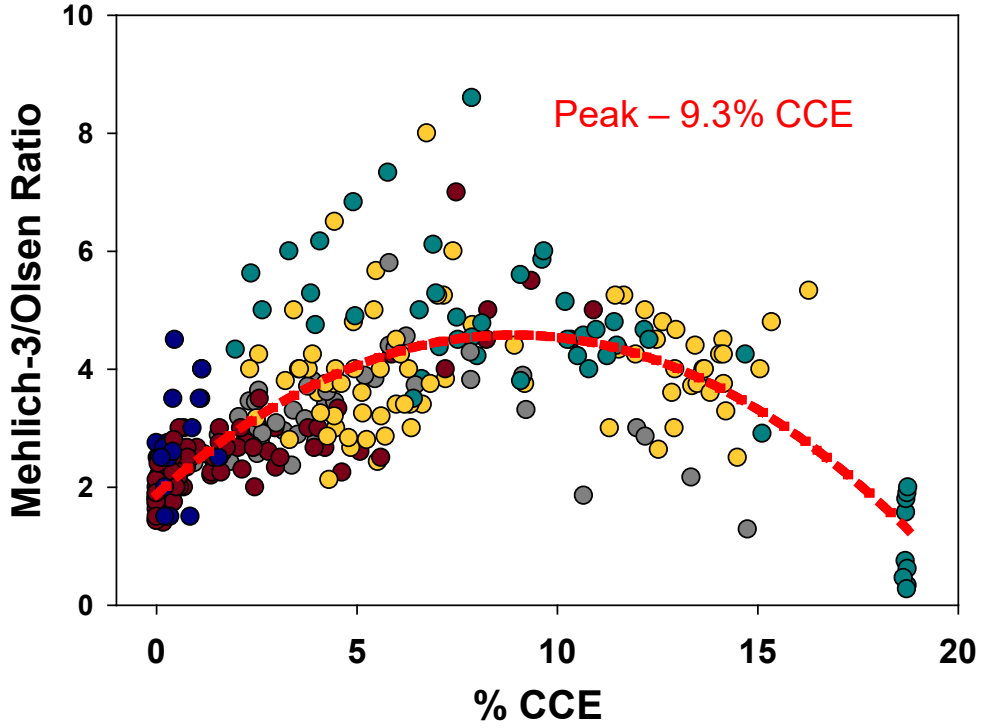
OTHER SOIL RELATIONSHIPS



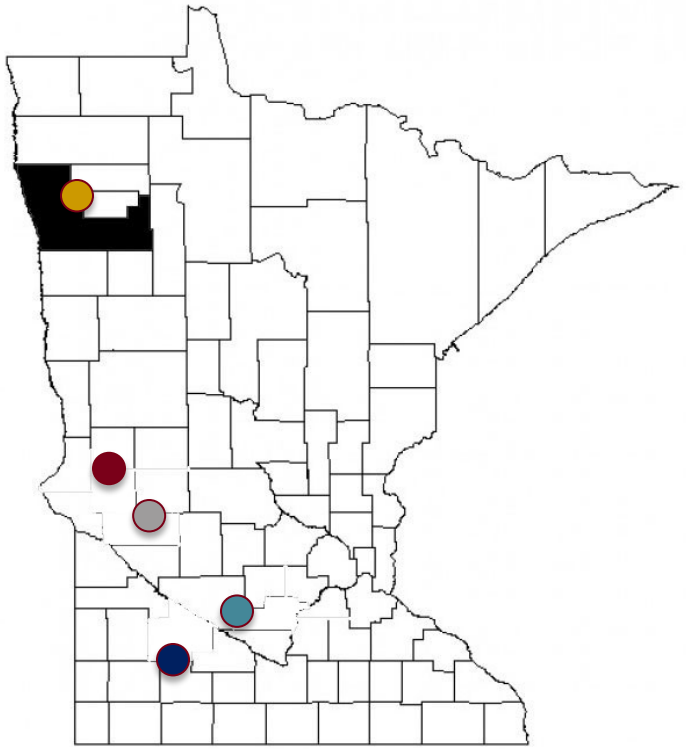


IS THE MEHLICH-3 IMPACTED BY CARBONATES?

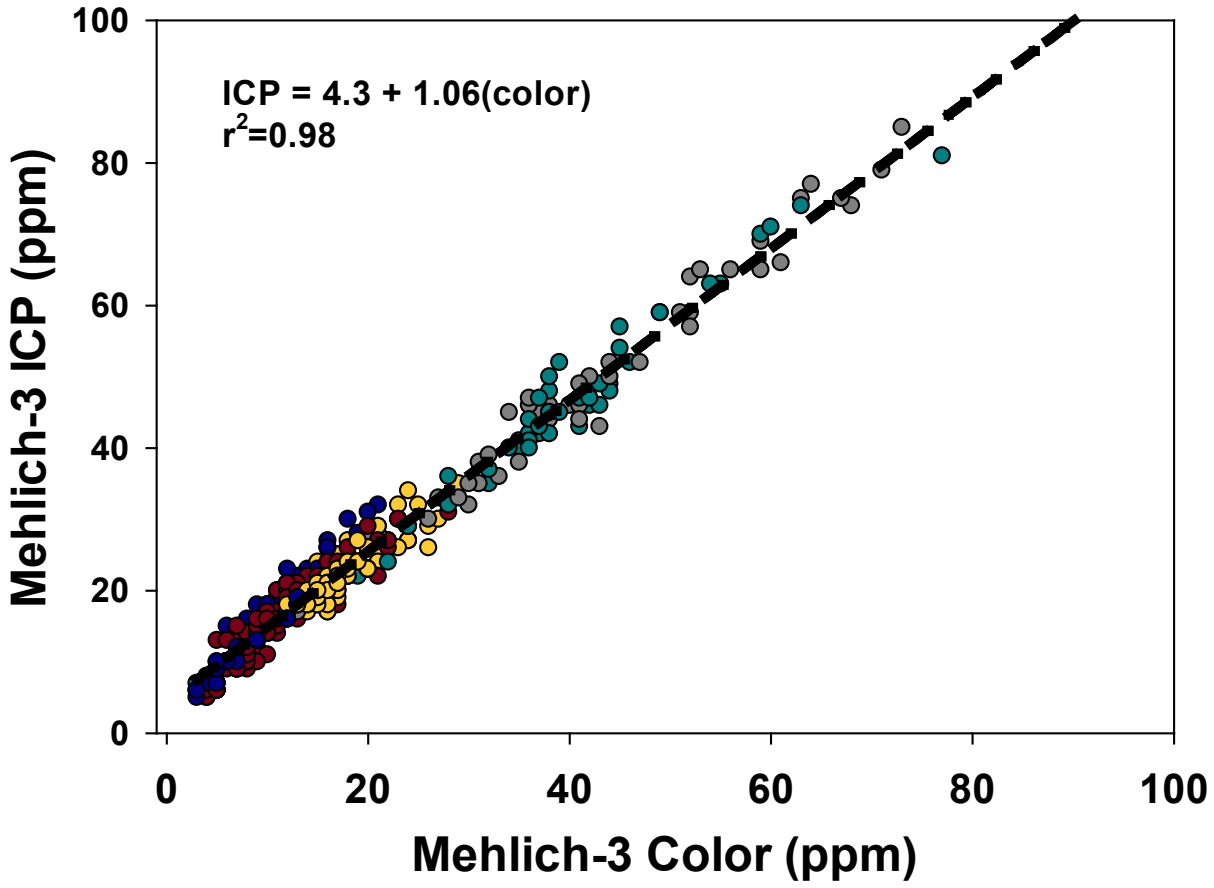
Mehlich-3 to Olsen Ratio



Locations



ICP VS COLOR MEHLICH-3



- Strong relationship between the colorimetric and ICP results
- Over extraction not likely a result of more organic P
- Either colorimetric or ICP will be impacted equally by carbonates

Daniel Kaiser
University of Minnesota
612-624-3482
dekaiser@umn.edu
http://z.umn.edu/nutrientmgmt