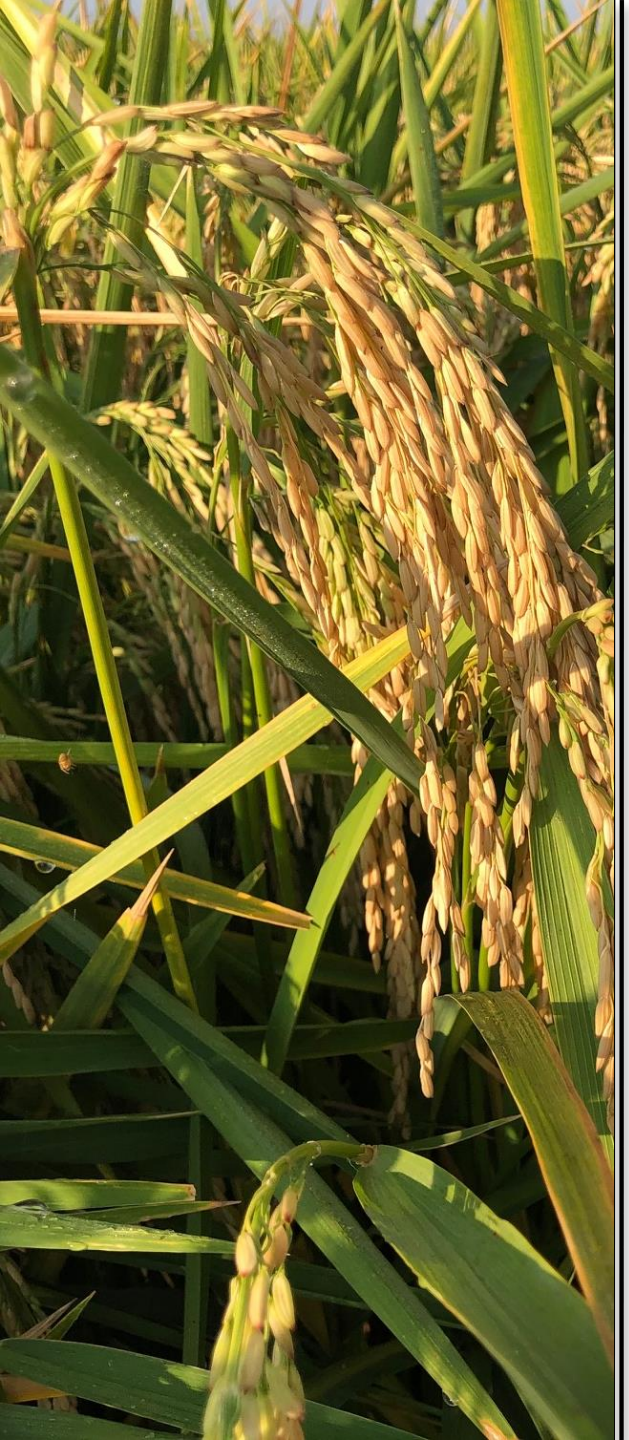

Evaluation of Rice Nutrition Ratings Through Full Season Foliar Analyses

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Plant Tissue Sampling

Soil testing

- Shows if sufficient nutrients exist in the soil to be “potentially” taken up by the plant.
- Tries to predict nutrient availability for the upcoming crop

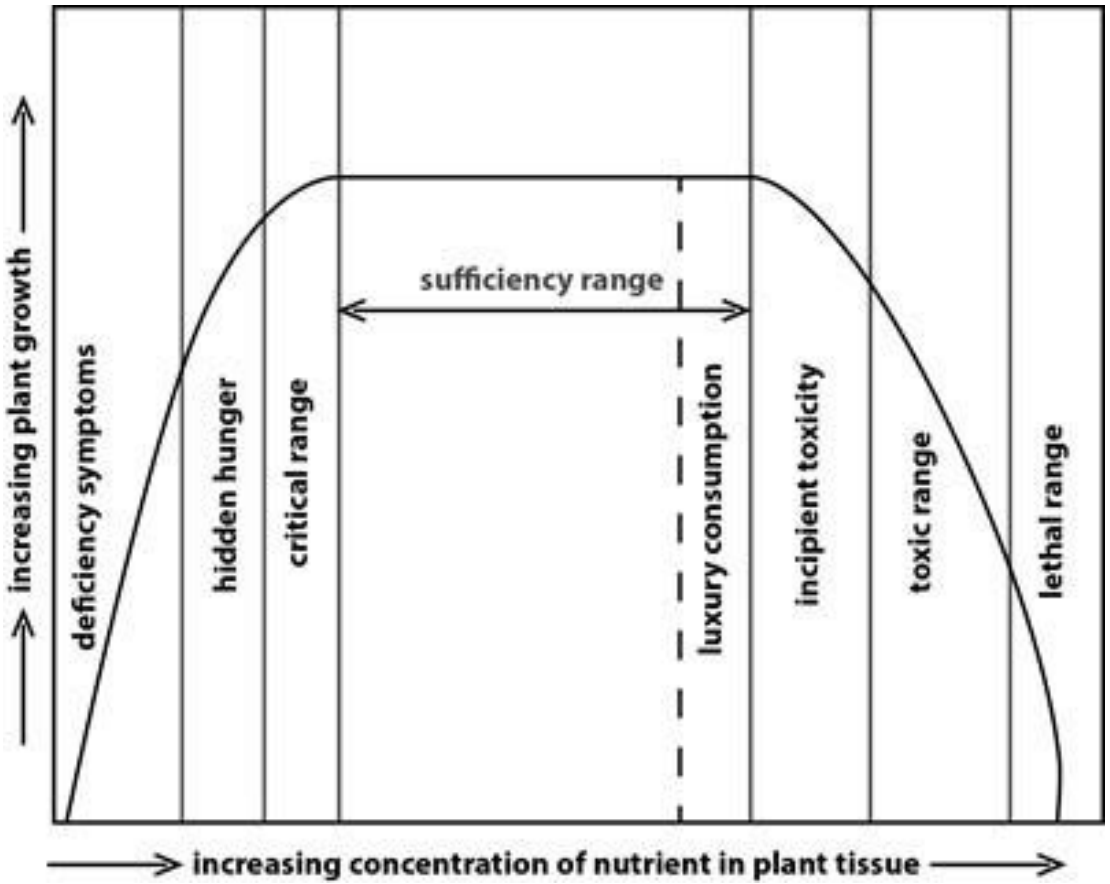
VS

Plant analysis

- Gives a snap shot of nutrient uptake for a particular time.
- Cannot be used to predict very far in advance.

Plant Tissue Sampling

- Rice nutrient levels have not been updated
  - SERA-6
- Shows “hidden hunger”
- Top yields when nutrient levels are kept in the upper half of sufficient
- Best when used as part of a program
- Can be used as a diagnostic tool
  - pair “good” and “bad” areas in conjunction with a soil test
- Complements precision ag soil sampling program



Location and Methods

- Griffithville, AR – Feather Farms
- 2020 - ‘Diamond’ UofAR conventional rice
- 2022 – DG263L DynaGro conventional rice
- 3 set points sampled throughout the each season
  - 2020 F field - 0.1 miles from road, 0.2 mi, Riser
  - 2022 Bayou Rd – 1, 2, 3
- Sampled as weekly as possible
- Foliar PT2 Analysis
  - Total macro and micronutrients
  - Plant Analysis Handbook III, 2014

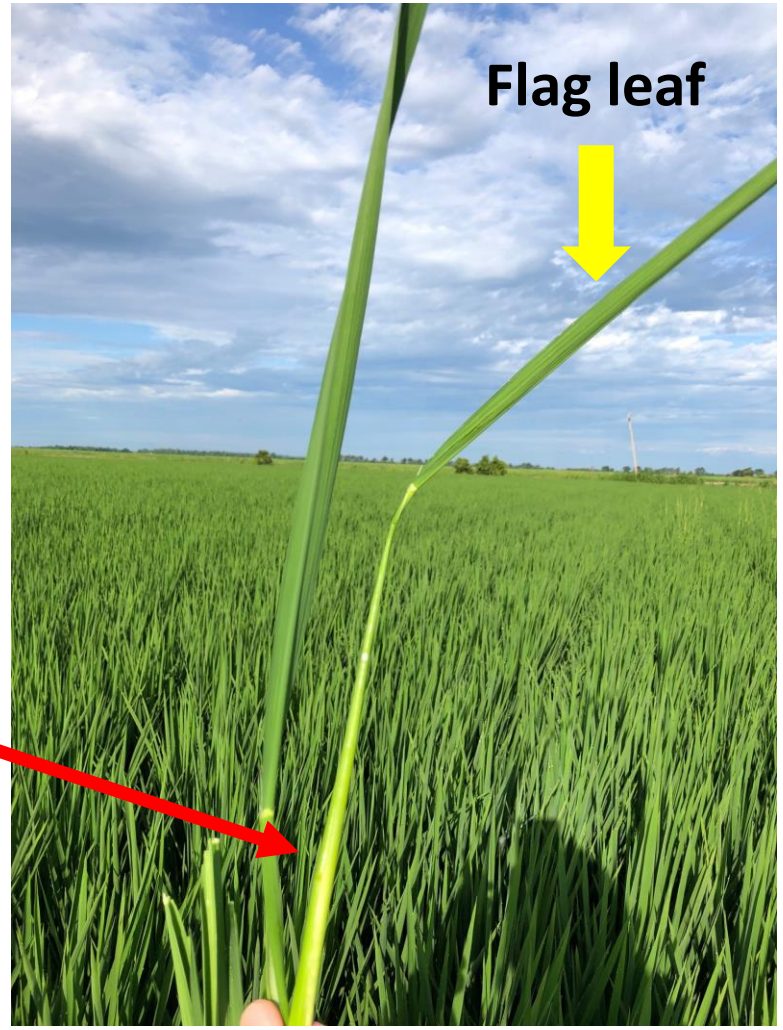
Location and Methods

- Waypoint Analytical S3M Soil Analysis
  - Soil Analysis. Handbook of Reference Methods. 1999.
    - Mehlich 3, pH 1:1, Loss on ignition OM%

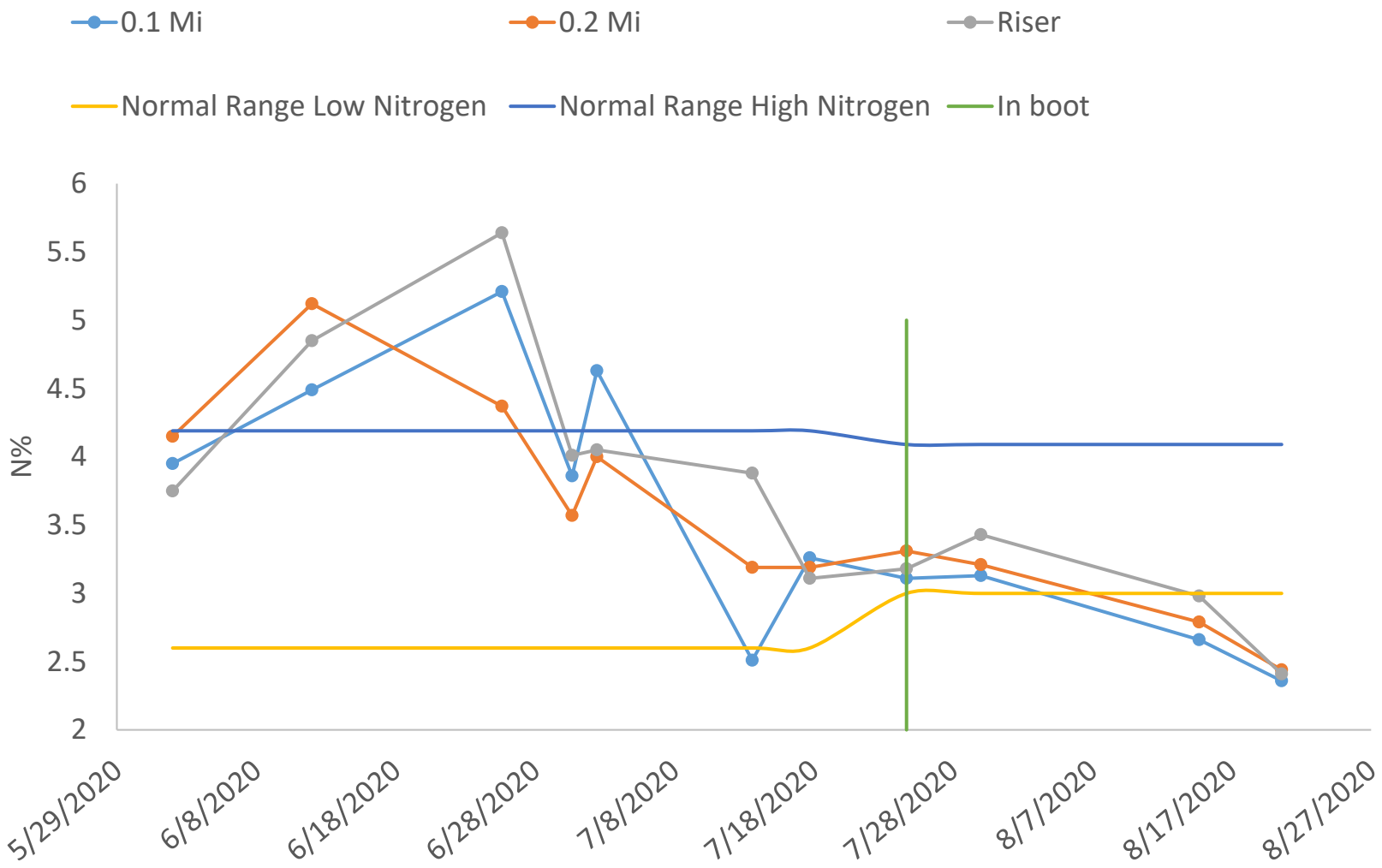
	pH	OM%	CEC meq/100g	P ppm	K ppm	Ca ppm	Mg ppm	K%	Ca%	Mg%	Ca/Mg	K/Mg	S ppm	B ppm	Cu ppm	Fe ppm	Mn ppm	Zn ppm
0.1 mi	6.7	2.7	6.8	41	56	1055	118	2.1	77.6	14.5	5.35	0.15	9	0.2	1.1	309	91	5.6
0.2 mi	6.7	1.9	7.3	30	70	1141	125	2.5	78.2	14.3	5.47	0.17	6	0.2	1.1	204	133	3.2
Riser	6	2.6	7.2	40	96	973	106	3.4	67.6	12.3	5.5	0.28	7	0.1	1.4	232	74	3.8
1	6.7	2.7	8.0	85	176	1155	148	5.6	72.2	15.4	4.69	0.36	11	0.4	2.1	299	156	6.1
2	6.5	2.7	9.4	112	223	1263	176	6.1	67.2	15.6	4.31	0.38	42	0.4	2.4	301	170	7.3
3	6.5	2.6	8.3	76	157	1167	146	4.9	70.3	14.7	4.78	0.33	16	0.4	2.0	287	170	6.4

Location and Methods

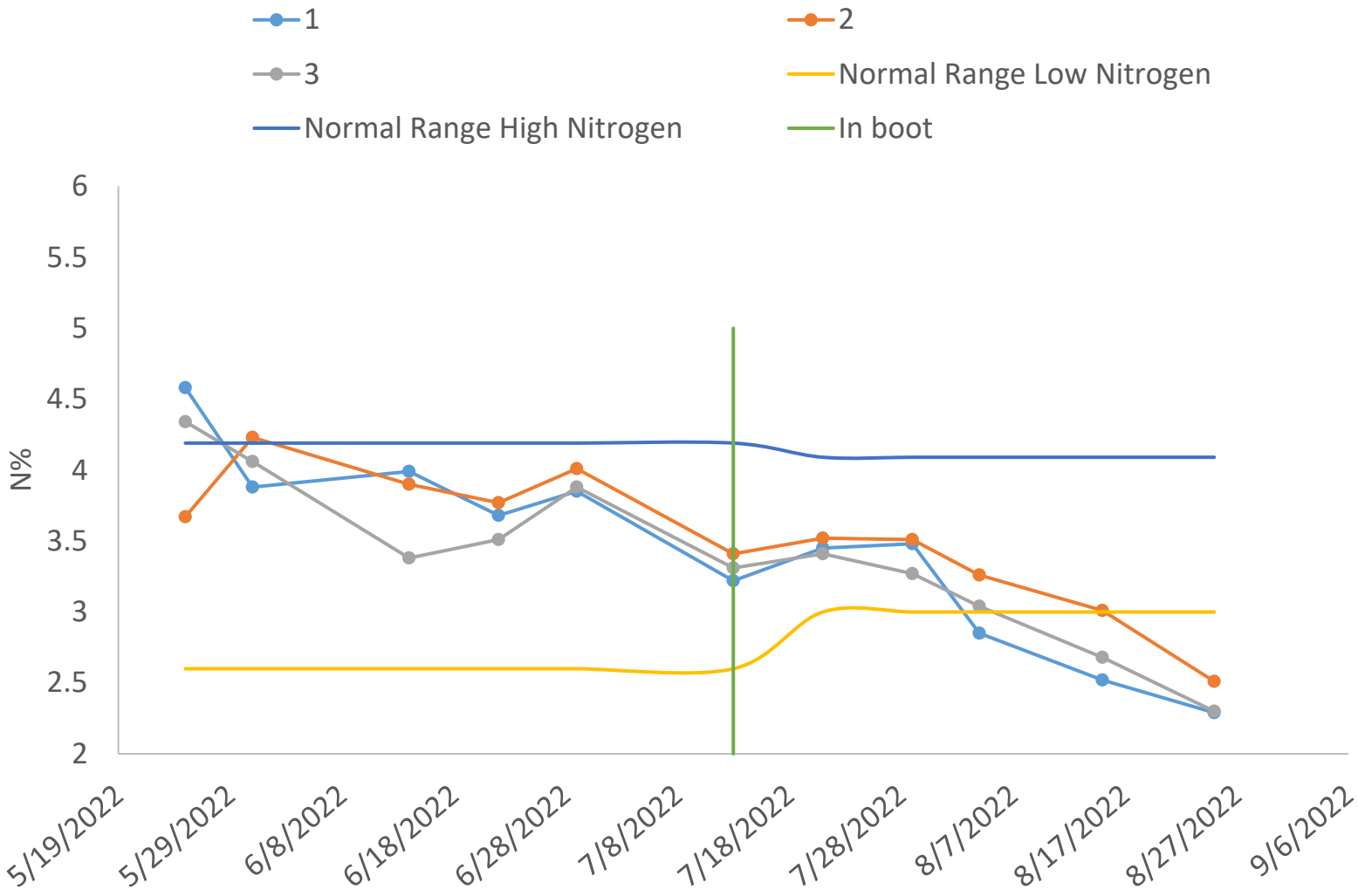
- Foliar Analysis
  - V5- R1 – Sampled Most Recently Matured Leaf (1 pint)
    - Fully emerged leaf with collar
  - R2 (in boot) – R8 – Flag leaf (1 pint)



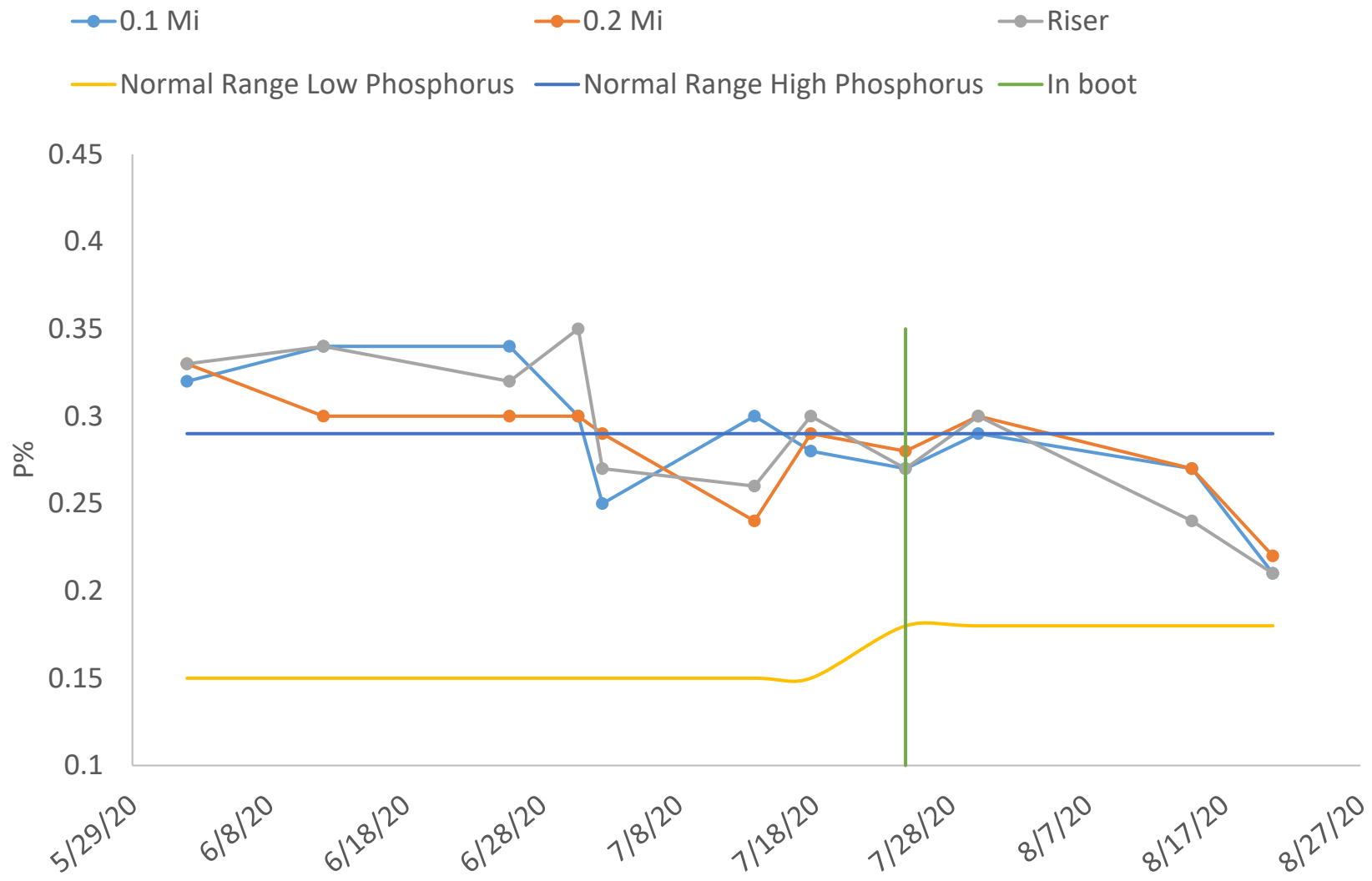
Nitrogen 2020



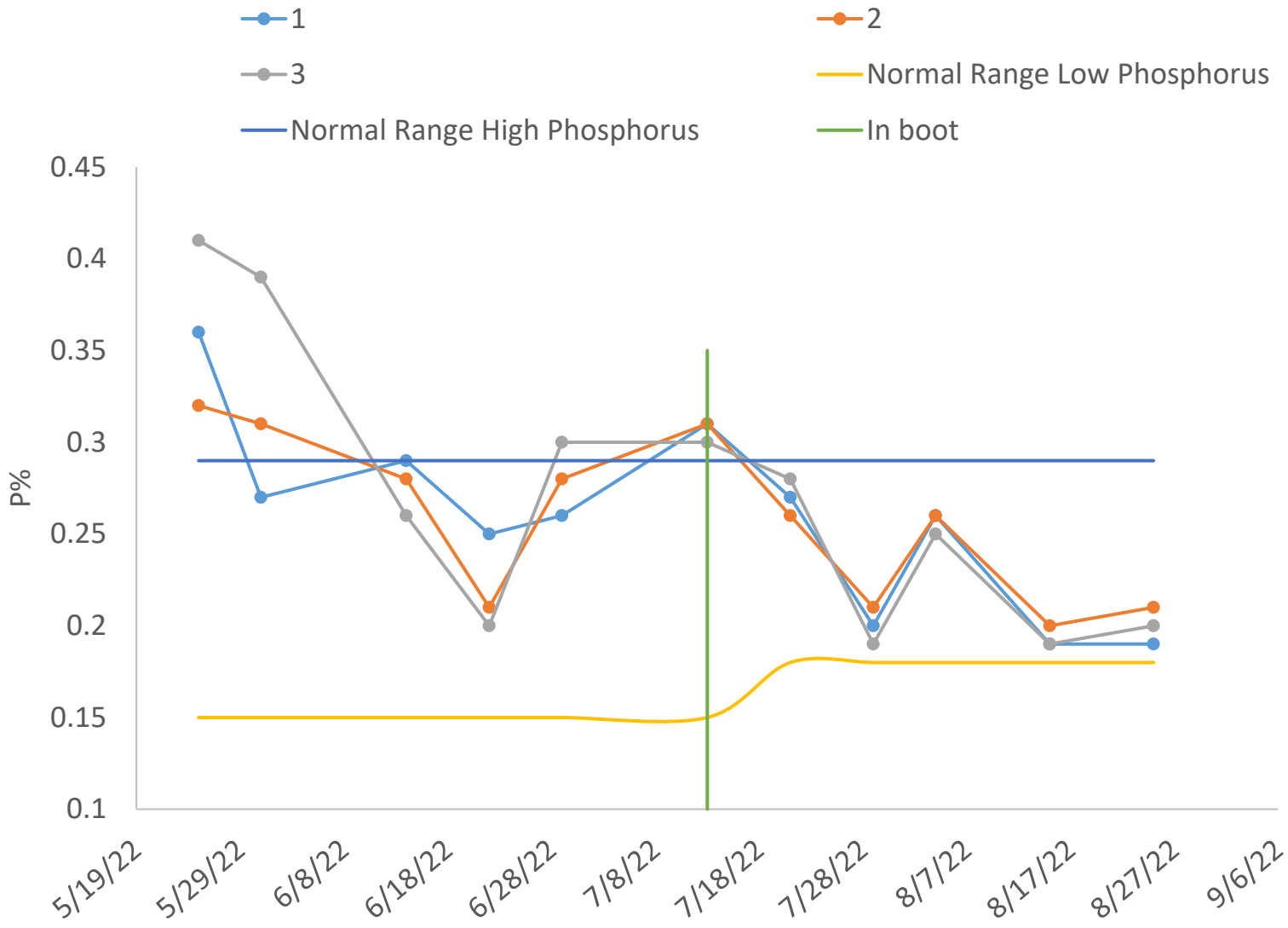
Nitrogen 2022



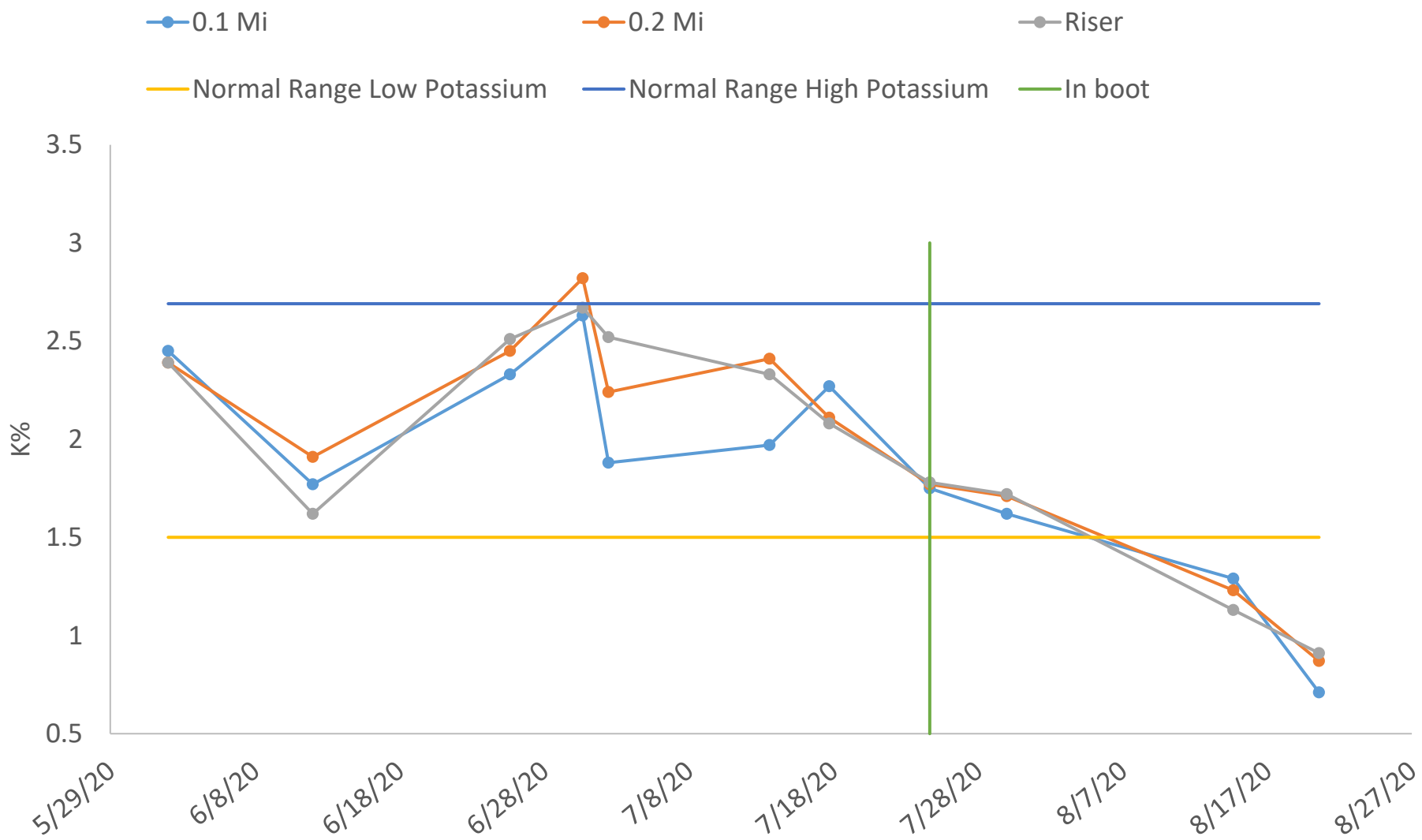
Phosphorus 2020



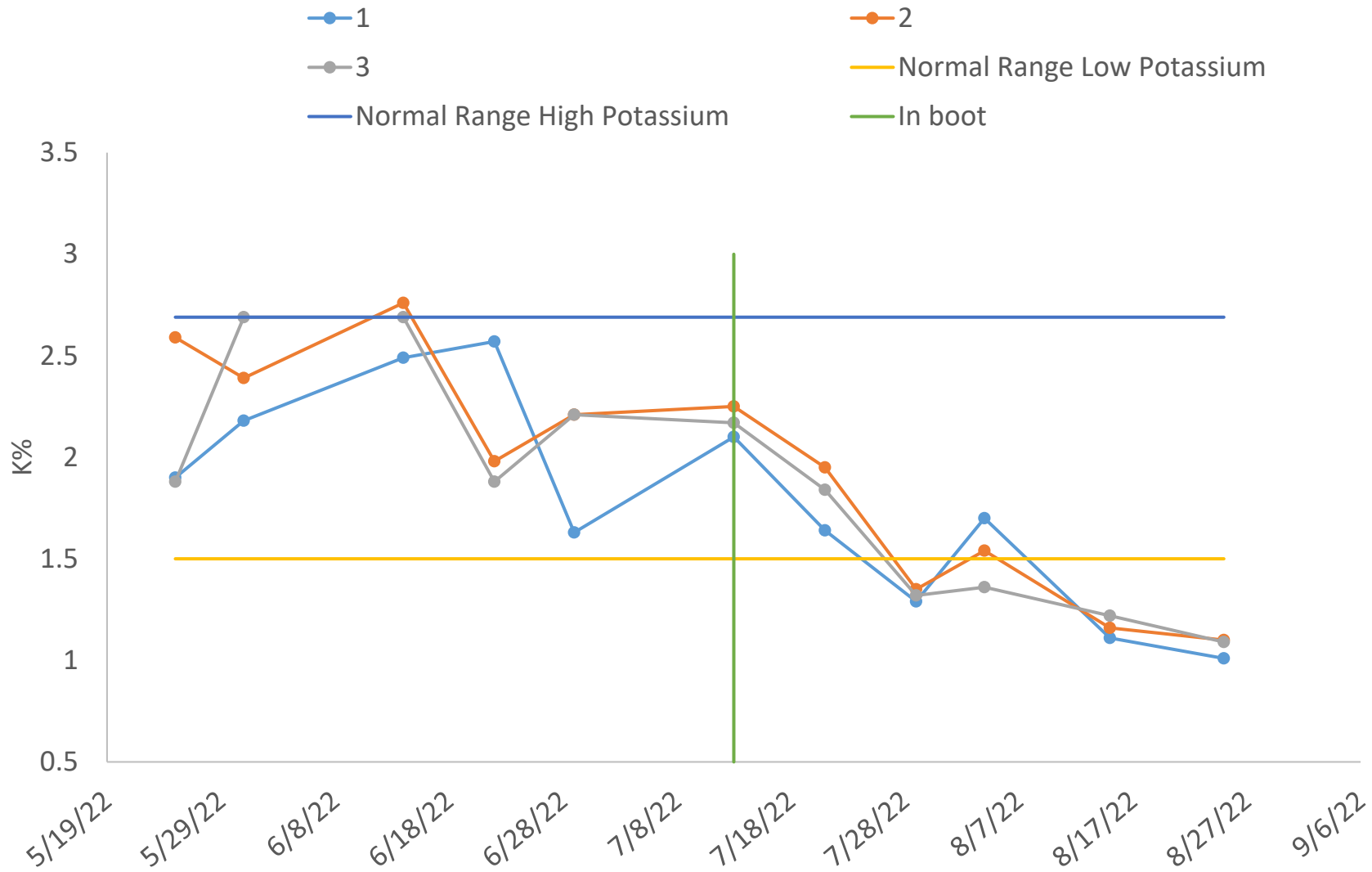
Phosphorus 2022



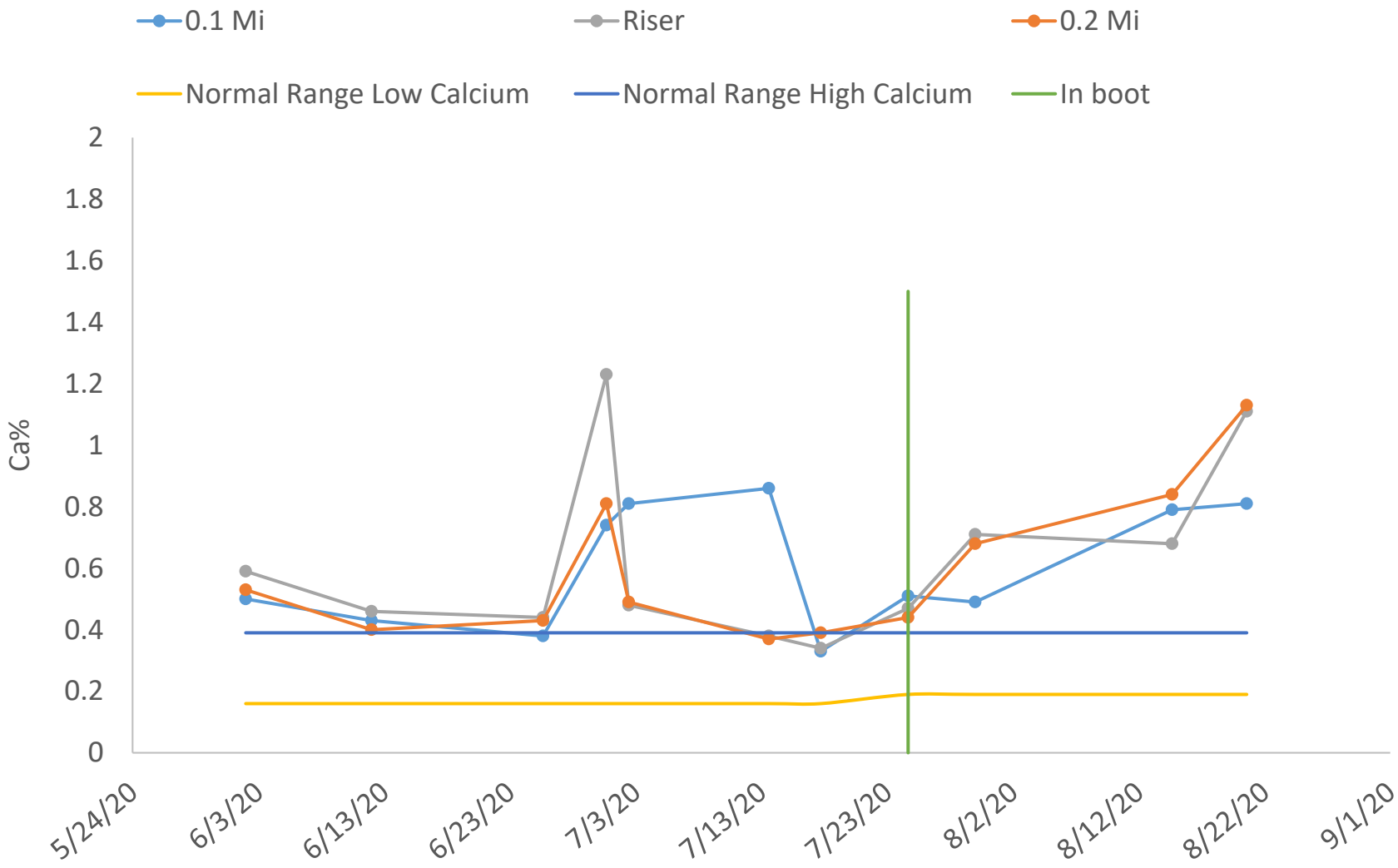
Potassium 2020



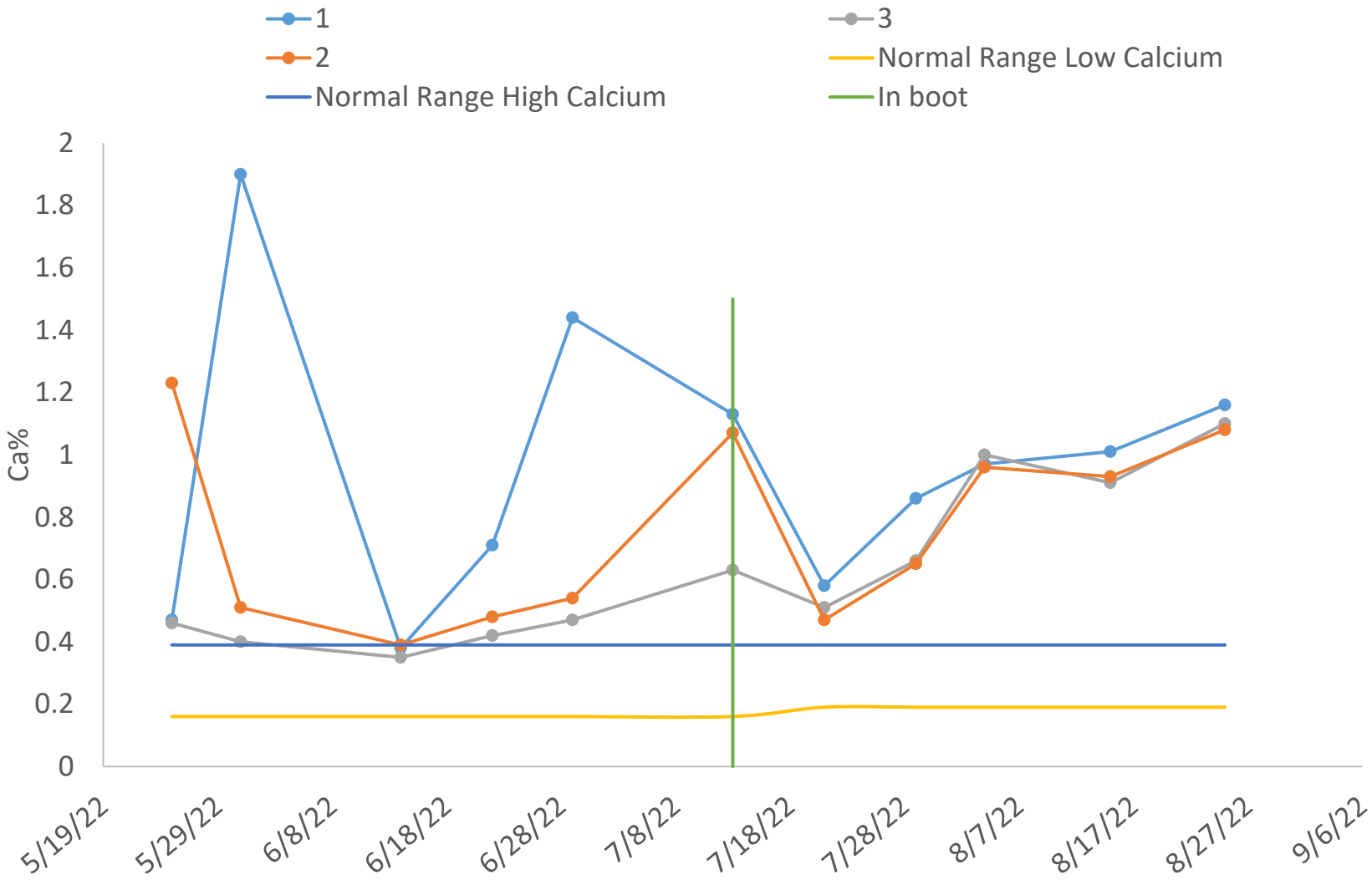
Potassium 2022



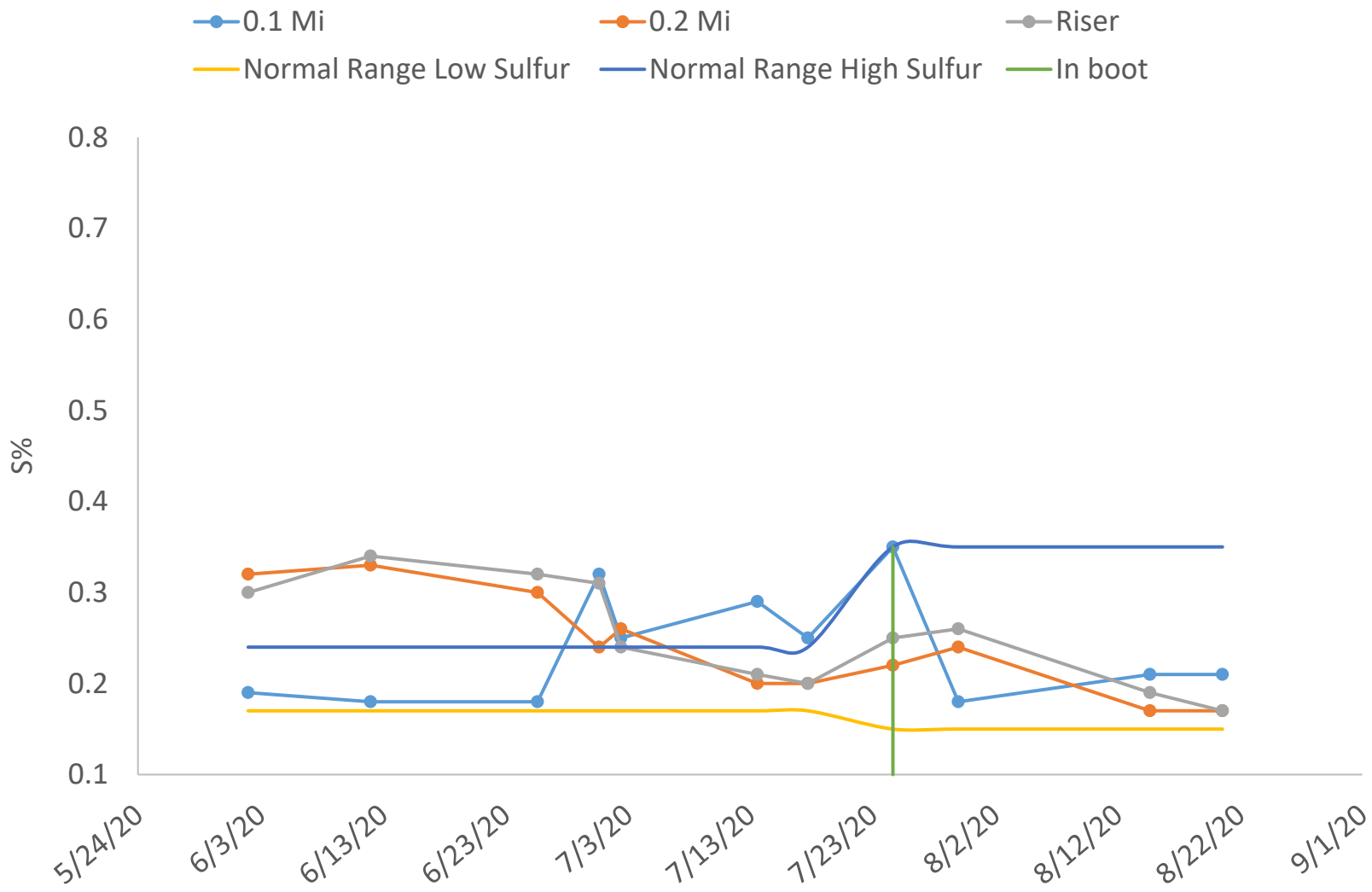
Calcium 2020



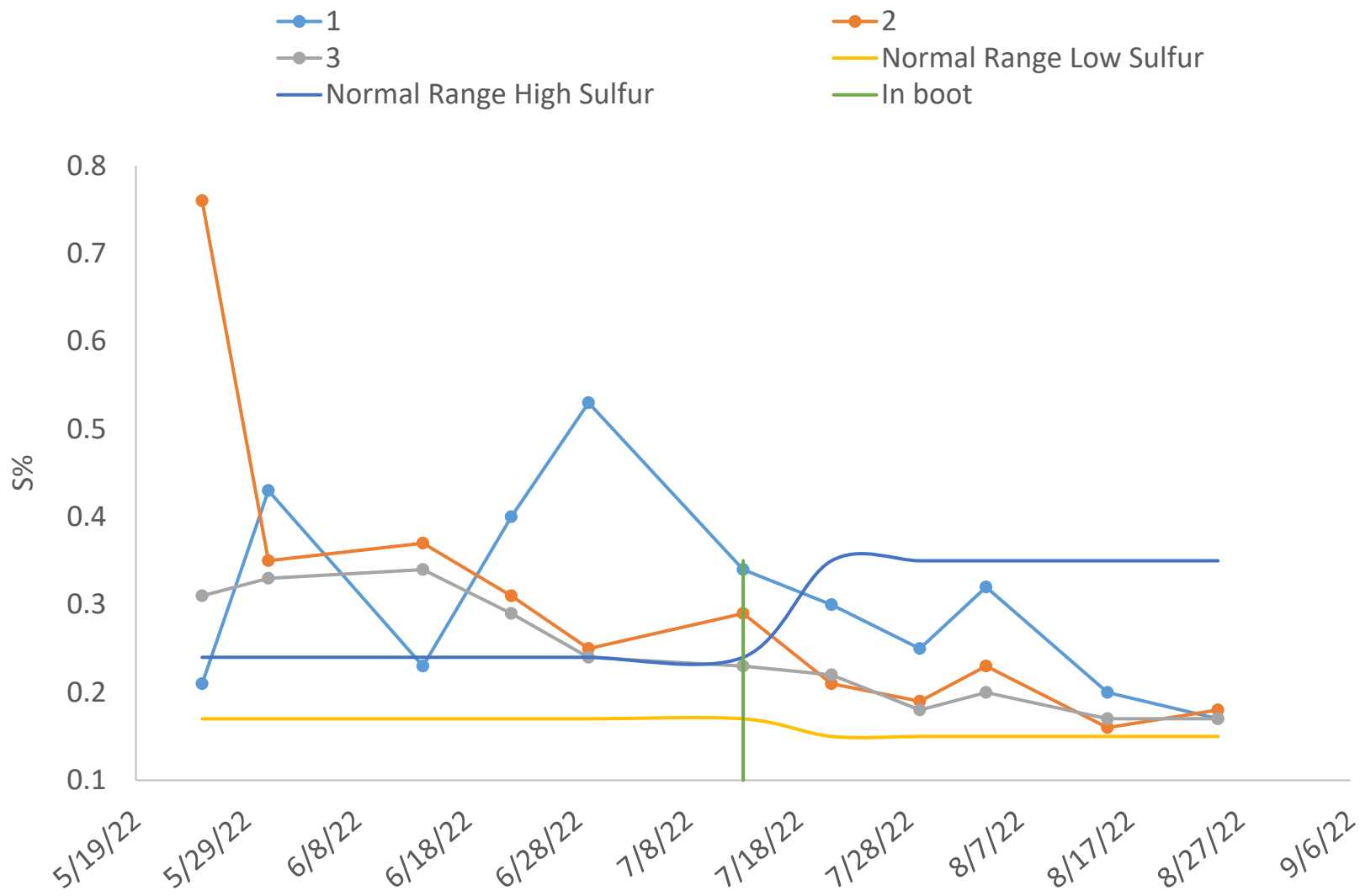
Calcium 2022



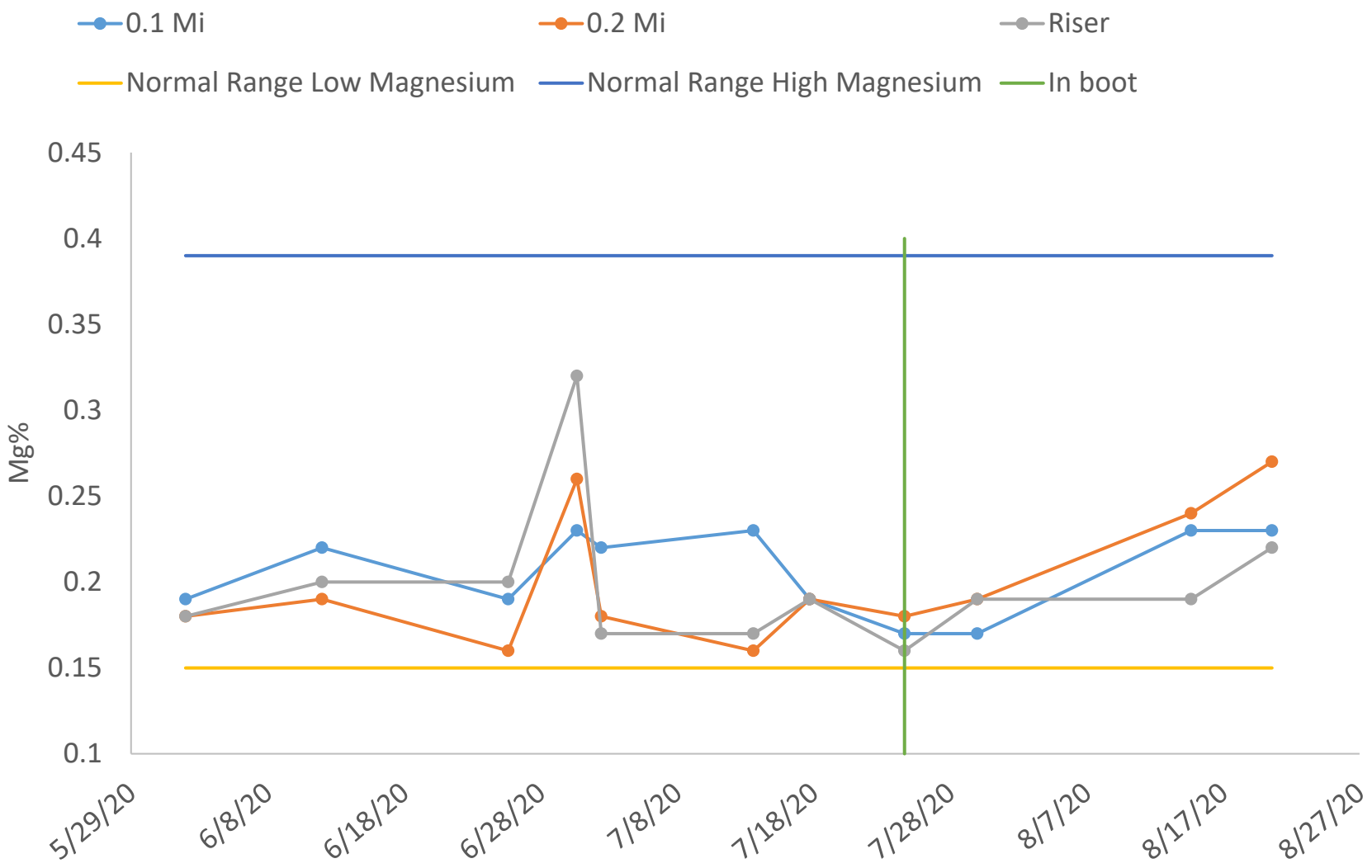
Sulfur 2020


0.1 Mi
0.2 Mi
Riser
Normal Range Low Sulfur
Normal Range High Sulfur
In boot
S%
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
5/24/20
6/3/20
6/13/20
6/23/20
7/3/20
7/13/20
7/23/20
8/2/20
8/12/20
8/22/20
9/1/20

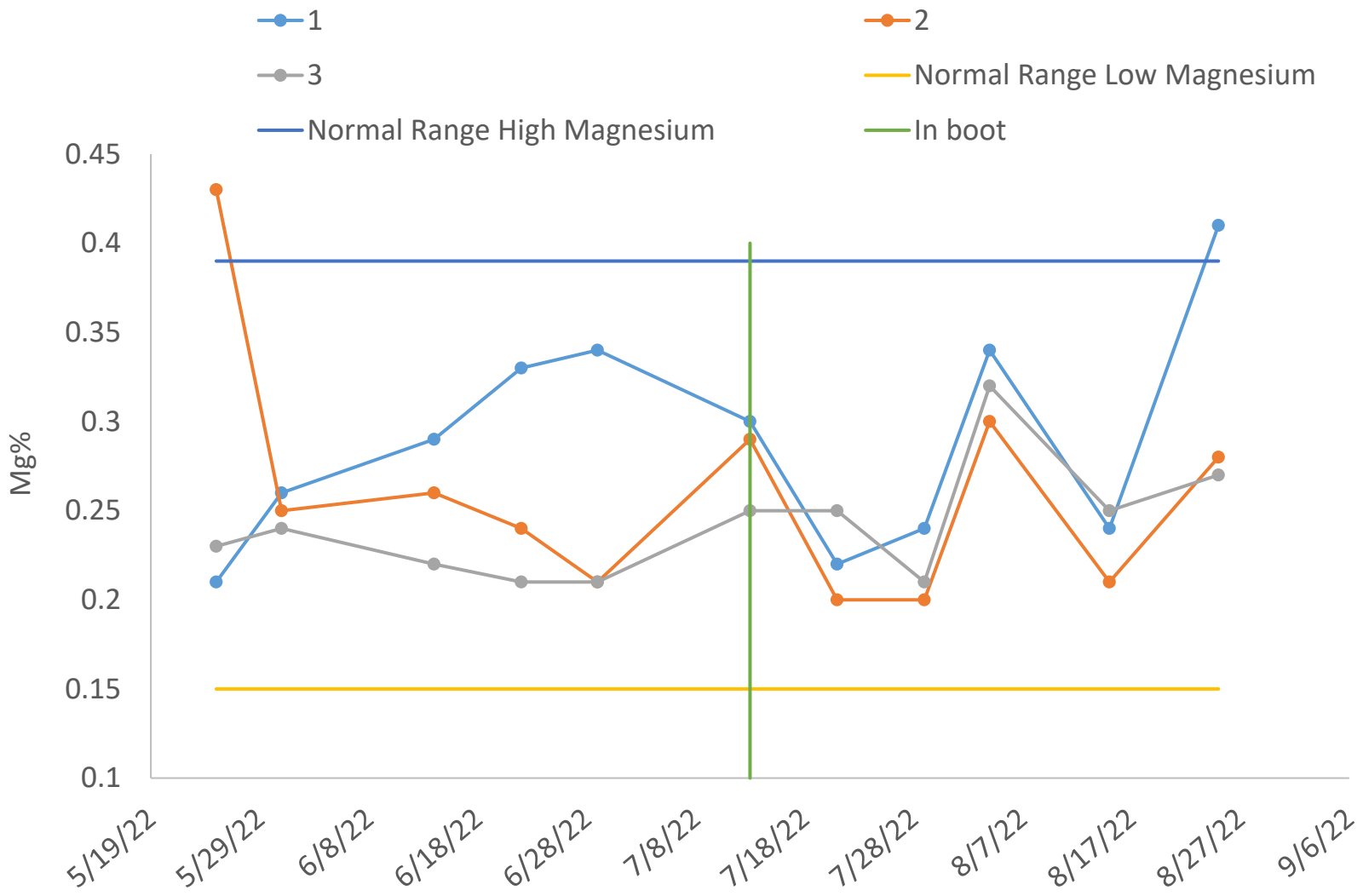
Sulfur 2022


1
2
3
Normal Range Low Sulfur
Normal Range High Sulfur
In boot
S%
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
5/19/22
5/29/22
6/8/22
6/18/22
6/28/22
7/8/22
7/18/22
7/28/22
8/7/22
8/17/22
8/27/22
9/6/22

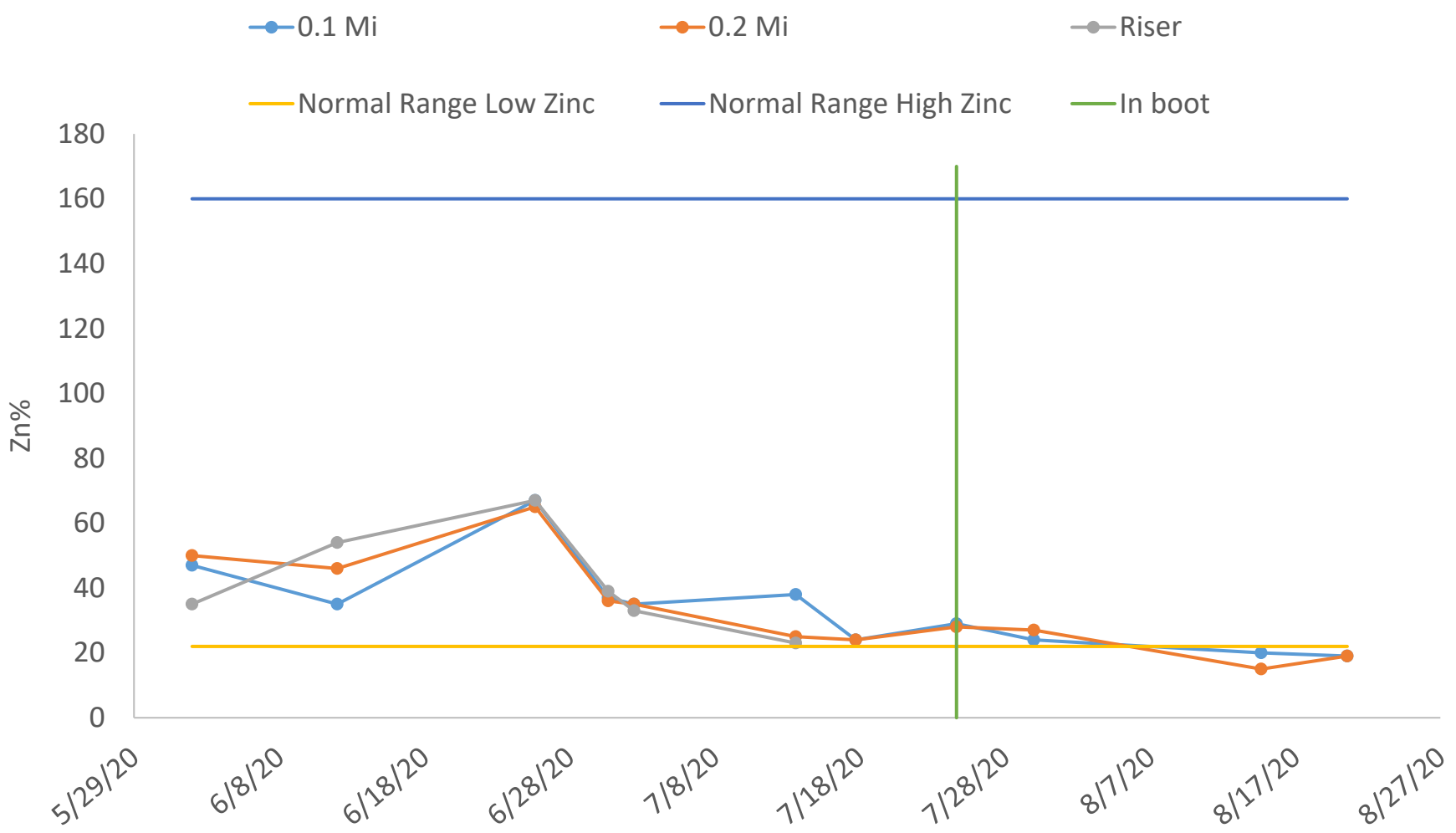
Magnesium 2020



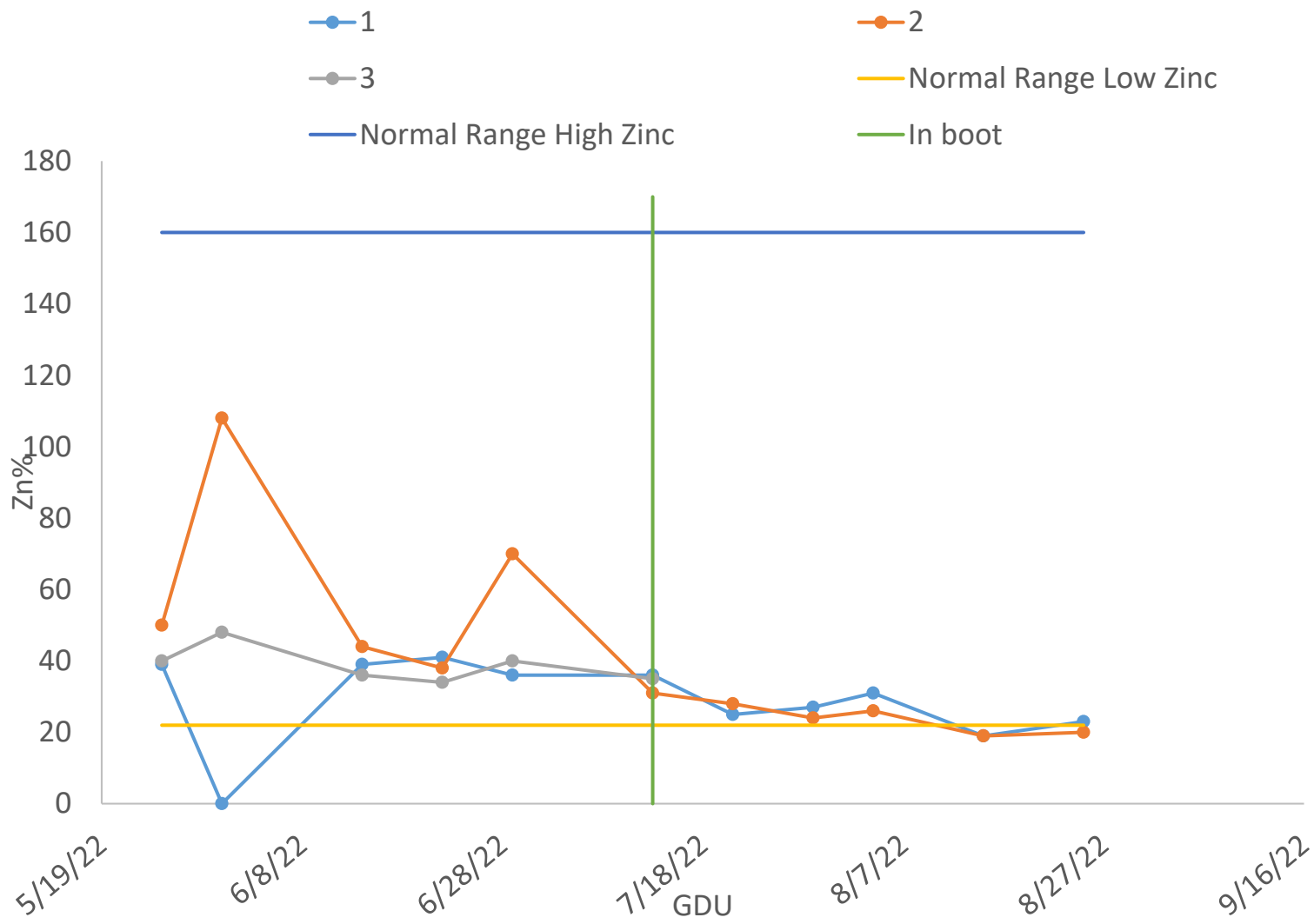
Magnesium 2022



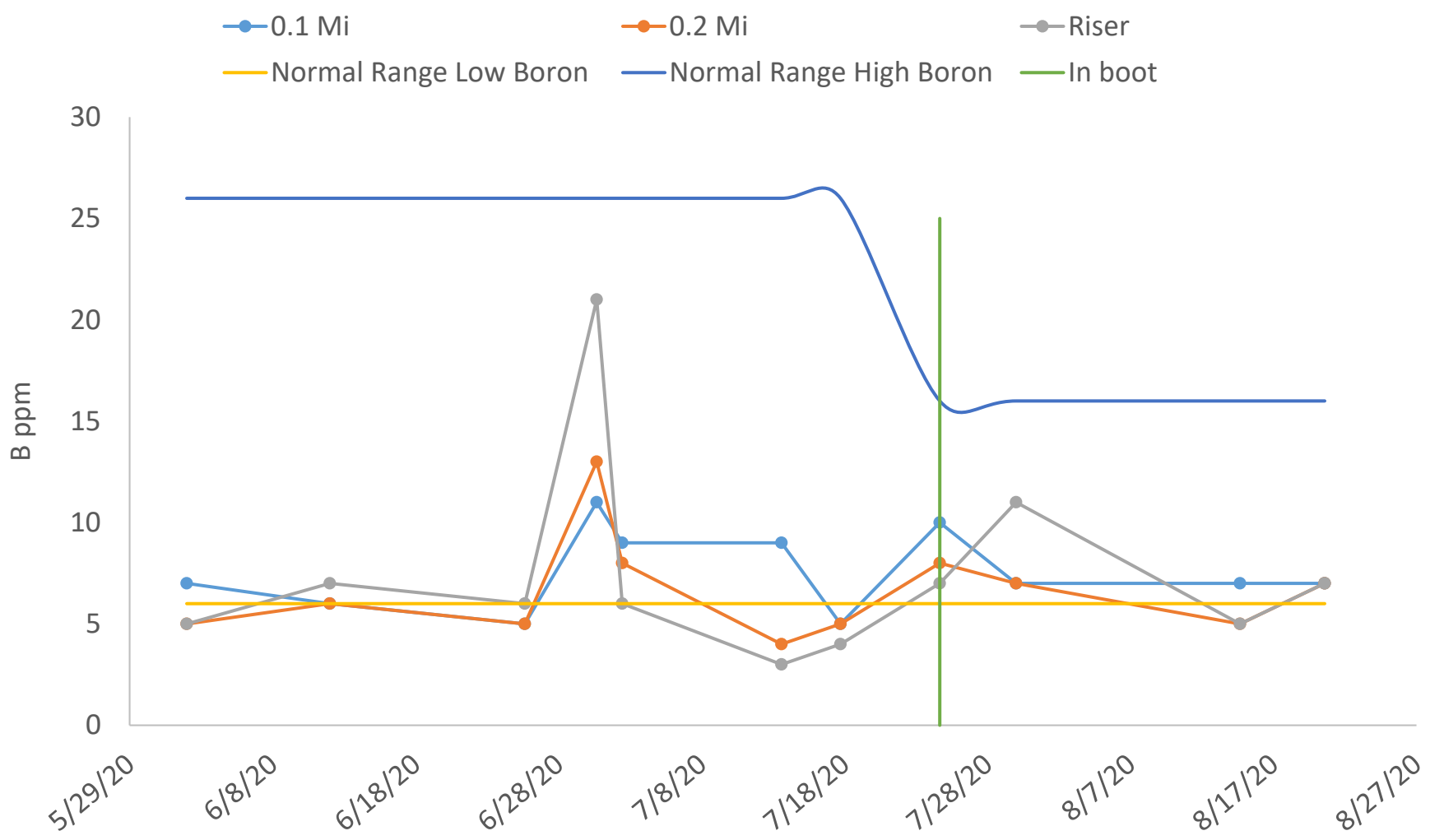
Zinc 2020


0.1 Mi
0.2 Mi
Riser
Normal Range Low Zinc
Normal Range High Zinc
In boot
Zn%
180
160
140
120
100
80
60
40
20
0
5/29/20
6/8/20
6/18/20
6/28/20
7/8/20
7/18/20
7/28/20
8/7/20
8/17/20
8/27/20

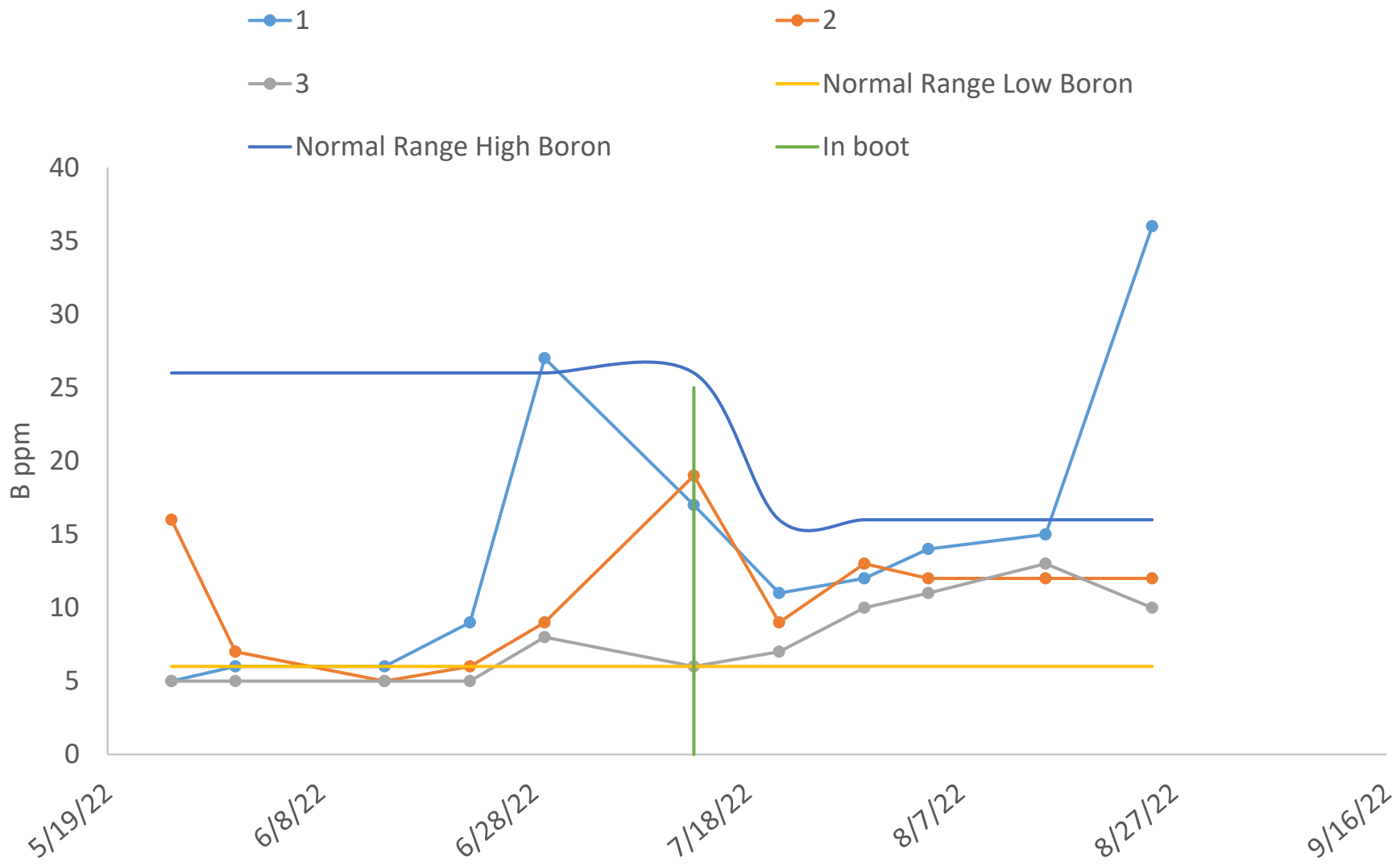
Zinc 2022


1
2
3
Normal Range Low Zinc
Normal Range High Zinc
In boot
180
160
140
120
100
80
60
40
20
0
Zn%
5/19/22
6/8/22
6/28/22
7/18/22
8/7/22
8/27/22
9/16/22
GDU

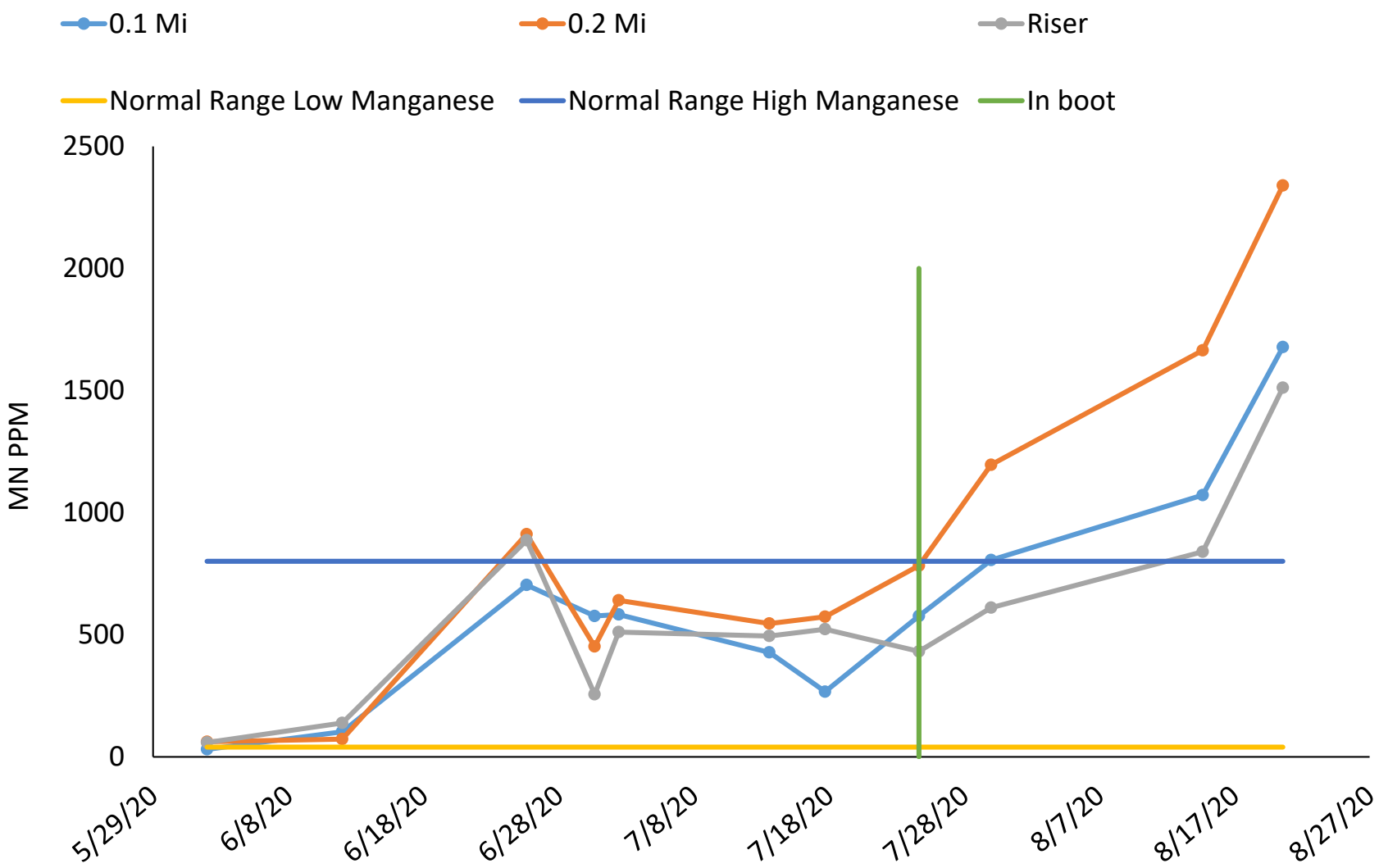
Boron 2020


0.1 Mi
0.2 Mi
Riser
Normal Range Low Boron
Normal Range High Boron
In boot
B ppm
30
25
20
15
10
5
0
5/29/20
6/8/20
6/18/20
6/28/20
7/8/20
7/18/20
7/28/20
8/7/20
8/17/20
8/27/20

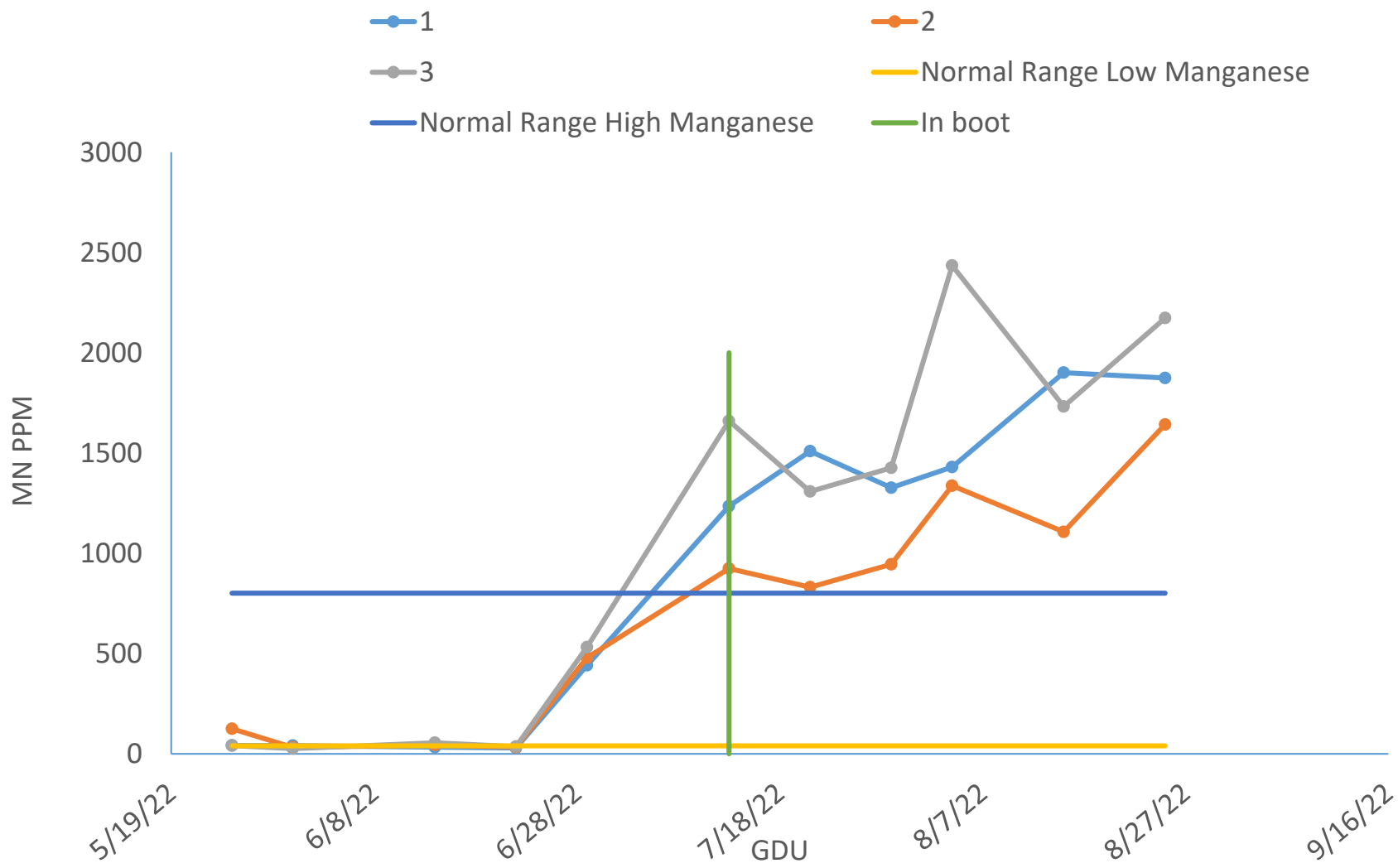
Boron 2022


1
2
3
Normal Range Low Boron
Normal Range High Boron
In boot
B ppm
40
35
30
25
20
15
10
5
0
5/19/22
6/8/22
6/28/22
7/18/22
8/7/22
8/27/22
9/16/22

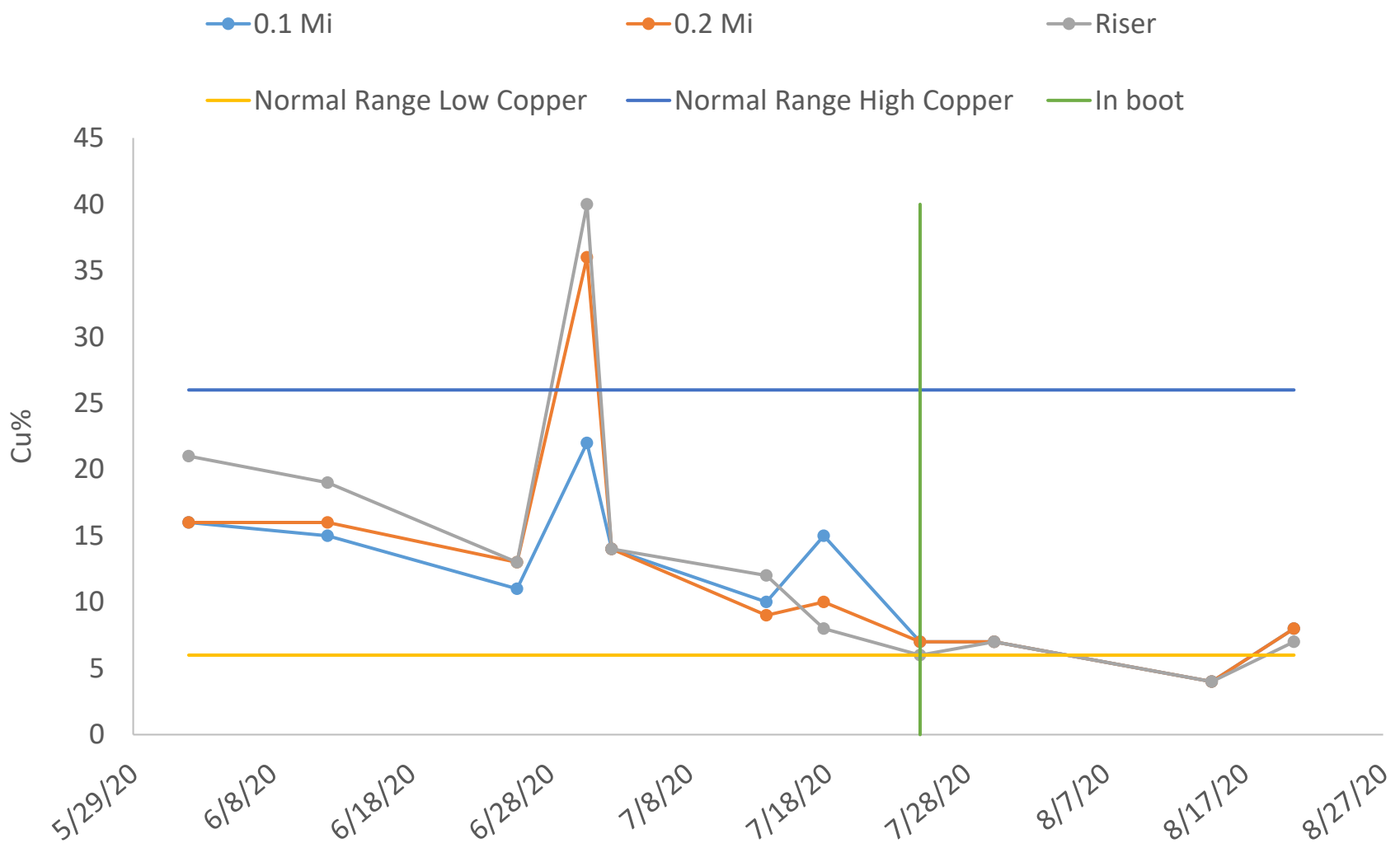
Manganese 2020



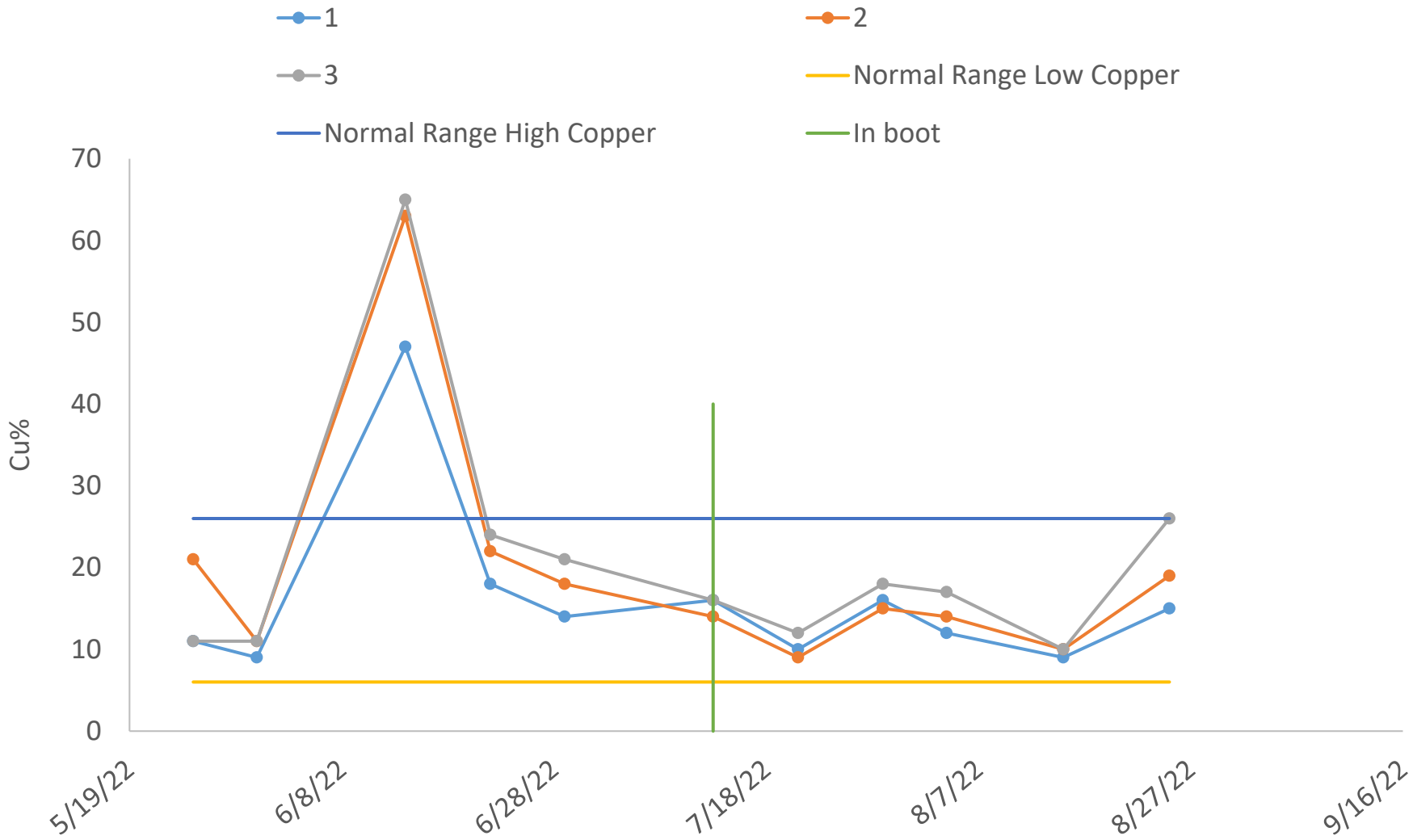
Manganese 2022



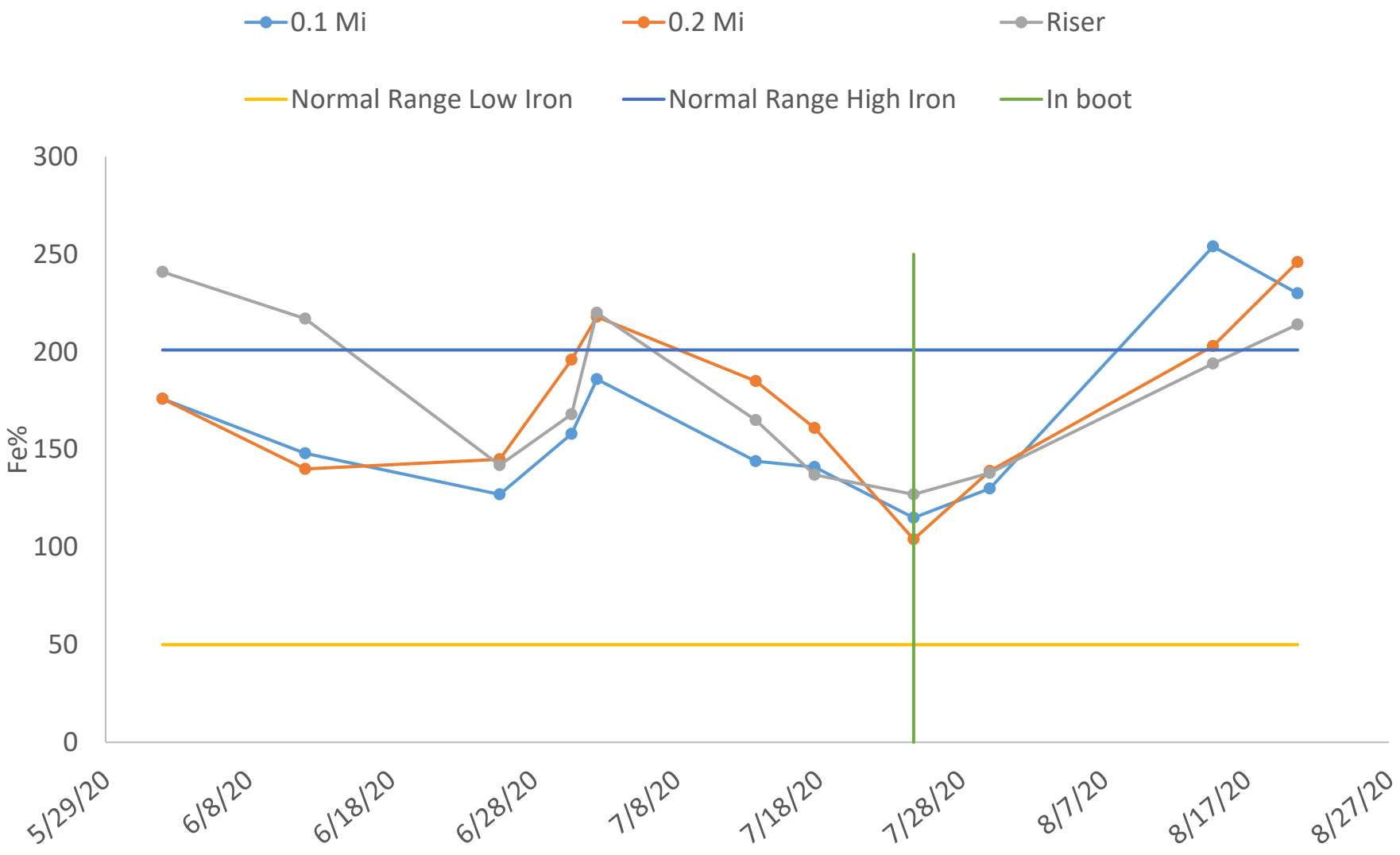
Copper 2020


0.1 Mi
0.2 Mi
Riser
Normal Range Low Copper
Normal Range High Copper
In boot
Cu%
45
40
35
30
25
20
15
10
5
0
5/29/20
6/8/20
6/18/20
6/28/20
7/8/20
7/18/20
7/28/20
8/7/20
8/17/20
8/27/20

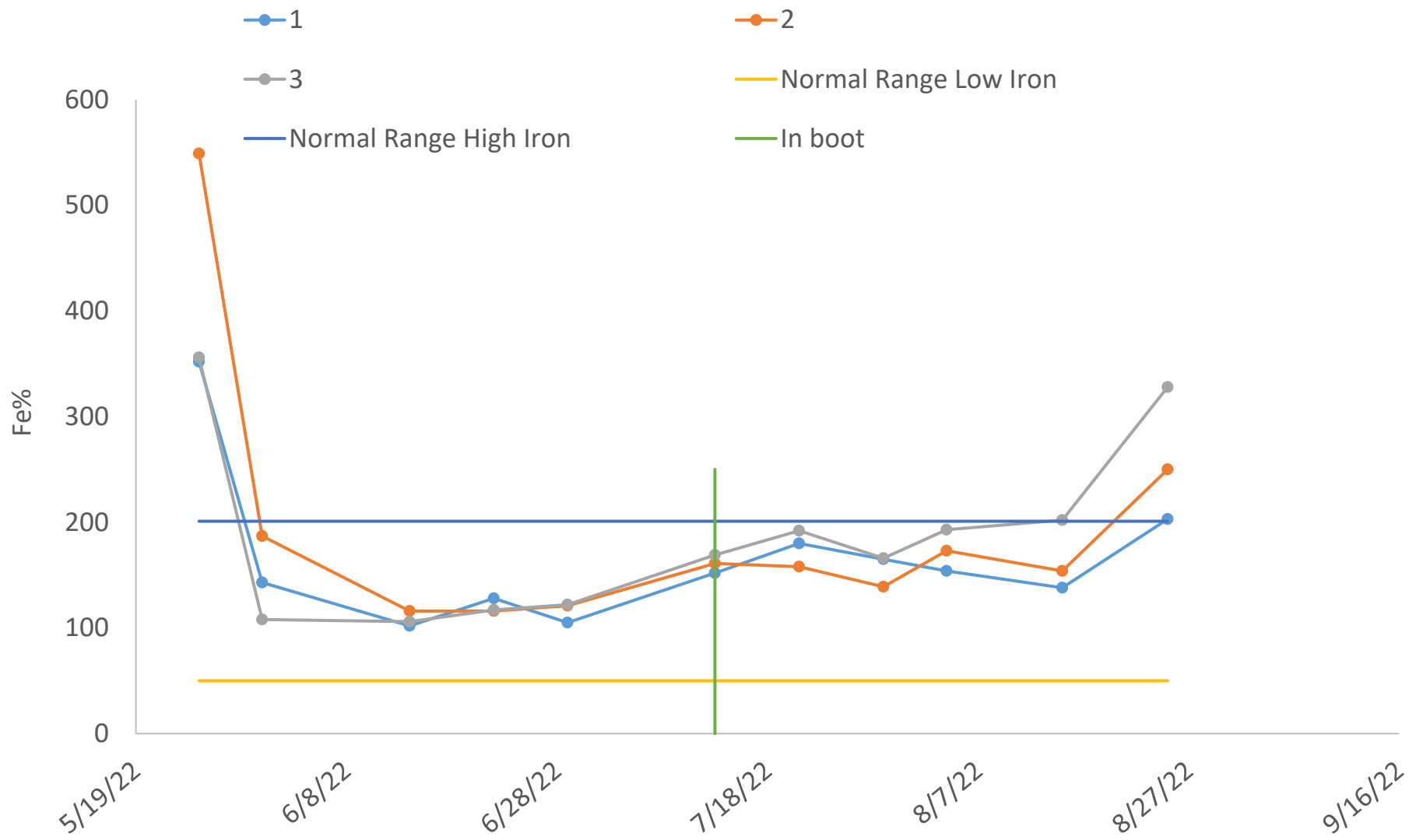
Copper 2022


1
2
3
Normal Range Low Copper
Normal Range High Copper
In boot
70
60
50
40
30
20
10
0
Cu%
5/19/22
6/8/22
6/28/22
7/18/22
8/7/22
8/27/22
9/16/22

Iron 2020


0.1 Mi
0.2 Mi
Riser
Normal Range Low Iron
Normal Range High Iron
In boot
300
250
200
150
100
50
0
Fe%
5/29/20
6/8/20
6/18/20
6/28/20
7/8/20
7/18/20
7/28/20
8/7/20
8/17/20
8/27/20

Iron 2022


1
2
3
Normal Range Low Iron
Normal Range High Iron
In boot
600
500
400
300
200
100
0
Fe%
5/19/22
6/8/22
6/28/22
7/18/22
8/7/22
8/27/22
9/16/22

Results

- Mobile macronutrients decrease throughout the season as expected
- Issues to note and possibly address
  - Zinc stays on the low side of sufficient throughout the entire season

Conclusion and Goals

- Continue to evaluate current rice tissue levels to update sufficiency ratings
- Evaluate the effects Zinc, Boron and Copper in-season applications on tissue levels and yield
  - All 3 of these nutrients play a critical role in pollination, starch production and grain quality.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