Fertility Programs for Reduced Irrigation and Population

Irrigation Research Foundation: Yuma, CO

Experiment Info	
Planted:	5/3/2024
Harvested:	10/17/20
Yield Goal:	225
Variety:	P05466Q
Pop.:	Varied
Row Width:	
Prev. Crop:	
Plot Size:	
Reps:	

Soil Test (ppm)	
pH:	6.2
CEC:	12
%OM:	1.5
Bray P1:	40
Bicarb P:	
K:	628
S:	14
%K:	13
%Mg:	21
%Ca:	62
%H:	0
Zn:	2.6
Mn:	86
B:	0.7

Objective:

As water well production slows and regulations increase in areas of heavy groundwater use, growers are forced to cut back plant populations to match irrigation capacities. In this multi-year study, AgroLiquid aims to provide answers for growers on how fertility programs can be adjusted to match these population and irrigation reductions. In this first year, a full conventional program (116 gals/A total) was compared to a full AgroLiquid program (82 gals/A total) across 3 different populations (34k, 28k, and 22k plants/A) and 3 irrigation rates of 100%, 70%, and 40% (based on full crop need of 24 Acre-inches/year).

15.12 INCHES of applied water through the pivot

34K POPULATION		28K POPULATION		22K POPULATION	
AVERAGE		AVERAGE		AVERAGE	
MOISTURE	BUSHELS PER ACRE	MOISTURE	BUSHELS PER ACRE	MOISTURE	BUSHELS PER ACRE
12.6	245.3	12.6	235.9	13.2	224.5

11.18 INCHES of applied water through the pivot

34K POPULATION		28K POPULATION		22K POPULATION	
AVERAGE		AVERAGE		AVERAGE	
MOISTURE	BUSHELS PER ACRE	MOISTURE	BUSHELS PER ACRE	MOISTURE	BUSHELS PER ACRE
12.5	225.3	12.3	224.4	13.1	203.7

7.24 INCHES of applied water through the pivot

34K POPULATION		28K POPULATION		22K POPULATION	
AVERAGE		AVERAGE		AVERAGE	
MOISTURE	BUSHELS PER ACRE	MOISTURE	BUSHELS PER ACRE	MOISTURE	BUSHELS PER ACRE
12.5	202.3	12.5	190.6	13.0	177.5

Conventional Fertility Program (116 gal/A total)

Strip Till (gals/A) – 35gal UAN 28%, 19gal 10-34-0, 3gal K-Row, 12gal 12-0-0-26, 78oz Zn, 19oz each of Mn, Fe, Cu, B

Planter - 3X2X1.5 (gals/A) – 22gal UAN, 12gal 10-34-0, 2gal K-Row, 8gal 12-0-0-26, 50oz Zn, 13oz each of Mn, Fe, Cu, B

15.12 INCHES of applied water through the pivot

34K POPULATION		28K POPULATION		22K POPULATION	
AVERAGE		AVERAGE		AVERAGE	
MOISTURE	BUSHELS PER ACRE	MOISTURE	BUSHELS PER ACRE	MOISTURE	BUSHELS PER ACRE
12.8	252.4	12.6	244.7	12.9	225.1

11.18 INCHES of applied water through the pivot

34K POPULATION		28K POPULATION		22K POPULATION	
AVERAGE		AVERAGE		AVERAGE	
MOISTURE	BUSHELS PER ACRE	MOISTURE	BUSHELS PER ACRE	MOISTURE	BUSHELS PER ACRE
12.7	213.5	12.3	213.3	12.6	197.5

7.24 INCHES of applied water through the pivot

34K POPULATION		28K POPULATION		22K POPULATION	
AVERAGE		AVERAGE		AVERAGE	
MOISTURE	BUSHELS PER ACRE	MOISTURE	BUSHELS PER ACRE	MOISTURE	BUSHELS PER ACRE
13.1	193.3	12.6	191.7	12.6	180.2

AgroLiquid Fertility Program (82 gal/A total)

Strip Till (gals/A) – 19gal HighN, 6gal ProGerm, 2gal Kalibrate, 4gal AccesS, 49oz Zn, 12oz each Mn, Fe, Cu, B

Planter – 3X2X1.5 (gals/A) – 31galHighN, 9gal ProGerm, 3 gal Kalibrate, 6galAccesS, 76oz Zn, 20oz each Mn, Fe, Cu, B

Conclusions:

The AgroLiquid program performed well across the trial compared to the conventional program despite using over 30 gals less per acre. At the full irrigation rate, AgroLiquid out yielded the conventional at all 3 population rates. At the 70% irrigation rate, AgroLiquid yielded lower across all 3 population rates. At the 40% irrigation rate, AgroLiquid yielded lower at the 34,000 population but out yielded the conventional at the lower population rates of 28,000 and 22,000. Although the data is mixed throughout the trial, AgroLiquid products performed very well considering the lower use rates. AgroLiquid also did very well in the full irrigation environment by maximizing the crops water use.