

# UTAH DICOT SOLUTION

UPDATED January 2017

SALT	STOCK CONC. [Molar]	STARTER First Fill Only		VEGETATIVE GROWTH Refill		REPRODUCTIVE GROWTH Refill	
		mL per 100 L	FINAL CONC. mM	mL per 100 L	FINAL CONC. mM	mL per 100 L	FINAL CONC. mM
	[mMolar]		$\mu$ M		$\mu$ M		$\mu$ M
Ca(NO <sub>3</sub> ) <sub>2</sub>	1	100	1	100	1	50	0.5
K(NO <sub>3</sub> )	2	50	1	200	4	100	2
KH <sub>2</sub> PO <sub>4</sub>	0.2	100	0.2	200	0.4	200	0.4
MgSO <sub>4</sub>	0.5	100	0.5	200	1	50	0.25
K <sub>2</sub> SiO <sub>3</sub>	0.3	100	0.3	100	0.3	100	0.3
FeCl <sub>3</sub>	50	10	5	5	2.5	5	2.5
EDDHA (Sequestrene 138 Fe) (Red Color)	25	80	20	20	5	20	5
MnCl <sub>2</sub>	20	10	2	10	2	10	2
ZnCl <sub>2</sub>	30	10	3	10	3	10	3
H <sub>3</sub> BO <sub>3</sub>	400	10	40	10	40	10	40
CuCl <sub>2</sub>	40	5	2	5	2	5	2
Na <sub>2</sub> MoO <sub>4</sub>	1	10	0.1	10	0.1	10	0.1

Add nitric acid (HNO<sub>3</sub>) as needed to adjust initial pH to 5.5

*Use nitric acid for pH control to help resupply nitrogen*

Phosphorus concentration in the Starter Solution is reduced to minimize FePO<sub>4</sub> precipitation. Phosphorus concentration is less than 0.01 mM in field soils.

Nov 15: Reduced Mn and Zn concentrations by half to reduce accumulation in plant tissue

January 2017: reduced Cu by half to reduce accumulation in tissue, and reduced concentration of EDDHA stock solution to make it more soluble.

# UTAH MONOCOT SOLUTION

UPDATED February 2016

SALT	STOCK CONC. [Molar]	STARTER First Fill Only		VEGETATIVE GROWTH (PRE-ANTHESIS) Refill		REPRODUCTIVE GROWTH (POST-ANTHESIS) Refill	
		mL per 100 L	FINAL CONC. mM	mL per 100 L	FINAL CONC. mM	mL per 100 L	FINAL CONC. mM
Ca(NO <sub>3</sub> ) <sub>2</sub>	1	100	1	100	1	50	0.5
K(NO <sub>3</sub> )	2	50	1	200	4	100	2
KH <sub>2</sub> PO <sub>4</sub>	0.2	25	0.05	200	0.4	200	0.4
MgSO <sub>4</sub>	0.5	100	0.5	200	1	50	0.25
K <sub>2</sub> SiO <sub>3</sub>	0.3	100	0.3	100	0.3	100	0.3
	[mMolar]		μM		μM		μM
FeCl <sub>3</sub>	50	20	10	5	2.5	5	2.5
Fe-HEDTA & FeCl <sub>3</sub>	250	20	50	2	5	2	5
MnCl <sub>2</sub>	20	10	2	10	2	10	2
ZnCl <sub>2</sub>	30	10	3	10	3	10	3
H <sub>3</sub> BO <sub>3</sub>	400	1	4	1	4	1	4
CuCl <sub>2</sub>	40	5	2	5	2	5	2
Na <sub>2</sub> MoO <sub>4</sub>	1	10	0.1	10	0.1	10	0.1

Add nitric acid (HNO<sub>3</sub>) as needed to adjust initial pH to 5  
Lower pH helps minimize iron chlorosis

*Use nitric acid for pH control to help resupply nitrogen*

Phosphorus concentration in the Starter Solution is reduced to minimize FePO<sub>4</sub> precipitation and thus minimize Fe chlorosis. Phosphorus concentration is less than 0.01 mM in field soils.

Nov 15: Reduced Mn, Zn, and Cu concentration by half to reduce accumulation in plant tissue.

Feb 16: Increased HEDTA from 25 to 50 uM and KH<sub>2</sub>PO<sub>4</sub> from 0.02 to 0.05 mM.