

Table S1. Modified barley basal nutrient solution composition

Stock	Treat-1 (NO ₃ ⁻)	Treat-2 (NH ₄ ⁺)	Treat-3 (Urea)	Treat-4 (Glycine)	(g/L)	Stock Conc.	Final Conc.	10 L	30L
H1*	KNO ₃ (101.1 g/mol)				101.1 g/L	1M	2 mM	20ml	60ml
		(NH ₄) ₂ SO ₄ (MW 132.14 g/mol)			132.14g/L	1M	1mM	10ml	30ml
			CH ₄ N ₂ O MW (60.1 g/mol)		60.1 g/L	1M	1 mM	10ml	30ml
				C ₂ H ₅ NO ₂ MW (75.07 g/mol)	75.07 g/L	1M	2 mM	20ml	60ml
		KCl MW (74.55 g/mol)	KCl MW (74.55 g/mol)	KCl MW (74.55 g/mol)	74.55 g/L	1M	2 mM	20ml	60ml
	CaCl ₂ ·2H ₂ O MW (147.0 g/mol)				147 g/L	1M	0.9 mM	9 ml	27ml
H2	Ca(H ₂ PO ₄) ₂ MW (234.05 g/mol)				234.05 g/L	1M	0.1 mM	1 ml	3ml
		Ca(H ₂ PO ₄) ₂ MW (234.05 g/mol)	Ca(H ₂ PO ₄) ₂ MW (234.05 g/mol)	Ca(H ₂ PO ₄) ₂ MW (234.05 g/mol)	234.05 g/L	1M	1 mM	10ml	30ml
H3	MgSO ₄ ·7H ₂ O MW (246.46)	MgSO ₄ ·7H ₂ O MW (246.46)	MgSO ₄ ·7H ₂ O MW (246.46)	MgSO ₄ ·7H ₂ O MW (246.46)	246.46 g/L	1M	0.4 mM	4 ml	12ml
H4	H ₃ BO ₃ MW (61.83 g/mol)	H ₃ BO ₃ MW (61.83 g/mol)	H ₃ BO ₃ MW (61.83 g/mol)	H ₃ BO ₃ MW (61.83 g/mol)	0.185 g/L	0.003 M	3 uM	10ml	30ml
	MnCl ₂ ·4H ₂ O MW (197.91 g/mol)	MnCl ₂ ·4H ₂ O MW (197.91 g/mol)	MnCl ₂ ·4H ₂ O MW (197.91 g/mol)	MnCl ₂ ·4H ₂ O MW (197.91 g/mol)	0.99 g/L	0.005 M	0.5 uM		
	Na ₂ MoO ₄ ·2H ₂ O MW (241.95 g/mol)	Na ₂ MoO ₄ ·2H ₂ O MW (241.95 g/mol)	Na ₂ MoO ₄ ·2H ₂ O MW (241.95 g/mol)	Na ₂ MoO ₄ ·2H ₂ O MW (241.95 g/mol)	0.242 g/L	0.001 M	1 uM		
	ZnSO ₄ ·7H ₂ O MW (287.56 g/mol)	ZnSO ₄ ·7H ₂ O MW (287.56 g/mol)	ZnSO ₄ ·7H ₂ O MW (287.56 g/mol)	ZnSO ₄ ·7H ₂ O MW (287.56 g/mol)	1.15 g/L	0.004 M	0.4 uM		
H5	CuSO ₄ ·5H ₂ O MW (249.68 g/mol)	CuSO ₄ ·5H ₂ O MW (249.68 g/mol)	CuSO ₄ ·5H ₂ O MW (249.68 g/mol)	CuSO ₄ ·5H ₂ O MW (249.68 g/mol)	0.25 g/500 ml	0.002 M	0.2 uM	10ml	30ml
H6	Fe(III)Na-EDTA MW (367.15g/mol))	Fe(III)Na-EDTA MW (367.15g/mol)	Fe(III)NaEDTA MW (367.15g/mol)	Fe(III)Na-EDTA MW (367.15g/mol)	7.343 g/L	0.02 M	20 uM	10ml	30ml

*H1 have 4 forms of nitrate, H2 have different conc., H3,H4,H5,H6 are the common stock, MW= Molecular Weight