Table S1: **Notional treatments of the population experiment.**

Treatment	Nutrient concentration	Number of occupied sites	Experimental parameters: estimates used to design the experiment				Experimental parameters: estimates from populations and within-treatment heterogeneity			
			$\psi_{\mathbf{site}}$	$\langle\psi\rangle_{\mathbf{pop}}$	$\sigma^2_{\mathbf{pop}}$	$\mathbf{P}_{\mathrm{inv}}$	$\hat{\psi}_{\mathrm{site}}(T, r)$	$\hat{\psi}_{\mathrm{pop}}(T, r)$	$\hat{\sigma}^2_{\mathrm{pop}}(T, r)$	$\hat{P}_{\mathrm{inv}}$
A	3%	217	**0.51** (0.4, 0.62)	**0.51** (0.4, 0.62)	**0**	**0.98** (0.81, 1)	0.58 ± 0.08	0.58 ± 0.08	0	1
B	3.5%	175	**0.62** (0.51, 0.71)[a]	**0.5** (0.41, 0.58)[a]	**0.06** (0.04, 0.08)[a]	**0.91** (0.71, 0.98)	0.62 ± 0.1	0.5 ± 0.08	0.06 ± 0.02	0.79
C	4%	146	**0.73** (0.62, 0.81)[a]	**0.49** (0.42, 0.54)[a]	**0.12** (0.08, 0.14)[a]	**0.78** (0.61, 0.90)	0.63 ± 0.12	0.43 ± 0.08	0.09 ± 0.03	0.72
D	4.5%	125	**0.84** (0.73, 0.90)[a]	**0.48** (0.42, 0.52)[a]	**0.17** (0.13, 0.2)[a]	**0.67** (0.47, 0.82)	0.66 ± 0.09	0.38 ± 0.05	0.11 ± 0.03	0.46
E	5%	110	**0.95** (0.84, 1)	**0.48** (0.43, 0.51)	**0.22** (0.18, 0.25)	**0.14** (0.05, 0.32)	0.7 ± 0.16	0.35 ± 0.08	0.13 ± 0.06	0.04
F	10%	98	**1** (0.94, 1)	**0.45** (0.42, 0.45)	**0.25** (0.21, 0.25)	**0.03** (0.01, 0.17)	0.78 ± 0.16	0.35 ± 0.07	0.16 ± 0.05	0.04