

Article

Impact of Nitrogen Application Rates on Upland Rice Performance, Planted under Varying Sowing Times

Tajamul Hussain ¹, Nurda Hussain ¹, Mukhtar Ahmed ², Charassri Nualsri ³ and Saowapa Duangpan ^{1,*}

* Correspondence: saowapa.d@psu.ac.th; Tel.: +66–74–286–138

Supplementary Table S1

Table S1. Mean squares of ANOVA of yield and yield attributes of Dawk Pa–yawm, straw N uptake, grain N uptake, total N uptake and water use efficiency during 2018–19.

SOV	df	DF	DM	PH	NT	NP	GY	BM	SNU	GNU	TNU	WUE
NR	3	0.88 ^{ns}	2.44 ^{ns}	738.56 ^{***}	8.54 ^{***}	7.89 ^{***}	13.07 ^{***}	330.79 ^{***}	1.37 ^{***}	0.01 ^{***}	2.14 ^{***}	0.003 ^{***}
ST	2	286.36 ^{***}	255.86 ^{***}	1002.69 ^{***}	3.69 ^{**}	3.58 ^{**}	11.04 ^{***}	24.38 ^{**}	0.13 ^{***}	0.05 ^{***}	0.03 ^{ns}	0.001 ^{**}
NR×ST	6	2.81 ^{ns}	0.08 ^{ns}	26.14 ^{ns}	0.21 ^{ns}	0.14 ^{ns}	0.52 ^{ns}	2.29 ^{ns}	0.06 ^{***}	0.01 ^{***}	0.04 [*]	0.0001 ^{ns}
Error	24	2.47	1.83	37.64	0.44	0.39	0.45	3.60	0.009	0.001	0.009	0.0001
CV %		1.40	1.02	5.83	12.06	11.34	13.80	9.76	12.10	12.78	9.07	12.80

SOV= Source of variation, df = degree of freedom, NR = Nitrogen application rate, ST = Sowing time, DF = Days to flowering, DM = Days to maturity, PH = Plant height, NT = Number of tillers, NP = Number of panicles, GY = Grain yield, BM = biomass, SNU = Straw nitrogen uptake, GNU = Grain nitrogen uptake, TNU = Total nitrogen uptake, WUE = Water use efficiency, *** = Highly significant ($p < 0.001$), ** = Moderately significant ($p < 0.01$), * Significant ($p < 0.05$), ns = non-significant

Supplementary Table S2

Table S2. Mean squares of ANOVA of yield and yield attributes of Dawk Pa–yawm, straw N uptake, grain N up-take, total N uptake and water use efficiency during 2019–20.

SOV	df	DF	DM	PH	NT	NP	GY	BM	SNU	GNU	TNU	WUE
NR	3	1.07 ^{ns}	7.66 ^{ns}	452.32 ^{***}	10.11 ^{**}	9.14 ^{**}	13.52 ^{***}	143.18 ^{***}	0.821 ^{***}	0.057 ^{***}	1.281 ^{***}	0.030 ^{***}
ST	2	1177.53 ^{***}	166.08 ^{***}	5466.03 ^{***}	8.44 [*]	5.86 [*]	20.93 ^{***}	71.57 ^{**}	0.491 ^{***}	0.033 ^{***}	0.663 ^{***}	0.090 ^{***}
NR×ST	6	3.38 ^{ns}	3.60 ^{ns}	91.77 ^{**}	0.67 ^{ns}	0.42 ^{ns}	1.81 ^{ns}	3.59 ^{ns}	0.090 [*]	0.004 ^{ns}	0.097 ^{ns}	0.005 [*]
Error	24	2.47	2.67	24.42	1.72	1.25	0.84	9.81	0.031	0.002	0.042	0.001
CV %		1.44	1.28	4.76	23.39	21.52	18.36	18.27	22.04	18.16	19.58	15.73

SOV= Source of variation, df = degree of freedom, NR = Nitrogen application rate, ST = Sowing time, DF = Days to flowering, DM = Days to maturity, PH = Plant height, NT = Number of tillers, NP = Number of panicles, GY = Grain yield, BM = biomass, SNU = Straw nitrogen uptake, GNU = Grain nitrogen uptake, TNU = Total nitrogen uptake, WUE = Water use efficiency, *** = Highly significant ($p < 0.001$), ** = Moderately significant ($p < 0.01$), * Significant ($p < 0.05$), ns = non-significant.

Supplementary Figure S1

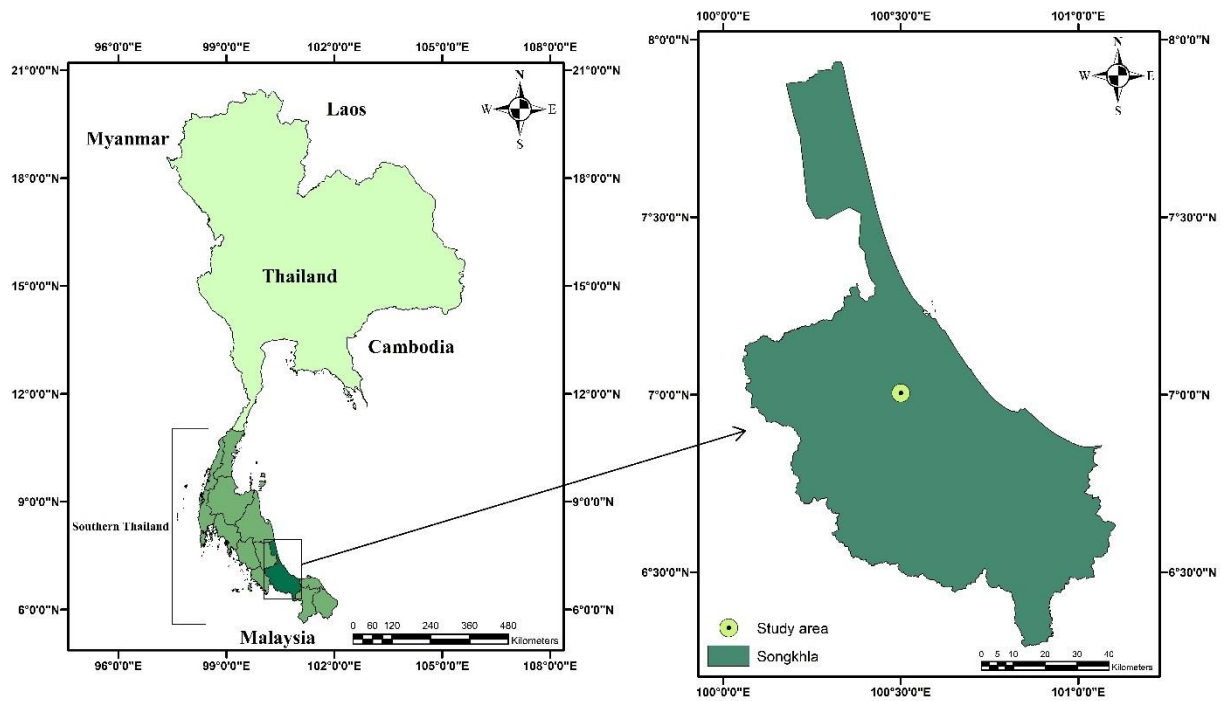


Figure S1. Study area at Prince of Songkla University, Songkhla in Southern Thailand (Source: adapted from ArcGIS:v10.5).