

Supplementary Information

Supplementary Table S1: Selling price of different crops

Crop	Selling Price (Rs/kg)		Source
	2016-2017	2017-18	
Rice	15.10	15.90	CACP (2019)
Grass Pea	25.00	26.00	Ray <i>et al.</i> (2019)
Lentil	33.25	39.50	CACP (2019)

References:

Commission for Agricultural Costs and Prices, 2019. <https://cacp.da.gov.in/> (accessed on 15.01.2019).

Ray, K., Brahmachari, M., Goswami, R., Sarkar, S., Brahmachari, K., Ghosh, A. and Nanda, M.K. Adoption of Improved Technologies for Cropping Intensification in the Coastal Zone of West Bengal, India: A Village Level Study for Impact Assessment. *Journal of Indian Society of Coastal Agricultural Research* 2019, 37(2): 144–152.

Supplementary Table S2: Effect of land situation and date of sowing on economics of the crops under rice-grass pea cropping system (based on mean data of two years)

Treatment combinations	Gross return (Rs/ha)		Net return (Rs/ha)		B:C ratio	
	Rice	Grass pea	Rice	Grass pea	Rice	Grass pea
<i>Medium–upland</i>						
1 st DOS	81,722.5	25,676.0	42,504.9	10,122.0	2.08	1.65
2 nd DOS	80,768.5	24,210.0	41,550.9	8,656.0	2.06	1.56
3 rd DOS	74,330.5	21,703.0	35,112.9	6,149.0	1.90	1.40

4 th DOS	72,999.3	20,627.5	33,781.6	5,073.5	1.86	1.33
5 th DOS	70,802.8	19,430.5	31,585.1	3,876.5	1.81	1.25
6 th DOS	66,113.3	17,162.5	26,895.6	1,608.5	1.69	1.10
<i>Medium–lowland</i>						
1 st DOS	86,194.0	28,754.0	46,976.4	13,200.0	2.20	1.85
2 nd DOS	81,743.0	24,487.5	42,525.4	8,933.5	2.08	1.57
3 rd DOS	80,649.3	23,427.0	41,431.6	7,873.0	2.06	1.51
4 th DOS	77,916.8	21,645.0	38,699.1	6,091.0	1.99	1.39
5 th DOS	69,671.0	20,967.0	30,453.4	5,413.0	1.78	1.35
6 th DOS	67,793.3	19,431.5	28,575.6	3,877.5	1.73	1.25

Average Cost of cultivation of rice for Year 1 and Year 2 was Rs. 39217.62 (Annexure I); Average cost of cultivation of grass pea for Year 1 and Year 2 was Rs. 15,554.00 [Abbreviation: 1st DOS: 23rd November; 2nd DOS: 27th November; 3rd DOS: 2nd December; 4th DOS: 7th December; 5th DOS: 12th December; 6th DOS: 17th December]

Supplementary Table S3: Effect of land situation and date of sowing of economics of the crops under rice-lentil cropping system (based on mean data of two years)

Treatment combinations	Gross return (Rs/ha)		Net return (Rs/ha)		B:C ratio	
	Rice	Lentil	Rice	Lentil	Rice	Lentil
<i>Medium–upland</i>						
1 st DOS	81,613.5	30,649.0	42,395.9	11,789.8	2.08	1.63
2 nd DOS	76,756.3	29,040.0	37,538.6	10,180.8	1.96	1.54
3 rd DOS	75,701.5	26,159.0	36,483.9	7,299.8	1.93	1.39

4 th DOS	77,539.8	24,545.3	38,322.1	5,686.1	1.98	1.30
5 th DOS	66,123.8	20,811.6	26,906.1	1,952.4	1.69	1.10
6 th DOS	62,427.0	19,392.9	23,209.4	533.7	1.59	1.03
<i>Medium–lowland</i>						
1 st DOS	88,001.8	31,262.1	48,784.1	12,402.9	2.24	1.66
2 nd DOS	86,133.8	29,799.6	46,916.1	10,940.4	2.20	1.58
3 rd DOS	75,901.0	26,863.8	36,683.4	8,004.6	1.94	1.42
4 th DOS	72,214.5	25,422.5	32,996.9	6,563.3	1.84	1.35
5 th DOS	73,455.8	23,720.3	34,238.1	4,861.1	1.87	1.26
6 th DOS	72,839.5	22,406.4	33,621.9	3,547.2	1.86	1.19

Average cost of cultivation of rice for Year 1 and Year 2 was Rs. 39217.60 (Annexure I); Average cost of cultivation of lentil for Year 1 and Year 2 was Rs. 18,859.20 [Abbreviation: 1st DOS: 23rd November; 2nd DOS: 27th November; 3rd DOS: 2nd December; 4th DOS: 7th December; 5th DOS: 12th December; 6th DOS: 17th December]

Supplementary Table S4: RDA explaining the effect of date of sowing and land situation on growth and yield components of rice

Axes	1	2	3	4	Total variance
Eigen values	0.102	0.091	0.018	0.468	1.00
Independent-Dependent set correlations	0.823	0.724	0.632	0	-
<i>Cumulative percentage variance</i>					
Dependent set	10.2	19.3	21.1	67.9	-
Independent –Dependent set relation	48.5	91.6	100	0	-

Supplementary Table S5: RDA explaining the effect of date of sowing and land situation on grain yield of pulse crops

Axes	1	2	3	4	Total variance
Eigen values	0.227	0.075	0.338	0.171	1.00
Independent-Dependent set correlations	0.682	0.612	0	0	-
<i>Cumulative percentage variance</i>					
Dependent set	22.7	30.1	63.9	81	-
Independent –Dependent set relation	75.2	100	0	0	-

Supplementary Table S6: ANOVA table of yield attributes of the rice plant (Year 1)

[illegible]

[illegible]

Supplementary Table S7: ANOVA table of yield attributes of the Rice (Year 2)

[illegible]

Supplementary Table S8: ANOVA table of yield attributes of the Lentil (Year 1)

(L X D)	5	ns	ns	ns	ns	ns	ns	**	**	ns	ns	ns
Error (L X D)	15	-	-	-	-	-	-	-	-	-	-	-
Total	47	-	-	-	-	-	-	-	-	-	-	-

ns: non-significant; ** significant at $P \leq 0.01$

Supplementary Table S9: ANOVA table of yield attributes of the Lentil (Year 2)

SOURCE	DF	Pod/plant	Seed/pod	TW (g)	Grain yield (k/ha)	Stover yield (kg/ha)	Grain N (%)	Stover N (%)	Grain P (%)	Straw P (%)	Grain K (%)	Straw K (%)
Replication	3	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Land Situation (L)	1	**	ns	ns	**	**	ns	**	ns	ns	**	ns
Error (L)	3	-	-	-	-	-	-	-	-	-	-	-
Date of Sowing (D)	5	**	ns	ns	**	**	**	**	**	**	**	ns
Error (D)	15	-	-	-	-	-	-	-	-	-	-	-
(L X D)	5	ns	ns	ns	**	**	ns	**	**	ns	ns	ns
Error (L X D)	15	-	-	-	-	-	-	-	-	-	-	-
Total	47	-	-	-	-	-	-	-	-	-	-	-

ns: non-significant; ** significant at $P \leq 0.01$

Supplementary Table S10: ANOVA table of yield attributes of the *Lathyrus* (Year 1)

SOURCE	DF	Pod/plant	Seed/pod	TW (g)	Grain yield (k/ha)	Stover yield (kg/ha)	Grain N (%)	Stover N (%)	Grain P (%)	Straw P (%)	Grain K (%)	Straw K (%)
Replication	3	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Land Situation (L)	1	**	ns	ns	**	ns	ns	**	ns	ns	**	ns
Error (L)	3	-	-	-	-	-	-	-	-	-	-	-
Date of Sowing (D)	5	ns	**	ns	**	**	**	**	ns	ns	**	ns

Error (D)	15	-	-	-	-	-	-	-	-	-	-	-
(L X D)	5	ns	ns	ns	**	**	ns	**	**	ns	ns	ns
Error (L X D)	15	-	-	-	-	-	-	-	-	-	-	-
Total	47	-	-	-	-	-	-	-	-	-	-	-

ns: non-significant; ** significant at $P \leq 0.01$

Table S11: ANOVA table of yield attributes of the *Lathyrus* (Year 2)

SOURCE	DF	Pod/plant	Seed/pod	TW (g)	Grain yield (k/ha)	Stover yield (kg/ha)	Grain N (%)	Stover N (%)	Grain P (%)	Straw P (%)	Grain K (%)	Straw K (%)
Replication	3	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Land Situation (L)	1	**	ns	ns	**	**	ns	**	ns	ns	**	ns
Error (L)	3	-	-	-	-	-	-	-	-	-	-	-
Date of Sowing (D)	5	**	**	ns	**	**	**	**	ns	ns	**	ns
Error (D)	15	-	-	-	-	-	-	-	-	-	-	-
(L X D)	5	**	ns	ns	**	**	ns	**	**	ns	ns	ns
Error (L X D)	15	-	-	-	-	-	-	-	-	-	-	-
Total	47	-	-	-	-	-	-	-	-	-	-	-

ns: non-significant; ** significant at $P \leq 0.01$

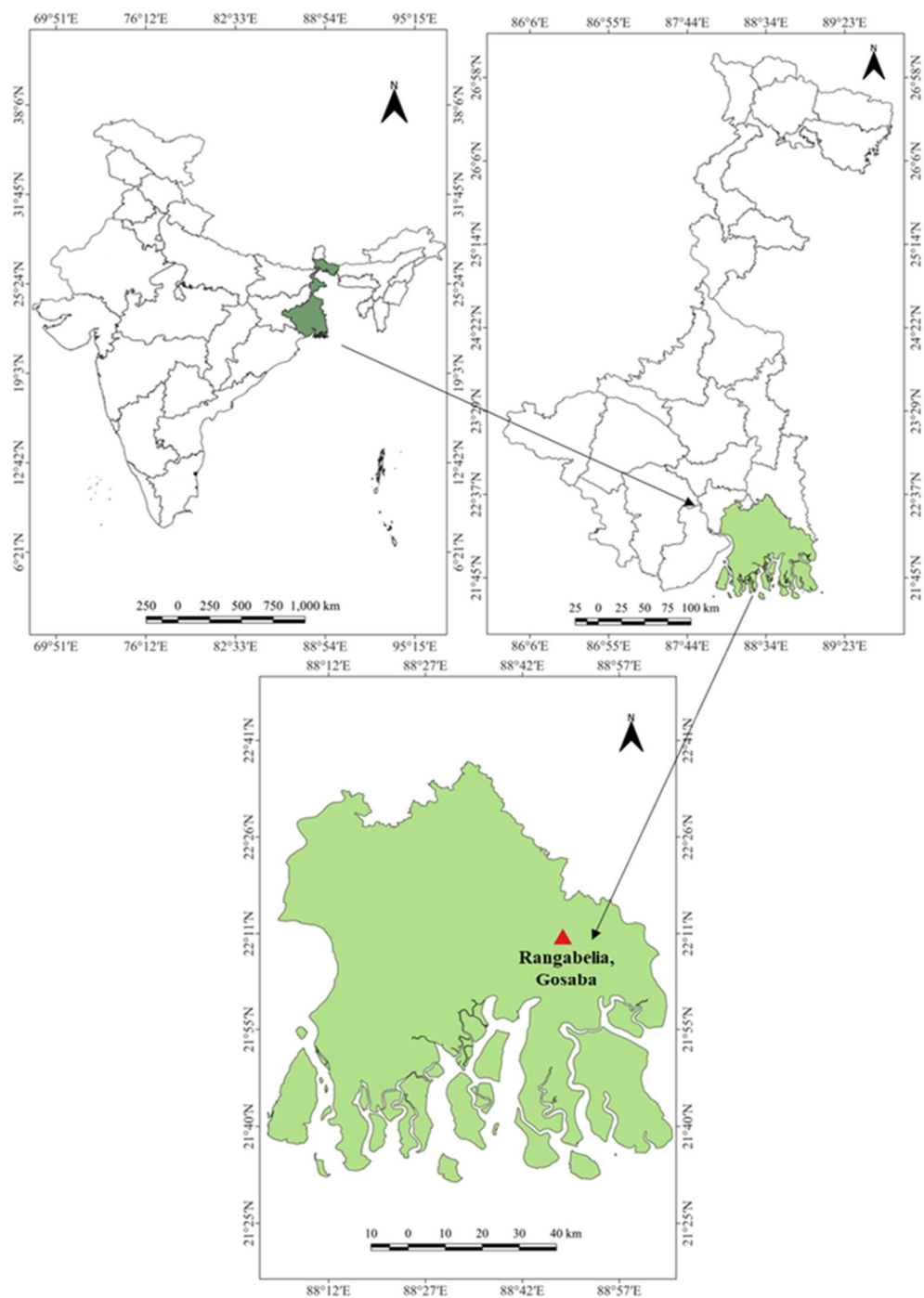


Fig S 1: Location Map of the experimental site (Map was prepared with QGIS Open-source Software, not for commercial use).

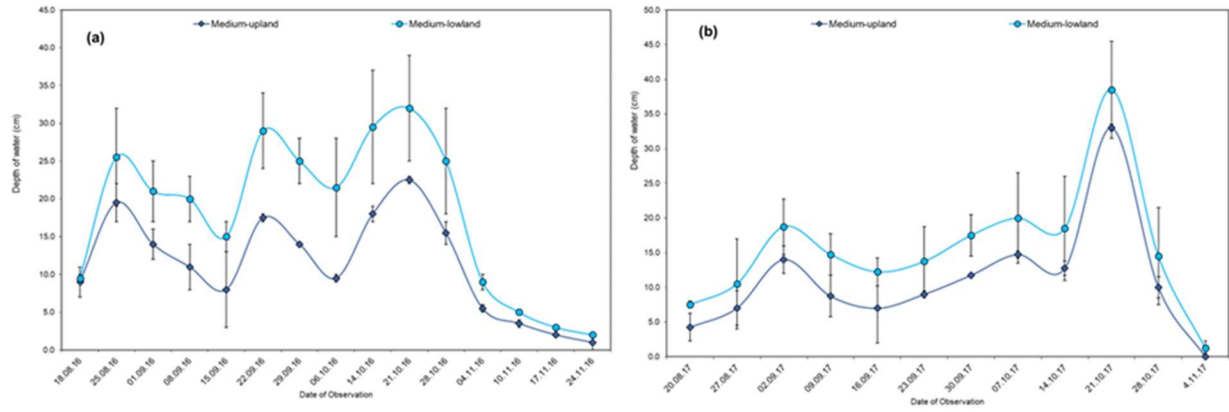


Fig S 2: Ponding depths during rice crops across different land situations were presented (Fig. a. year 1; Fig. b. year 2)

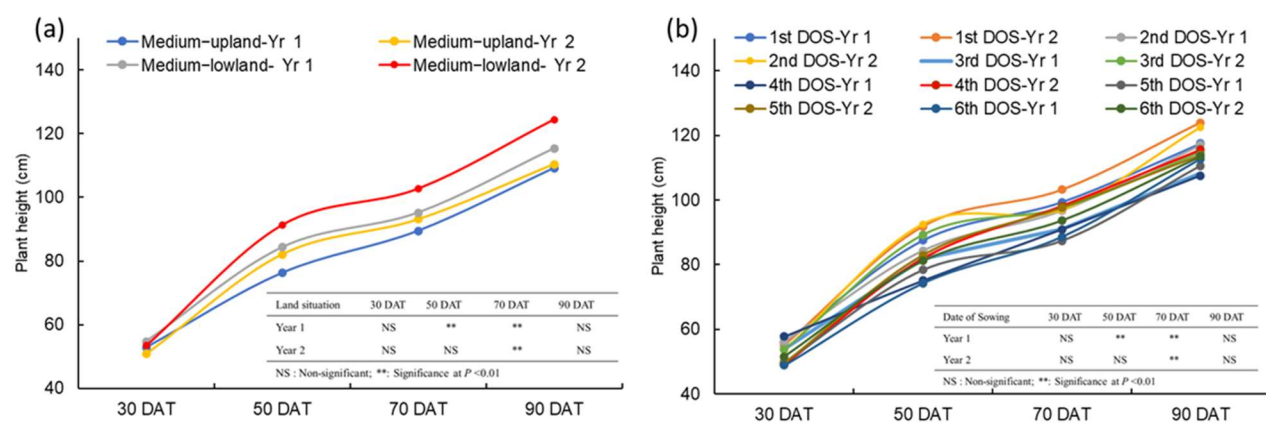


Fig S 3: Effect on plant height of rice as influenced by (a) land situation, (b) date of sowing; [Abbreviation: 1st DOS: 15th June, 2nd DOS: 21st June, 3rd DOS: 28th June, 4th DOS: 5th July, 5th DOS: 12th July, 6th DOS: 19th July; DAT, Days after transplanting]

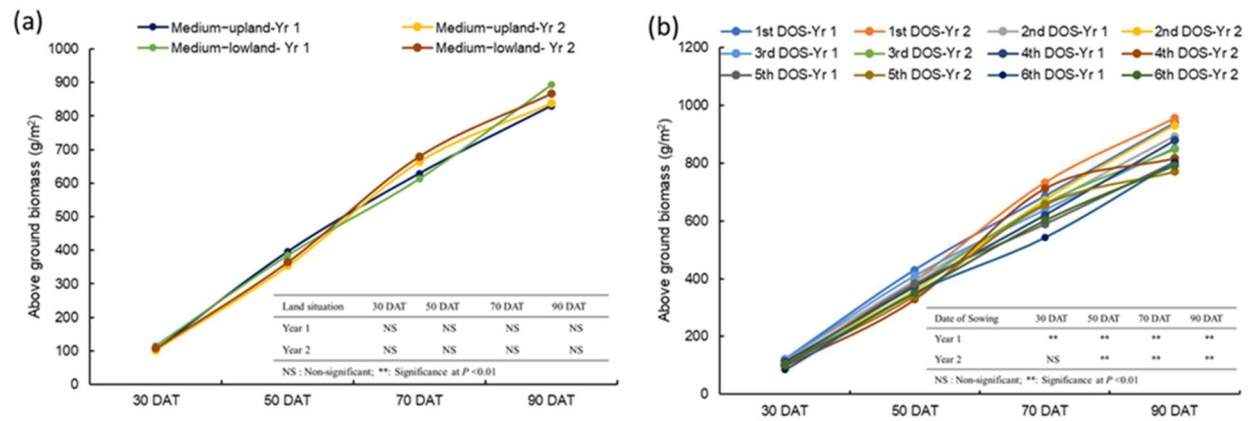


Fig S 4: Effect on aerial dry biomass of rice as influenced by (a) land situation, (b) date of sowing [Abbreviation: 1st DOS: 15th June, 2nd DOS: 21st June, 3rd DOS: 28th June, 4th DOS: 5th July, 5th DOS: 12th July, 6th DOS: 19th July; DAT, Days after transplanting]

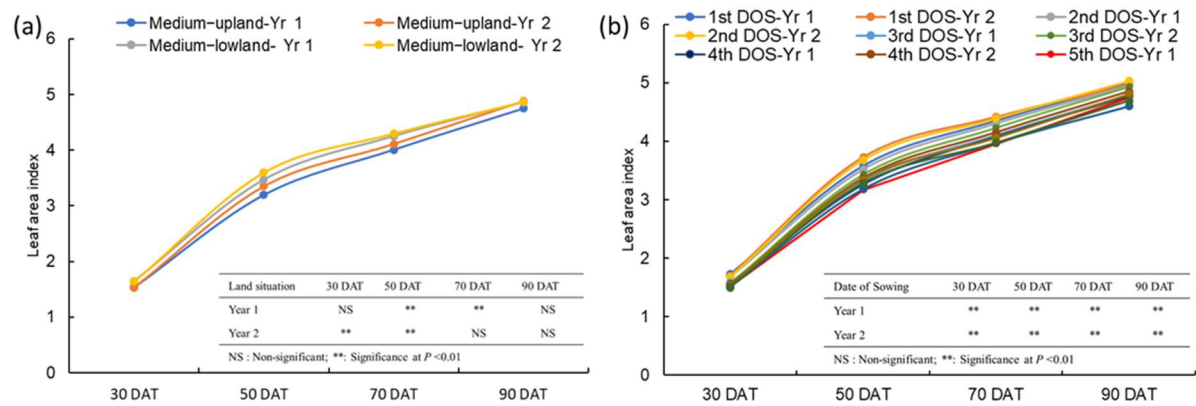


Fig S 5: Effect on LAI of rice as influenced by (a) land situation, (b) date of sowing [Abbreviation: 1st DOS: 15th June, 2nd DOS: 21st June, 3rd DOS: 28th June, 4th DOS: 5th July, 5th DOS: 12th July, 6th DOS: 19th July; DAT, Days after transplanting]

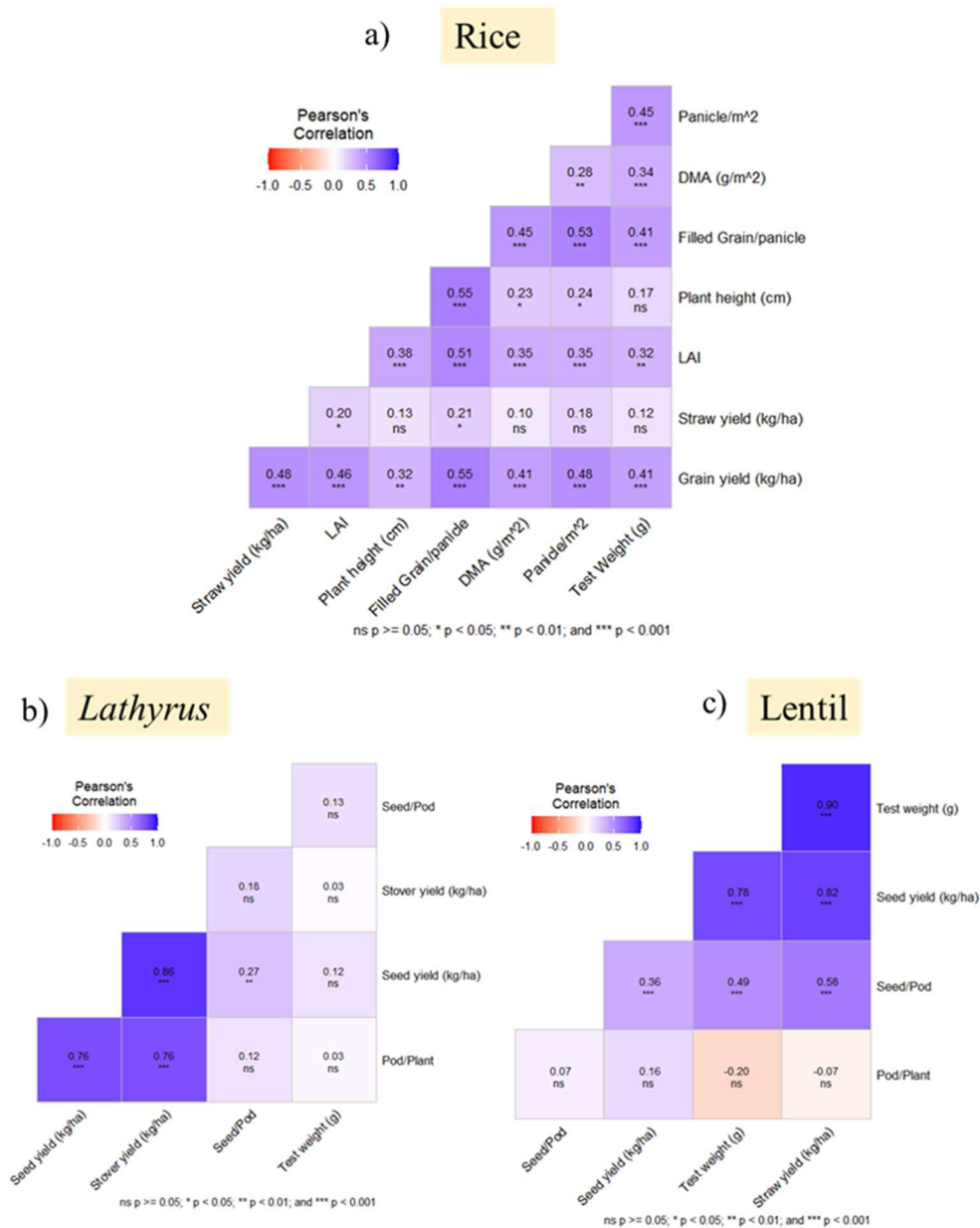


Fig S 6. Correlation analysis between different growth and yield attributes of crops.