

(A)

Main water channel	T1	T2	T3	T4	T5	T6	T7	T8	T9	Rep I
	Water sub-channel									
	T9	T8	T7	T6	T5	T4	T3	T2	T1	Rep II
	Water sub-channel									
	T7	T5	T1	T8	T4	T3	T9	T6	T2	Rep III
	Water sub-channel									

T1: Control T4: Osmopriming 12-h T7: Halopriming 24-h
T2: Hydropriming 12-h T5: Osmopriming 24-h T8: Hormopriming 12-h
T3: Hydropriming 24-h T6: Halopriming 12-h T9: Hormopriming 24-h

(B)

main water channel	T1	T2	T3	T4	T5	T6	T7	T8	T9	Conventional DSR	Rep I
	Water sub-channel										
	T9	T8	T7	T5	T6	T4	T3	T2	T1	<i>Vattar DSR</i>	
	Water sub-channel										
	T7	T5	T1	T6	T4	T2	T9	T8	T3	<i>Vattar DSR</i>	
	Water sub-channel										
	T7	T5	T1	T6	T4	T3	T9	T8	T2	Conventional DSR	Rep II
	Water sub-channel										
	T9	T8	T7	T5	T6	T4	T3	T2	T1	Conventional DSR	
	Water sub-channel										
	T1	T2	T3	T4	T5	T6	T7	T8	T9	<i>Vattar DSR</i>	
	Water sub-channel										

Figure S1. Experimental layout in 2018 (A) and 2019 (B)

Table S1. Summary of crop management and field operations in a field study during 2018 and 2019

Field operation	2018	2019	
	Conventional DSR	Conventional DSR	Soil mulch/Vattar DSR
Preparatory tillage			
Disc harrow (two)	May 30	May 31	May 31
Cultivator (one)	June 1	June 2	June 2
Planker (one)	June 2	June 3	June 3
Laser leveling	June 2	June 3	June 3
Pre sowing irrigation	June 2	June 3	June 3
Final seed bed preparation			
Cultivator (one) f.b. Planker (two)	June 6	June 8	June 8
Sowing	June 6	June 8	June 8
Post sowing irrigations	1 st - June 6 Subsequent irrigation as per need of the crop (~weekly interval)	1 st - June 8 Subsequent irrigation as per need of the crop (~weekly interval)	1 st - June 29 (21 days after sowing). Subsequent as per need of the crop (~weekly interval)
Pre-emergence herbicide (pendimethilin 0.75 kg/ha)	June 8	June 10	June 8
Post-emergence herbicide (Bispyribac sodium 25 g/ha)	July 11	July 11	July 11
Nutrient Management			
Nitrogen @ 150 kg/ha (through urea)	Applied at 4, 6 and 9 weeks after sowing		
Zinc Sulphate (21%) @ 25 kg/ha	Applied at last field preparation		
Harvesting	October 5	October 6	October 10