

(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

T1: Control

T2: Hydropriming 12-h

T3: Hydropriming 24-h

T4: Osmopriming 12-h

T5: Osmopriming 24-h

T6: Halopriming 12-h

T7: Halopriming 24-h

T8: Hormopriming 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	Vattar DSR	
	Water sub-channel										
	T7	T5	T1	T6	T4	T2	T9	T8	T3	Vattar DSR	Rep II
	Water sub-channel										
	T7	T5	T1	T6	T4	T3	T9	T8	T2	Conventional DSR	
	Water sub-channel										
	T9	T8	T7	T5	T6	T4	T3	T2	T1	Conventional DSR	Rep III
	Water sub-channel										
	T1	T2	T3	T4	T5	T6	T7	T8	T9	Vattar DSR	

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