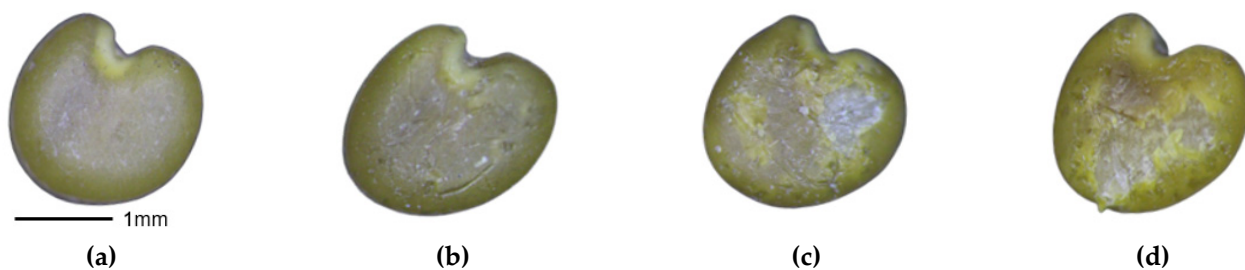


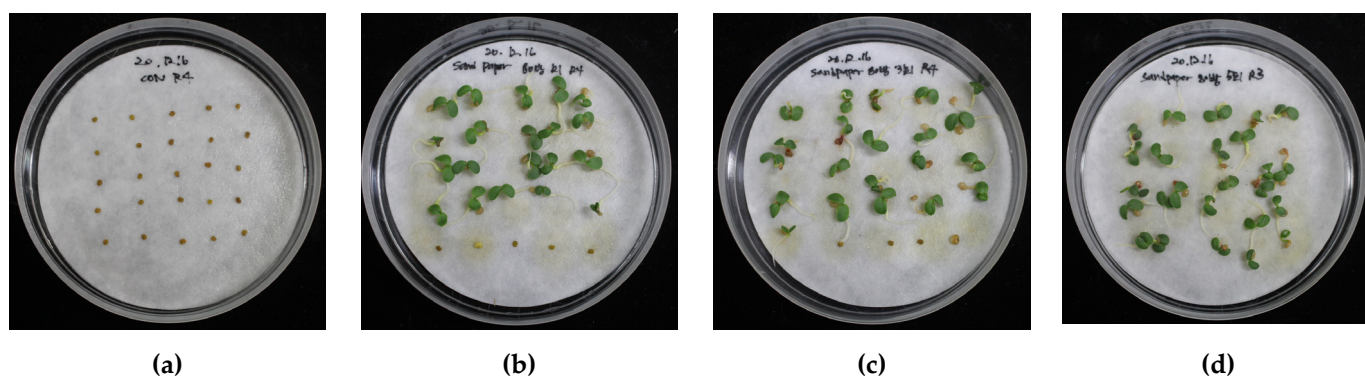
## Supplementary Materials



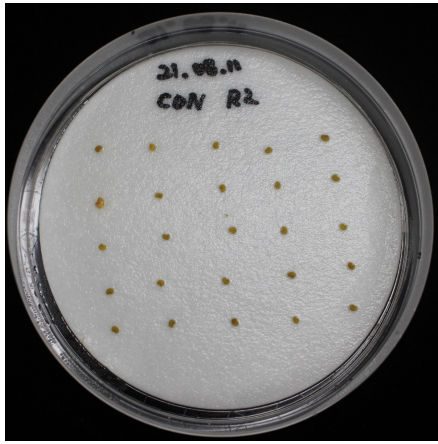
**Figure S1.** Light micrograph of sandpaper (SP) treated seeds. (a) Untreated, (b) SP1, (c) SP3, (d) SP5.

**Table S1.** Seed moisture content (SMC) of sandpaper (SP) treated seeds after 6, 12, 18 and 24 h of imbibition in water.

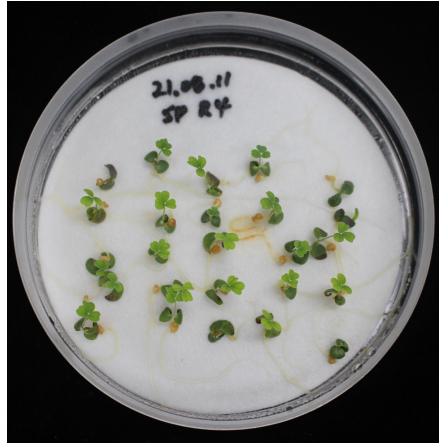
Seed Treatment	Seed moisture content (%)											
	6 h			12 h			18 h			24 h		
	R1	R2	R3	R1	R2	R3	R1	R2	R3	R1	R2	R3
Untreated	10.1	9.4	7.6	7.3	12.4	8.6	11.6	16.7	7.0	9.4	11.2	12.8
SP1	65.8	61.7	59.2	66.8	64.0	61.5	73.6	65.1	66.4	67.9	65.1	66.4
SP3	69.6	68.8	70.2	67.4	68.8	71.2	66.8	71.2	72.6	67.1	74.0	70.3
SP5	73.7	73.9	67.9	75.8	70.9	71.1	70.6	74.7	73.7	74.0	79.1	71.8



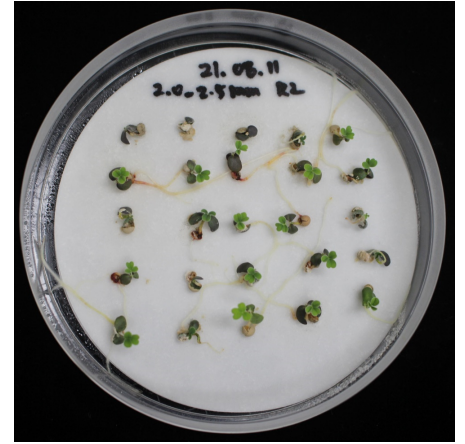
**Figure S2.** Photos of germination of sandpaper (SP) treated seeds. (a) Untreated, (b) SP1, (c) SP3, (d) SP5. Seed germination at 14 days after sowing.



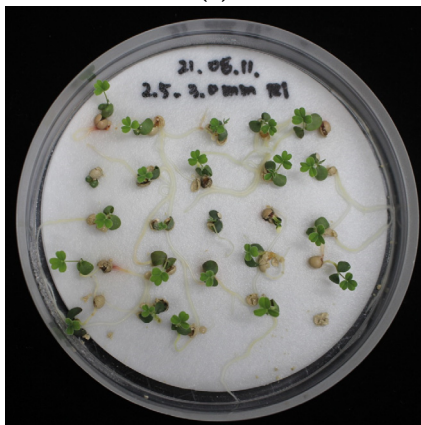
(a)



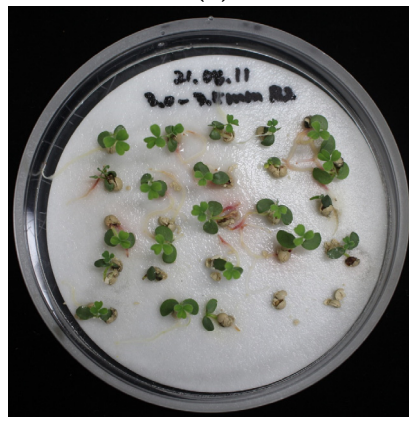
(b)



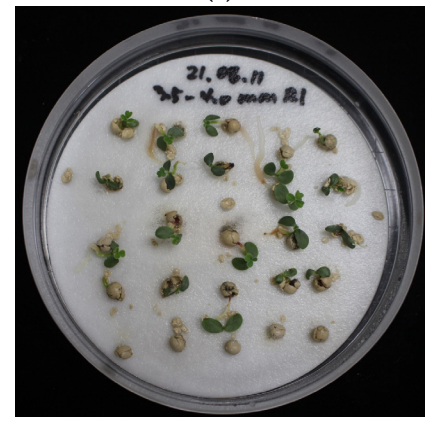
(c)



(d)

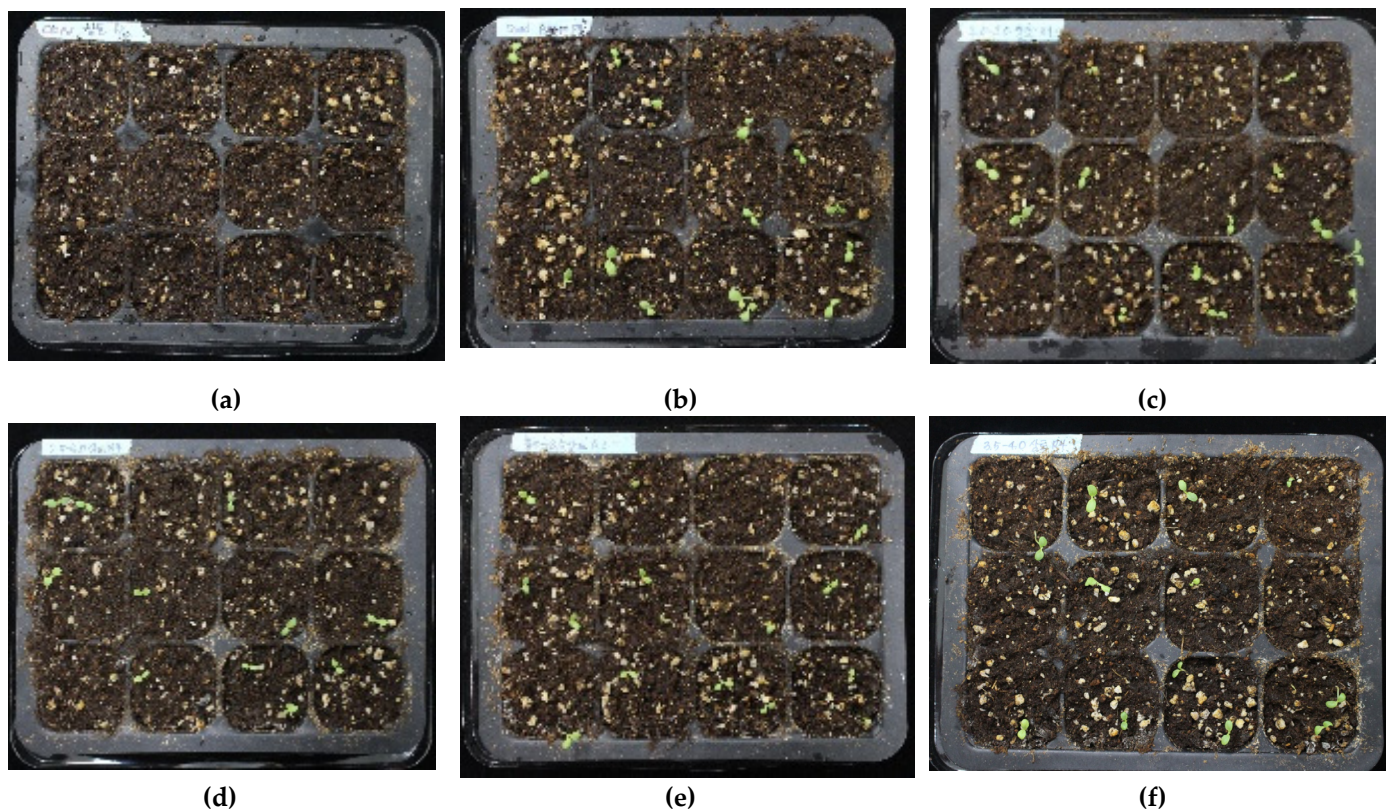


(e)

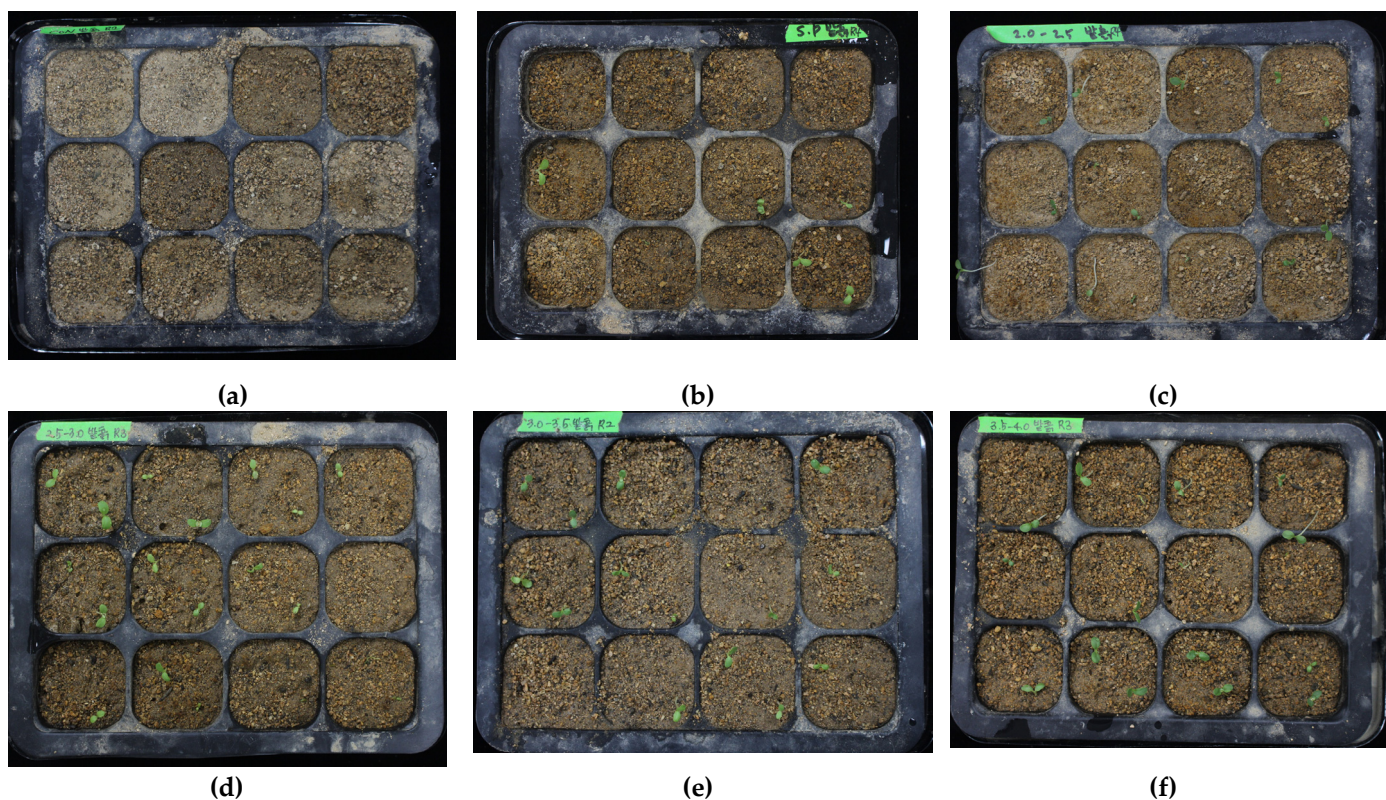


(f)

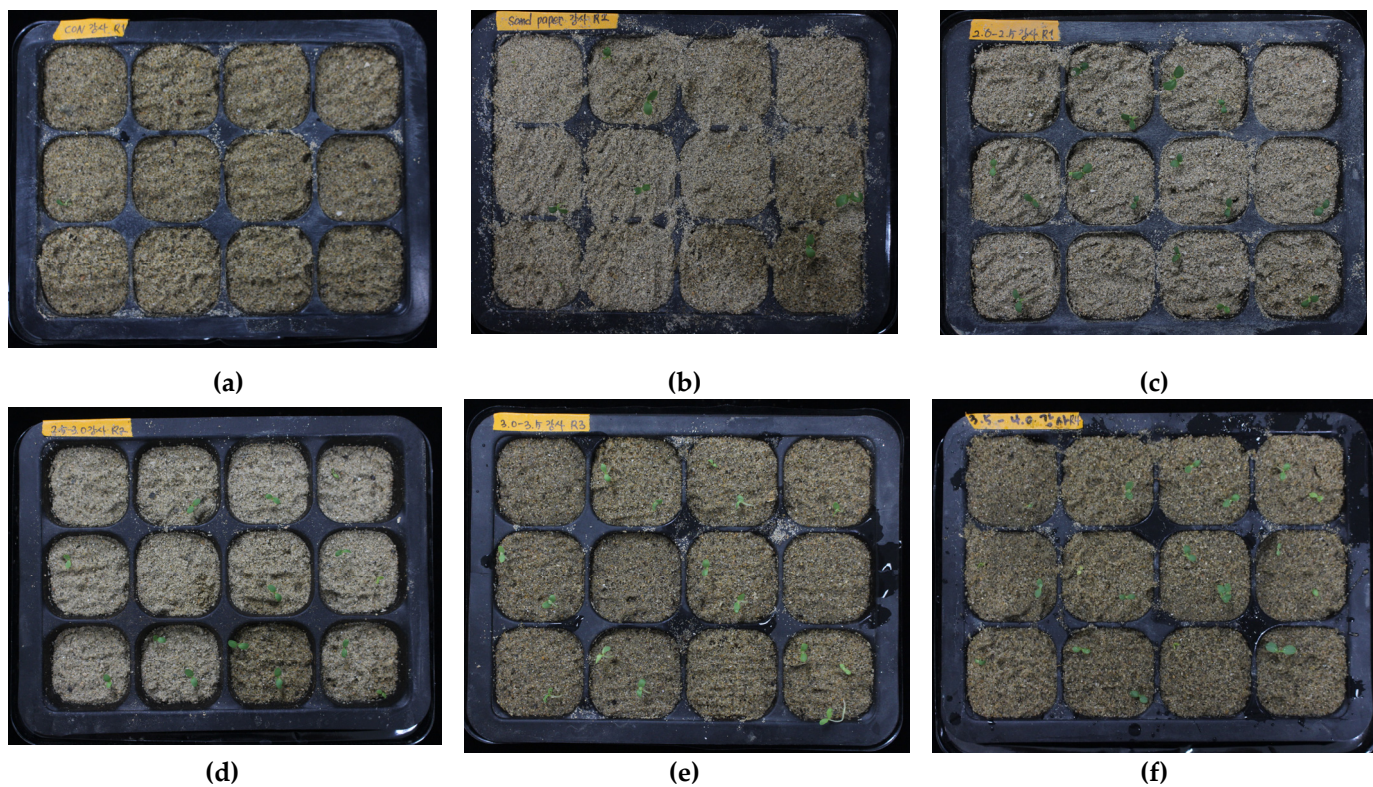
**Figure S3.** Photos of germination of pelleted seeds on filter papers. (a) Unpelleted CON, (b) Unpelleted SP, (c) 2.0-2.5 mm, (d) 2.5-3.0 mm, (e) 3.0-3.5 mm (f) 3.5 -4.0 mm. Seed germination at 14 days after sowing.



**Figure S4.** Photos of germination of pelleted seeds in commercial soil. (a) Unpelleted CON, (b) Unpelleted SP, (c) 2.0-2.5 mm, (d) 2.5-3.0 mm, (e) 3.0-3.5 mm (f) 3.5 -4.0 mm. Seed germination at 14 days after sowing.



**Figure S5.** Photos of germination of pelleted seeds in field soil. (a) Unpelleted CON, (b) Unpelleted SP, (c) 2.0-2.5 mm, (d) 2.5-3.0 mm, (e) 3.0-3.5 mm (f) 3.5 -4.0 mm. Seed germination at 14 days after sowing.



**Figure S6.** Photos of germination of pelleted seeds in sand. (a) Unpelleted CON, (b) Unpelleted SP, (c) 2.0-2.5 mm, (d) 2.5-3.0 mm, (e) 3.0-3.5 mm (f) 3.5 -4.0 mm. Seed germination at 14 days after sowing.