

Temperature and Imbibition Effects on Seed Germination of *Sabal palmetto* and *Serenoa repens*

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Soaking palm seed in water for 1 to 21 days prior to planting reduces the number of days required for germination (3). Loomis (1) found soaking seeds of *Acrocomia sclerocarpa* and *Astrocaryum mexicanum* palms for 2 to 3 weeks following hot water scarification at 100°C for 3 min hastened seed germination. Rees (3) reported soaking *Copernicia cerifera* (Mart.) seeds in water for 7 days at 38° to 42° also accelerated germination after planting. Presoaking Alexandra palm [*Archontophoenix alexandrae* (F.J. Muell.) H. Wendl & Drude] seed in water for 24 to 72 hr at 25° was reported by Nagao and Sakai (2) to stimulate germination. The purpose of this study was to determine the effect of temperature during a 7-day preplanting period on imbibed and nonimbibed seed and to compare seed soaking in water with moist peatmoss on germination percentages and numbers of days required to achieve 50% final germination.

Seeds of *Sabal palmetto* (Lodd) and *Serenoa repens* (Bartr.) Small were collected in northern Florida in Fall 1985 and stored 2–3 weeks in plastic bags at 5°C prior to initiating the study. Nonsoaked seeds of each species were dusted with captan and placed in polyethylene bags in incubators at 25°, 35°, and 45° for 1 week prior to planting. For soaking treatments, seeds of each species were kept 1 week in distilled water or in plastic bags containing moist peatmoss (50–60% of water capacity) in 25°, 35°, and 45° incubators. Water was changed daily for seed soaking treatments. Both soaking and moist peatmoss treatments increased seed weights by 34% to 39%. Each treatment contained 25 seeds in each of four replicates. Seeds were planted 6-mm-deep in sterile quartz sand in a greenhouse at 34° and 21° (average max/min air temperatures) and light intensity of 420 μmol·s⁻¹·m⁻². Bottom heat, provided by electrical resistance heating coils, maintained the propagation medium at 30° ± 2°.

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Germination counts of visible shoots were begun 18 days after planting. Since no interaction was found between temperature and soaking treatments, means were separated at the 5% level by Duncan's multiple range test.

S. palmetto and *S. repens* seeds imbibed prior to sowing had significantly increased percent germination, except moist peatmoss at 35°C (Fig. 1) and reduced time (days) to achieve 50% of final germination (Table 1). Soaking *S. repens* seed increased germination at 25°, 35°, and 45° with 35° best and no difference between 25° and 45° (Fig. 1). Soaking *S. palmetto* seed has no significant effect on germination, but soaking temperature was important with 35° and 45° better than 25°. Seed of both palm species had similar percentages of germination from water imbibed during soaking or in moist peatmoss (Fig. 1).

Nonimbibed *S. repens* seeds required significantly more time to achieve 50% of final germination than imbibed seed at the same temperatures (Table 1). The maximum reduction in time to germination was at 35°C. *S. palmetto* seed imbibed during soaking and in moist peatmoss at 35° had earlier germination than nonsoaked seed, but no differences were found at 25° and 45°. The accelerated germination from soaking at high temperatures was similar to the results of Loomis (1) and Rees (3). Temperature during the 7-day preplanting treatment significantly influenced the number of days imbibed seed required to achieve 50% final germination. For both palm species, 35° during the preplanting treatment promoted germination in significantly fewer days than 25° and 45°

Table 1. Days to 50% of final germination from 7-day temperature and imbibition seed preplanting treatments.

Seed preplanting treatment	Days to 50% final germination		
	25	Temp (°C)	
		35	45
		<i>Sabal palmetto</i>	
None	4.58 a [†]	43.2 a	43.9 b
Soak	46.5 a	36.4 b	50.1 a
Moist peak	46.2 a	32.9 b	44.3 b
		<i>Serenoa repens</i>	
None	55.7 a	53.0 a	59.5 a
Soak	46.3 b	39.8 b	50.2 b
Moist peak	47.6 b	33.7 b	42.0 c

[†]For each species, mean separation in columns by Duncan's multiple range test, P = 5%.

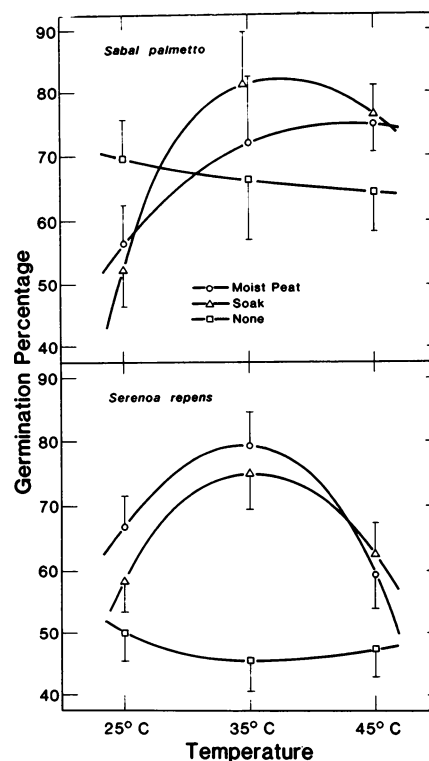


Fig. 1. Final germination percentages after 91 days for 7-day temperature and imbibition seed preplanting treatments. Vertical bars represent ± SE of four replicate samples.

(Table 1).

The results show imbibing *S. palmetto* and *S. repens* seed in 35° to 45°C water during 7 days prior to sowing is superior to sowing nonimbibed seed. Germination percentages and days to 50% of final germination of seed imbibed at 25° were similar to nonimbibed seed. Temperatures around 35° seemed to be optimum for the preplanting treatment.

Literature Cited

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