

生物策略表

類別	生物策略 (Strategy)	
生物策略 STRATEGY	彈簧狀的種子能鑽進土壤 (Spring-like seed drills into ground)	
生物系統 LIVING SYSTEM	芹葉牻牛兒苗 <i>Erodium cicutarium</i> (Common Stork's-bill)	
功能類別 FUNCTIONS	#永久性附著 #在固體中/上移動 #在氣體中移動 #貯存能量 #Attach permanently #Move in/on solids #Move in/through gases #Store energy	
作用機制標題	芹葉牻牛兒苗種子上彈簧狀的芒刺透過隨著濕度卷曲及解開，使種子自行鑽到土壤中 (Spring-like awn of filaree seed drills itself into the ground by curling and uncurling with changes in moisture.)	
生物系統/作用機制 示意圖		
作用機制摘要說明 (SUMMARY OF FUNCTIONING MECHANISMS)		
文獻引用 (REFERENCES)		
<p>「種子將自己埋藏的能力能提升它們發芽和生存的機會…自我埋藏 (self-burial) 可以利用芒刺 (awn) 來達成，這是一種毛狀的附屬物，能夠以貯存的彈力位能 (elastic energy) 發射種子，並隨後利用吸濕性地 (hygroscopically) 驅動形狀改變，使種子穿過或進入土壤…一旦掉落在地面上，濕度變化使芒刺在潮濕時解開成筆直形狀，或在乾燥時重新卷曲到本來的螺旋形狀。此種方式導致的運動反應，結合著位在種子上及沿著芒刺所分布的毛，使種子在土表上移動，最終使種子卡在石縫 (crevice) 中並使他們自行鑽進土壤中 (自我埋藏) (Stamp, 1984)。」 (Evangelista et al. 2011: 521)」</p> <p>“The ability of seeds to...bury themselves can improve their chances of germinating and surviving...[S]elf-burial can be accomplished using awns, hair-like appendages that launch seeds by storing elastic energy and subsequently move them across or into the soil using hygroscopically powered shape changes...Once on the ground, humidity changes cause the awns to unwind straight when wet, or rewind back to their helical shape when dry. The resulting motor action, combined with hairs on the seed and along the length of the awn, moves the seeds across the surface, eventually lodging them into a crevice and causing them to drill themselves into the ground (self-burial) (Stamp, 1984).” (Evangelista et al. 2011: 521)</p>		
參考文獻清單與連結 (REFERENCE LIST)		

Evangelista, D., S. Hotton, and J. Dumais. (2011). The mechanics of explosive dispersal and self-burial in the seeds of the filaree, *Erodium cicutarium* (Geraniaceae). *Journal of Experimental Biology* 214: 521-529. (<https://jeb.biologists.org/content/214/4/521>)

延伸閱讀

<https://www.youtube.com/watch?v=nU603B4DDXY>

(譚國銜提供)

生物系統延伸資訊連結 (LEARN MORE ABOUT THE LIVING SYSTEM/S)

https://en.wikipedia.org/wiki/erodium_cicutarium

https://www.onezoom.org/life/@erodium_cicutarium

<https://eol.org/pages/392836>

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AskNature 原文連結

<https://asknature.org/strategy/spring-like-seed-drills-into-ground/>