


生物策略表

類別	生物策略 (Strategy)
生物策略 STRATEGY	種子透過噴射散播 (Seeds disperse by jet action)
生物系統 LIVING SYSTEM	冰花/番杏科 Aizoaceae (Iceplants)
功能類別 FUNCTIONS	#散佈種子 #排出固體 #Disperse seeds #Expel solids
作用機制標題	冰花的種子透過雨滴的能量及濕度敏感的蒴果，以噴射方式散播種子 (Seeds of ice plants disperse by jet action using the energy of raindrops and moisture-sensitive capsules.)
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>本文獻回顧描述植物種子的雨水散播 (ombrohydrochoric) 特性，也就是種子靠雨水逸出。雨水散播有兩種不同的模式—種子透過雨水沖刷或是以噴射力的方式散播。兩種模式在熱帶和溫帶森林底層、在濕地和沙漠，在多個科及屬中都曾被報導過。一種特殊的雨水散播型式是由雨水引起的噴射式種子散播機制，這只局限於半沙漠型的冰花番杏科植物 (ice plants)，番杏科是開花植物中一個大的科。在這個科中，98%的物種都會產生具有雨水散播種子機制的濕裂性 (hygrochastic) 蒴果，而此種子散播機制也是導致重大物種形成爆發 (speciation burst) 及輻射形演化 (radiation) 的部分原因。結構高度複雜的蒴果在濕潤時打開，其內的種子被雨滴的動能彈走。子房室 (locule) 包覆外膜的兩半在靠近蒴果中心處形成一個噴嘴作為噴射口。當水滴掉落在頂端開口時（在子房室充滿水分之後），水滴及種子會隨著爆發性的噴射而彈出。比起沒有這種噴射機制的蒴果，冰花的蒴果能使更多的種子散播到更遠處。(Parolin 2007: 511)</p> <p>“The present review describes the ombrohydrochoric dispersal syndrome in plants, i.e. seed expulsion by raindrops. There are two different ombrohydrochoric dispersal modes – dispersal by rain wash and by ballistic forces. Both have been reported from the understory of tropical and temperate forests, from wetlands and from deserts, and from numerous families and genera.</p>	

A special form of ombrohydrochoric dispersal is the jet-action rain-operated seed dispersal mechanism which is restricted to the semi-desert ice plants, Aizoaceae, one of the major families of the angiosperms. Within this family, 98% of the species possess hygrochastic capsules with an ombrohydrochoric seed dispersal mechanism which in part are also responsible for the remarkable speciation burst and radiation. The highly complex capsules open when wet, and the seeds are expelled by a 'jet action' with the kinetic energy of raindrops. The halves of the covering membranes of a locule form a nozzle near the centre of the capsule which serves as a jet. Drops of water falling on the distal opening (after the locule has been filled with water) result in an explosive expulsion of water droplets and seeds through that jet. More seeds are dispersed further away from the capsule than in those capsule types without such a jet mechanism.” (Parolin 2007: 511)

參考文獻清單與連結 (REFERENCE LIST)

Parolin, P. (2007). Ombrohydrochory: rain-operated seed dispersal in plants – With special regard to jet-action dispersal in Aizoaceae. *Flora - Morphology, Distribution, Functional Ecology of Plants* 201: 511-518. (<https://doi.org/10.1016/j.flora.2005.11.003>)

延伸閱讀

(譚國銜提供)

https://www.youtube.com/watch?time_continue=3&v=wQYtd4_dUpM&feature=emb_title
<https://www.youtube.com/watch?v=buZV0h4vfmQ>

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

<https://en.wikipedia.org/wiki/aizoaceae>
<https://www.onezoom.org/life/@aizoaceae>
<https://eol.org/pages/4225>

撰寫/翻譯/編修者與日期

譚國銜翻譯 (2021/03/22)；洪麗分編修 (2021/04/10)

AskNature 原文連結

<https://asknature.org/strategy/seeds-disperse-by-jet-action/>