

Solution to the Problem of Short Vitality In Seeds of European Butterworts

By

Miloslav Studnicka

Botanical Gardens, 460 01 Liberec

Czech Republic

Members of CP-societies usually obtain seeds from seed banks or from botanical gardens. Unfortunately, the seeds may be several months old. The seeds of European *Pinguicula* species especially often have reduced vitality. According to my own experience, vitality is decreased from nearly 100% to 70% after 7 months if the seeds have been sheltered in paper bag. The seeds are completely dead after 14 months. I have started many experiments with *Pinguicula bohemica*, studying methods of handling seeds of European butterworts.

I can confirm the statement of other authors that a cold period, so-called stratification, is necessary to germination if seeds have been sown on the surface of wet soil. About 4% of the seeds are often so light dormant that they can germinate without a cold period.

My first surprising experience was that seeds of butterworts, which have been submerged into pure water can germinate within a few days. No cool period is necessary, and germination may be accelerated by shaking. Light is also necessary (cf. Kinzel 1927).

How to explain this effect? Dormancy is chemically controlled by an inhibiting substance, namely abscissic acid (ABA). The substance may be either enzymatically removed during a cold period or it may be dissolved and washed away off the seed coat by quantities of water (Fellenberg 1978). The same effect is known in celery seeds according to the literature (Hovadik et Kratochvilova, 1977). The described germination in water is blocked if light is absent. The second step in my experiments was based on the question :how long a time can the wet seeds be kept in darkness?

Seventy percent of seeds kept 3 years in water can germinate. The seeds of *P. bohemica* in my experiments were vital even after 5 years. Twenty-four percent of them germinated into good seedlings when they had been exposed to light. Germination is possible even during short winter days because seedlings are not photoperiodical as mature plants (cf. Isikawa, 1954). The following property of seeds is very interesting: Being kept for a very long time in water and darkness, they gradually lose light dependence and more and more of them start germination in darkness. Such an effect is also known in other seeds (Fellenberg, 1978, Sebanek et al., 1983). I came to following conclusions:

1) We can collect fresh seeds and send them in paper bags, but only up to 6 months without risk.

2) A good method for storing the *Pinguicula* seeds for a long time is to keep them in water and in full darkness. Vitality of the seeds can be prolonged by cold conditions. But remember please, that seeds submerged in water and which have therefore lost the inhibiting substance cannot hereafter tolerate frost.

References

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