

Notes for New Growers - SEED RAISING

An important part of raising bromeliads from seed is access to fresh, good quality seed. A quick look at the sex life of bromeliads is in order! See page 9 in the 2005 May/June issue of Bromeliaceae for a description of the anatomy of a bromeliad flower.

Pollination is the transfer of pollen from the anther to the stigma. In most bromeliads, the stigma remains receptive for only a short time after the flower opens -possibly only an hour or so-. While the stigma is receptive, it has a 'moist' appearance. If the fine hair structure of the stigma looks dried out or discoloured, it is unlikely that pollination will result in seed production.

Spread the pollen over the surface of the stigma as completely and evenly as possible. Successful pollination may require some early morning visits to the plants when the flowers have just opened; or a torchlight sortie to catch the night flowering species. Pollen can be stored at ambient conditions for a short time - a few days- Wrap in a labelled sachet of uncoated paper.

In the BSI Journal 1991 #1, Don Beadle wrote about the storage of pollen. (Don is a noted grower and hybridiser of Billbergias). Pollen stored in labelled zip plastic bags in the cool section of the fridge went mouldy in a few days. When stored frozen in zip bags, good fertilisation was achieved after 90 days, but he felt the acceptance rate dropped off after 60 days. Some crosses were successful with pollen frozen for 18 months. After pollination, a germ tube grows down the style to fertilise the ovules and initiate seed development. If seed is not required for propagation, remove the flower spike when flowering has finished. Seed development requires a substantial use of the plants resources- energy and nutrients- at the expense of offsets.

Some plants are self-pollinating, some self fertile - these plants will set seed with pollen from the same plant. A number of bromeliad species will only set seed with pollen from a different clone. Hybrids are obtained by using pollen from a different species or hybrid. When producing hybrid seed, it is important to avoid contaminating the stigma with pollen from the seed parent. Removal of the anthers prior to maturity of the stigma is strongly recommended.

Intergeneric hybrids are produced by crossing plants from different genera. To date, intergenerics have only been produced within a sub-family (ie Bromelioideae, Pitcairnioideae or Tillandsioideae).

Keep accurate notes of your seed production (date, seed and pollen parent), especially hybrid seed and use only plants whose identity is well established.

Bromeliad seed take several months to mature. Bromelioideae seed develop in a pulpy berry which changes colour on maturity; generally darkening. If the berries detach with light finger pressure, this is a reliable indication that the seed is mature. Squeeze the seed out of the berry and wash free of the pulp.

Pitcairnioideae and Tillandsioideae seed develop in a three celled structure called a capsule. When mature, the capsules change colour (generally becoming lighter) and gradually dry out

from the base. When the tips dry, the capsule springs open ejecting the seed for wind dispersal. Tillandsioideae seed have a coma of fine hairs which act as a parachute. Pitcairnioideae seed have 'wings' in various shapes to aid wind dispersion.

Seed capsules may open slightly at the base before the final ejection of the seed. At this time, the capsules are susceptible to moisture penetration from watering or rain; with possible 'fermentation' or mould growth. Seed with a sweet smell or the coma matted - not fluffed out - is likely to have been so affected. This seed is unlikely to result in good germination. For valuable seed, the best option is to plant/sow the seed and wash several times with a light spray of water. Avoid handling seed with 'sweaty' fingers as the perspiration may aid mould development. Wash your hands; then dust lightly with talcum powder.

Bromeliad seed are best 'planted' fresh. For storage, the seeds should be kept in small paper labelled envelopes, never plastic sachets.

All bromeliad seed needs light to initiate germination and is planted (sown) on top of the growing medium; and well labelled. Bromelioideae and pitcairnioideae seed are planted on the surface of a fine potting mixture; a sieved version of the mixture used for adult plants is suitable. Keep the mixture moist but not sodden. For large scale operations, periodic misting is appropriate. For the odd lot of seed, the container can be placed in a plastic bag to conserve moisture. In both instances, the seed is exposed to sunlight.

Tillandsioideae seed from plants grown in a potting mixture are sown as above. Seed from epiphytic tillandsioideae -especially the extreme epiphytes- are best sown on an inert substrate which allows good air movement around the germinating seeds. Coconut fibre from basket liners or old mattress padding is suitable. A useful precaution is to pour boiling water over the fibre to discourage any mould spores. The fibre pad should be at least 10 mm thick and will probably need a backing of wood or foam plastic for support.

I have had good success using a local version of 'the bundle of sticks'. This was developed by Dr. Oeser, a noted German bromelian of the 1960's using thuya twigs; and successfully introduced locally by Nez Misso, the first President of the Society. My version uses melaleuca twigs, mainly because I have a suitable tree on site. The bundle is built up around a central stick 12-15 mm in diameter for support; with the rest of the bundle made up of fine twigs < 2 mm. The bundle is tied very tightly with wire (iron, not copper); the bundle should be at least 70 mm in diameter when compressed.

In either case, the seed is spread as evenly as possible over the fibre or twigs and lightly sprayed with water. This causes the fine hairs of the coma to cling to any surface roughness. The seed are sprayed regularly but allowed to dry out between watering. Be alert for any low humidity winds especially the hot north-westerlies (S-E Qld) when the spray frequency will need to be increased.

For all seed, some sign of germination should be apparent in 2-4 weeks with the development of a small green spot. This is the first seed leaf and is followed by a small root, more tiny leaves and more roots.

The developing seed are sprayed with the weak fertilizer solution that I use for the adult plants from a very early stage. It's hard to prove that this is a major benefit but it does not cause any problems.

Many seedlings have a similar shapes (for their genus) while small; and develop the characteristic adult shape in later growth. The seedlings are left in the original mixture or on the mounting until they are big enough to handle and transfer to community pots or individual pots or mountings.

Growing bromeliads from seed is not for the impatient. The faster growing species such as Neoregelias, Aechmeas or Billbergias may mature in 2-3 years while some of the slow growing atmospheric Tillandsias will take 4-7 years.

Watch the developing plants. Occasionally, there will be an odd one which is worth special attention - a variegation in a leaf or an odd growth habit. Some years ago, I grew a small crop of *Tillandsia ionantha* from seed. From a very early stage, it was apparent that there was one odd plant that grew more rapidly than the others and had a slightly different shape. When it matured, it was apparent that it was a hybrid, with pollen parent unknown but suspected to be *T. seleriana*.

Good Growing.

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