

Floral reversion in succulents

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Transformation of the apical meristem from vegetative to generative mode of development involves a number of radical changes at histological, ultrastructural, physiological and molecular levels. Such changes are in general irreversible, because, for a particular meristem, the beginning of flowering is equivalent to termination of its lifespan. However, succulent plants from several families provide examples of reversion from generative to the vegetative state. A notable example is the genus *Agave* with vegetative bulbils produced from inflorescence axes, where they supplement sexual reproduction. Further instances are found in *Haworthia*, several Bromeliads and *Opuntia*.

The reversal of reproductive tissue in species that do not normally show this phenomenon may be stimulated by hormonal treatment under laboratory conditions. Incubation of flower buds on solid medium containing 1-5 mg l⁻¹ 6-benzylaminopurine and 0.1 mg l⁻¹ naphthaleneacetic acid was an efficient method to cause reversal in many species:

1. In various species of *Haworthia* single-node segments of inflorescence stalk produced growth in thickness, followed by appearance of adventitious vegetative buds on the surface of the segment.
2. Cyathia of *Euphorbia milii* and *Euphorbia caput-medusae* developed axillary vegetative shoots.
3. Flowers of *Echeveria laui* and *Tacitus bellus* produced leaf-rosettes from bases of petals.
4. Flowers of *Mammillaria carmenae* and *M. albicoma*, as well as several other Cactaceae developed adventitious areoles and shoots from perianth surface. Some of the shoots clearly appeared from axils of perianth members.
5. Segments of cephalium from *Melocactus matanzanus* developed vegetative shoots.

These taxonomically diverse examples indicate the usefulness of succulent plants in studying general questions relating to meristematic determination. In fact there are not many cases from non-succulent families where floral reversal can be so easily achieved.