

Pre-Germination

Zantedeschia Technical Bulletin C04/12



Pregermination promotes more even crop emergence, better Gibberellic Acid (GA) absorption and shortens the growing cycle. This process is recommended if tubers have only a short dormancy (10-12 weeks) and when growing in cooler conditions.

Prior to planting and application of GA, remove tubers from storage and pregerminate at 21-25°C and 85% RH for 7-10 days to trigger emergence of green shoots. The effect of GA on dormant tubers (no green tips showing) is significantly reduced.



Stable temperature and humidity throughout the process is critical. Some airflow in the pregermination room/chamber is important but should not be overdone. 24 hour lighting assists.

Smaller 1.5 and 2cm tubers have much less ability to withstand temperature and humidity fluctuation than larger flowering stock – pre-germinating T1 or small tubers is not recommended.

GIBBERELIC ACID

Why use Gibberellic Acid (GA)?

GA applied as a spray or dip is used to help initiate flowering buds in Zantedeschia (Coloured Calla) tubers.

Without GA, callas have significantly less flowers. GA can significantly increase flowering from a flowering grade tuber.

Which Gibberellin?

Use GA3 tablets (eg. Berelex®, Grocel®, Domgib™) at a rate of 1 tablet per 8-10 litres (100-125 ppm) of water.



Alternatively use ProGibb® 10SP (GA3) powder can be used at 1 x 10g sachet per 8 -10 litres (100-125ppm).

Some growers use liquid Promalin® (GA4, GA7 & 6-Benzyl-adenine) as a dip (3ml/litre 50ppm) for 10-15 minutes or as a spray to the growing points. ie. top side of the tuber (5ml/litre 100ppm).



Is a protectant fungicide required?

Many growers add a broad spectrum protectant fungicide or disinfectant eg. Previcur®N or Sporekill® (Didecylidimethyl Ammonium Chloride) to the GA solution.

In the USA a pre-plant treatment of **Champ®** or **Kocide®** (copper hydroxide), **Heritage** (Azoxytobin) and **Subdue®** or **Ridomil®** (metalaxyl-M) is commonly used.

Other combinations such as **Collis®** (Boscalid & Kresoxim-methyl), **Topsin®** (Thiophanate Methyl) and **Risolex®** have been used successfully.

Addition of an insecticide such as **Confidor** or **Admire** (Imadocloprid) will help prevent attack from soil borne insects.

A sticker/spreader/surfactant can be added to the solution to aid absorption. Refresh the dipping solution daily or as required, especially if tubers are dirty.

Promalin® is compatible with Benlate, Thiram, Mancozeb, Captan and wettable sulphur.

pH of solution

GA can have reduced effect at high pH; if necessary use a pH buffer to reduce the water pH to 5.5 prior to addition of GA.

When to apply GA

The optimum stage of treatment is after pregermination, at emergence of green growing points (5-10mm). GA is directly absorbed around the growing points.

Grower experience and research demonstrate that more flowers will NOT be initiated with higher GA concentrations.

Spray or dip

Spraying is preferable to dipping as it minimises the risk of bacterial or fungal pathogens on the surface of the tuber spreading to other tubers. Spray thoroughly to runoff.

Two applications of GA, several hours or up to 2-3 days apart, can help absorption and enhance flower numbers.

When to plant?

Tubers must be dried after treatment to ensure the GA is fully absorbed. It is best to plant within 48 hours of treatment as the effectiveness of the GA diminishes.

Flower malformation

GA may cause some malformation in flowers and cause flower-like coloured leaves which is a natural phenomenon.

Promalin® is known to contribute to some malformation of first flowers, especially if they emerge too quickly in hot growing conditions. Later flowers normally stabilise to the correct shape.

If tubers have developed long 3-5cm+ green shoots prior to treatment, it is advisable to reduce the GA rate to help avoid distortion of first flowers.

Do weather conditions affect GA?

Short flower stems (40cm vs. normal 70cm) can occur in cold weather, especially with unprotected outdoor production. Flower production can also be reduced by up to 50%. As temperatures increase (daytime 25°C) crop performance improves with normal numbers of tall flowers.

Hot conditions in early growth may also cause short stems as the tuber produces a flower without the support of good leaf production (required for photosynthesis).

Water, nutrition and previous tuber handling will have as much effect on flower malformation as any other factor.

The function of GA is to increase shoot numbers, not the strength of the tuber, although Promalin® is known to increase bulb multiplication.

Disclaimer - No guarantee of production performance is expressed or implied by BLOOMZ. All chemical products recommended are those found to be appropriate by Calla growers and are a guide rather than registered products with specific application to Zantedeschia (Coloured Calla Lily).

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