

Germinating seeds with GA3

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GA3 is a short form for one of the Gibberellins, a plant hormone, which is used to speed up the germination of some seeds. In this report I am documenting some of my observations as a first time user of GA3.

If you have used our Germination Guide before you will have noticed that GA3 is suggested for some seed. It is not suitable for all species. In many cases it has no effect on the germination process. In others, it promotes germination but results in weak seedlings that die soon after germination. The concentration of GA3 is also important. Too little and the seed does not germinate. Too much, and the seedlings will be deformed. This may sound more complicated than it is, but for some seeds it is very useful and worth a try.

Some species of *Aquilegia* germinate easily at room temperature, but some are more difficult to germinate especially once the seed has dried out. I tried using GA3 on several varieties including *Aquilegia flabellata* var. *nana*, a species that has been very stubborn for me. GA3 did not make any difference. It is quite possible that my seed was too old, or the concentration was wrong. It is worth trying again with other *Aquilegia* species.

As part of my research (see reference 2) I learned that GA3 helps with old *Aquilegia* seed, but that it is not needed for fresh seed. This summer, I collected *Aquilegia flabellata* var. *nana* from my own plants and started germinating them as soon as they were ripe. I just left them sitting at room temperature and within a month they started to germinate.

In each of the past couple of years I was very fortunate to receive some *Glaucidium palmatum* seeds from the ORG&HPS Seedex—thanks to everyone who donates seeds. The recommended procedure for germination is to plant as soon as they are ripe. That is not possible with our regular SeedEx since we don't get the seed until it has dried for several months. I tried temperature cycling but that did not work. According to our Germination Guide and Fr. Deno (reference 2), *G. palmatum* is one species that does germinate easier with GA3, and I just happen to get a good number of seeds from the left over seeds this year. I decided to try some seed with GA3 and some without. The seeds were put into a baggy along with some Promix potting soil. They were all left at room temperature, some with room light, and some in the dark.

Darkness is not required for germination. Seeds treated with GA3 started germinating 1 week after treatment and continued for a couple of months. Non-treated seed started germinating after about 2 months. The % germination was almost 100% with GA3 and around 50% without. None of the seedlings treated with GA3 were deformed, and they all grew well.

Podophyllum hexandrum seeds are fairly difficult to germinate and usually require one or more cold/warm cycles. When the seed finally germinates it only produces a radicle and in some cases it shows

the cotyledon leaves. The first true leaf is not made until the seedling goes through another cold cycle which means it takes another year before you see a true leaf. So it can take 2-3 years before you see the first true leaf after starting the seed. Kristl Walek of Gardens North has reported that treatment with GA3 contracts the first 2-3 years into one. So in the first year the seed makes a radicle and a true leaf, and then grows normally in the second year. If GA3 would save a year or more in getting mature plants it was worth a try.

I used seed from my own plants that had been dried and stored for 5 months. All of the seed was put into baggies along with moist peat moss, and left at room temperature for 3 weeks—nothing happened. The reason for this initial incubation is that I did not have any GA3—yet. When the GA3 arrived half the seed was treated with GA3 and the other half was left untreated as a control. The treated seed started to germinate within 2 weeks and continued with a few seeds germinating every week. Untreated seed did not germinate in the following 6 week so I treated the non-treated seeds with GA3, and they started to germinate within a week of treatment.

Some seedlings started developing a true leaf 3-4 weeks after germinating. Some showed only the seed capsule above ground. For this latter group I dropped GA3 solution right onto the seed and radicle. Within a couple of weeks a true leaf started to grow.

None of the seedlings seemed to die or be spindly as a result of GA3 treatment. In a couple of cases the seedlings made two true leaves which I think is unusual. Hopefully that translates into a stronger plant next year.

In the case of *Podophyllum hexandrum*, GA3 reduced the long temperature cycling period to a few weeks at room temperature, and it save a years' worth of growth.

This initial experience with GA3 was very positive, and I plan to use more of it next year.

References:

- 1) Description by Gardens North for germinating *Podophyllum hexandrum* with GA3:
<https://www.facebook.com/media/set/?set=a.229102397177180.58376.130083313745756&type=3>
- 2) "Seed germination, theory and practice" by Dr. Deno, describes the method for using GA3.
<http://naldc.nal.usda.gov/catalog/41278>