

# Growing Welwitschia Mirabilis from Seed | Experiences from a Boston Grower

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*Seedlings at 11 months old*

Although Welwitschia Mirabilis has been growing in popularity within the plant community over the last several years, there isn't exactly an excess of information online about growing them from seed. From the existing resources out there, there are still many unanswered questions and lack of details. I will attempt to provide a summary of my approach to growing Welwitschia Mirabilis from seed indoors in Massachusetts Zone 6b - 7a.

After some failed attempts, I have come to realize that growing Welwitschia from seed is not too difficult a task at all. The key is simply to optimize the environmental conditions with respect to heat and lighting, particularly in a region with very cold winters. I won't claim my techniques to be the best approach, but it has worked well for me so far. My growing approach is also far from scientific, not taking into account humidity, pH, CEC, etc.

## Seed Preparation

Sterilization of the seed coat can be a good way to guard against contaminants before sowing, given that Welwitschia are infamous for being prone to fungal issues early on.

1. (Optional) You may de-wing the seeds if you wish, but I have never done so.
2. Soak the seed in your choice of sterilant. Two options include but are not limited to:
  - a. Physan 20 - Soak for 5 minutes in a solution ratio of [1 to 1.5 tsp \ gallon of water].
  - b. 3% Hydrogen Peroxide - Soak for 15 minutes in 3% Hydrogen Peroxide.



3. Rinse off the seed with distilled water, and then soak in distilled water for 12-24 hours.

## Soil / Growing Medium

You will find a few recommendations for the soil mix for Welwitschia online. Many choose to avoid heavily organic mixes to minimize risk of overwatering or fungal issues - in fact, the most common advice is to plant seeds in 100% pumice.

Personally, I have selected to grow in 80% inorganic to 20% cactus soil mix (which is 40-50% organic itself). With 100% inorganic, the soil can dry out rapidly which may force you to water nearly every day, which many growers do for seedlings. 80/20 allows for more moisture retention and significantly less work for watering seedlings (closer to once every 3-5 days).

What I use for Inorganic	What I use for Organic	Top Dressing
<ul style="list-style-type: none"><li>- Pumice</li><li>- Hard Akadama</li><li>- Zeolite</li><li>- Lava Rock</li><li>- Calcined Clay</li></ul>	<ul style="list-style-type: none"><li>- Sterilized and sifted Cactus and Succulent Soil (Sungro Black Gold)</li></ul>	<ul style="list-style-type: none"><li>- Hard Akadama</li></ul>

For top dressing, I use Akadama because it allows you to see when the soil is beginning to dry out. Additionally, you may optionally add beneficial microbes, such as Great White Mycorrhizae.

## Pots

The tap root of Welwitschia seedlings can be very long, and grow rapidly right after germination. Although not strictly necessary, a taller pot will help prevent any unintentional root damage as the tap root burrows.

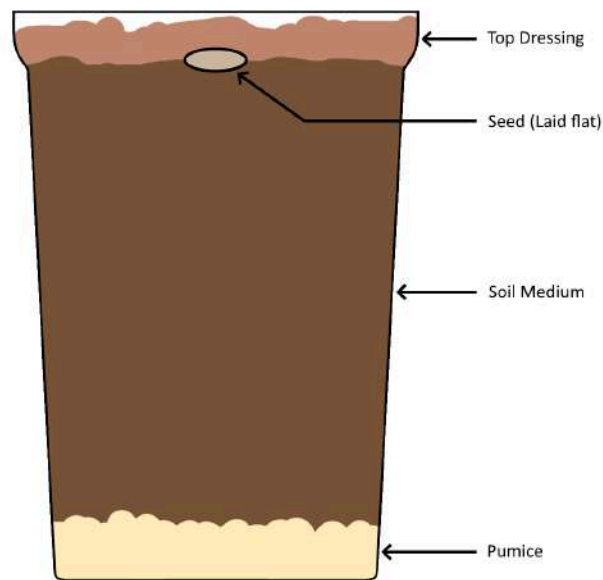
I personally have used a **3 [in] x 3 [in] x 4 [in]** pot with success, but I would not go shorter than this. Other growers do **6 [in] or greater**. For seedlings, a plastic pot is recommended, to allow for easier moisture management as well as gentler repotting in the future.

## Environment

The best way to ensure robust Welwitschia seedlings is to give them the optimal environment. This can be difficult during the wintertime, which is why heat mats are essential. ***In my opinion, the hardest part of growing Welwitschia is the first 3 months. The better an environment you provide, the faster they will grow to a stable point, which will make them more tolerant of mistakes.***

<b>Airflow</b>	I have a fan running that allows gentle but constant airflow over the Welwitschia
<b>Light</b>	<p>I used cheap T5 grow lights from Monios on a 12 hour on/off cycle.</p> <p>The light levels for germination were 9000 lux - however, I quickly ramped to 18-20000 lux. Some growers provide even more light than this, but 20000 has worked well for me. I do not have a par measurement at this time.</p>
<b>Temperature</b>	<p>To ensure proper temperature setting, I have a heat mat controlled by feedback from a thermal probe. The probe is in a dummy pot with the same substrate but no seed planted, to allow for accurate control of temperature of the substrate itself.</p> <p>In general, I tried to keep daytime temps between 75 - 80 F and nighttime temps between 65 - 70 F at minimal. Welwitschia seem to enjoy relatively high heat, so bumping these thresholds by 5-10 F would likely be completely fine as well.</p> <p>I use the following:</p> <ul style="list-style-type: none"><li>• 20W heat mat from Vivosun</li><li>• Temp controller from InkBird (IPT-2CH)</li></ul>

## Sowing Instructions



1. Fill your pot with your soil medium. You may optionally put 4-6mm pumice as the very bottom layer of your pot. Saturate your growing medium with distilled water.
2. Place the seed flat side down onto the top of the soil medium. Press it in, but no need to bury it.



3. Cover the seed with your choice of top dressing. This will help to hold the seed coat in place as germination occurs. Water in the top dressing with distilled water to saturate it.
4. Cover your seedlings in a humidity dome until they germinate. I used a plastic baggie. If the soil begins to dry out before germination occurs, re-saturate the soil.



5. When the seedling has germinated, remove it from humidity, and apply your fungicide immediately. For more details, see next section.

## Care after Germination

<b>Fungicide</b>	<p>Welwitschia seedlings are susceptible to damping off, which is caused by soil-borne pathogens such as Pythium and Phytophthora.</p> <p>For the first 3 months, I recommend watering with a fungicide at the recommended dilution that explicitly targets these pathogens. Additionally, I applied the first round of fungicide <b>immediately</b> after germination, regardless of the dampness.</p> <p>Personally, I have used <b>Monterey Garden Phos</b> at a dilution recommended for Conifers, at 2 tsp / gallon of water every 14-20 days.</p> <p>Alternatives include Subdue Maxx and Banrot, neither of which I have used due to cost and safety. And personally, I have found copper fungicides to be completely ineffective for Welwitschia.</p>
<b>Watering</b>	<p><b>Water once the soil is 50-60% dry by weight.</b> Do not allow the Welwitschia seedlings to dry off completely - however, overwatering is certainly a possibility, especially during winter.</p> <p>For reference, please note the following weights I used to guide my watering:</p> <ul style="list-style-type: none"><li>- Bone dry weight: 260g</li><li>- After top watering: 405-415g</li><li>- When I watered: 330-340g (note that I did not always follow this perfectly, and sometimes watered at 340-350g)</li></ul> <p><b><i>Remember to never try to force a schedule - a lot of factors will influence the drying out of the medium, such as ambient temperature and humidity.</i></b></p> <p>It is difficult to recommend a watering schedule without knowing too much about the individual grower's environment, but I watered my seedlings every 3-4 days.</p> <p>Seedlings become much more prone to overwatering with lower temps - this is important to note when growing in Massachusetts for example.</p>
<b>Fertilizing</b>	<p>Fertilizer is a very important component to support strong growth in seedlings. Some institutions fertilize every single watering starting from germination.</p> <p>Personally, I started fertilizing after 3 months - although I suspect you can start earlier. I use <b>Maxsea 16-16-16</b> at 50% dilution applied once a month.</p>

## Examples of Problems You May Encounter

### *Damping Off*

Usually, this issue is characterized by the base of the stem going soft and dark. It is preventable with an appropriate fungicide and proper environmental control.



### Overwatering / Sub-optimal Environment

It is hard to say with confidence what the issue is below, but it occurred as temperatures were changing when winter was beginning. I suspect that the issue was overwatering, as well as poor environmental conditions. As mentioned before, proper light, heat, airflow, and nutrients will make overwatering difficult.



### Additional Resources and Information

#### Websites:

- A great tutorial from a fella in Austria:  
<https://ihaveplants.com/germination/how-to-grow-welwitschia-mirabilis-from-seed/>
- Notes from Ed Perfect:  
<https://theamateursdigestarchive.wordpress.com/articles-revived/notes-on-growing-welwitschia-mirabilis-hook-e-from-seed/>
- Kew Species Profile:  
<https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:383591-1/general-information>

#### 🐾 UC Davis Botanical Conservatory (<https://www.reddit.com/user/UCDavisbotanical/>) 🐾

- Seedlings are generally sowed in 100% pumice, but some are in 80/20 mix.
- Repotting: *"Some seedlings were started in 6 inch pots and had very vigorous taproots. Honestly they don't mind being repotted. Simply don't break the taproot itself! I use a tub of warm distilled water and gently take it out of the pot and it works like a charm everytime. Never lost a single one"*

#### UC Davis Botanical Conservatory Care Guide posted at their Welwitschia sale:

- All seedlings are in pure pumice! If you change media type, reduce watering schedule
- Warmer daytime temps prompt faster growth.
- All get watered daily with liquid fertilizer, around 5-24-38 with a pH around 5.5 to 6
- \*\*\* After buying, where are you putting your Welwitschia seedling?\*\*\*
  - **Desert chamber / warm greenhouse:**
    - High temperature during day, above 80F
    - Fertigate (water + fertilize) every day until it drains from bottom
    - Do not give direct sunlight
  - **Inside house:**
    - Daytime temps below 80F
    - Fertigate (water + fertilize) every other day until it drains from bottom
    - Keep under LED lights, not too close. 12,000 LUX is fine.
    - Do not give direct sunlight.
  - **Regardless of location:**
    - If leaves start to show deep lines as in wrinkles, and chlorophyll starts to fade, water more if still in pure pumice. If chlorophyll changes to anthocyanins (reddish pink pigment and not green), reduce light. The light intensity is too strong.