

Pleione: Terrestrial Orchids

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Hello, thank you for coming out to hear me speak. Today we will be discussing the Genus Pleione, a type of terrestrial to semi-terrestrial orchid that many of you may not have even heard of.

We will be going over their care and cultural requirements as well as their growth habits through each of the 4 seasons.

Before we begin I just wanted to say: Feel free to stop me at any point you have questions. Pleiones while not very hard to grow can be a bit confusing at first because of their dormancy period where their care changes drastically.

Ok lets begin.

Who am I?

- ▶ Growing orchids for 17 years
- ▶ Member of GAOS – 5 years
 - ▶ Former VP and current Editor
- ▶ Growing pleiones for only a few years but have become fascinated with them



Pleione x confusa

Who am I and why should you listen to me?

I am a hobby grower who always been interested in plants and flowers. My Mom used to call me her little nature kid. I received my first orchid at 16 and have been building my collection ever since.

I have been a member of the Greater Akron Orchid Society for 5 years where I've been the Vice President and am now the current newsletter editor

I became fascinated with pleiones when I first saw them at a spring orchid show. I couldn't understand how a plant could survive and flower with no leaves. At the time, I didn't realize about dormancy and that some plants bloom in a different season than when they put out leaves and grow.

I wanted to learn all that I could about this genus and was disappointed when I found that there are only 2 books and a few articles about them written in English. I've compiled knowledge from books, magazine articles, online forum groups and my personal experience in hopes to help shed some light on this uncommon genus

2016: JC/AOS Awarded display at the GAOS spring show



This is my 2016 pleione display at the Spring Akron Orchid Show where it received a Judges Commendation. As you can see, one of the reasons why I love them so much is because you can have many plants in a pot and many pots in a small display which will have a big impact.

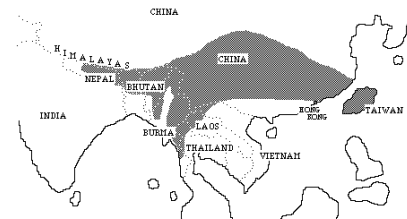
Except for a few of the photos in this presentation of pleiones in the wild or of people's personal collections, the rest are taken by me of my plants. While I only have a few, there are many species and even more hybrids but I will speak to the things they have in common and will point out the differences of a few special cases.

Overview

- ▶ Pleiones are miniature orchids that bear large showy flowers
- ▶ Native to the mountains and foothills of SE Asia
- ▶ Terrestrial – Grow in the moss layer on the ground, trees, or rocks making them more epiphytic in nature
- ▶ Easy to grow plants referred to as “windowsill plants” in England



DISTRIBUTION OF THE GENUS PLEIONE.



Pleiones are miniature orchids that have large, showy flowers that seem oversized for these tiny plants.

Native to the mountains and foothills of SE Asia

They are called terrestrial because they are often found on the ground but they actually grow in the moss layer on the ground, on trees, or rocks making them more epiphytic in nature

These easy to grow plants are referred to as “windowsill plants” in England, while fairly unknown and not well understood here in the States, there, they are used as houseplants and, depending on the climate, are even grown outside in the garden.

Culture Overview

Temperature: Cool conditions. Fall blooming species are warmer growers.

Light: 1800-3000 footcandles

Water-Humidity: 40-60% in the greenhouse, variable outdoors

Fertilizer: Weakly during the growing season

Potting: Peat and perlite (1-1 by volume)



This is their general cultural overview.

They are generally a cooler growing genus with a handful of fall blooming species being warmer growers. They like partial shade but can tolerate a few hours of direct sun, provided it isn't too hot. Becoming too warm at the root base can lead to early dormancy, poor growing or death. Humidity isn't much of a factor. They enjoy fertilizer like any other orchid but only during the growing season of spring through fall. They are very forgiving on their potting media with many different mixes being just fine. You can use peat, perlite, bark, moss or anything that doesn't hold onto moisture for too long.

Watering is probably the leading cause of death and is why many people think this genus is difficult this will be discussed more in depth later. But in general, when dormant, they receive no water at all. Slowly introduce water after there are flowers and when they are in full growth they love water.

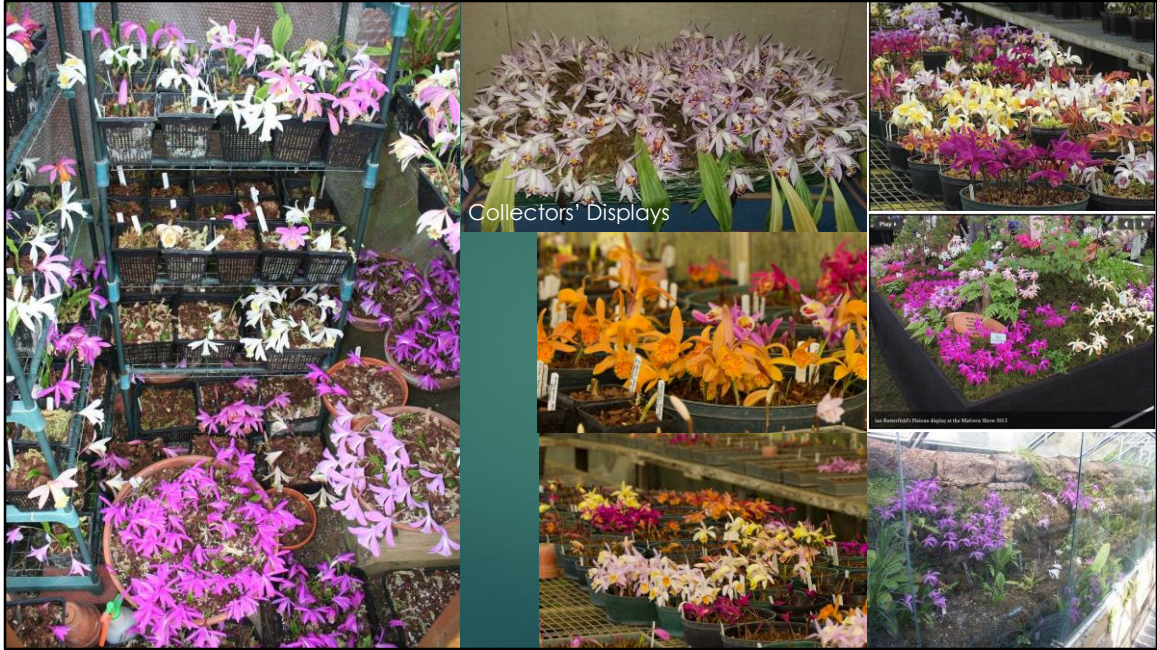
- ▶ *Pleione maculata* in situ growing in leaf litter on the ground, trees or rocks



This is *pleione maculata*, a warm growing, fall blooming species, in situ. Here, you can see it growing in 3 different media: in leaf litter on the ground, on the moss layer on trees or on the moss layer on rocks. They like free draining media that doesn't hold onto water



Several different species of pleione in situ. Notice how at all these locations they are growing in such a way that water runs off or through their media easily so that they aren't left in standing water.



These are collections from growers in Europe. Pleiones come in many different colors and you can easily fit hundreds to thousands on a small space.

- ▶ First described in 1825, separate genus in 1851
- ▶ 21 species and 5 natural hybrids
- ▶ Still being discovered
 - ▶ *Pleione arunachalensis* was just described in Feb. 2017
- ▶ Most species were discovered within the last 100 years but have only been introduced into cultivation in the last 20



grandiflora



yunnanensis

arunachalensis

forrestii

aurita



Pleiones were first described in the 1825 under the name, *Coelogyne*, and became their own genus in 1851

Today there are 21 species and 5 natural hybrids recognized by (Royal Botanical Gardens) or Kew, but many taxonomists still debate this

There is still much to learn and they are still being discovered. *Pleione arunachalensis*, in the lower left, was just described in Feb. 2017

Most of the species were discovered within the last 100 years but have only been introduced into cultivation in the last 20 or so years. This creates confusion about their nomenclature, care and growth habits. A note, *forrestii* the picture in the middle is the only yellow species of pleione, so if you see any yellows or oranges or golden hues, it will have this species in their parentage. This is very similar to *cattleya dowiana* for *cattleya* hybrids



Natural hybrids like this *Pleione x barbara* have a wide range of colors and patterns. Natural hybrids like this are denoted by an 'X' in between the genus and the species name. *Barbara* is a hybrid of *grandiflora*, which is white with yellow spots and *bulbocodioides* which is pink with pink spots. Here are 7 different flowers just from my collection alone that may look like completely different species. This has added to the confusion when trying to identify species. Combine that with the fact that you have many smugglers of wild collected plants being introduced from the East, like China or mass commercial growers, growing only a random mix of hybrids from Europe (just like *Phalaenopsis* here in the States found in grocery stores or Home Depot) It is very difficult to ID a plant. In addition, when dormant it is impossible since all pleiones die back to just their bulb which all look the same

- ▶ Scarcity and difficulty in cultivation can cause sky high prices for prized species and varieties
- ▶ *Pleione albiflora*, first discovered in 1983. The first living flower seen in the wild 1993 and the first cultivated flower in 2000
 - ▶ Today these can fetch \$150 per bulb
- ▶ Alba forms are also extremely rare due in part to the fact that setting seed has a higher rate of killing the (pod) parent
 - ▶ This *aurita alba* was sold in 2016 for \$250 for a non-blooming sized bulb

aurita alba



albiflora



Scarcity, poaching and difficulty in cultivation can cause sky high prices for prized species and varieties

Pleione albiflora is considered the 'holy grail' to pleione collectors, first discovered in 1983 from a dried specimen in a botanical collection. The first living flower seen in the wild 1993 and the first cultivated flower in 2000

Today these are hard to find but when available can fetch \$150 per bulb
 Alba forms of certain species are also extremely rare due in part to the fact that setting seed has a higher rate of killing the (pod) parent than an orchid with pseudobulbs

This *aurita alba* was sold in 2016 for \$250 for a non-blooming sized bulb

Pleione Care

- ▶ Reputation of being hard to grow
- ▶ Some of the easiest with key care
 - ▶ Cold, dry dormancy
 - ▶ Well-drained media
 - ▶ Care with watering, especially at their start of growth
 - ▶ Plenty of water while in full growth
 - ▶ Shady conditions
 - ▶ Weak feeding
 - ▶ Attention to pests
 - ▶ Annual repotting



Pleione have a reputation of being hard to grow, even within the orchid hobby where we are used to picky species

This reputation is not really deserved as they actually can be some of the easiest, provided some key care requirements are met (in order of importance)

Cold, dry dormancy

Very open, well-drained media

Care with watering, especially at their start of growth

Plenty of water while in full growth

Shady conditions

Regular weak feeding

Attention to pests

Annual repotting

Pleione Growth Cycle - Spring

- ▶ Late Fall – Early Spring (Dormant Phase) – Time to purchase online
- ▶ Dormant bulbs can be repotted anytime, I prefer to repot as I start to see new growth
- ▶ Different species flower at different times. Keep in storage until new growth, Mar - April
- ▶ 4-6 weeks from cold storage to blooming



We will now go over the growth cycles through all 4 seasons

Late Fall – Early Spring (Dormant Phase) – This is the time to purchase Pleione online, when they are dormant and can easily be shipped

Dormant bulbs can be repotted anytime, but I prefer to repot as I start to see new growth nubs at the base of the bulbs in early to late spring, depending on the variety
Different species flower at different times. I keep all my cold growing pleione in fridge until I see new growth or until around March to April when space allows. Dormant bulbs should be stored in a cool place with a low temperature of 40 degrees F. I use a fridge because it provides a constant cool temperature and won't freeze, which will kill the bulbs.

It takes anywhere from 4-6 weeks from cold storage removal to blooming

- ▶ New growth and new roots means time to pot
- ▶ Growth can come from various points
 - ▶ Damaged bulbs can still have growth points
 - ▶ Only discard bulbs if they are mushy or rotten



Here are some examples of bulbs taken out of cold storage with new growth and the start of roots which means it's time to repot

Growth can come from various points on the bulb. Generally from the bottom but occasionally can be located along the side of even the top. This seems to happen more often if the growth points at the base of the bulb are damaged.

The first and second picture show damaged bulbs which can still have growth points

Only discard bulbs if they are mushy, desiccated or are starting to rot

- ▶ My spring repotting setup
 - ▶ Bulb pans work well because they are shallow
 - ▶ My mix consists of bark, moss and perlite



This is my spring repotting setup. As you can see I kinda took over the kitchen table. I like using Bulb pans because they are shallow. But many different types of containers can be used provided they are free draining
My mix consists of bark, moss and perlite. But again pleione are pretty forgiving in terms of media. You want to use a mix that won't hold too much water. It is better to water more often than to keep a wet mix.
You can see some pans filled with the mix, next to the components

► Pots

- Pleione are very easy plants to grow if you don't overwater at the wrong time
- They can be grown in a variety of containers

- Use shallow pots with drainage

For large numbers
I use bulb pans.



Pleione are very easy plants to grow once you master their yearly cycle with their main cause of death being water, usually overwatering at the wrong time. Their critical time is right out of dormancy, here, water needs to be introduced very slowly and gradually increased

They can be grown in a variety of containers or even outside in the garden (in appropriate USDA zones) that have a mild summer yet don't get frost. I have read about people growing them outside year round in the Pacific Northwest and in some parts of Europe.

For pots, I tend to use whatever is on hand but prefer shallow pots with plenty of drainage. For large numbers of a variety I use bulb pans.

For smaller numbers I prefer plastic pots of varying shapes

▶ Media

- ▶ Free draining media
- ▶ My mix: 2 parts bark, 1 part moss, 1 part perlite

- ▶ Top dressing of bark to hold the bulbs down.

Layer of bark at bottom for drainage

- ▶ Tip: Wet the mixture first, smaller pieces tend to settle when dry



Media

Pleione are very forgiving with the media they are grown in. The important thing is it must be very free draining

They are often called “terrestrial” orchids but they are more epiphytic or lithophytic in nature. So please don’t use terrestrial mixes or potting soil.

My preferred mix consists of: 2 parts bark, 1 part moss, 1 part perlite

I also prefer a top dressing of bark to hold the bulbs down into the mix because these bare bulbs don’t have any roots and can easily fall over.

I also put a layer of bark at the bottom for drainage

Tip: Wet the mixture first, this greatly helps components in getting them to ‘mix’ better. If you don’t then the dry perlite will tend to settle to the bottom.

It also helps greatly in positioning the bulbs so they don’t fall over

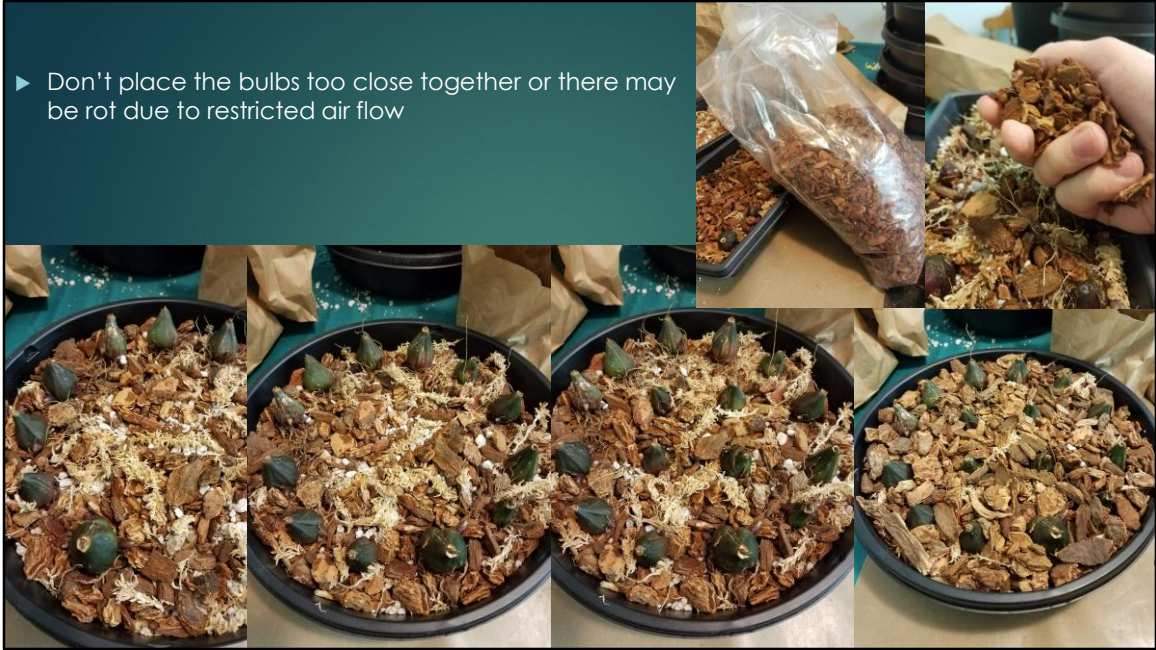
▶ Potting

- ▶ New growth ready to pot
- ▶ Be careful of the new growth
- ▶ Fill the pot with mix about 1" below the lip
- ▶ Place the bulbs spaced 1" apart
- ▶ Top with bark so 1/3 – 1/2 of bulb above media



People can get confused on the best time to pot up their pleione bulbs. New growth signifies being ready to pot, but this process can be done at anytime during dormancy if you want to be proactive and have the grow space. I tend to wait as long as possible because they take up so little space in the fridge. When potting, be careful of the new growth, seen here at the base of the bulb. Damage to these will cause the plant to put energy into creating a new growth point and will inhibit chances of flowering that year. Fill the pot with mix about 1" below the lip. Place the bulbs on top with about 1" space between, I tend to place the largest growths towards the center. Top with bark so that 1/3 – 1/2 of the bulb is above media.

- ▶ Don't place the bulbs too close together or there may be rot due to restricted air flow



Here, I've placed the bulbs evenly around the pan on top of the mix. Then I add a layer of bark to keep them in place and aid in drainage around the bulb. The finished pan is on the bottom right. There's always so much to learn. Last year I placed the bulbs too close together and had some rot later in the summer probably due to restricted air flow and overwatering.

This year, I added more bark and perlite to my mix and reduced the # of bulbs per pan by about 25-30%

- ▶ Dip in fungicide or neem before storing and check periodically for rot or bugs
- ▶ Spraying with isopropyl/soap water can help kill bugs



Bugs can be a problem when bringing in plants from outside and putting in cold storage. It is a good practice to dip in fungicide or neem before storing and to check periodically throughout winter for rot or in my case mealy bugs, ugh. After potting, I sprayed the bulbs down again, isopropyl/soap water, because I wanted to kill any mealies that may have survived

This is my grow table in early spring right after potting. They don't need any light at this time because they are still dormant. This is in my basement where it is relatively cool. Pleione like to come out of cold storage and warm up slowly over a few weeks. If possible, place pots in an unheated room or basement. If they warm too fast, I find that this might force the plant out of dormancy early and when I've tried this in hopes of getting them ready in time for a show, I had dramatically reduced flowers. They aren't like amaryllis

▶ Pleione Setups

- ▶ Temporary setups and moved outside for the summer



For me, most of these setups are temporary since I move them all outside for the summer until they go dormant in again in the fall. You can see the different stages of growth in these photos. Some have flowers, some are over flowers, while some have yet to start growing. My earlier photo of my JC award was quite a fluke of perfect timing and I have yet to reproduce that display.



More pleione waiting to start growth. I put them everywhere until I ran out of space and even had to move some onto my grow table of masdevallias.

▶ Pleione Setups



I have grown in windowsills and under lights over the years. But because of the number that I am trying to bloom at once for shows, I have found that growing under lights are ideal for producing taller, straighter flowers. The winter light even in southern windows is very low and causes flowers to lean towards it causing shorter flowers and a poor overall appearance.

▶ Watering

- ▶ Media kept dry
- ▶ Roots don't grow until after the flowers
- ▶ Too much water can rot new roots
- ▶ Water on the new flower bud, can cause it to rot
- ▶ Water from below
- ▶ When the leaf is fully mature in summer, they can take much more water



I removed this plant from the media to discuss watering which can be confusing and is one of the main reason for loss of flower buds and bulbs

In the spring, just after potting, the media should be kept dry or just barely moist. Watering should only begin after the bulb has produced roots that are at least an inch long.

Roots don't really grow until after the flowers fade and the onset of leaf growth begins

Pleione only create roots once a season and too much water at this time can cause the new roots to rot

Additionally, any water on the new flower bud, can cause it to rot overnight. Even if the new bud is inside of a leaf

The best way to water is from below. What I do is sit the pot in 1-2 inches of water for a few mins only to wet the bottom of the pot

When the leaf is fully mature in summer, they can take much more watering.

This is because they come from areas where there are monsoon rains and can take much more water

- ▶ Use seedling trays filled with water and set the pots inside for only a minute or two
- ▶ Watering in this way until after the flowers die and there's no more chance of bud rot



This is how I water my larger pots in the spring. I use seedling trays filled with water and set the pots inside for only a minute or two. I will continue watering in this way until after the flowers die and there's no more chance of bud rot, then I can water from above. I have experienced a very high rate of flower and bud rot from even a small amount of water on them. There is a much smaller chance of bulb or root rot, so you can also water around the edge of the pot if you're careful to avoid the new growths.

Pleione Growth Cycle – Flowering

- ▶ Spring (Flowering Phase): 4-6 weeks
- ▶ Flower buds appear before the leaf
- ▶ 1-2 buds per scape, 1-3 scapes per bulb
 - ▶ A single leaf will start to grow as the flowers die
- ▶ Flowers can last 1-2 weeks, colder temps for longer lasting flowers
 - ▶ Tip: Buds rot easily, water from below to prevent this



Pleione can take anywhere from 4-6 weeks after removing from cold storage

The flower buds will appear before the leaf. There may be 1-2 buds per scape or growth point and as many as 3 scapes per bulb. After flowering, a single (rarely double) leaf will start to grow.

Flowers can last 1-2 weeks, I've noticed that the colder you keep them the longer the flowers can last. Dramatic changes in temperature can also cause the flowers to die prematurely.

This is the critical time, you won't believe how easily the buds can rot. I now only water from below because even stray mist can rot the buds even if they are still surrounded by the sheath.

Bud Growth

Elongation

Flowering



Here is how they grow. It starts with the bud growth, then it will elongate and the flower buds will appear. The flowers will then fully open for a few weeks and after their death the single leaf will start to grow

Pleione Growth Cycle - Summer

- ▶ Growth phase
- ▶ Kept outside if the night temps are >40F
- ▶ Leaves grow to around 18-24 inches
 - ▶ Pleated and fragile
 - ▶ Easily scorched and spotting
 - ▶ Only last one season so don't worry about imperfections
- ▶ Provide a shady spot with no direct sun if placed outside



Alright, moving on to summer. Summer marks the end of the flowering season and the beginning of their growth phase

As the temperature rises, the flowers will die and the pleione can be safely kept outside if the night temps are >40F

The leaf will elongate and grow to around 18-24 inches

The leaves are pleated and pretty fragile

They are easily scorched and prone to spotting from water damage and leaf tip dieback from the heat

The leaves only last one season so don't worry about imperfections and slight damage

By the end of summer they are all very nearly destroyed by the sun, rain and wind but it's ok because they will drop off in the fall

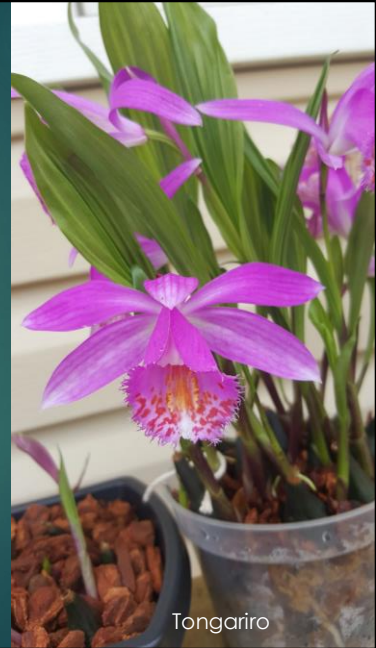
Provide a shady spot with no direct sun if placed outside. Heat is a big killer in the summer, if they are exposed to sun make sure that they don't overheat or provide a shade cloth

- ▶ All of my pleione are kept on my shaded deck until first frost
- ▶ Water thoroughly so they never fully dry out



This was my growing area last year. All of my pleione are kept on my shaded deck until first frost. I water them thoroughly so that they never fully dry out. I made a huge mistake this year and placed them all in the yard under a large tree. Even though they were raised off the ground I had huge predation and lost almost all of my bulbs so I'll have to try nets to keep them out next year.

- ▶ Weak fertilizer in growth
- ▶ Bulbs only last one season. The new leaf base with fatten up and create next year's bulb
- ▶ Summer temp: 75F – 85F
- ▶ High temperatures can cause the leaf drop, the loss of energy will mean the bulb won't be able to flower next year
- ▶ A cool, shady spot is best, but in moderate temperature they can tolerate dappled sun



Pleione enjoy a weak fertilizer like many other orchids. Start fertilizing when the leaves start growing and stop when they start to die

Bulbs only last one season and are created at the base of the new growth. The new leaf base with fatten up and create next year's bulb

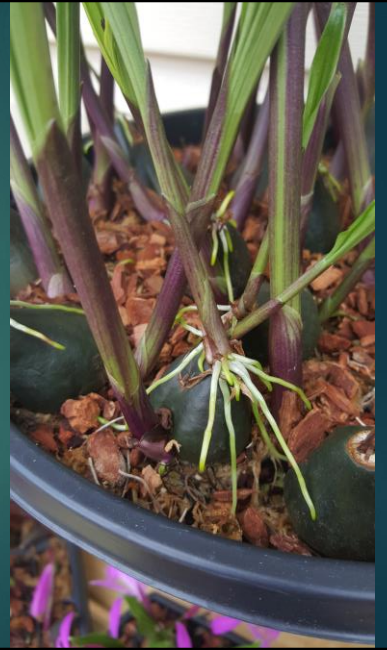
It is important to give the bulbs as much time as possible to form, so I leave them outside until right before the first frost.

Pleione prefer a summer temperature of 75F – 85F

High temperatures can cause the leaf to drop prematurely, the loss of energy will probably mean the bulb won't be able to flower next year

A cool, shady spot is best to prevent this, but if temperature is moderate they can tolerate dappled to part sun

- ▶ Large bulbs will also have growths at the tip
- ▶ This small growth is called a bulbil
- ▶ These can be left on the bulb until they go dormant



In addition to creating new bulbs at the base, most pleione will also have smaller growths at the apex or the tip of the bulb old bulb. These form after the new growth is well underway. If the old bulb has any energy left over it uses it to created these new babies called a bulbils. These can either grow roots themselves, like on the picture on the right, or they won't, like the first two pictures, but they can be left on the bulb to gain energy until they go dormant in the fall. A large bulb can produce anywhere from 1-3 of these bulbils typically or to at least 10, depending on the variety.

Pleione Growth Cycle – Fall

- ▶ Cool nights induce dormancy
- ▶ Leaves turn yellow, then brown, before falling off
- ▶ Reduce water
- ▶ Roots still remain alive 3-4 weeks after leaves die
- ▶ Leave them outside to cool and dry slowly
- ▶ Night temps ~35F: prepare them for cold storage (Oct – Nov)



As the nights begin to cool in the fall, the pleione will begin to go dormant. Their leaves will start to turn yellow, then brown, before getting dry and falling off. When the leaves start to go dormant it is time to start reducing water but it is important to not stop watering because the roots remain alive for 3-4 weeks after the leaves die off. Leave them outside to get cool slowly, aim to have them fully dry by the time you store them. When the nights start to get to around 35F then it is time to start to prepare them for cold storage around (Oct – Nov).

- ▶ October – All my other orchids have been brought in, but the pleione remain outside to dry fully. As the leaves drop, they are discarded



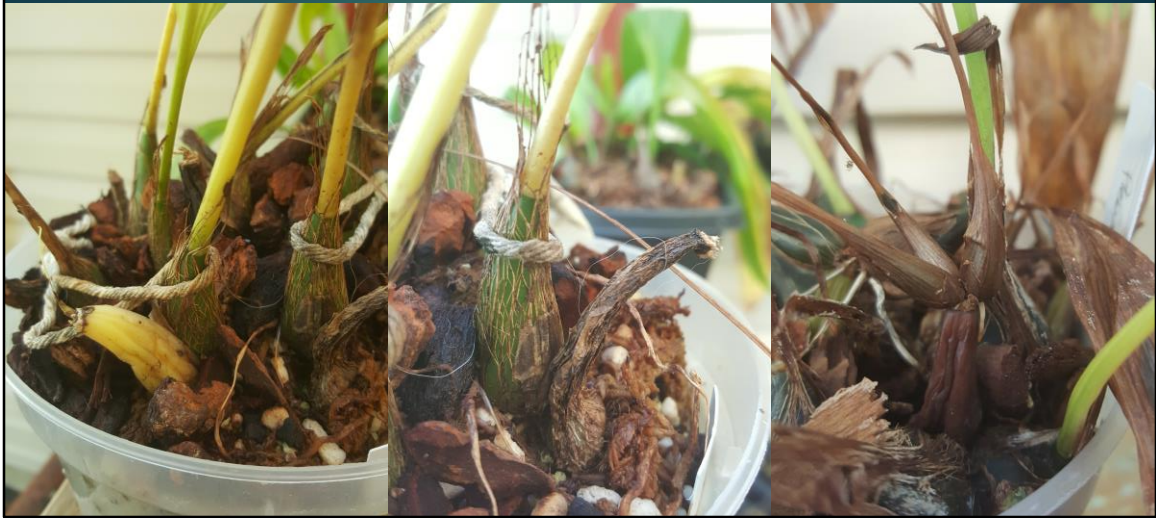
This is my grow space in October – All my other orchids have been brought in for awhile but the pleione remain outside to dry fully. As the leaves drop I go through and remove them. I also check for the bulbils that might have fallen off into the mix and separate them

- ▶ The drying process. Keep the media slightly moist until all the leaves have dropped. This helps reduce bulb shriveling while in storage



This is the drying process. I've found that it is important to keep the media slightly moist until all the leaves have dropped. This helps reduce bulb shriveling while in storage

- ▶ The old bulb is spent and will start to die, then fully turn brown
- ▶ The baby bulbils produced can sometimes fall off. I remove these early and collect them



Here you can see the old bulb is spent and will start to die, it is the yellow bulb in the first picture, then fully turn brown and dry in the second picture
The baby bulbils produced can sometimes fall off on their own or be blown away. I usually remove these early and collect them where they will be safe

- ▶ When preparing the bulbs for cold storage remove them from their old media
- ▶ Discard any dead bulbs as well as identify any pests to treat later



When preparing the bulbs for cold storage it is best to remove them entirely from their old media

Now is a good time to discard any dead bulbs as well as identify any pests like these mealy bugs and pills bugs

- ▶ Different varieties enter dormancy at different rates



Here you can see that different varieties enter dormancy at different rates. The top large pans are all one variety and have all entered dormancy and the bottom is a different one and still has all its leaves. As long as it remains frost free, it is safe to leave them all outside until they are fully dry and you are ready to pack them for storage

- ▶ Discard old bulbs
- ▶ Collect the small bulbils that fall into the mix
- ▶ Remove healthy bulbs



When preparing for cold storage, go through the entire pot and remove the spent bulbs and any lingering leaves

Keep a lookout for the small bulbils that often fall into the mix

Remove all healthy bulbs which can grow on top of each other so be thorough in your hunt

Bucket of Bulbs



New & Old Bulb



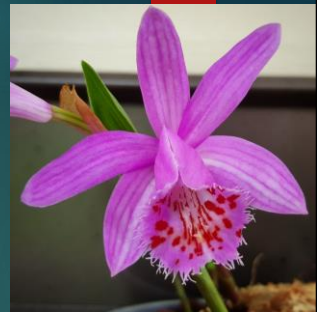
New Growth



Here is what I've collected so far. Most of the bulbs will have the next year's growth already. When packing and storing, be careful not to damage this growth or the bulb will have to put energy into making a new one and it will likely not produce a flower

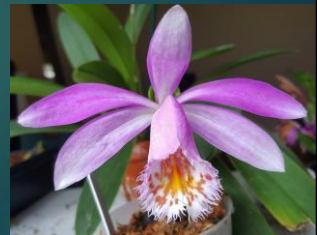
Pleione Growth Cycle – Winter

- ▶ Pleione are dormant
- ▶ Do not water
- ▶ Temp (~40F) for 3-4 months
 - ▶ Early dormancy or not enough time at cold temperatures will only produce leaves the next year
- ▶ Unheated garage/cellar or the fridge
 - ▶ I use the fridge because of constant temp
- ▶ Can be kept potted but I prefer to unpot, treat for pests, and store in a paper or plastic bag



Giacomo Leopardii

Britannia 'Doreen'



Moving into winter is when Pleione enter their dormant phase and they lose their leaves and roots

During this time they should not receive any water

For spring blooming, cold growing species, they should receive temperatures just above freezing (~40F) for at least 3-4 months in order to promote flowers

Early dormancy and/or not enough time at cold temperatures will only produce leaves the next year

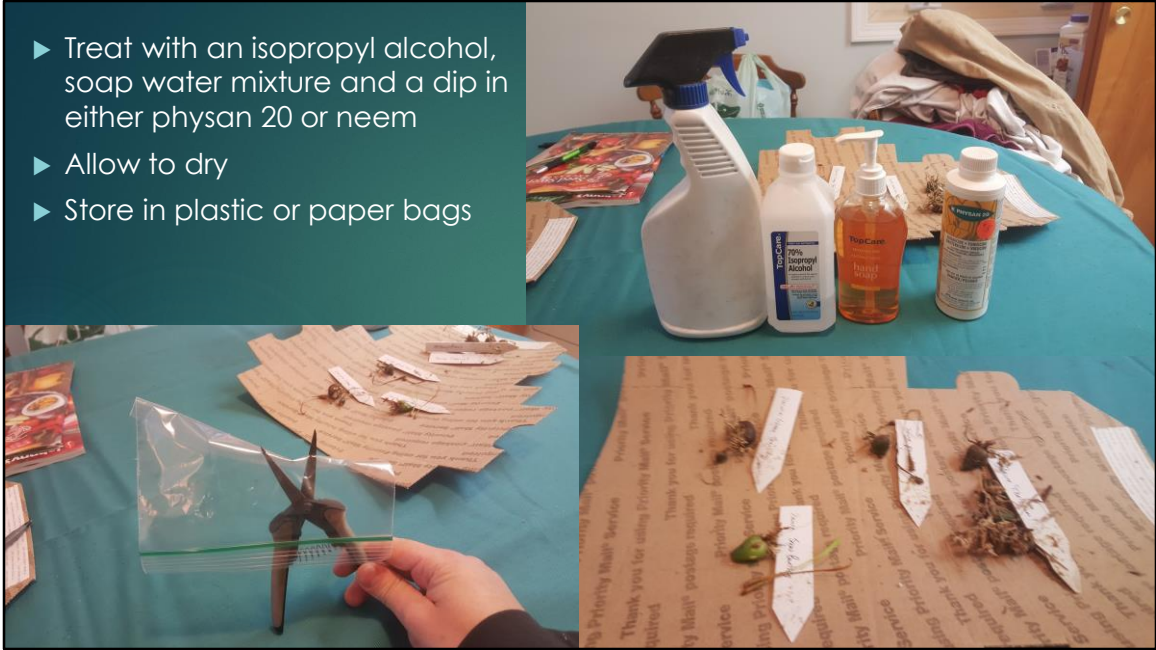
These temperatures can be achieved in an unheated garage/cellar or the fridge which is my preferred method

I use the fridge because it can be kept at a constant temperature with no threat of temperatures spikes becoming too cold or too hot

They can be kept potted but I prefer to unpot, treat for pests, and store in a paper or plastic bag

This greatly helps to conserve space but at the expense of the family freezer drawer

- ▶ Treat with an isopropyl alcohol, soap water mixture and a dip in either physan 20 or neem
- ▶ Allow to dry
- ▶ Store in plastic or paper bags



Before moving them into cold storage, I treat all bulbs with an isopropyl alcohol, soap water mixture and a dip in either physan 20 or neem oil

Allow them to completely dry before storing in plastic bags with holes or paper bags to allow some air movement. Many sources say to store in a bag or container that breathes to reduce fungus and rot. However, the preferred method of many in Europe is to store them in closed plastic containers. This is to help keep in moisture for more plump bulbs while paper bags may produce shriveled bulbs. I have done both and am now leaning towards the air tight storage method but both work.

- ▶ Pack each variety in their own bag
- ▶ The crisper drawer in the fridge is perfect for any 'hardy' orchids that need a winter cool down
 - ▶ Ex. Ponerorchis, calopogon, pogonia, hab. radiata



I then pack each variety in their own bag with a tag
The crisper drawer in the fridge is perfect for any 'hardy' orchids that need a winter cool down. As you can see I commandeered this entire drawer



I keep them in the outside fridge along with my potted cypripediums. They will stay here until March-April. I check on them several times and remove any that have started to rot. When there are signs of life in the spring, I then remove them and pot them up.

Exceptions

- ▶ Autumn blooming, warm growing pleione
 - ▶ Species: *maculata*, *praecox* and hybrid *x lagenaria*
 - ▶ Hybrids of the above species CAN have warm growing characteristics
- ▶ Warm growers ~50F, short dormant period and bloom from autumn through winter
- ▶ Exception to the exception...
 - ▶ *Pleione saxicola* is also an autumn bloomer but grow it cooler and moist because it grows new roots even in the dormant period



The exceptions to the cold storage culture are the autumn blooming, warm growing pleione

Species: *maculata*, *praecox* and their natural hybrid *x lagenaria*

Hybrids of the above species CAN have warm growing characteristics but may not

These warm growers cannot go below 50F, have an extremely short dormant period and will bloom from autumn through winter, often with leaves still green. For these warm growers, I keep them in their pot and put them in a dry spot on my grow table until they start their new growth in a few weeks. I only repot them when the media has gone stale.

Exception to the exception...

Pleione saxicola is also an autumn bloomer but there is a great debate about the care temperature. I grow it cooler but it needs to be kept fairly moist at all times because it grows new roots even in the dormant period, this has made it difficult to grow well



These are the fall bloomers. Maculata and praecox are species with their natural hybrid lagenaria are warm growers and Saxicola likes it cooler. I have the white maculata for sale

Problems & Issues

- ▶ Mealy Bugs and Aphids – treat with alcohol and neem
- ▶ Bud Blasting – most likely due to water on the bud
- ▶ Bud Drying – warming the bulb too quickly
- ▶ Low Flower Count – not long enough time in cold storage
- ▶ Bulb Shriveling – low humidity
- ▶ Pleione Virus Y – dispose of the infected bulb



Pleione, are prone to some problems or issues and the longer I grow them, the more I find

Just a few I've personally run into:

Mealy Bugs and Aphids can get into the folds of the leaves – treat with alcohol and neem

Bud Blasting – most likely due to water on the developing bud or temperature swings

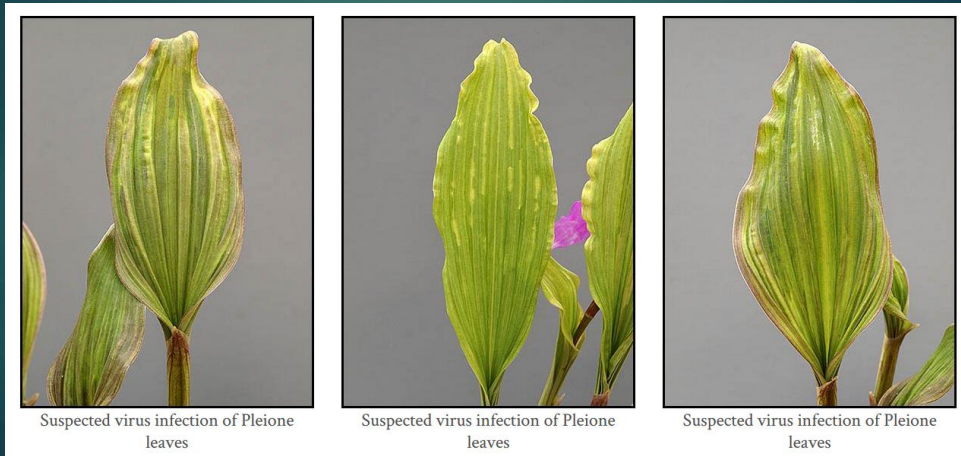
Bud Drying – warming the bulb too quickly out of storage as seen in this picture

Low Flower Count – not long enough time in cold storage

Bulb Shriveling – low humidity in storage or unpotting bulbs too early in the fall

Pleione Virus Y – dispose of or destroy the infected bulb

- ▶ Pleiones are susceptible to viruses. The main killer is known as *Pleione virus Y*
- ▶ There are no treatments available, throw infected bulbs away than risk spreading. Symptoms to look out for on the leaves include streaks and speckles or twisted and deformed.



Pleiones are susceptible to viruses, mainly by mites. There has not been much research on *Pleione* viruses, but one that has been identified is known as *Pleione virus Y*

There are no treatments available and it is better to throw infected bulbs away than risk spreading. Symptoms to look out for on the leaves include streaks and speckles and they may also be twisted and deformed. In recent years this virus has become almost rampant. Online communities, particularly in Europe, have talked about how they've had to destroy most if not all of their collection because of this virus. It travels from plant to plant via normal watering. Several large commercial growers over there have had many of their plants offered for sale found to be infected. So, it is important to purchase from a trusted source.

- ▶ Virus infection shows on the flowers as streaks and/or color breaks, malformed or misshapen.



Suspected virus infection of Pleione



Suspected virus infection of Pleione



Suspected virus infection of Pleione



Suspected virus infection of Pleione

Virus infection shows on the flowers as streaks and/or color breaks and again they also may be malformed or misshapen.

Resources

▶ Online

- ▶ www.pleione.info – The best place for online info
- ▶ Facebook Group (Pleione Cultivation, Sales and Trading)
- ▶ www.srgc.net/forum - Scottish Rock Garden Club

▶ Literature

- ▶ "The Genus Pleione" by Phillip Cribb & Ian Butterfield
- ▶ "A Synopsis of The Genus Pleione" by Phillip Cribb & Ian Butterfield - The Orchid Digest"
- ▶ "The Pleione Review" (including Hardy Orchids) – Magazine from 1988 to 2005



Here are some of resources I've used. The best place by far is pleione.info a website that has a very dedicated staff which has care info and updates each year with the new varieties awarded with photos.

Thank You!

Cuyahoga
Valley
Orchids



- ▶ It's been my pleasure collating all this info together to help shed light on this fascinating orchid that's only been lightly covered in literature and research
- ▶ Find me online:
 - ▶ Search: "Cuyahoga Valley Orchids"
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