GROWING GUIDELINES FOR POT USE

Start with Rancho Espinoza grown multi eyed tubers

1. Bulbs are pretreated with fungicides to ensure a quality performance.
2. Follow up with recommended drenches to prevent disease as detail in "Fungicides Recommendations".

Media

Coastal Callas prefer a well-draining media with a pH of 6.0-6.5. Having good air porosity in your media will allow even moisture. Well drained components include scoria, firbark, perlite, sand and pumice. Prevent using soils with "High water capacity" as the pots will remain too wet and lead to disease enhancement.

Planting

Plant with 1" to 1 ½" media over the tubers. Sprouts (eyes) facing up, and rounded side down. Roots from tubers develop from the top, planting them too shallow will stress the plant and will result in lower performance.

Selecting the right pot size for tuber size is important for favorable performance.

Pot Size	Tubers Per Pot by size	Equal Performance Substitution / Alternative
4"	10/12cm (1.5")	2 tubers @ 8/10cm (1")
5"	18/20cm (2.25")	2 tubers @ 8/10cm (1.25")
6"	20/24cm (2.5")	2 tubers @ 12/14cm (1.75") or 1 tuber @ 16/18cm (2")
7"	2.5"	3 tubers @ 10/12cm (1.5") or 2 tubers @ 16/18cm (2")
8"	24cm (3")	2 tubers @ 20/24cm (2.5") or 3 tubers @ 10/12cm (1.5")
Quarts	14/16cm (1.75")	2 tubers @ 8/10cm (1")
Gallon Cans	18/20cm (2.25")	2 tubers @ 10/12cm (1.5")

Growing Conditions

Model growing conditions involves good air circulation, highest possible light, and moderately high relative humidity.

When forcing Coastal Calla tubers there are 3 stages that need to be taken into consideration. Consistent temperatures schedule for each stage allows for maximum plant flower performance.

Recommended temperature are stage dependent:

Stage 1

Sprout/ Root Development (Weeks 1 thru 3 or 25 days after planting).

Root development will begin occurring about 10-22 days after planting, with 1-2.5" sprouts developing depending on the variety. During this stage a constant 68F is ideal across all varieties to initiate root and sprout development. Once sprouts have grown above the soil media about 1" thru 2" plant growth regulator is to be applied. We recommend Bonzi. Rates of Bonzi will vary depending on the variety.

Stage 2

Leaf Unfurling and Control (Weeks 4 thru 8).

Once the sprouts begin to develop and grow taller sprouts will begin to unfurl. Depending on the variety this can start occurring from day 22 thru day 45. It is very important to keep close attention on foliage growth as some varieties might require a second Bonzi application to reduce their growth and maintain compaction. Maintain temperature of 70-75 degrees Fahrenheit during the days and 55-60 degrees Fahrenheit during the night. Cooler nights assist in plants keeping compact.

Stage 3

Flower Development and Control

From day 46 thru day 70 depending on the variety and conditions is when you will begin to develop flower buds. Spacing your plants will allow for more light and higher bloom count. Maintaining 65 degrees Fahrenheit during the day, and minimum 50 Degrees Fahrenheit during the night. Cold nights below 50F will slow flower development and increase your bench time. In order to speed your blooming time you can increase your average daily temperatures, there are risks associated with increased temperatures you will develop soft tall plants. Air flow is very important during this stage as air flow helps prevent foliar and root diseases.

Water Management

Water Management is the most critical job when growing Coastal Callas. Preserving pots moist throughout the growing cycle is recipe to best water management practices. This requires attention to detail and constant monitoring. Adding too much water can lead to water mold diseases and keeping pots too dry can abort flower production and cause plant stress. When watering, ensure your pots are irrigated full and thorough. Good water quality at an EC below 1.5 is recommended to ensure good plant health. Checking your roots and soil media to examine water moisture levels is the best cultural practice to safeguarding your plant health, and preventing over watering & dry conditions.

Fertilization

Appropriate fertilization is critical for maximizing Coastal Calla growth potential. Avoid E.C. levels above 2.5 when fertilizing. We recommend growers use a constant feed of 20-10-20 balanced liquid feed which includes minors.

Timing & Rates

1st Stage of growth weeks 2-4 we recommend weekly applications of ***N to 100 ppm*** derived Scott's 20-10-20.

2nd Stage weeks 5-7 we recommend reducing ***N to 75-100 ppm***. Third Stage Leaching pots with clear water every third-irrigation is recommend preventing salt build up.

3rd Stage weeks 7-12 we recommend reducing ***N to 50 ppm*** as Coastal Callas don't benefit from high applications on N.

Plant Growth Control

The best plant growth regulator for calla pot production is Bonzi (paclobutrazol). Keeps plant uniformly control and compact. ***Notice Read the entire Bonzi Label Directions for Use and Conditions before applying.***

Attached is a link for official label:
http://www.syngentacropprotection.com/pdf/labels/SCP996AL3A1005.pdf

Application of Bonzi should take place when all plants have sprouts emerge above soil media and are about 0.5-2."tall. Pots must be uniformly moist before application for best results.

Each variety requires specific Bonzi (paclobutrazol) rate. Please refer to Variety cultural sheet for best recommended rate. Rates can vary from 8-15 PPM. Depending on your cultural environment conditions and goals your Bonzi applications can vary. Some varieties require multiple applications of Bonzi. Second and third applications should be applied with at least 7 days between applications. Plant Growth Regulator applications must be accurately measured. Below is a table to assist.

Bonzi Drench Volume Guidelines and Conversions

Drench Volume Table

Pot Diameter (inches)	Drench Volume (fl. oz./pot)
4"	4 oz.
6"	6 oz.
8"	10 oz.
10"	12 oz.

PPM Desided Concentration Table

PPM Bonzi Desired	Fl. Oz Per Gallon
5	0.16
6	0.19
7	0.22
8	0.25
9	0.29
10	0.32
11	0.35
12	0.39
13	0.42
14	0.448
15	0.48

Fungicide Preventive Treatments

Coastal Callas are susceptible to three soil borne pathogens. Phytium, Phytophthora, and Rhizoctonia. Once plants are infected with any of these three pathogens Erwinia bacteria will develop. During sprout development is when plants are most susceptible to disease. Conducive conditions for soil borne pathogens are overly wet and cold conditions. Water Management along with a three part preventive fungicide drench is recommended to safeguard plant health and maintain strong root development.

3-Part Fungicide Drench Mix.

Please read fungicide labels before application.

1. Subdue Maxx (mefenoxam) 1oz. /100 gal.
   http://www.syngentacropprotection.com/pdf/labels/SCP796BL2G0909.pdf
2. Heritage (azoxystrobin) 4 oz. /100 gal
   http://www.syngentaprofessionalproducts.com/pdf/labels/scp1093al1b0705n.pdf
3. Agrimycin-17 (streptomycin sulfate) 8-16 oz. /100gal.
   http://www.cdms.net/LDat/ld315002.pdf

Fungicide drench timing is crucial in order to maintain healthy root development.

1st 3-Part Fungicide Mix should take place once roots are developed to prevent phytium.

Leaf Spot Preventive Sprays

Two primary leaf spots in callas are fungal and bacterial leaf spot. Please read fungicide labels before application.

1. Bacterial leaf spot can be controlled with Champ II (copper hydroxide) 16 oz./100 gal.
   http://www.cdms.net/LDat/ld135012.pdf
2. Fungal leaf spot can be controlled with Daconil Weather stick (chlorothalonil). 22 oz. /100gal
   http://www.cdms.net/LDat/ld135012.pdf

Pest Management

Controlling Fungus Gnats and Shoreflies is necessary preventing bacteria spread. Aphids and Thrips must be controlled as they can cosmetically damage flower-leafs. They can also spread viruses to healthy tubers. It is very important to maintain a regularly scheduled, intergraded pest management program in place to ensure potted calla plants grow healthy. Inspecting crops weekly is recommended for Thrips, Aphids, Fungus Gnats, and Shore flies controlling these pests is advised. Various insecticides are commercially available to assist in the destruction of pests. Please consult with your local Pest Control Advisor to receive accurate rates and availability in your area as every state has different laws and regulations.

8 Important Measures to Ensuring Quality Healthy Coastal Calla Pots

1. Plant Coastal Calla Tubers from Rancho Espinoza Inc.

2. Select a Media that is well draining with a pH of 6.0-6.5.

3. Model Growing conditions with good air circulation, highest possible light, and temperature control during all 3 stages.

4. Checking your soil media to examine water moisture levels before irrigating. Preserving pots moist. Avoid overwatering as may lead to disease infections. Maintain water quality below 1.5 E.C.

5. Avoid E.C. of 2.5 when applying fertilizer. Apply a balanced feed of N 20-10-20 with minor's fertilizer throughout growing cycle.

6. Apply Bonzi PGR to keep plants uniform and compact.

7. Properly spacing plants to allow for light and air circulation will improve plant habit and flower color.

8. Controlling Thrips, Aphids, Shore Flies, and Fungus Gnats is required to develop strong Healthy Coastal Callas.