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Thanksgiving Cactus Production

by

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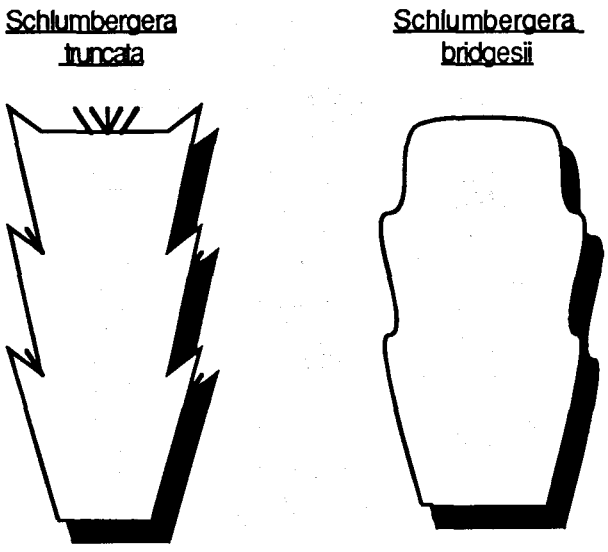
Introduction

Holiday cactus are produced for Thanksgiving, Christmas, and/or Easter sales. Schlumbergera truncata, the Thanksgiving cactus, is often produced for both Thanksgiving and Christmas seasons. Most plants sold as Christmas cacti are in fact Thanksgiving cacti. The less known Schlumbergera bridgesii, Christmas cactus, is sometimes grown for the Christmas season. Rhipsalidopsis is typically grown for flowering during the Easter season. You can tell the difference between the Thanksgiving and Christmas cactus by the appearance of the phylloclades. A phylloclade is a stem segment. The Thanksgiving cactus has toothed phylloclade margins whereas the Christmas cactus has rounded phylloclade margins (Figure 1). Easter cactus are distinguishable by an entire leaf margin. This article will concentrate on Schlumbergera truncata production.

The Thanksgiving cactus is an epiphytic cacti which is native to rain forests in the Organ mountains just north of Rio de Janeiro, Argentina, in South America. Day and night temperatures in the Organ mountains vary between 60 and 70°F. Photoperiod varies between 11 and 13.5 hours. Rainfall varies from 17 inches per month from December to March to 3 inches per month from June to September. Flowering occurs naturally between late November and early December. The Thanksgiving cactus originated in lower altitudes than its relative the Christmas cactus.

Figure 1.



Cultivars

A considerable amount of breeding has been conducted in Europe on the Thanksgiving cactus. The result is a wide selection of uniformly flowering cultivars of many colors. The more popular cultivars and their characteristics are shown in Table 1.

Propagation

Plants are propagated from stem cuttings which are often 1 phylloclade in length. Schlumbergera are short day plants. Therefore, propagation is conducted under long day conditions (> 12 hour photoperiod) to maintain plants in a vegetative state. Care should be taken that cuttings are from mature stem segments.

Plants should be rooted with a media temperature of 70°F. Propagation media should be composed of sterile peat, perlite, and vermiculite. It is very important that the media has good drainage characteristics. Cuttings can be 'direct stuck' to reduce labor if facilities are available.

Propagation should begin in December of the previous year for 4 inch production and by March for 3.5 inch production. Long days are delivered during this period by exposing plants to night interruption lighting using incandescent lamps from 2200-0200 hours. Night interruption lighting should be delivered at an intensity of 10 footcandles at phylloclade level.

Table 1. Common commercial cultivars of Thanksgiving cacti and flower color of each cultivar.

Cultivar	Color
Christmas Charm	purple
Christmas Cheer	orange-red
Christmas Magic	purple
Gold Charm	yellow
Lavender Doll	lavender
Kris Kringle	red
Madisto	pink-purple
Majestic	royal purple
Maria	red
Peach Parfait	peach
Red Beauty	red
Red Radiance	red
Sabrina	dark purple
Snowfire	white
Sonja	light lavender
Twilight Tangerine	orange
White Christmas	white

Phylloclades from the previous seasons 'leveling' (see flower initiation section) procedure can be used for propagation. If phylloclades are saved from the leveling process, store them in the dark at 40-44°F. Phylloclades can be stored up to 6 weeks when segments are stored at 50-55°F under high humidity conditions.

Fertilization during the propagation phase is not necessary.

Vegetative Production Phase

The vegetative phase of development occurs from the propagation phase (March) to flower induction (late September). Plant 3 to 4 rooted phylloclades per pot. Plants should be pinched back to a single segment when potted to stimulate branching.

Plant rooted cuttings in a soilless medium with good drainage. Most commercial potting media are acceptable. However, the media should be at least 40% perlite and/or vermiculite. Media pH should be maintained in between 5.5 and 6.5.

Drench all plants with a fungicide to control Pythium and Rhizoctonia. Fungicide control for Phytophthora and Fusarium is also desirable (see control materials in the pathogen section).

Pinch plants again to 2-3 segments in June to encourage branching. Application of 100 ppm of benzyladenine after pinching plants can increase branching.

Branching is greatest when temperatures are maintained at or near 68°F. If day and/or night temperature deviate from 68°F, branch number is reduced.

Flower Initiation

At cooler temperatures (between 50 and 59°F) the Thanksgiving cactus will flower under any photoperiod length. At higher temperatures (above 59°F) the Thanksgiving cactus is a short day plant, i.e. flowering will occur when the day is shorter than the night. The optimal temperature for flower initiation is between 65 and 68°F. At this temperature flower initiation in most cultivars will occur if the day is 11 hours or less in length, and flower number is greatest.

In general, as temperature increases, the daylength necessary for flower initiation decreases to 9 hours. Flowering will not occur when day and night temperature exceed 74°F or drop below 50°F.

Flower initiation will only occur if 4 or more phylloclades are present on a plant. Phylloclades 1/2" and shorter in length will not flower. For this reason immature phylloclades are often removed prior to placing plants under short days. Phylloclades are also removed by many growers to make a crop more uniform and give plants a more upright architecture. This process is referred to as 'leveling'.

In the leveling process, phylloclades should be removed by twisting stem segments off. Ripping, cutting, or tearing phylloclades may damage the primordia from which the flowers will arise.

It is important to realize that cool temperature and/or drying out

procedures which were believed to hasten flower initiation are not effective.

Flower Number

Flower number is greatest when day and night temperatures are maintained at or near 68°F. As day and/or night temperature deviate from 68°F, flower number decreases (Table 2).

Any stress to plants will reduce flower number. Water stress, low light, nutrient deficiencies, non-optimal temperatures, and/or toxicities can all result in reduced flower numbers. Pathogen or insect infestations can also decrease flower number.

Flower number can be increased by applying 100 ppm of benzyladenine 2 weeks after the start of short days. Benzyladenine is available in the technical chemical grade or dissolved in solution. The commercial mix is also available which contains gibberellic acid.

Table 2. The effect of day and night temperature on Thanksgiving cactus cv 'Madisto' flower number.

Night Temp. (°F)	Day Temperature (°F) 50	59	68	76	86
	Flowers per pot				
50	0.6	0.0	3.4	2.4	0.0
59	6.0	8.0	11.0	13.2	-
68	10.4	11.8	13.4	11.0	-
76	8.8	8.8	7.6	1.4	-
86	0.0	-	-	-	0.0

Flower Development

Flower development is most rapid at warmer temperatures. The rate of flower development increases as temperature increases from 50 to approximately 90°F (Table 3).

Insects

Fungus gnats are the most frequent pest in Thanksgiving cactus production. There are a number of compounds registered for fungus gnat control on Thanksgiving cactus.

Table 3. The effect of day and night temperature on Thanksgiving cactus cv 'Madisto' time from flower induction to anthesis (full flower).

Night Temp. (°F)	Day Temperature (°F) 50	59	68	76	86
50	99	94	94	80	*
59	95	80	65	59	-
68	62	57	52	53	-
76	54	51	51	*	-
86	*	-	-	-	*

* no flowering occurred
\- no treatment

Do not apply 'Diazinon' to Thanksgiving cactus as severe stunting of new growth can occur.

Thanksgiving cactus can also be infested by nematodes. The most common nematode infestation is Heterodera cacti. Heavily infested plants have reddish colored stem tops. The spread of nematodes is facilitated by subirrigation systems. Nematodes move

freely among pots with subirrigation systems. No compounds are registered for nematode control on Thanksgiving cacti.

Pathogens

Thanksgiving cacti are susceptible to infestation by a number of pathogens which can cause stem and/or root rot. Both Phytophthora parasitica and Pythium aphanidermatum cause basal stem and root rot. Fusarium, Rhizoctonia, and Erwinia can also cause stem and root rot.

Phytophthora infected stems appear wilted and a dull grey/green color. Necrotic water-soaked spots with faded red borders may be visible on phylloclades at the soil surface. Phylloclade abscission is also common.

In contrast to Phytophthora infestation, Pythium infestation does not result in phylloclade abscission. Other symptoms of Pythium infestation are similar to those seen with Phytophthora, however, necrotic spots on the phylloclades lack the faded reddish border.

Materials registered for pathogen control on Thanksgiving cactus are shown in Table 4. All of the diseases listed can be controlled by using a sterilized media, not overwatering, limiting splashing between plants, and applying fungicides on a regular basis.

Table 4. Pathogens and registered fungicides available for application on Thanksgiving cacti.

Pathogen	Material
Erwinia	-
Fusarium	Benelate Banrot
Phytophthora	Banrot Truban
Pythium	Banrot Truban
Rhizoctonia	Benelate Banrot

Postharvest

Postharvest life of thanksgiving cacti can be extended by applying silver thiosulfate (STS). A spray application of 200 ppm silver thiosulfate when flower buds are visible will help retain buds after marketing. Plants are marketed when buds show color. Shipping results in less bud loss when plants exhibit an upright architecture. An upright architecture can be achieved by leveling plants at the initiation of short days.

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