

Liner Size: 72-Cell and 32-Cell

Availability: Weeks 5-15 for 72-Cell | Weeks 35-40 for 32-Cell

Hardiness Zone: 5-8

Growing Temps: 40-50°F in fall for flower initiation, 32-40°F through winter

Exposure: Part Sun-Shade

Average Finishing Time: 40-52 Weeks using 72-Cell and 18-26 Weeks using 32-Cell for 1 gallon



FROSTKISS® HELLEBORE

LATER TO BLOOM

Frostkiss® are not early Hellebore like many niger types on the market. In general, these varieties start to bloom late January and will hold until April or later depending on the temperature. The colder the better for holding the flowers.

HEAT TOLERANT

Hellebores and heat are two words that generally do not go well together. Frostkiss® are successfully grown in very warm climates by following the growing tips in this solution starter.

GUARANTEED UNIFORMITY

Because our liners are born from tissue culture rather than seed, crops will be very uniform and easily row run. Another benefit to tissue culture is that crops will bloom in under one year (crops from seed can take two to three)!

TWO SIZES & PLANTING SEASONS TO FIT YOUR NEEDS

Want to save some money? Start your crops in the spring using our 72 cell liners. Don't want to over-summer your Hellebore crop? Start crops in the fall using our deep 32 cell to quickly fill pots for early spring sales.

TECHNICAL SUPPORT

Hellebores are not new to the US market but there is still a bit of mystery to growing a good crop. PP&L has teamed with the breeders of Frostkiss® to provide unparalleled growing support. If you need help or have questions, shoot us a line!

SOLUTION STARTER

PROGRAM SPOTLIGHT

Trade Name: Hellebore Frostkiss® | Scientific Name: Helleborus x hybridus

Liner Specs: 72-Cell Growcoon and 32-Cell Deep

VARIETIES



ANNA'S RED | USPP# 24,720



LI'S BLUSH® | USPP# 27,120



DANA'S DULCET® | USPP# 27,970



DOROTHY'S DAWN® | USPP# 28,010



GLENDA'S GLOSS® | USPP# 28,008



ILLUMI LIME™ | PPAF



MOLLY'S WHITE | USPP# 25,685



MOONDANCE® | USPP# 27,969



PENNY'S PINK | USPP# 24,149



PIPPA'S PURPLE® | USPP# 27,121



CHERYL'S SHINE® | USPP# 28,009



SALLY'S SHELL® | USPP# 28,038

EXPOSURE

Hellebores like cool roots at all times and grow best with sun protection. It is very important to prevent the sun from shining directly on the pots at any time. Therefore, leave as little space between pots as possible and make sure the leaves cover the pots, creating shade on the pot. In the summer months when temperatures are warmer, take further precaution by using 30-35% shade cloth. If overwintering under plastic, be sure to use a white poly vs. clear poly. This will help keep plants from burning on sunny days.

I TEMPERATURE

In the fall, the perfect temperature for growing Hellebores is between 40-50°F, this range triggers the flowers to initiate. Depending on the climate, this will occur between September and December. In winter, keep Hellebores inside a frost-free greenhouse with temperatures ranging between 32-40°F. When there is no frost, the plants will flower by their natural genetics. If there is frost, it will postpone the flowering time. In the summer months, it is important to shade at 30-35% when temperatures rise above 80°F.

SOLUTION STARTER

PROGRAM SPOTLIGHT

Trade Name: Hellebore Frostkiss® | Scientific Name: Helleborus x hybridus

Liner Specs: 72-Cell Growcoon and 32-Cell Deep

PROGRAM AT A GLANCE

Variety	Habit	Flower Color	Flowering Time December till March	
ANNA'S RED	Tall, less branching	Burgundy Red		
BAYLI'S BLUSH®	Medium	Two-Toned Violet Blush with Creamy White	January till April	
CHERYL'S SHINE®	Vigorous	Light Pink	January till April	
DANA'S DULCET®	Compact	Two-Toned Smokey Pink with Greenish White	February till April	
DOROTHY'S DAWN®	Vigorous	Light Pink	February till April	
GLENDA'S GLOSS®	Tall, less branching	White with Magenta-Purple Edging	December till March	
ILLUMI LIME™	Medium	Chartreuse-Lime Green	January till April	
MOLLY'S WHITE	Vigorous	White Fading Into Green	January till April	
MOONDANCE®	Vigorous	White Fading Into Green	January till April	
PENNY'S PINK	Medium	Mauve Pink	January till April	
PIPPA'S PURPLE®	Medium	Smokey Pink with Burgundy Flecking	January till April	
SALLY'S SHELL®	Vigorous	Medium Pink with Soft Shell Pink Center	January till April	

^{*}Growers should use the information presented here as a guideline only. Flower times might vary due to winter temperatures.

Colder growing temperatures will lead to later flowering.

GROWER TIPS

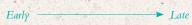
- Hellebores are fast growing in spring and fall, these are the recommended seasons to plant in. Hellebores grow very slow in the summer months, therefore, it is not recommended to pot liners during the warm months of summer.
- Hellebores need a very well drained, coarse soil with lots of aeration. pH should be at 5.5. A peat-based soil with decomposed bark works best.
- Plants should be shaded at 30-35% in the summer months to prevent overheating and/or burning of foliage.

- Hellebores do not like to be watered during the hottest part of the day, so water them in the early morning or late evening.
- Opposite of many plants, Hellebores need more fertilizer in the fall to help to initiate flowers.
- Always keep a Hellebore actively growing, even in the summer months. If they stop growing because of low fertilizer, it can set back the growth by 2–3 months.
- Flower initiation occurs with shortening of days in the fall and lowering of temperatures, at around 40–50°F.

- Keep frost-free during the winter in a cold greenhouse, 32=45°F, to prevent flower delay.
- To delay flowering, keep crop very cold, just below freezing.
 This can delay flowering by one month or more.

BLOOM CHART

		Mid December	Early January	Mid January	Early February	Mid February	Early March	Mid March	Early April	Mid April
	ANNÀ'S RED									
	GLENDA'S GLOSS®									
	CHERYL'S SHINE®									
	MOLLY'S White									
*	MOONDANCE®	d. o								
	SALLY'S SHELL®									
	BAYLI'S Blush®									
	ILLUMI LIME™									
	PENNY'S PINK									à S
	PIPPA'S PURPLE®									
	DANA'S DULCET®									
	DOROTHY'S Dawn®	5								





FERTILIZATION & IRRIGATION GUIDELINES

The most important thing with Hellebores is to keep them growing during the year. Never stop fertilizing for any reason. Hellebores need a steady feed throughout the growing cycle with an EC of 1.2–1.5, measured directly in the soil. If using a pour through method, EC should be at 1.0. A slow release 8–9 month fertilizer is recommended when spring planted. In the fall, Hellebores start initiating flowers so they need extra Nitrogen (N) and Iron (FE) during this time. This can be supplied using a liquid drench, keeping EC levels at 1.2–1.5. Suggested fertilizer for liquid feed is 27–15–12 as it will keep pH low and has a good potassium and phosphorus balance.

Macro-elements	PPM	MMOL	Micro-elements	PPB	UMOL/L
NH4	<1.9	<0.1	Fe	558	10
K	47	1.2	Mn	110	2.0
Na	<58	<2.5	Zn	131	2
Ca	40	1.0	В	108	10
Mg	7.3	0.3	Cu	44	0.7
NO3	155	2.5	Мо	<9.6	<0.1
Cl	<89	<2.5			
S	58	0.6			
HCO3	<6.2	<0.1			
P *	15	0.5			
K/Ca	1:2	1:2			

^{**}Keep in mind; these are not fixed numbers, just guidelines.

The method of watering is very important for Hellebores to avoid stress. Drip irrigation works best but overhead irrigation with feed is also possible. With overhead irrigation, try to avoid watering during the hottest hours of the day because the leaf temperature is high and the water temperature much cooler. Leaf temperatures can go up to 105°F while in most cases the water temperature is around 75°F. This difference creates a temperature shock and causes stress. Stress will weaken plants and make them vulnerable to root problems such as Pythium, Rhizoctonia and Phytophthora. When watering using overhead irrigation on warm days, irrigate only in the early morning or late evening.



TECHNICAL GROWING INFORMATION

MEDIA	Use a well-drained soil made with mostly white peat, Canadian or Baltic, and not more 20% quality black peat. Black peat will shrink throughout the growing cycle causing poor drainage. Contrary to many crops, Hellebores need a lower soil pH at 5.5, never go above 6.0.				
VERNALIZATION	Hellebores need to be grown cool in the winter for proper flower development. A temperature range of 32-45°F is suggested.				
	to get the grow v actively grow v of the crop and for growers wa	are spring or fall planted, it is advisable to pot as each th needed to fill the pot. This is particularly true is when the temperatures are cooler. A delay in plantiful decrease the flower bud count. For growers not wonting to avoid over-summering a Hellebore, fall place crop time in half. The chart below gives recommon times.	n the spring as Hellebore only ng can stunt the overall finish size wanting such a long crop time or lanting is highly recommended		
PLANTING	LINER SIZE	PLANTING DATES	CROP TIME 2.5 QT-1 GALLON		
	72 Cell	Weeks 5-15 (Once chance of frost has passed)	40-52 weeks		
	32 Cell	Weeks 35-40 (Once temps start to cool)	18-26 weeks		
SPACING	can tight. The l they need less s keeping plants roots will allow	ies are bred with efficiency in mind, so most of the Frostkiss varieties do not have a heavy rosette habit space and will not stretch when grown can tight. I close together causes the foliage to shade the pot or plants to grow much bigger and create more flowlower in the spring they can be spaced (12 gallon pp.	it, but grow upright; therefore, Hellebores enjoy cool roots so and prevent root burn. Cool wers by time of sale. Once		
PINCHING	removing leave	uld never be pinched. Every leaf on a Hellebore less will decrease flower count and overall finished of the removed at time of shipping.			
HEIGHT CONTROL	PGRs are not required and are not recommended.				
DISEASE	Hellebores are tough plants and rarely get diseases. The main disease issue seen is Botrytis in the flowers. Prevent this by keeping plants dry and in an area with good air flow.				
INSECT	Watch for aphids and spider mites.				
POST PRODUCTION/	It is important to remember that Frostkiss Hellebores can flower up to 2.5 months. For this reason, crops do not need to be shipped to garden centers all at once. At the garden center, keep plants in a shaded location away from direct sun and in cool temperatures to prevent flower fade and water as needed.				

