Culture Guide

DarwinPerennials®

Brunnera macrophylla Permafrost

Brunnera macrophylla

Culture (revised 02/27/26)

Large leaves with strong venation for shaded areas.

- Brighten up your shade display with this large-leaf plant with strong veins.
- Displays bright blue flowers in Spring.
- Produces less Summer browning compared to the competition.
- Ideal for the landscape.

General Information

Exposure	Bloom Season	Height	Spread	Spacing
Shade	Spring	12 - 15 in. (30 - 38cm)	18 - 21 in. (46 - 53cm)	20 - 23 in. (51 - 58 cm)

Propagation Information

Media EC/pH	Soil Temperature	Rooting Hormone	Mist	Fertilization	Pinching	Transplanting
EC 0.75-0.80 mmhos/pH 5.8-6.2	68-72°F (21-22° C)	None	Low mist or tenting	Balanced fertilizer 75-100 ppm	None	7-8 weeks

Propagation Comments

This is a tissue culture raised item. Please see our detailed tissue culture propagation guide at darwinperennials.com. This item is generally a summer propagated item. Excessive heat can cause losses.

Finishing Information

Media pH	Temperature	Light Levels (fc)	Vernalization	Daylength	Watering	Fertilization	Pinching After Transplant	Plant Growth Regulators	Pests and Fungal Diseases
5.8-6.2	Nights: 50 to 55° F (10 to 13°C) Days: 60 to 65°F (16 to 18°C)	1,500 to 2,500	Yes, required for flowering; however, plants sell as foliage.	Day length neutral	Allow media to dry slightly between watering.	Use a balanced fertilizer at a rate of 100 to 125 ppm.	None	PGRs generally not needed	Pythium and rhizoctonia can result from overwatering.

Crop Scheduling

1–qt. (10–cm) pot, 1 plant per pot	1–gal. (15–cm) pot, 1 plant per pot	2 to 3–gal. (25 to 30–cm) pot, 3 plants per pot	Bloom Months
Not recommended	10-12 wks	12-14 wks	April to May

NOTE: Growers should use the information presented here as guidelines only. Darwin Perennials recommends that growers conduct a trial of products under their own conditions. Crop times will vary depending on the climate, location, time of year, and greenhouse environmental conditions. It is the responsibility of the grower to read and follow all the current label directions relating to the products. Nothing herein shall be deemed a warranty or guaranty by Darwin Perennials of any products listed herein. Darwin Perennials terms and conditions of sale shall apply to all products listed herein.

Variety Pictures


Permafrost


Permafrost

Darwin Perennials Essential Culture Guide

Upon Receipt

Unrooted perennials should be stuck as quickly as possible. Tender cuttings such as Artemisia, Agastache, Lavandula, Perovskia and Salvia should be immediate priority. Cuttings that cannot be stuck immediately should be maintained in a cooler at 40 to 45°F (4 to 7°C). Refer to the Propagation Guide for crop–specific suggestions. Generally speaking, herbaceous perennials benefit from a basal stem dip of IBA rooting hormone to speed up the rooting process. Be careful with misting levels. Perennials suffer from receiving too much mist more often than from too little mist.

Rooted perennials should be unpacked and inspected for active root growth. It is often preferable to place recently received perennial liners on a bench or the ground for a few days to help them overcome transport stress. This is particularly important for liners that have been shipped in boxes. Water on arrival and look for new root activity prior to transplant if possible.

At Transplant

Well–rooted and toned perennial liners are able to withstand transplant stress very well. Critical to success, provide newly transplanted perennials with immediate irrigation. Watering at the end of the transplant line rather than after you've filled a bed greatly improves uniformity of new root establishment. In any case, do not allow media surface to dry after transplant for the first several days until new roots are extending into the media. Perennials do not like to be planted too deep. Generally speaking, perennial liners should be planted level with the soil surface.

Use a well–drained media containing properly composted bark. These types of perennial soil media are readily available. It is important that the media incorporates a surfactant to help ensure proper wetting and re– wetting of the media. The media should be stabilized to a pH of 5.8 to 6.2 and an EC of 1 to 1.2 using Saturated Media Extract (SME) method.

Fertilization

Perennials can be fed using liquid fertilizers on a periodic or constant feed basis. Liquid fertilizer rates can be found in the Perennial Finishing Guide. Use a balanced formula that complements the pH and alkalinity of your irrigation water. Liquid fertilizing offers advantages of greater flexibility and control over fertility levels but can be difficult to administer economically when overhead irrigation is used. In the case of overhead irrigation, controlled release fertilizers (CRF) are preferable. Incorporate CRF into the media prior to planting based on manufacturer's recommendations or top–dress after planting.

Spacing

Spring–planted perennials should be spaced to finished spacing after transplant. This allows better growing conditions and helps to avoid overcrowding and stretch. The added airflow will help reduce foliar diseases and allow for better insect control.

Fall–planted perennials can be spaced at transplant in temperate climates or placed pot–tight in climates where temperatures cause containers to freeze. In either case, proper spacing for the anticipated finished size of the plant will dramatically improve plant quality and reduce labor.

Insects and Diseases

Incoming perennial liners or cuttings should be inspected for pests and diseases. Apply appropriate treatments as needed.

After transplant, regular scouting and careful observation is critical to maintaining a healthy crop. The practice of integrated pest management (IPM) will reduce losses and pesticide costs by identifying and correcting problems before they escalate. If a pesticide treatment is necessary, please refer to the manufacturer's label regarding proper usage. It is always a good practice to test new varieties for phytotoxicity when making pesticide applications.

Vernalization and Bulking

A number of perennial species require a period of cold temperature exposure to flower. The length of time varies from just a few weeks below 50°F (10°C) to as much as 10 weeks below 40°F (4°C). Generally speaking, early Spring–flowering perennials like Phlox subulata, Iberis and Alyssum require a cold period to flower. Many perennials such as Salvia nemorosa, Monarda and Phlox paniculata do not require vernalization to flower but do benefit from a cold, short day bulking period. In these cases, Summer or Fall planting increases root and crown mass and the corresponding flowering shoots on the plants. It has also been shown to hasten flowering in many species by up to four weeks.

Overwintering

The keys to success when overwintering perennials are:

- Avoid standing water
- Provide adequate air circulation
- Preventative disease treatments
- Dead leaf/tissue removal
- Rodent control
- Low media EC when entering dormancy
- Avoid freeze and thaw cycles

The overwintering area, whether in a field or hoop–house, should be sloped so that rain or other water sources cannot accumulate. In climates where Winter conditions freeze and thaw, cover prior to freeze and uncover as soon as possible. Where temperatures remain below freezing, cover after first freeze and maintain the cover until late Winter or early Spring when weather moderates. Remove dead and abscising leaves from herbaceous perennials like Hosta, Monarda, Heliopsis and dormant Hemerocallis. Apply a broad spectrum fungicide prior to covering or closing hoop houses to reduce disease pressure.

Once weather conditions moderate, be sure to scout for insect and disease problems and respond accordingly. Also, check pH and EC levels in the media. Perennials that emerge from dormancy will begin to grow rapidly, and the lack of adequate nutrition will lead to reduced branching, lower leaf loss and smaller flowers.

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