

## Hydrangea Double Delights

(*Hydrangea macrophylla*)

### Propagation

Not Applicable.

### Growing On to Finish

#### Media

Use a well-drained, disease-free, soil-less medium with a medium initial nutrient charge and a pH appropriate for the color desired. For flowers to be pink pH of 6.0-6.5. For flowers to be blue pH 4.0-5.0. The adjustment of soil pH, the addition of Aluminum into the media as well as numerous other factors all can contribute to having beautiful blue flowers for Spring sales. But, factors that professional nurserymen are in control of are the predominant responsibility of the grower.

#### Flowers

We cannot guarantee that the plants will bloom in the spring. It is the growers' responsibility to be attentive to their crop maintenance and management. Many factors, in your control, contribute to finishing and shipping a high quality product.

#### Blue Flowers

The liners offered for sales are not guaranteed to have blue flowers. It is the growers responsibility to manage the factors. As the liners roots expand into the new soil media, the plants absorb the nutrients available to them in the media. Growing location, soils, pH, weather, fertilizers, water and other factors beyond our control will contribute to the overall performance of the plant.

We recommend the following treatments to have blue flowers in the spring:

- In fall the pH should be between 4.3 to 4.4. One or more applications of Aluminum sulfate will be needed during the growing in August into the fall dormancy.
- In spring pH start at 5.5 and reduce to 4.4. Phosphorus levels should remain low in spring. pH MUST be below 4.5 for blue flowers.
- Treat with Aluminum sulphate 2 to 3 times in the Spring. With the first 4 weeks of foliage flush in the spring, you must treat with Aluminum sulfate. Subsequent applications need to be applied with a confirmation of pH levels.
- Do NOT fertigate – this will flush the Aluminum sulphate out of the soil media.
- Treat with aluminum sulfate drenches during the last 6-8 weeks before sale to aid in color change.

1/2 ounce per gallon 3-4 lbs/ 100 gallon) every 10-14 days applied to moist soil is best. Withhold phosphorous, increase potassium and reduce nitrogen for clearest blue color.

- Maintain medium electrical conductivity around 1.0 mmhos/cm (using 1:2 extraction).

#### Aluminum Sulphate Rates

8% liquid solution – follow recommended rates according to the package directions.

#### Temperature

##### Average Daily Growing Temperature

Night: 55-60°F (13-16°C) minimum

Day: 65°F (18°C) or greater

Temperatures above 85°F will slow growth rate. USDA Hardiness Zones 5 to 9.

#### Light

55% shade recommended in late Spring and Summer for compact habit from late Spring until Fall. Full sun from late Fall until Spring.

#### Irrigation

Uniform media water levels for optimum growth. Do not permit full drying of media. Follow recommendations listed elsewhere in this document.

#### Fertilizer

You must use a 9-month slow release, high quality fertilizer. Fertigation will flush the Aluminum sulphate out of the media and turn the flowers pink. Aluminum sulphate with an 8% liquid application works best to have blue flowers.

#### Spacing

Can be grown pot tight at initial potting. Spacing needed for Spring crop

#### Crop Scheduling

This crop will follow a similar production schedule as other *Hydrangea macrophylla* cultivars. Crop schedules listed below are general guidelines. Many factors can contribute to faster or slower growth rates. Please keep this in mind when developing your production schedule.

## Liner to #1 nursery container

**Summer potting:** #1 nursery container will finish in 6 to 7 months (July/August/September potting saleable in Late April to Late May/early June)

Flower production can be significantly impacted if you prune incorrectly or grow too long in a greenhouse.

## Container Size

**#2 pot:** 1 liner per pot

**#3 pot:** 1 liner per pot; or shift #1 container

## Common Problems

**Insects:** Aphids, Snails, slugs, Spider mites, Whitefly

**Diseases:** Botrytis, Mildew, Phytophthora, Rhizoctonia, Pythium

Greenhouse pests and diseases differ from location to location. Consult with your County Cooperative Extension Service Center regarding effective, labeled prevention and control procedures. Listed below are the major problems of hydrangeas. Problems most likely to be encountered are indicated by the "+":

### Insects

- + Aphids (*Aphis gossypii*, *Myzus circumflexus*, *M. persicae*)
- Four-lined plant bug (*Poecilocapsis lineatus*)
- Leaf-tiers (*Exartema ferriferanum*, *Udea rubigalis*)
- Rose-chafer (*Macrodactylus subspinosus*)
- Scale (*Lepidosaphes ulmi*, *Pulvinaria* spp.)
- Tarnished plant bug (*Lygus lineolaris*)
- Thrips (*Hercinothrips femoralis*)
- +Whiteflies (*Bemisia tabaci*, *Trialeurodes vaporariorum*)

### Mites

- + Two-spotted mite or Red spider mite (*Tetranychus urticae*)

### Other Pests

- Slugs (*Deroceras reficulatum*, *Limax* spp.)
- Snails (*Helix* spp.)

### Bacteria

- Bacterial wilt (*Pseudomonas solanacearum*)

### Fungi

- Blister rust (*Pucciniastrum hydrangeae*)
- + Bud rot (*Botrytis cinerea*)

- + Gray mold (*Botrytis cinerea*)
- + Inflorescence blight (*Botrytis cinerea*)
- Leaf spots (*Ascochyta hydrangeae*, *Cercospora arborescentis*, *Corynespora cassicola*, *Phyllosticta hydrangeae*, *Septoria hydrangeae*)
- + Powdery mildew (*Erysiphe polygoni*)
- Root rot (*Armillaria* spp., *Polyporus* spp., *Rhizoctonia* spp., *Sclerotium* spp.)
- Stem rot (*Polyporus* spp., *Rhizoctonia* spp., *Sclerotium* spp.)

## Mycoplasma-Like Organisms (MLO)

- + Hydrangea virescence

## Nematodes

- Leaf nematodes (*Aphelenchoides* spp.)
- Lesion nematodes (*Pratylenchus* spp.)
- Root-knot nematodes (*Meloidogyne incognita*, *M. hapla*)
- Stem nematodes (*Ditylenchus dipsaci*)

## Viruses

- Alfalfa mosaic virus
- Cucumber mosaic virus
- Hydrangea mosaic virus
- + Hydrangea ring-spot virus
- Tobacco rattle virus
- Tobacco ring-spot virus
- Tobacco necrosis virus
- Tomato ring-spot virus
- + Tomato spotted-wilt virus

### Problem: Uneven growth

**Causes:** Overcrowding, space plants 3-4 weeks after potting

### Problem: Leaf drop

**Causes:** Root damage (too high Aluminum sulfate); Overcrowding (Space); Excessive/wrong chemical application

### Problem: Stunted growth

**Causes:** Excessive night temp while forcing (optimum is 58-60°F); Excessive growth regulator

### Problem: Leaf or bract burn

**Causes:** Lack of water; High light; Excessive boron, deficient in Potassium



**Problem:** Crinkled leaves; Discolored/deformed leaves or flowers; Holes, chewing on leaves

**Causes:** Aphids; Mites; Snails or slugs

**Problem:** Chlorosis

**Causes:** Lack of iron; pH 6.5

**Problem:** Poor Rooting

**Causes:** pH too high 6.5; Root ball too dry; Excessive lime in soil; Root ball not scored before potting

**Problem:** Poor bract color – Pink

**Causes:** pH too low (5.5-6.2 optimum), high aluminum; Low phosphate; PGR applied too late – last 2-3 weeks of summer; Night temps too high during last 2-3 weeks of season (optimum 60°F); High light intensity

**Problem:** Poor bract color ↗ Blue

**Causes:** pH too basic (4.0-5.0 optimal); Low aluminum, high phosphate; Too high light intensity

**NOTE:** Growers should use the information presented here as a starting point. Crop times will vary depending on the climate, location, time of year and greenhouse environmental conditions. Chemical and PGR recommendations are only guidelines. It is the responsibility of the applicator to read and follow all the current label directions for the specific chemical being used in accordance with all regulations.

