

Updated Jan. 2012

Aris has tested and selected the best varieties from the Hydrangea Breeder's Association (HBA) most suited for production in North America. These German breeders have established a reputation for developing some of the finest pot hydrangea genetics in the world.

Varietal Features and Benefits

- A full range of intense colors, including a true red, true pink and dynamic blues (when properly treated), along with two unique bicolors to fill any customer's total needs.
- Compact habits, good breaking action, and strong, sturdy stems produce full, beautiful plants.
- Excellent keeping quality for store and home life.
- Four liner sizes to fill all possible needs.

Product Specs and Features

Your success begins with the quality of growth of the liners made the previous summer, and pinching on schedule.

Aris dormant hydrangea liners are grown in Leamington, Ontario, Canada right next to Lake Erie where they enjoy cooler summers, and the earlier cool nights of fall. They come out of the field at the proper stage, and receive the correct amount of refrigerated cooling.

Dormant liners are well grown, well graded and available in four product forms:

- **NEW** 21-cell PINCHED liner with a minimum of 3 canes. Great for finishing in a 4" or 6.5" pot.
- **NEW** 21-cell SINGLE STEM liner. One big flower to grow in a smaller

1. Recommended Finished Pot Size By Variety

Variety	Color	4.5"	6.5"	8"	10"
First White	white		x	x	
Pink Picotee	light pink		x	x	x
Pink Sensation	pink		x	x	
Hot Red	red	x	x		
Tivoli**	red or blue/white	x	x		
Bela	blue		x	x	x
Early Blue	blue	x	x		
Bavaria**	pink or blue/white		x	x	
Sweet Dreams (Lacecap)**	pink or blue	x	x	x	

* Opens white and quickly fades to a blush pink.

** Can be treated to be a blue. (Refer to the section on Fertilization and pH.)

2. Average Time to Sepal Color by Response

(based on April 1 sale in the north)

Variety	Color	Response in days with no B-NINE	Response Group
Bela	blue	65	EARLY
First White	white	68	
Early Blue	blue	72	
Hot Red	red	72	
Sweet Dreams	pink or blue	72	MID
Bavaria	pink or blue/white	75	
Pink Sensation	pink	77	
Pink Picotee	lt. pink	79	LATE
Tivoli Red	red or blue/white	78	

pot for a price-point plant. Use deco for added value.

- 4.5" liner with a minimum of 4 canes.
- 6.5" liner with 4 to 6 canes.

Availability

Liners are available for shipping Weeks 52 through 13 for all four sizes.

Handling on Receipt

Prior to shipping to you, Aris' dormant plants have been in controlled, refrigerated cooling for the required number of weeks, so it is important to get them out of the box, potted and benched on receipt. **ANY DELAY AFTER THAT PUTS YOUR PLANTS AT RISK FOR DISEASE AND STRETCH.**

Should there be an unavoidable delay, remove the plants from the boxes and place them in the cooler

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at a temperature of 40° to 45°F (4° to 7°C). Botrytis can occur if plants are left in the boxes. Also, boxes can collapse in a high humidity cooler, causing plant damage.

Another less satisfactory alternative is to remove plants from the box and place them in a cool location such as a service area. Be sure to water the media to avoid dry out.

Pre Potting Preparation

Determine the desired pot size by variety. (See Chart 1 on page 1.)

Use a soilless media with a pH of 5.5 and primarily peat moss that will drain well. Our liner media contains some haydite for better aeration.

Some gypsum can be included to provide calcium for all varieties without affecting pH.

Saturate liners before potting. Generally roots on our liners are actively growing and have been grown successfully with or without scoring before transplanting.

TRANSPLANTING OR POTTING

Plant at the same level as the crown of the liner received, and water in thoroughly with clear water.

FORCING

- Forcing time will vary depending on variety, conditions provided, season and use of Plant Growth Regulators (PGR).
- In general, and under recommended conditions, one can figure 60-80 days until sepal color for our HBA varieties. Crop time for Mother's Day sales will be shorter than for Easter. As a crop development guideline, at a 60°F (16°C) night temperature, buds will be pea sized about 8 weeks before sales; nickel-sized 6 weeks before sales; fifty-cent-sized at 4 weeks, and sepal color showing two weeks before sales.
- Chart 2 (previous page) for our HBA hydrangeas is more specific with average forcing time by variety and response group for

April sales in the North, without the use of any PGR. **USE OF B-NINE COULD ADD UP TO SEVEN DAYS IN RESPONSE IF APPLIED LATE IN THE CROP.**

- Getting all varieties to bloom at the same time can be a concern where different responses and rates of B-Nine are used. You can help the situation by planting the late varieties first, and the early varieties a few days later. Also, almost every greenhouse has warmer or cooler locations. Make use of them for plants ahead or behind schedule.

Light Intensity

HBA varieties can take high levels of light intensity in the 5,000-7,000 fc range through much of the crop, but as sepals enlarge and just begin to color, it is necessary to reduce light intensity to 2,500-3,000 fc to prevent sepal burn and fading.

Spacing

Proper spacing is critical for proper growth. Spacing too close or late contributes to uneven flowering, stretch, Botrytis and powdery mildew.

Pots can be closely spaced for the first 2-3 weeks, after which the following **MINIMUM** spacing requirement should be provided.

4.5" (transplanted from 21-cell single stem) – 8" x 8"
4.5" pinched – 10" x 10"
6.5" – 16" x 16"
8" – 20" x 20"
10" – 24" x 24"

Temperature

After potting, maintain 60° to 65°F (16° to 18°C) the first 7 days. Beginning the second week, stay at 60° to 65°F (16° to 18°C), and use graphic tracking to determine if negative or positive DIF is required to meet the desired height.

Varieties respond differently. Some faster. Adjust bud development by adjusting temperature. (See Forcing.)

If available, bottom heat for 1st 4 weeks is advantageous for faster and earlier rooting.

Fertilization and pH

The two go hand in hand since pH determines color and the fertilizer used influences pH.

Start out at a constant feed of 150-200 ppm using drip or tube irrigation and 100-150 ppm with sub irrigation.

One wants to get to a media EC reading of .6 – 1.0, on a 2 to 1 ratio, as soon as possible.

During winter and early spring, you generally will feed more per week on drip or tube irrigation than sub irrigation, so it will take longer to reach this EC reading.

After getting to the desired nutrient level for growing on, you can cut back to 100-150 ppm nitrogen constant, and further reduce fertilizer to every other irrigation at first color.

Blue Varieties require a low pH of 5.0-5.5 with LOW phosphorous and HIGH potassium, so use an analysis such as 20-2-20, 14-0-14 or 15-0-30.

Getting a good blue color starts in the Aris liner production area. Aluminum sulfate treatments are applied to all blue varieties during liner production.

Allow the plants to acclimate and establish a root system and start the aluminum sulphate applications about 14 days after potting.

Use aluminum sulfate at the rate of 8 lbs/100 gallons of water applied as a thorough drench. Normally 3 to 4 applications, 10-14 days apart, are required. Since it is a strong concentration, be sure to only apply to moist media. Adjust the frequency or concentration to whatever is required to maintain pH in the desired 5.0 - 5.5 range until color if necessary. Should acid injection be required, use sulfuric

acid. **DO NOT USE PHOSPHORIC ACID.** Lower nitrogen levels of 100-200 ppm are often used as a tool to get a clearer blue color.

A key element to obtaining a good blue color is to always insure you apply enough volume of **Aluminum Sulfate** to THOROUGHLY saturate the media in the pot. This can be more of a problem if your media is up to the pot rim and you are hose irrigating these 3 to 4 applications.

Pink, White and Red Varieties require a pH of 5.8 – 6.2 with HIGH phosphorous and LOW potassium using an analysis such as a 15-30-15. Maintain a constant level of 150-200 ppm on tube or drip irrigation; 100 to 150 for sub irrigation. Should acid injection be needed to control pH, phosphoric acid is required.

Chlorosis

If the pH moves above 6.2 you may encounter chlorosis. Iron chelate applications can be effective. It is very difficult to green up foliage once flowering begins.

It is good procedure to measure pH and/or EC on a weekly basis. Do so the day before you plan to feed so you can adjust for chlorosis, pH and fertilizer concentrations.

Water Management

Soft growth is best avoided with proper spacing and low humidity, but plants will require frequent irrigation as they grow and mature.

Tube, drip and sub irrigation can all be used, but avoid any over head watering.

Cut back on feed to every other irrigation at first color.

Avoid wilting at all costs, as lower foliage can be lost, or a general reduction in overall quality can occur. Wilting in the late stages of production can cause bud or flower damage, or marginal leaf burn.

Plant Growth Regulators (PGR)

Where possible, good light intensity, low humidity and adequate spacing are still good tools to control height. Also the HBA varieties are more compact growers, and generally need less PGR than older varieties. Your location, the time of year, pot size and temperatures maintained will also influence need.

For Easter, 6.5" pots or larger will usually need very little B-Nine, where 4.5" pots definitely require applications, since the dormant plant received is already two thirds the finished height for most markets.

Mother's Day flowering and beyond may require applications for all sizes.

Use weekly graphic tracking to monitor the growth of your plants. You will know the height of your liners at potting, the finished height your market requires for each pot size, and the number of weeks until the sell date. The difference in the height required divided by the number of weeks you have will give you the average number of inches or centimeters of growth required each week to be on track.

By measuring weekly you can determine if you are on schedule, or adjustments in temperature and PGR are needed. (Refer to Temperature section.)

B-Nine is the most used PGR, and applications should begin when true leaves begin to unfold and internode growth is about ½ inch.

Frequent, lower concentrations are safer than higher rates that stop growth altogether.

Start with 700-2500 ppm and increase as needed to control height which can vary by variety.

More aggressive varieties, such as Bela, Bavaria and Sweet Dreams, could require applications as high as 5000 ppm.

Apply every 7-10 days and adjust for plant growth, final height required and weather. Refer to graphic tracking above.

PGR applications can be safely applied until buds reach the size of a quarter on earlier season crops, but may be applied later on smaller pot sizes and later season crops.

Bonzi as a 1-2 ppm drench can be used to stop growth, but due to the more compact habit of the HBA varieties, it normally will not be required.

If plant height is behind schedule, Fascination can be applied, but **ONLY BEFORE BUDS ARE VISIBLE.** This can be applied twice as a spray at 10 ppm, followed by a positive DIF of 68°F (20°C) daytime and 62°F (17°C) nighttime. Do not overuse Fascination, it can cause splitting of the flower head.

Insect and Disease Control Insects

Scout regularly. Primary concerns are aphids, spider mites and thrips.

Early prevention programs are essential, starting as leaves unfold.

Disease

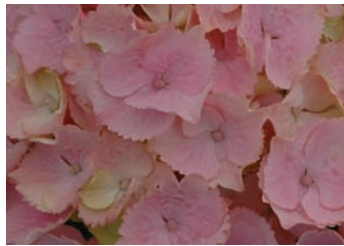
Powdery mildew and botrytis are the most common.

Provide good cultural practices such as proper ventilation, heating and air flow, to keep relative humidity low, and avoid water on leaves and flowers.

Refer to page 16 of the March 2010 issue of **Grower Product News** (GPN) magazine, for an excellent article on hydrangea diseases written by A.R. Chase and Margery Daughtrey. (<http://content.yudu.com/A1my2x/Gpn-Mar2010Vol20No3/resources/34.htm>)



First White (USPP# 16204)
An early, pure white with very large flowers and moderate vigor.



Pink Picotee
A light pink mop head type, which also has late response, but more vigor than Pink Sensation.



Pink Sensation (USPPAF)
Our number one pink. Best described as a bright bubble gum pink color, with a late response and moderate vigor. Flowers have a unique quilted appearance. Heavily branched. Late response is due to heavy branching.



Hot Red (USPPAF)
A mop head red with a compact habit and early response. It is earlier than Tivoli.



Tivoli (USPPAF)
Dark pink to red flowers with a white picotee edging. Can be blue/white picotee with aluminum sulfate treatments. Tivoli has a compact growth habit and a late response.



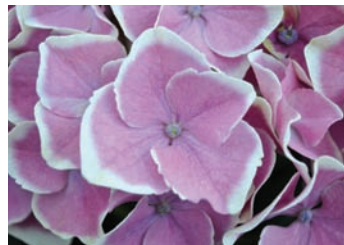
Bela (USPP# 16099)
A more vigorous mop head blue and a later response than Early Blue. Better suited for larger pots.



Early Blue (USPP# 16441)
Our number one blue for its compact, easier-to-control habit. It's early like Bela, but has a more compact habit. Color can be made more purple or blue by adjusting aluminum sulfate treatments.



Bavaria (USPPAF)
A blue/white picotee or a pink/white picotee depending on use of aluminum sulfate. Bavaria has moderate vigor and a mid response.



Sweet Dreams (USPP# 16264)
A lace cap type with pink or blue flowers depending on use of aluminum sulfate. Sweet Dreams has moderate vigor with a mid response. Easy to grow, can usually ship bench run.

