Flower Color Control on Remontant Flowering *Hydrangea macrophylla* Cultivars

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Nature of Work: The development of repeat flowering *Hydrangea macrophylla* selections has add new excitement to the hydrangea world. Nursery production of 'Endless Summer', 'David Ramsey' and 'Penny Mac' has yet to explore the control of flower color in pine bark production substrates. By adjusting the potting mix pH and by providing aluminum, the flower bracts of many *Hydrangea macrophylla* cultivars can be adjusted from pink to grape to blue.

Rooted liners of 'David Ramsey', 'Endless Summer' and 'Penny Mac' in 4" pots were potted into three gallons on September 7, 2001. The pine bark:sand 9:1 v:v mix was amended with dolomitic lime 4#/yd^3 and Osmocote 20-4-8 at 10#/yd^3. Ten single plant replicates were planted and maintained under nursery conditions. They were covered with a cloth blanket when cold protection was needed.

On April 1, 2002 all plants were top dressed with Osmocote 20-4-8 at 57g/3 gallon and one tablespoon of iron chelate /3 gallon. Initial pH measurements were recorded from leachate from each pot on April 3, 2002. The aluminum sulfate treatments were applied on April 14, 2002 and the flowable lime treatments were applied on April 18, 2002. The aluminum sulfate was top dressed while the lime was mixed with ~500 ml. water and drenched on each pot. The treatments were 1)$AlSO_4$ 1.5g/pot, 2) $AlSO_4$ 1.5g/pot and 80g flowable lime /pot and 3) No $AlSO_4$ and 80g flowable lime /pot. Final pH readings form the leachate and flower color observations were made on May 22 and 31, 2002. By June 11, 2002 most plants were past their peak bloom and the plants were cut back will all flowers removed. Sporadic flowering occurred in fall.

Results and Discussion: The $AlSO_4$ treatment decreased pH and produced the bluest flowers (Figure 1 - 2). The combination treatment of $AlSO_4$ and Lime increased pH while producing grape to purple flowers. The lime treatment alone always produces bright pink flowers since there is no aluminum in the pine bark mixes. By adjusting pH and using aluminum, the flower color on the re-flowering hydrangeas can be controlled (Table 1).

The rapid production from a September 2001 liner to a fully sized 3 gallon plant in May 2002 suggests producers could improve their production speed and increase profits.

Significance to the Industry: The application of aluminum to acid pine bark mixes will produce blue flowers on most *Hydrangea macrophylla* cultivars. The absence of aluminum in these mixes will produce pink to red flowers on all cultivars. The purple or grape colors can be obtained by applying aluminum and raising the pH to the 5.0 to 5.5 level.

Figure 1. Color Response of Remontant Hydrangea to $AlSO_4$ and Lime application

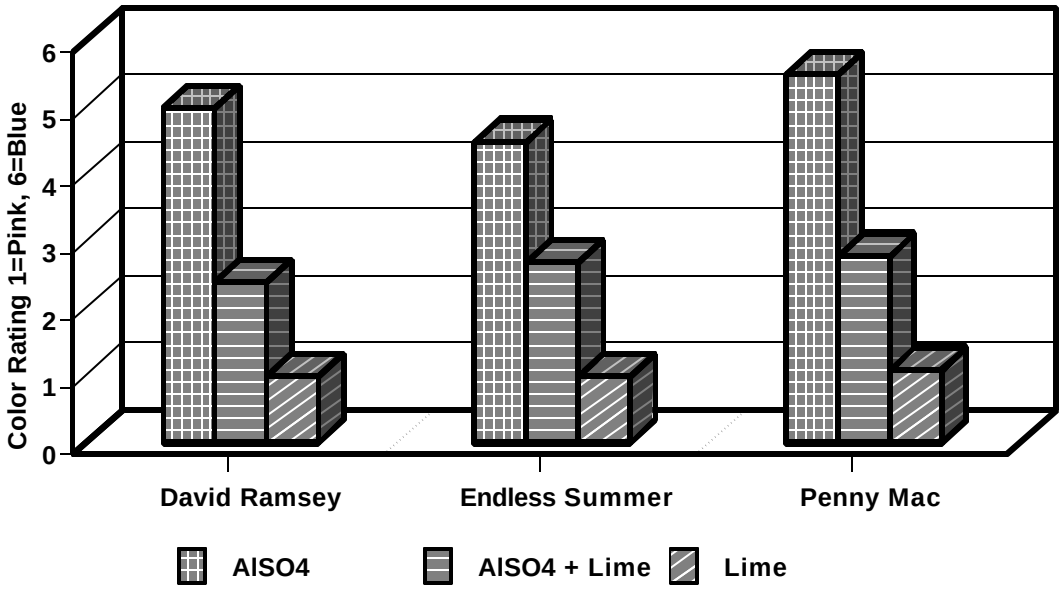

Figure 2. pH Response of Remontant Hydrangea to $AlSO_4$ and Lime applicati

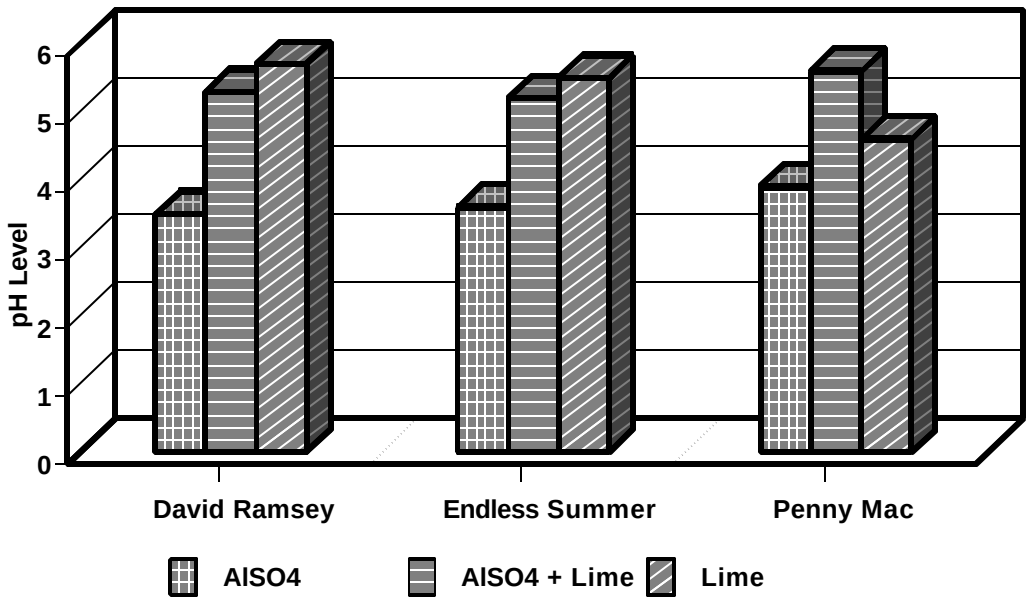

Table 1. Hydrangea pH and Flower Color Change with $AlSO_4$ and Lime Treatments.				
Cultivar* & Treatment	pH 0 4/3	pH 0 6/16	Flower Color 0 ** 5/22	Flower Color 0 ** 5/31
DR - $AlSO_4$	4.5	3.5	5	5.6
DR - $AlSO_4$ + Lime	4.2	5.3	2.4	3.2
DR - Lime	3.9	5.7	1	1.1
ES - $AlSO_4$	4.4	3.6	4.5	6
ES - $AlSO_4$ + Lime	4.3	5.2	2.7	3.2
ES - Lime	4.4	5.5	1	1
PM - $AlSO_4$	4.7	3.9	5.5	3.6
PM - $AlSO_4$ + Lime	4.7	5.6	2.8	2.4
PM - Lime	4.6	4.6	1.1	1.1
* Cultivars - DR=David Ramsey, ES=Endless Summer and PM=Penny Mac. ** Flower Color - 1=Bright Pink or Red, 3=Purple and 6=Clear Blue.				