



By Paul Pilon

Aquilegia x hybrida Swan

Twenty-first century breeding has made this old-fashioned plant popular again.

Aquilegia, commonly known as columbine, is one of the best-known, old-fashioned perennials that still delivers great appeal in today's gardens, and thanks to breeding improvements, this genus keeps getting better. The aquilegia Swan series is a great example of how genetics have been used to create a plant with superior garden performance, great flower power and improved commercial production characteristics. The cultivars in the Swan series produce an abundance of large, spurred

blooms above mounds of attractive, medium-green foliage. The Swan series offers many cultivars of various flower colors, including Burgundy and White, Lavender, Rose and White, Violet and White, and Yellow.

PROPAGATION

Swan is easily propagated by seed. To improve germination, many aquilegia cultivars have a pre-chilling requirement; the Swan series does not and will easily germinate in 10-14 days without vernalization. When sowing, it is recommended to cover the seed lightly with medium-grade vermiculite and place the plug flats into a germination chamber or

greenhouse, maintaining soil temperatures of 70-75° F until seeds have germinated.

Placing the plug flats in a germination chamber will most likely improve the germination rate and decrease the time to germinate but is not necessary to successfully produce this series from seed. It takes 9-10 weeks from sowing for 72-cell flats to reach transplantable size.

PRODUCTION

Aquilegias perform best when grown in a moist, well-drained medium with good aeration and water-holding capacity. When planting, be careful not to plant the plugs too deep, as this could lead to poor plant establishment and possibly crown rot. The top of the starter plug should be even with the soil line of the finished container. I recommend applying a fungicide drench, using a broad spectrum fungicide such as Banrot (The Scotts Company), after transplanting.

When planting aquilegias, I incorporate a controlled-release fertilizer into the potting substrate at a rate equivalent to ¼ pound of nitrogen per yard of growing medium. Another method for delivering fertility to this crop would be through a constant liquid fertilizer program, delivering 50 ppm nitrates to the crop at each watering. The pH should be maintained at 5.8-6.4. When irrigating, water thoroughly and let dry between waterings.

Aphids, leaf miners, two-spotted spider mites and whiteflies are the most common insects that may be observed feeding on Swan. The presence of leaf miners is often hard to detect until the larvae



'Swan Lavender' (Photo courtesy of PanAmerican Seed)

begin feeding between the leaf surfaces, leaving behind a white trail often referred to as a "mine." Adult leaf miners can be caught on yellow sticky cards. They can be identified as small, 1/16-inch, bright yellow and black flies, resembling

the appearance of small bees. Recognition of the adults and treating the hotspots are keys to reducing excessive crop damage. Applying sprays of Avid (Syngenta Professional Products) or Conserve (Dow AgroSciences)

when adults are present is effective at reducing the number of larvae mines found per plant.

Spider mites are usually found feeding on the undersides of leaves. Damaged leaves are stippled with small yellowish to silvery-gray



'Swan Rose And White'

speckles. Controlling spider mites is not easy because it is difficult to deliver the chemicals to the lower leaf surfaces where they are feeding, there are several life stages present at any time, and they build resistance quickly to pesticides. I have found success by rotating chemical classes at every application, tank mixing ovicides such as Hexygon (Gowan Company) and Ovation (Scotts Company) with adulticides such as Avid and Floramite (Crompton/Uniroyal Chemical), and by ensuring good coverage of the sprays to the crop.

Powdery mildew is commonly observed on aquilegia cultivars. At first, powdery mildew appears as small, white, talcum-like colonies on the upper leaf surfaces, but under the right conditions may engulf the plant with a "powdery" appearance. To control this disease, I have found it is best to manage the environment by providing proper plant spacing and adequate air movement and controlling the humidity. If desired, you could also follow a preventative spray program using the appropriate chemicals.

The cultivars within the Swan series were originally developed for the cut flower market and may reach heights of 20-24 inches when blooming. Controlling plant height may be required in container production. Before using chemicals to reduce plant height, it is usually beneficial to provide adequate space between each plant, which will reduce the competition between plants for light and prevent plants from growing taller. If chemical plant growth regulators are required, B-Nine has shown the most effectiveness on aquilegia. In the Midwest, I would recommend beginning with an application rate of 2,500 ppm, applying it 2-3 times at weekly intervals. In other locations, it might be necessary to apply the weekly applica-

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Write in 708



'Swan Violet And White'

Plugs are available from C. Raker & Sons, Inc., Litchfield, Mich., www.raker.com, or Pacific Plug & Liner, Watsonville, Calif., www.northwestgrown.com. Plug flats can also be obtained through brokers and various perennial plug producers. 

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tions beginning with a higher rate. Regardless of location, it is better to apply lower rates of growth regulators frequently as opposed to applying a single higher rate application.

FORCING

Producing flowering Swan out of season is relatively easy, provided a few guidelines are followed. Aquilegias have a juvenility phase and are not capable of flowering until 12-15 leaves are present. Generally, it is recommended to vernalize plugs or small containers of aquilegia for 6-9 weeks at 40° F. As with many hybrid cultivars of aquilegia, Swan will flower sporadically the first year from seed without vernalization. A short cold treatment of four weeks is both beneficial and recommended to increase the uniformity of flowering while reducing the time it takes to reach flowering.

After cooling has been achieved, provide natural photoperiods. Columbines are day neutral plants and will flower under either short- or long-day conditions. If no cold treatment is provided, grow plants under long days and at temperatures below 60° F to initiate flower buds.

Plants forced under long-day conditions tend to grow taller than those grown under short days and may require additional applications of plant growth regulator. Swan can be successfully forced into bloom when grown at temperatures between 57 and 68° F. I recommend growers use production temperatures of 60-65° F to force aquilegia cultivars; this produces plants with the largest flower size and best overall plant appearance. At these temperatures, Swan will bloom in approximately 8-10 weeks.

AVAILABILITY

Aquilegia Swan series was brought to the market by PanAmerican Seed Company. To obtain seed, contact Ball Seed.