

***Viola langsdorffii* Fisch:**

A New Option for Northern Beauty

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EXECUTIVE SUMMARY

Hardy, gorgeous and easy to grow, *Viola langsdorffii* transports you to the Alaskan coastline without having to leave your own garden! Like other *Viola* species, *V. langsdorffii* can be cultivated using simple methods and techniques, but it offers a unique color, morphology and cool-climate hardiness that make it a great seller as well as a perfect addition to any northern garden.

I. INTRODUCTION

A. Study Species.

Viola langsdorffii Fisch. is an underutilized coastal violet with huge potential for commercial propagation. This beautiful, hardy and compact violet offers northern gardeners a unique pop of light lavender color early in the season. This little gem survives in a multitude of habitats, naturalizing in meadows and along water features. Easy to propagate and grow, it is an eye catcher year after year! See Figure 1 for growth habit and flower example.

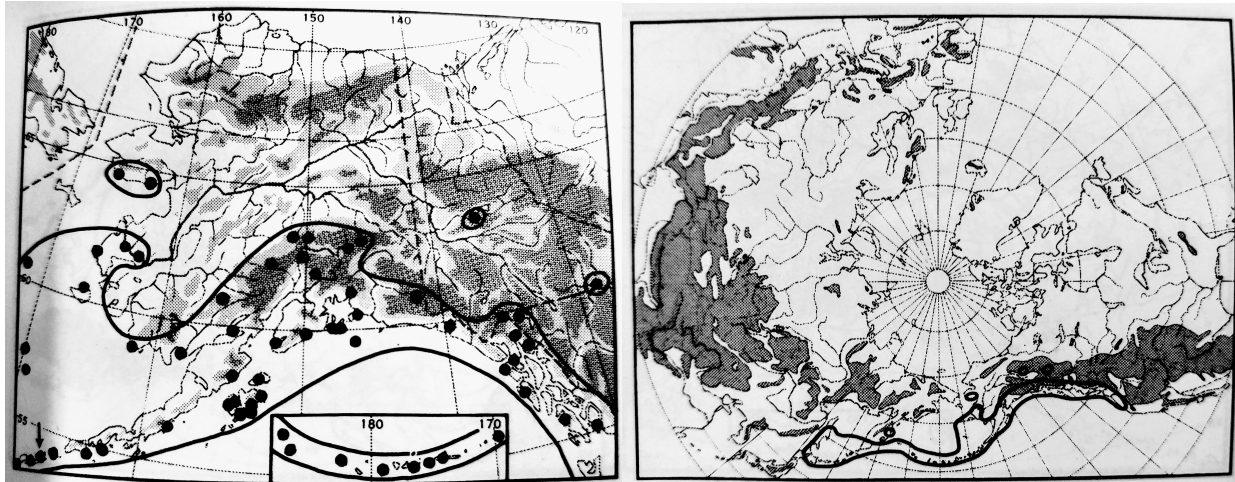


Figure 1. *Viola langsdorffii* plants illustrating growth and flowering potential (Bixland 2016)

B. Taxonomic Classification and Geographic Distribution in the Wild.

Viola langsdorffii is commonly referred to as the Alaska Violet or Aleutian Violet (Stuebaker 2010). Like other violets and pansies, *V. langsdorffii* is part of the Violaceae family. Its main range is the Aleutian Islands, coastal areas of Alaska and eastern Russia, but it has been found as far south as the coast of northern California and northern Japan, as shown in Figures 2 and 3 (Calflora 2019, Stuebaker 2010, Hulten 1968). It is found from sea level through alpine areas, in a wide range of habitats, including meadows, along streams, alder thickets, and on grassy rock outcrops (Robuck 1989, Hughes and Blackwell 1987, Hulten 1968). Its main range coordinates with USDA Plant Hardiness Zone 3 through Zone 6, with some US coastal

occurrences through Zone 8 (Calflora 2019). Alaska has eight native *Viola* species, with *V. tricolor* being the only non-native *Viola* species known to occur in Alaska (Nawrocki 2010).



Figures 2 & 3. Points where *V. langsdorffii* has been observed (left) and general estimated circumboreal range (right) (Hulten 1968).

Viola langsdorffii is 5 to 25 cm tall, with 8 to 13 cm stems that grow from thick horizontal rhizomes. The leaves are heart or kidney shaped with long petioles. Flowers are large in comparison the compact plant, with five petals. The petals are light bluish-violet with dark purple veins. The two lateral petals are bearded at the base (Studebaker 2010, Robuck 1989, Hughes and Blackwell 1987, Hulten 1968).

To the best of my knowledge, no information exists about the invasive potential of *V. langsdorffii*, but *V. tricolor* L. has been evaluated by the Alaska Natural Heritage Program at the University of Alaska Anchorage, and has been given an invasiveness rank of 34 out of 100. Its relatively low invasiveness rank is based on the fact that it has a little to no impact on native species, but it can spread easily, especially in areas of disturbed soil (Nawrocki 2010). In one study, interspecific hybrids of *V. riviniana* and *V. reichenbachiana* were shown to be hardier and more invasive than either parent species alone, due to the creation of novel genotypes that were better adapted to growing in the area of study. The area of study for this case was a pine forest

that had been disturbed and was also polluted (Neuffer 2003). The possible invasiveness of any *Viola* species means that new commercial species and cultivars, including *V. langsdorffii* should be monitored for invasive behavior and distributed with care, or to be even more cautious, a sterile cultivar could be developed and distributed instead.

Viola langsdorffii is considered edible, with both leaves and flowers historically used for food and medicine. The leaves and flowers are high in vitamin C (Studebaker 2010, Robuck 1989).

II. CROP SPECIES

A. History and Potential Uses.

No previous information about the breeding, cultivation or sale of *V. langsdorffii* has been found. Other *Viola* species have a long history of cultivation, including *V. tricolor* L., *V. cornuta*, *V. odorata* and *V. x wittrockiana* (Kelly 2006). *V. tricolor* produces up to 3000 seeds per plant (Nawrocki 2010). If *V. langsdorffii* is similarly prolific in its seed production, either production from seed or rhizome division could be possible, but seed production would likely be easier and more cost effective. Due to the many numbers of *Viola* species on the market, it is likely that current producers and distributors of *Viola* species could easily propagate *V. langsdorffii* using similar techniques, methods and best practices. Similar to other violas, after breeding and selection of a desired cultivar, *V. langsdorffii* would be propagated for seed by a producer. A distributor would then distribute the seeds to plug growers and seed packet companies. The plug growers would produce plugs for finisher growers. The finishers would supply full sized plants to retailers or direct to wholesale customers and the seed packet companies would supply seeds to retailers for sale to consumers. Any number of these steps could be handled by the same

company or each step could be done by a specific company specializing in that part of the production chain, depending on the companies involved and their capabilities. See Figure 4 for a diagram of the possible production and distribution chain for *V. langsdorffii*.

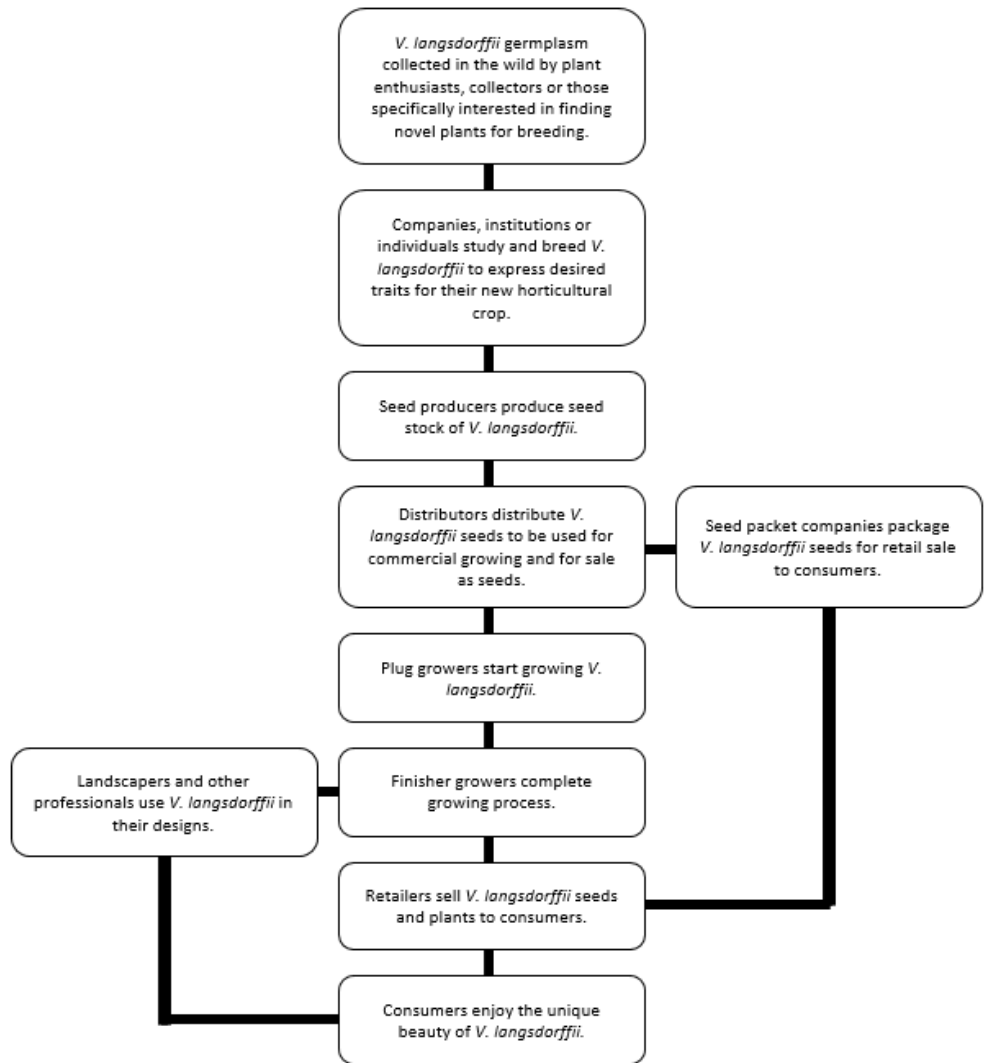


Figure 4. A diagram of the production and distribution chain of *V. langsdorffii*.

III. PRODUCTION INFORMATION

A. Anticipated Cultural Requirements.

Currently in the horticultural market, violas are almost always treated as an annual flowering bedding plant, though they may actually be herbaceous perennials in some growing zones and can be used for edible or medicinal purposes, not just as fillers for annual pots, bowls and beds (Studebaker 2010, Robuck 1989). *V. langsdorffii* may be a perennial in its native habitat, but no conclusive information has been found determining whether it is hardy or not. Many violas will self-seed, leading to violas growing in the same place year after year, regardless of weather the

individual plants have survived the winter (Nawrocki 2010). Based on its similarity to other violas, it seems likely that *V. langsdorffii* would self-seed in a similar manner, making hardiness somewhat irrelevant except in the case of the viability of the seeds that have overwintered.

Based on the locations where *V. langsdorffii* has been observed, it tolerates a relatively wide range of cool temperatures. It appears in USDA Hardiness Zones 3 through 7 (possibly 8), but usually only in AHS Heat Zone 1 with some rare occurrences recorded in Zone 2. This seems to indicate that it does not tolerate temperatures above 30° C very well, but occurs in a wide range of cooler locations, tolerating temperatures as low as -40° C.

V. langsdorffii has minimal requirements, but does do best under a few specific conditions, such as cooler temperatures. For germination, a lower pH media, high moisture and some warmth is ideal. Once seeds have germinated, temperatures can be lowered and supplementary lighting is optional. Adding a bit of nitrogen fertilizer is good through the plug growing and finishing stages. Temperatures can stay cool through the finishing stage. Long days would be beneficial in the finishing stage as most or all violas are facultative long day plants. If height control is needed, daminozide can be used. Damping-off, black root rot, foliar leaf spots and Botrytis blight can be issues, so care should be taken to make sure air circulation is good and plants are not left saturated with water for long periods. Fungus gnats and shore flies can be an issue during the plug stage. In the finishing stage possible pests include aphids, thrips, mites and whiteflies. Care should be taken to watch for insects and insect damage through the entire growth period and appropriate action should be taken if pests are found (PanAmerican Seed 2018 and PanAmerican Seed 2019).

B. Market Niche.

Viola langsdorffii is a beautiful, eye-catching viola that is easy to produce year-round. Quick to germinate and easy to grow, it doesn't need much to thrive! Often regarded as an early sign of

spring, *V. langsdorffii* tolerates cold well and can be planted right away in your first spring pots and window boxes. While hardy, it is also versatile and can be grown for year-round sale, adding its beautiful face to annual beds any time during the growing season, and thriving all season long in cool climates. Perfect for northern latitudes, *V. langsdorffii* does not tolerate heat well and should only be planted in AHS Heat Zone 1 and 2. It is a great alternative to other classic violas, offering a beautiful color scheme and unique northern vigor. If left to set seed, expect more of these little gems to appear every year. The highly anticipated launch of *V. langsdorffii* to the horticultural market will occur early in 2020, ensuring the availability of the plants for early spring sales to consumers.

IV. PRODUCT INFORMATION GUIDE (PIG) & CROP SCHEDULE

Based on the culture guides of other violas as well as direct observations of the propagation of *V. langsdorffii*, seeds of *V. langsdorffii* would do well when sown in a 288 plug tray with a lower pH media (5.5-5.8). Seeds should be covered with media when sown and kept at 18° to 21° C during the germination phase. *V. langsdorffii* will germinate quickly, usually in 3-4 days. The seeds do not have any dormancy requirements and are viable as soon as they are removed from the parent plant. *V. langsdorffii* could be grown outside during cooler spring or fall weather, but it is sensitive to high temperatures, so would do best in the protected environment of a greenhouse, especially if grown during the summer season or in climates where temperatures are high year-round. During plug production, lighting of 2,500 to 5,000 f.c. is optional but not necessary, and fertilization with 100 to 175 ppm N would be ideal. During the four to five week plug growth phase, the temperature could be lowered (which could reduce energy consumption) to as low as 13° C. After transplanting into larger containers such as a 4-inch pot, ideal temperatures would be set to 16° C during the day and 10° to 13° C at night, and plants would continue to be fertilized with 100 to 175 ppm N. Violas are facultative long day

plants, so they would benefit from long days during the finishing stage, which lasts four to six weeks. If height control is needed, a spray of daminozide 1,500-2,500 ppm can be used during the finishing stage (PanAmerican Seed 2018 and PanAmerican Seed 2019). All together propagation time from seed to sellable unit can last anywhere from eight to eleven

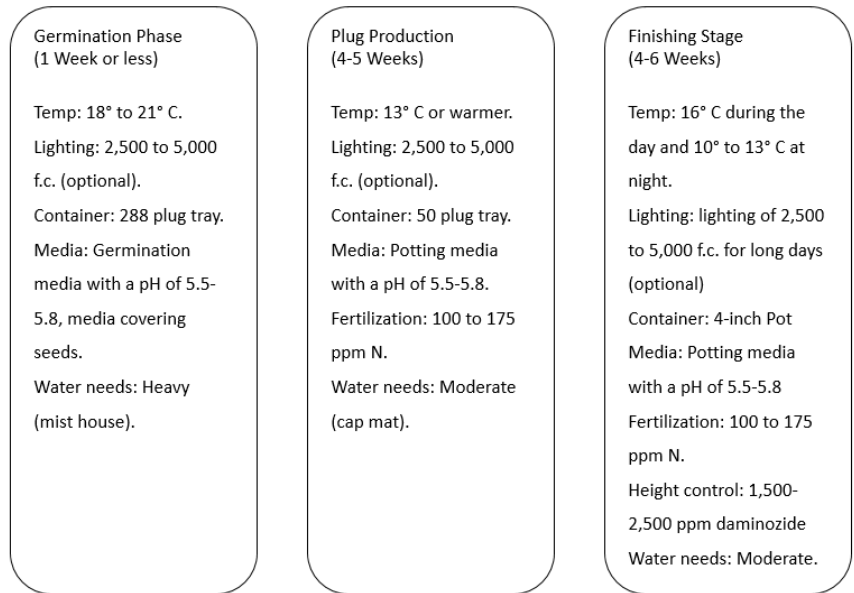


Figure 5. Production schedule and requirements for *V. langsdorffii*.

weeks. See Figure 5 for a summary of the production schedule and crop information.

The minimal requirements for *V. langsdorffii* allow it to be a very sustainable, hardy and easy to grow crop, especially in locations with naturally cooler climates. While lighting and temperature control can assist in the production of the plants, *V. langsdorffii* can be grown in natural lighting and at ambient temperatures, as long as the plants are not exposed to temperatures above 30° C for extended periods. In a similar manner, the plants should tolerate shipment well, as long as they are also protected from high temperatures during transport. Based on personal observations, moderate water stress can cause some die-back, but in general will not kill the plants, so they should handle water stress during shipping without any issues. The nominal heating and light needs of *V. langsdorffii* means that it is a great choice for growers looking to produce a beautiful and interesting cool-season plant with minimal production costs.

V. LITERATURE CITED

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