

Flowering Kale, Yokohama, Sapporo Fringed

Crop	Flowering Kale
Series	Nagoya, Yokohama, Sapporo Fringed
Botanical name	Brassica oleracea
Plant type	Annual & Biennial
Seed type	Raw
Seed count	230 seeds /gr
Germination	21°C - 4-7 days light favored
Growing	10-20°C
Optimum pH	5.8-6.2

Plug Culture: 4weeks (288 cell tray)

Stage 1 (days 1-5) Single sow seed into a 288 -plug tray filled with sterile and well-drained media. Optimum temperature is 21°C. Lightly cover with coarse vermiculite as seed requires light to germinate.

Stage 2 (days 6-14) As soon as seedlings emerge move the trays to a cool and bright location with good air movement. Optimum temperature is 13-15°C. In summer under high temperature conditions placing trays outdoors under shade cloth works well. Fertilize with 50 ppm nitrogen using a well-balanced calcium m nitrate -based fertilizer to strengthen the seedlings.

Stage 3 (days 15-22) Maintain optimum temperatures, if possible, and fertilize with 100 ppm nitrogen as needed to maintain strong growth. To reduce stem elongation, apply plant growth regulators.

Stage 4 (days 23-28) The seedlings are approaching transplant stage and should have 2 pairs of true leaves. Do not delay transplanting to avoid stretching.

Transplanting to finish: 4-8 weeks

Media: Flowering Kale does best in a soil-based mix (20-30% field soil) but soil less media can also be use with proper management.

Container: Flowering Kale Nagoya, Yokohama are targeted for production in 10.5-15 cm- pots.

Spacing: To maximize plant size, and reduce stretching, allow enough space between the plants. The Yokohama series is more compact than the Nagoya series.

Fertilizer: Fertilize with 150-200 ppm nitrogen using a well-balanced calcium nitrate -based fertilizer. Once coloring begins, reduce fertilizer slightly to 100-150 ppm nitrogen to maintain plant health and prevent lower leaf yellowing. Studies at North Carolina State University demonstrated no relation between nitrogen and a delay in coloring.

Lighting: Flowering Kale grows well outdoors under full sun.

Plant growth regulator: Under warm temperatures chemical growth regulation is necessary to keep the plants compact. Drenches with paclobutrazol at 2- 5 ppm work best. Spray applications of paclobutrazol are not effective. Applications of daminozide are not recommended as it delays color formation.

Coloring: The plants need to be of enough size before color initiation. The leaf color change is related to anthocyanins (a group of water-soluble flavonoids that impart pink to purple colors in leaves) that are always present in the leaves but are hidden by the chlorophyll, green color. When the daytime temperature is higher than 25°C and the night temperature is greater than 15°C, the leaves of Ornamental Cabbage and Kale can synthesize chlorophyll. When the daytime temperature is under

22-23°C and the nighttime temperature is between 4-15°C, the synthesis of chlorophyll stops and color (anthocyanins) begins to appear. In the case where cool temperatures come early and the Ornamental Cabbage and Kalen begin coloring and then the weather changes and warmer temperatures return, the color will change back to green (referred to as Green Back) due to the leaf starting to synthesize chlorophyll again.

Note: Yokohama is primarily used for its unique leaf texture, with less intense leaf coloration when compared to the Nagoya series.

Timing:

Nagoya series,

For 10 cm pots plan on 8-9 weeks from sowing to the start of color.

For 15 cm pots plan on 9-10 weeks from sowing to the start of color.

Yokohama series,

For 10 cm pots plan on 10-11 weeks from sowing to the start of color.

For 15 cm pots plan on 11-12 weeks from sowing to the start of color.

Pests: aphids, caterpillars, cut worms

Disease: botrytis, downy mildew

All information given is intended for general guidance only and may have to be adjusted to meet individual needs. Cultural details are based on Asian conditions such as in Japan and Sakata cannot be held responsible for any crop damage related to the information given herein. Always follow manufacturer's label instructions. Testing a few plants prior to treating the entire crop is best.