



**SAKATA®**

*Culture tips for Antirrhinum majus Cut Flowers*

## Snapdragons are Popular!

*Very popular due to the great color range, flower form (line flower) and year-round availability.*

*Good demand for local production due to difficulty in shipping (requires vertical transport).*

*Requires less heat, making it an economical crop.*



Calima Yellow (Group 2.5)

# Stage 1

## days 1-7

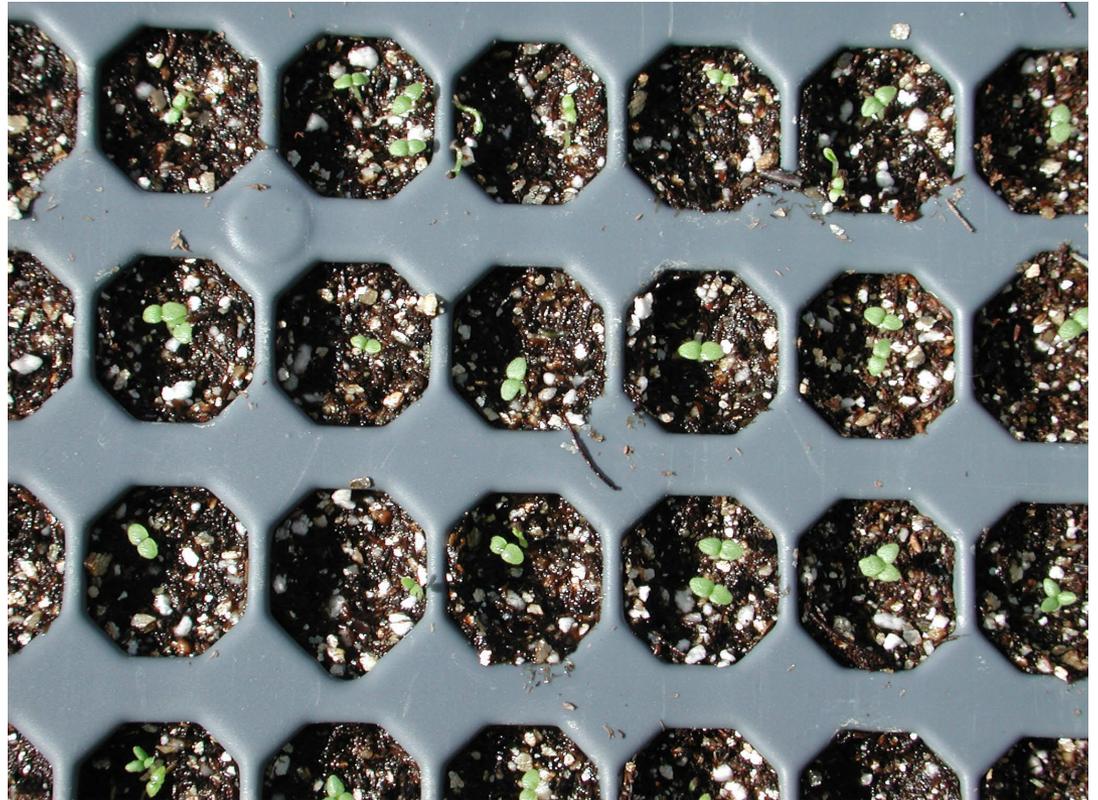
*Media with good drainage,  
pH of 5.5-5.8, plug tray size  
392 / 288 cells.*

*The ideal temperature is 65-  
72°F / 18-22°C*

*Very sensitive to high salts,  
EC < 0.75 mmhos/cm. (1:2)  
Ammonium < 5 ppm.*

*50 ppm of potassium nitrate\*  
applied at sowing improves  
germination.*

*\*5 ounces/100 gallons  
375 grams / 1,000 liters*



*Sowing to radicle emergence*

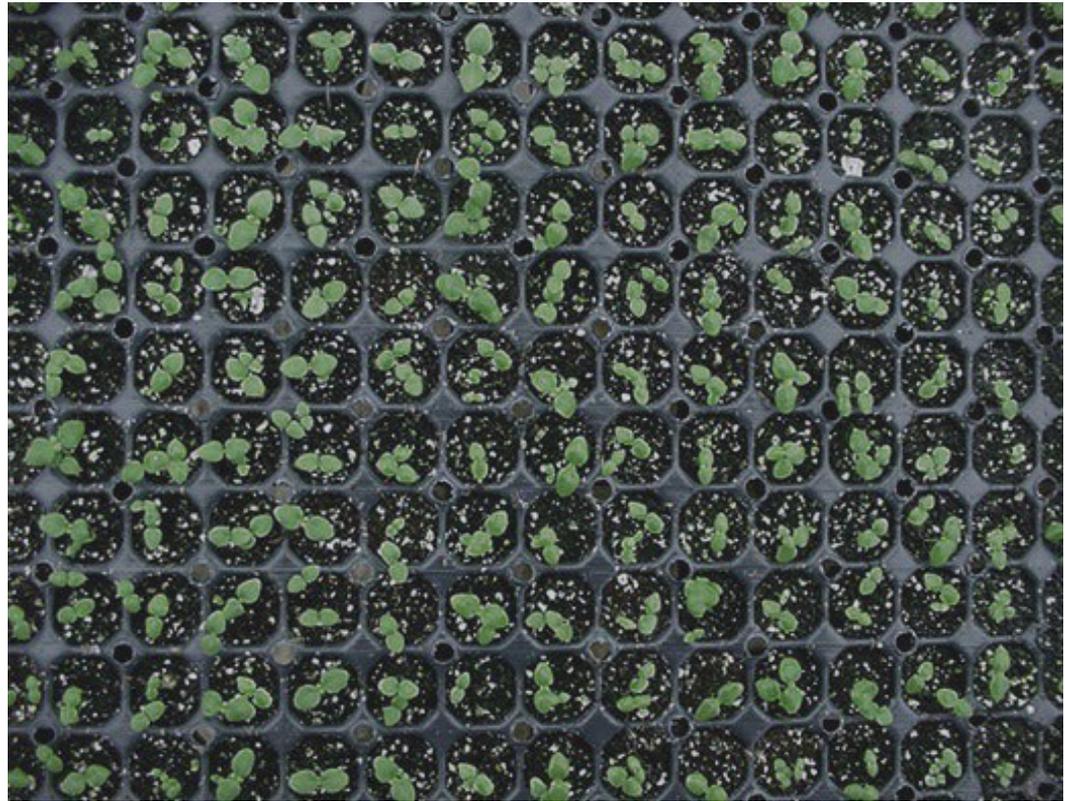
## Stage 2 days 8-14

*Temperature of 59-65°F/15-18°C with sufficient moisture, but not saturated.*

*Bright light (450-1,500 foot candles/4,750-1,600 lux), a pH between 5.5 - 5.8 and an EC of 0.4 - 0.8 mmhos/cm. (1:2 extraction).*

*Begin fertilizing at 50-75 ppm N, if there is no starter charge added to the germination media.*

*Water in the morning to prevent foliar diseases.*



*Emergence of the cotyledon*

## Stage 3

### days 15-28

*For the best root growth target a temperature of 57-59°F/14-15°C.*

*Select a well-drained soil and avoid plant wilting.*

*EC < 0.8 mmhos.cm.  
pH 5.5 - 5.8*

*Additional light (12-14 hours) benefits plug development under low light conditions.*



*Growth and development of the true leaves*

## Stage 3 cont. days 15-28

*Increase fertilizer to 100-150 ppm N using a well balanced calcium nitrate based fertilizer.*

*Antirrhinum plugs require adequate magnesium and magnesium is important for the Cal/Mg ratio.*

*Avoid applying ammonium at temperatures below 65°F/18°C.*

*4 K : 2 Ca : 1 Mg*



*Growth and development of the true leaves*

## Stage 4

### days 29-30

*The plugs have two pairs of leaves and are ready to transplant into the cut flower bed.*

*Do not delay trasplanting!*

*The plugs can be stored cool for 1-2 weeks.*

*Store them at 36-39°F / 2-4°C with 14 hours of light\* (250 foot candles / 2,700 lux)*

*\*Fluorescent light is best as it prevents stretching.*



*Transplant or shipping*

## Plug Size

*Ideal plug transplant size.*

*Avoid root banding and stretching for the best transition into the cut flower bed.*

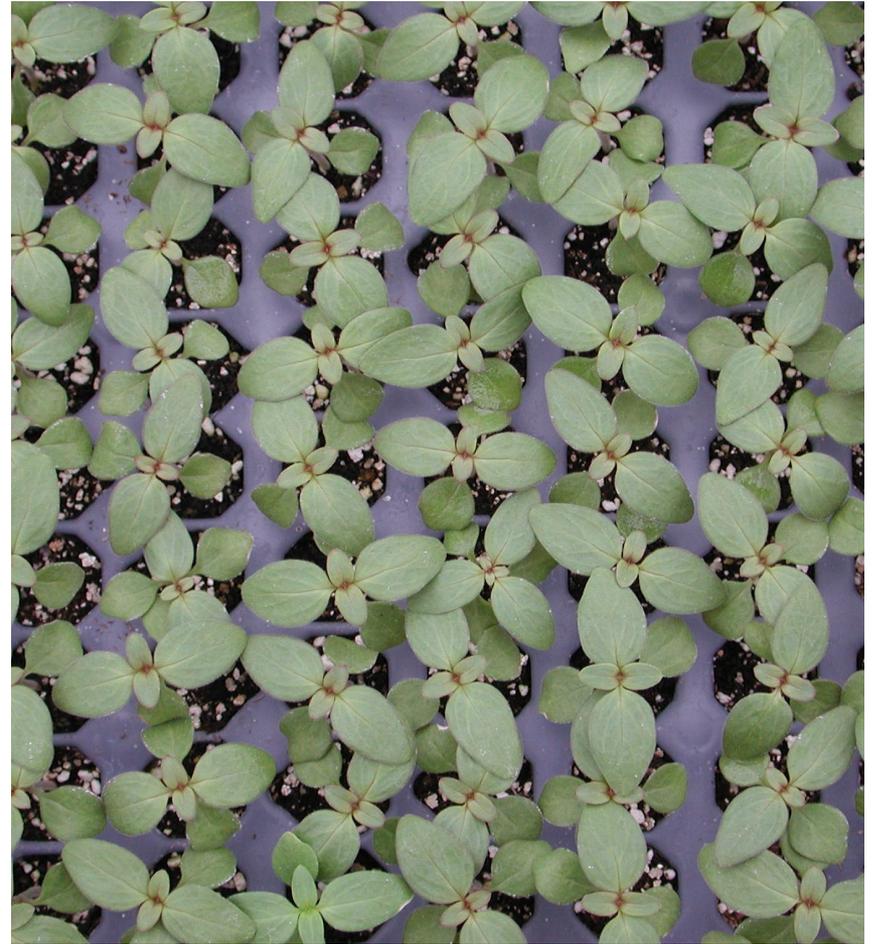


# Diseases

*Low light levels combined with humid and cool conditions are ideal conditions for disease expression; especially Pythium, Rhizoctonia and Thielaviopsis.*

*Treat with fungicides as needed to control these diseases.*

*Good culture practices are the best prevention!*



# Daylength Extension

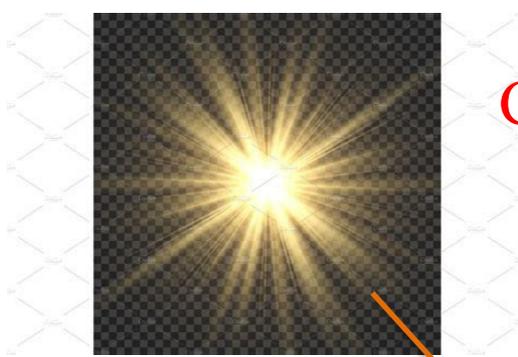
*Extending the photoperiod 6-8 hours can double the growth of plugs, and reduce the crop time by 1-4 weeks.*

*Fluorescent light is the best light source for daylength extension for snapdragon seedlings as it promotes compact seedlings.*



*The sun magnifies water droplets on the growing point causing burn and death of the tip.*

- *water early in the day or on cloudy days.*
- *remove the water droplets by shaking the bench or using a leaf blower.*
- *more critical when plugs are young and tender.*



## Culture Watch Point



## Bed preparation

*Transplant in beds high in organic matter, with good aeration and drainage.*

*Ideally, the soil should be free of disease-causing pathogens. Target a pH between 5.5 and 6.5.*



# Transplant

*Space at 8-10 plants per square foot or 85-110 plants per square meter depending on the light levels.*

*Initially water in with fresh water and then begin fertilizing with 150-200 ppm N. Avoid high levels of ammonium.*

*CE < 1.3 mmhos/cm. to minimize lateral branching.*



# Bed Design

*Planting in lines of two plants with a space in between improves air circulation.*

*Less disease problems!*



# Flower Induction

*Plants become reproductive when they have 5-10 pairs of leaves.*

*The photoperiod and light quality have the greatest influence on flower induction.*

*After flower induction, the night temperature has the greatest influence on time to flower and flower quality.*



# Snapdragons at a glance

Clasificación	Season	<i>Ideal</i> Night Temperature
Group I	End of fall into winter	45-55°F / 7-13°C
Group II	Spring	50-55°F / 10-15°C
Group III	End of spring into summer	55-61°F / 13-16°C
Group IV	Summer to the start of Fall	61°F / 16°C

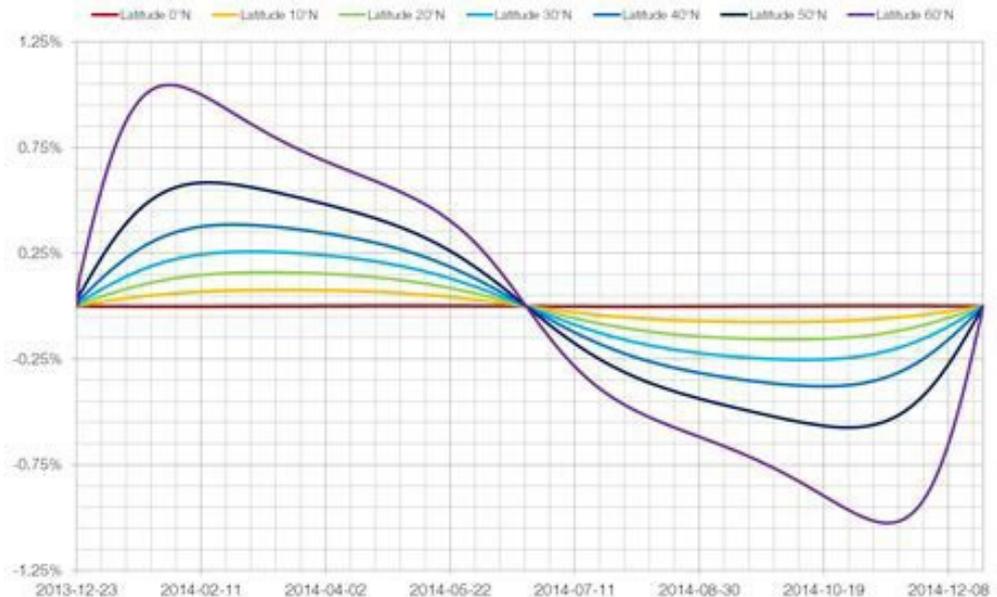


# Photoperiod

*The photoperiod (daylength) that one applies to the plants determines the number of leaves that form prior to flowering.*

*The number of leaves determines the quality and crop time.*

*The greater the number of leaves the taller the stem (higher quality) and more time to flower.*



# Group Two: Response to Photoperiod\*

<u>Daylength (hours)</u>	<u>Avg. # Leaves</u>	<u>Harvest Date</u>
5	67	Sept. 12
6	53	August 14
7	48	August 6
8	45	July 30
9	40	July 20
Natural	22	July 5
18	21	June 25

\*sown March 15th



# Temperature

*The temperature determines the rate of leaf unfolding.*

*Temperature as a climatic factor is more critical at the end of Fall, the beginning of Winter and the end of Spring; as the seasons transition the weather is less predictable. Sudden spells of hot temperatures can cause premature flowering.*

*The ability to control temperature is an advantage for meeting scheduled harvest dates.*



# Flower Induction: Days from transplant when the groups are receptive to flower initiation

- **Group I** • 43-50 days
  - **Group II** • 43-50 days
  - **Group III** • 50-57 days
  - **Group IV** • 57-64 days
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# Scheduling

*Antirrhinum flowers between 16-20 weeks after transplanting, as a response to a combination of daylength, light intensity and temperature*

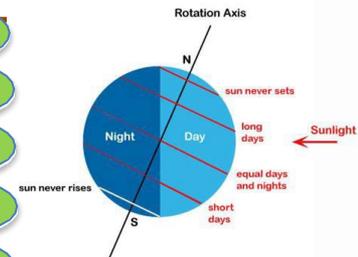
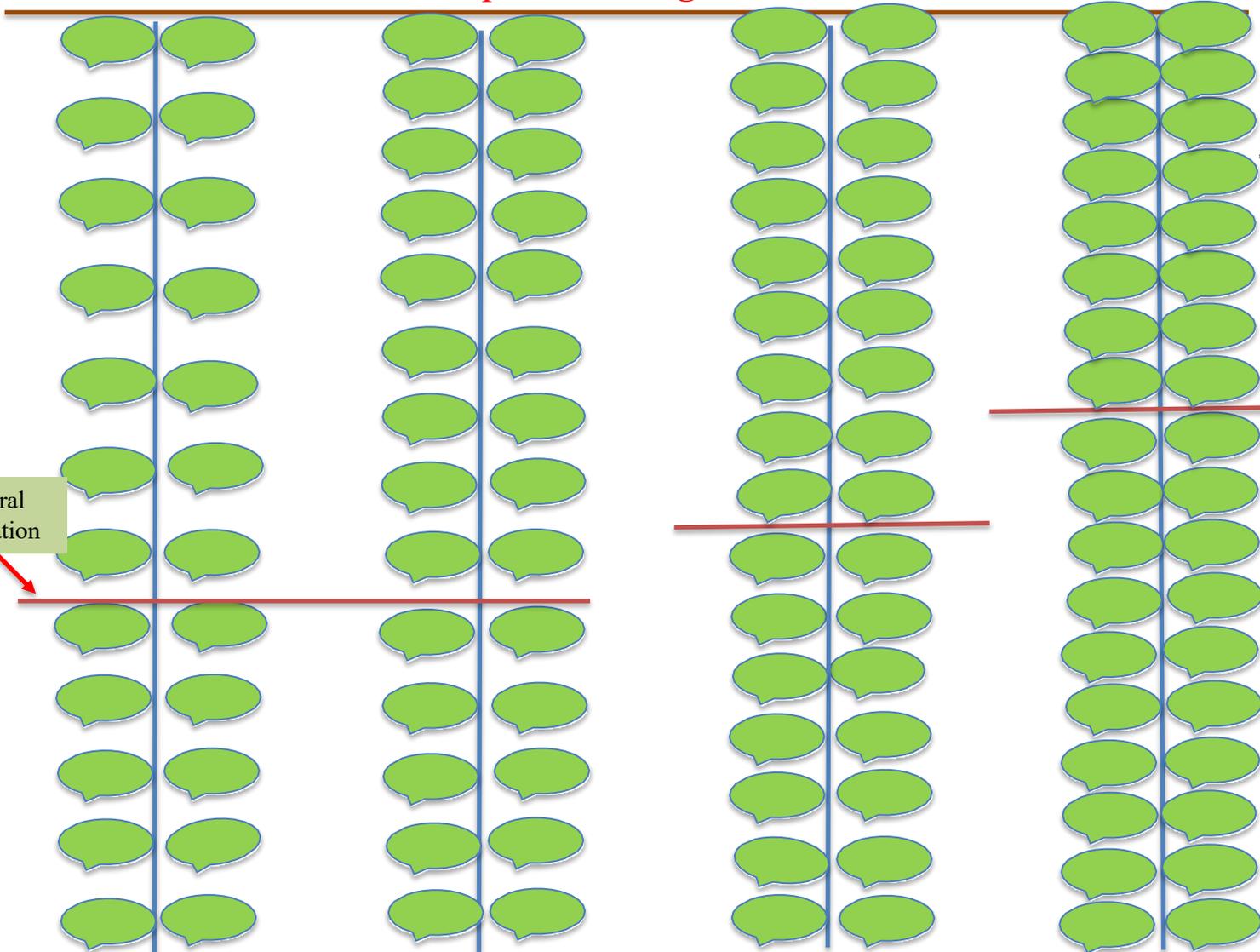
*Available in 4 groups for year-round production.*

*Many factors, including latitude, play an important role in the group / series that one should produce.*



# Clasificaciones de Antirrhinum

*Optimum Height 36 – 48 inches*



**Photoperiod**  
*Influences flower initiation*



**Light Quality**  
*Influences flower initiation*



**Temperature**  
*Influences the rate of development after flower initiation.*

Group 1	Group 2	Group 3	Group 4
45-55°F/7-13°C*	50-55°F/10-13°C*	55-61°F/13-16°C*	61°F/16°C*
End of Fall - Winter	Spring	End of Spring – Summer	Summer – start of Fall

\*optimum night temperature

# Post Harvest



- *Cut the stems when 5-7 flowers are open.*
- *Remove the lower foliage and place in lukewarm water (100°F/38°C) that contains a floral preservative and store at 45-50°F/7-10°C.*
- *To avoid problems with ethylene sensitive varieties, use products such as Ethyl Bloc.*
- *Place stems in a vertical position as soon as possible after cutting to avoid stem bending and store in an upright position.*
- *Snapdragon stems may be stored at 39°F/4°C for 3-4 days either dry or in water.*
- *Rehydrate stored dried stems before shipping.*

# Benefit of local production



Export Market



Local Market

Premature harvesting can reduce the flower size and color development on unopened flowers. This is more evident on varieties with darker flower colors such as rose and purple.

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# Calima Series

- *Flower Groups II & III*
- *Strong and thick flower stems.*
- *Extra large flower spikes with brilliant flower colors.*
- *Bred especially for use in equatorial regions.*



# Calima Series



Ivory White (Group 3)



Pink (Group 3.5)



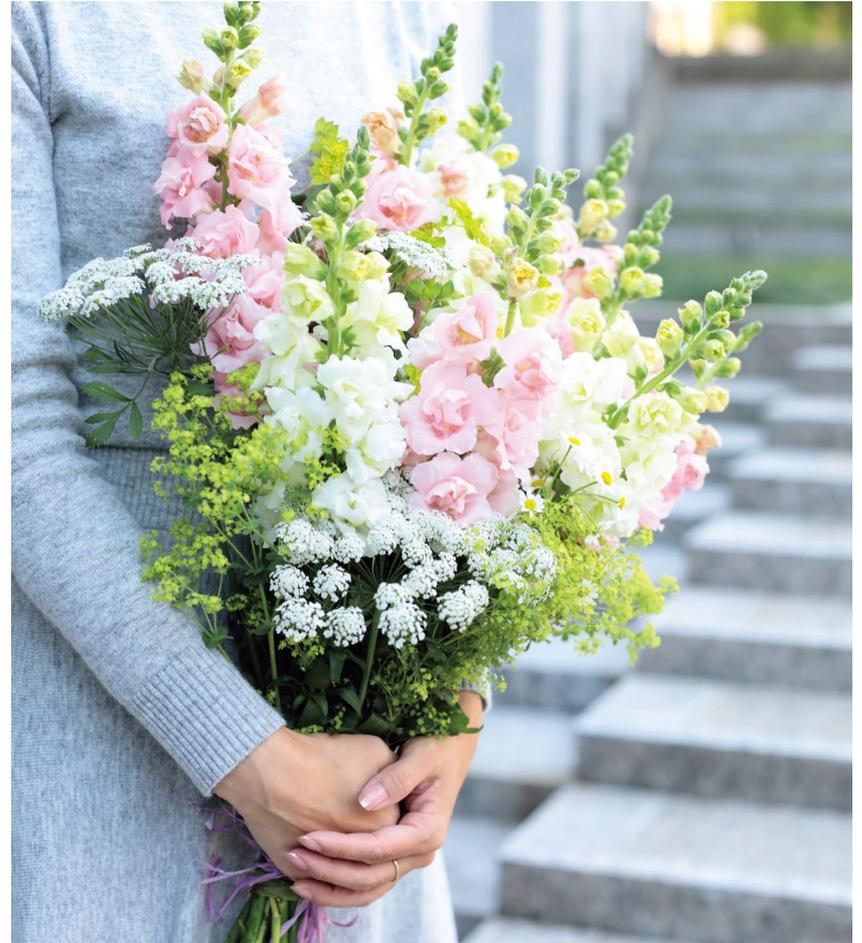
Pure White (Group 2.5)



Yellow (Group 2.5)

# Snapstar Series

- *Flower Group II*
- *Beautiful double flowers.*
- *Strong and thick flower stems with excellent stem length.*
- *Four pastel flower colors.*



# Snapstar Series



Champagne



Pink



White



Yellow



*Thank you for your attention*