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Gyosophila: Adorning Beauty as a Filler Crop

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Gypsophila derived from the Greek word *gypsos* meaning Gypsum and *philos* meaning friendship. Gypsophila (also known as Baby's Breath) belongs to family caryophyllaceae, originated in Europe and Asia. *Gypsophila elegans* is an annual herb with enormous blooms that can be used in the garden or as a cut flower. They are exquisite plants with charming flowers that are great for massing in bouquets because they highlight the delicacy and daintiness of many flowers. Gypsophila blooms naturally in summer. Gypsophila flowers are found among 10 leading cropsin the Dutch auctions' sales. Both outdoors and in a greenhouse are viable options for its cultivation.

Botanical Description

It reaches to a height of about 18" to 2' and has open airy clusters of tiny white flowers with rounded petals that are sometimes veined and glaucous light green leaves. Numerous flowers produced in large inflorescence, usually in profusely branched panicles. Each flower only measures 3-10 mm in diameter and has white or pink petals. The stems are slender, erect to spreading, swollen at the nodes. Gypsophila has a deep tap root system.

Uses

Gypsophila is highly valued for graceful symmetry, bright paniclesand lush green foliage. Gypsophila used in wall decoration, arch decoration, dining table decorations, flower arrangements, bouquets and mainly as a filler crops. As filler in the bouquet industry can also be arranged in a vase alone without additional flowers. Filler crops are the basic & fundamental element of any floral arrangements used in floral design with the purpose to act as a bulk fill-in for a floral arrangement or bouquet, cover gaps and blank space in the arrangement, and cover floral mechanics and provide a glamorous touch to floral designs.

Soil and Climate

The ideal soil is common, well-drained soil that has been liberally mixed with brick or mortar waste.The dwarf species do well in rockeries and border margins, whereas the erect species grow properly in sunny, well-drained soil. The favorable temperature for better development is 15°C during night and 25°C during day (sensitive under 5°C). Low night temperature will cause the plant to remain in its vegetative stage. *Gypsophila* is tolerant of frosts however, the severe hot weather during March to May affects the flower quality significantly.

Light

It is quantitative long day plant, minimum 12-16 hours of daylight is required to elongate the shoot and produce flowers. Artificial light induces the transition from vegetative to generative plant growth and improves the uniformity of flowering flush. Artificial lighting will be applied to complete natural day-length of 16 hours. The natural day length in equatorial countries is sufficient to induce flowering in most of the gypsophila varieties.

Species and Varieties

This genus comprises 125 species of hardy perennial and annual herbs distributed in the Himalayas, the Alps, Caucasus, Japan, Europe and Asia Minor. Different species of Gypsophila includes *G. elegans, G. pacifica, G. paniculata, G. acutifolia, G. cerastioides, G. perfoliata, G. repens* and *G. viscose.*

Varieties

Popular white colour varieties: Million stars, Fun Time Ultra, Golan, New Love, Dynamic Love, Over Time, Bristol Fairy

Pink colour varieties: Pinkolina, My Pink, Pink Fairy

***Gypsophila elegans* (annual varieties):** Carter snowstorm, Carmine, Covent Garden Strain, Covent Garden White, Deep Rose, Elegans Carmine, Grandiflora Alba, Paris Market White, Pink, Rose, Rosea.

***Gypsophila paniculata* (perennial varieties):** Compacta Plena, Pink Star, Rosy Veil, Double Snow White, Compacta Early Snowball, Oldhamiana, Pacifica, Repens, Rosea Baby Breath, Single White, Single Snowflake.

Propagation

Perennials are multiplied through rooted cuttings, division, tissue culture, or grafted plants, whereas annuals are multiplied by seeds. They resemble tiny, extremely dark brown beans. The seed germinates in 10-14 days at 21°C. Seedlings are planted about 8 inches apart. Although planting them near to some plants, will assist to make a wonderful floral display in the perennial garden.

Irrigation

Water requirement - 4 lit/m^2/day & the field should be irrigated 3 to 4 times a day for one week after planting. From 2^{nd} week onwards, the complete water requirement should be given through drip irrigation. For this, two laterals will be laid per bed, dripper distance should be 30 cm with 1.3 lph water discharge.

Growth Regulators

Plants treated with Phosphon-D, CCC (cycocel), and SADH (growth regulator) show light retardation of growth. MH at 1000 ppm inhibits both growth and blooming, whereas TIBA at 100 ppm stimulates plant height but has no effect on flowering.

General Disinfection of Soil

Soil disinfection is essential necessary prior to plantation. Use formalin at a rate of 7.5 to 10 lit/100 m^2. This pure chemical should be diluted 10 times in water before being sprayed/drenched over beds and covered with plastic for 7 days. After that, flush the soil with 100 litres of water per m^2 to remove any remaining formalin.

Pinching

Pinching is a necessary operation in the creation of high-quality gypsophila. If left unpinched, it will result in apical dominance and suppression of emergence and elongation of side shoots.

Pinching is the early removal of the main stem's tip through breaking or bending but still leaving 8 to 10 pairs of leaves (internodes) on the plant. This should be done generally 5 to 6 weeks after planting. It is to be done preferably before 9 am, when the plant is fresh and fully turgid. The application of GA_3 is required to ensure uniform elongation of the shoots. After pinching, 150 ppm GA_3 should be sprayed early in the morning (*i.e* before 8 am) or late in the evening (*i.e* after 5 pm). Generally, two to three sprays of GA_3 are required in one flush.

Supporting System

For successful cultivation of gypsophila, support netting using nylon net is essential to obtain erect shoots. If the crop is not supported well enough, it will collapse. This will result in bent stems and cause a stagnation of the crop development. Support netting should be fixed within 3 weeks of planting and before pinching. 1st netting should be of 20 x 20 cm at 30 cm height. 2nd netting (optional) of 20 x 20 cm at 45 cm height to obtain erect shoots for export markets.

Fertilizer

Gypsophila has low nutritional requirements. A recommended fertilizer is 500 kg/ha SSP as basal, Ammonium nitrate (0.88 g/plant/week) and KNO_3 (0.52 g/plant/ week). When stems are longer than 25 cm fertilizer applications should cease. These can be applied either through the irrigation system or as a foliar spray.

Harvesting

Flowers are harvested when 60 to 70 per cent flowers on the stem are fully opened on stem length between 40 to 70 cm. It is harvested when the flowers are open and not matured. Flowers on the plant do not open simultaneously. Tip of spray opens first and is harvested separately. Delay in harvesting causes browning of the flowers. Gypsophila exhibited a vase life of 14 days. They can be stored wet in water at 2 to 4°C for 4 to 5 days.

Yield

Depending on the variety and the number of flushes – an average of approx. 350,000 – 500,000 branches per flush/hectare. Commercial flowering per year – 2-2.5, represent a total of 700,000- 1,000,000 flowers per hectare/year.

Sorting and Grading

Sorting gypsophila by length will result in uniform bunches. Arrange the top of the inflorescences in each bunch in a straight line. After the process, place immediately back in the solution. The harvested stems are graded in shade in lengths of 80, 70, 60 and 50 cm. Then the stems are bunched and 5 bunches of stems (25 stems) are placed in one sleeve and placed in opening room for opening of the flowers.

Storage and Packaging

It is a special room having temperature of approximately 25°C, relative humidity of 70 to 75 % and provision of lighting (100 W bulb) throughout the night. The use of an opening room allows harvesting of the shoots at an early stage of flowering. In the opening room, the shoots are kept till 80 % of the inflorescence will be opened. Ensure there is at least 3 lit of post-harvest solution @2 ml/lit as the flowers require a lot of solution. Ventilation should be provided to maintain humidity. A corrugated modified environment packaging box with an

interior layer of variably permeable polymer integrated into a craft liner bonded with packing tissue paper.

Drying of Flowers

Flowers are air dried and kept upright in a container of water covering only the cut ends, at a temperature of 110°C. Flowers can also be dried by dipping in a solution of 1 part of glycerine and 2 parts of water. Flowers should be removed from the glycerine solution when drops of water accumulate on the leaf surface. Stem should be dried keeping the flowers hanging down in a well aerated room.