

Technical Guide

MATILDA



Ptilotus exaltatus

Matilda



GENERAL INFORMATION

Ptilotus exaltatus is a perennial plant belonging to the Amaranthaceae's family. Ptilotus is native to South West Australia in semi-desert areas. Production must therefore take into consideration a deep-root system and well-drained soil.

CHARACTERISTICS OF PTILOTUS MATILDA

- Stem length: 20–32" / 50–80 cm. (When following the recommendations described below).
- Growing cycle varies depending on the average day/night temperatures:
 - 6 to 8 weeks for plug production.
 - 12 to 20 weeks from transplant to flowering: depending on temperature.
 - Total: 18 to 28 weeks of cycle from sowing to flower harvest: depending on temperature.
- Planting density: 35 to 25 plants per m² of bed: that is to say between 6–8" / 15–20 cm between plants.
- Expected number of stems per plant per harvest: 4–6: depending on stem selection management

SEED STORAGE

- Ptilotus Matilda has a good shelf life when stored in proper conditions.

We recommend storing the seeds in their original packages at a temperature of 41–59 °F / 5–15 °C and 35% relative humidity.

YOUNG PLANT PRODUCTION

- Tray size: Use a 200 or 280 plug-tray count, and not smaller. To insure a good root development later, the Ptilotus root system must not wrap at the bottom of the plug. Deep trays and transplant at an early stage are always beneficial.

An intermediary transplant in an 18-01 tray for better root development and better take-off after transplant in production bed can be planned. This does not affect the total crop time, and will insure better crop uniformity and yield.

- **Germination:** One seed per cell in a well-porous, drained medium. pH between 5.5 and 6.5. Ask us about our peat recommendation for this case.

- **Light:** Ptilotus Matilda is a daylength neutral plant and will flower regardless of daylength once plants are rooted with 4-6 true leaves. Long days >12 hrs make Matilda flower faster.

It is recommended to maintain around a 10-hour day length during plug production in order to avoid a premature flower induction which will reduce the stem length later on. A 20% shade during plug production can be necessary.

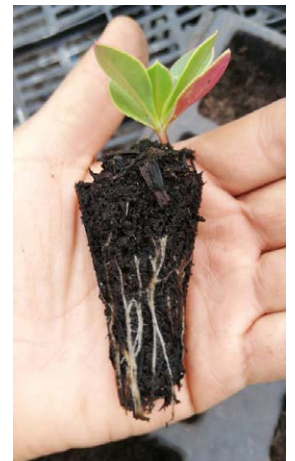
Very lightly cover the seeds with medium-sized vermiculite to maintain proper microclimate around the seeds and hypocotyledon during stages 1 and 2.

- The radicle emerges in 5–7 days at a temperature between 68–75 °F / 20–24 °C.
- Best young-plant quality is obtained when maintaining a temperature of 24 °C during the entire plug production. Lower temperatures will lead to longer crop time and potentially ununiformed or less usable young plants. Night temperature should not be lower than 64 °F / 18 °C for the same reasons.
- **Moisture:** Do not saturate the soil and maintain moderate levels of substrate moisture. Water temperature is critical for the quality of the young plant and should be at the same temperature as the soil or not less than 36 °F / 2 °C.
- **Plug cycle:** 6–8 weeks depending on plug tray size and temperature.

Germination stages

(from seed to the finished plug)

- **Stage I** - From sowing to initial root emergence.
- **Stage II** - From initial root emergence to fully open "flat" cotyledons.
- **Stage III** - From flat cotyledons to first true leaf.
- **Stage IV** - From first true leaf to transplantable size. It is critical to avoid plugs being root bound, as this will impair the young plants to generate a proper rootsystem after transplant, and thus the plants will remain weak and stunt. See the above picture showing proper root development ready for transplant.



- Young plant fertilization should start on a weekly basis at Stage III.

Initial feeding starts on day 7 after germination is complete.

- **Young plant bulking:** Ptilotus Matilda will benefit from an intermediary transplanting into an 18 pack (2–3" / 5–7 cm pots), for 2–3 weeks in order to bulk and strengthen the plants before transplanting in the production field. This stage will allow focus on root development by keeping the plants at a constant soil temperature of 68-70 °F / 20-21 °C.



This step will not increase the total crop time, and will enhance substantially the uniformity of the harvest and yield later on.

During the plug production and the bulking stage, it is critical to irrigate with water that is at the same temperature as that of the soil, in order to avoid stress which will lead to longer crop time and earlier flower induction.

GROWING MATILDA AS A CUT FLOWER

PLANNING AND CROP MANAGEMENT

Matilda stem classification:

Matilda by its unique plant structure can yield different stem structures. This can be managed during stem selection at the early stage of production.

We have identified the following primary types of stems for the different needs of the market:

Premium Spray:

One stem holds many ramifications and plumes – more than 4–5 secondary stems toward the upper half of the main stems and carrying many plumes. These can be quite large around the crown of the stems and require adequate packing. They offer many possibilities of usage for the Floral Designers as central part of a large composition as well as sub-divided in order to be integrated in a number of smaller bouquets and presentations. This Premium Spray stem is principally generated by the main central stem of the plant.

DeluXXe Spray:

One stem holds 2–3 secondary stems. Each secondary stem carrying 1–3 plumes. These Medium Spray stems are mostly generated by the secondary stems, which are coming from the base of the plants. Their numbers will be defined during the early stem selection according to the production program chosen.

Extra Spray:

One stem carries 1–3 plumes at the top. These types are the result of strong selection during production by removing all secondary branching in order to generate the tallest and largest plumes during selection according to the production program chosen.

These different Spray types can then be subdivided in stem length classes with the following estimated yield ratios:

Premium Spray and Extra Spray:

- 16" / 40 cm > 7 % < 20" / 50 cm
- 20" / 50 cm > 25 % < 24" / 60 cm
- 24" / 60 cm > 45 % < 28" / 70 cm
- 28" / 70 cm > 19 % < 32" / 80 cm
- 32" / 80 cm > 3 %

DeluXXe Spray:

- 12" / 30 cm > 1 % < 16" / 40 cm
- 16" / 40 cm > 26 % < 20" / 50 cm
- 20" / 50 cm > 47 % < 24" / 60 cm
- 24" / 60 cm > 25 % < 28" / 70 cm
- 28" / 70 cm > 1 %

The quantity of stems of each type yield per m² of actual planted surface will vary depending on:

- a) climate production zone
- b) stem selection plan
- c) density of plants per m²

The total average useable stems per m² planted, all categories described above together, can be estimated between 100 to 115+ stems per m² of planted production. 2nd choice stems are additional to these numbers.

Number of production cycles per year will depend on the growing environment and climate zone as well as the size of the young plant at time of planting in the greenhouse ground – plugs or 18-0-1 pack. Number of estimated rotations per year: 2.5 to 3.5 rotations.

- **Bed and growing media:** Soil must be well aerated, like for Lisianthus, with excellent drainage (a minimum of 50 % of rice husk is suggested to mix with the greenhouse soil or using a mix of 50 % coco fiber and 50 % perlite)

This not only allows the proper water drainage, but also the best development and deepening of the root system.

The length of the stem of Ptilotus Matilda is intimately related to its root development.

Soil should be prepared at a minimum of 16" / 40 cm deep.

Raised beds are preferable.

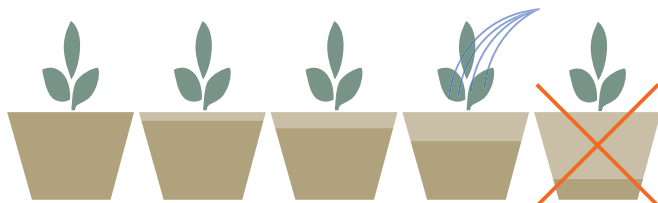
The proper pH in your growing media must be in the range of 5.5–6.5.

- **Transplant:** Plant the Ptilotus Matilda young plants (18-pack) into a well-drained and porous substrate, as described in the previous section. Plant the plug superficially: the soil level of the plugs or of the 18-pack should be at the same level as the soil of the bed. Ptilotus Matildais very sensitive to neck burial.



- **Planting density:** Plan on 25–35 plants per m² production area with training. Using a mesh might pose problem at time of harvest by rendering difficult the pull out of the stems and the risk of damaging some of them during their harvest.
- **Soil moisture:** Avoid excess irrigation. As the plant grows, space out the irrigation cycle. Combine increased water volume, giving lapses of “apparent droughts”, hanging “on the dry side” results in a greater depth of the root system. To promote root development and air circulation in the soil, the first 2–4” / 5–10 cm of the soil must be allowed to dry between watering. Not respecting this cycle will lead to poor growth, as well as leaf and root diseases.

Irrigate on a watering cycle from wet (4) to medium (2), allowing plants to dry back to medium (2) within 24 hours.



- **Temperature and light level:** Ptilotus Matilda grows best at an average day/night temperature between 64–70 °F / 18–21 °C. Ptilotus Matilda, on the other hand, is heat tolerant and will tolerate excessive temperatures during the day, making it suitable for production areas such as the Cafeteria zone and Medellin, as well as Cartagena. Regarding areas like Cartagena, to minimize plant stress and therefore growth it will be necessary at some times of the year to shade partially the greenhouses to avoid excessive heat accumulation in the greenhouses.

Temperatures below 57 °F / 14 °C at night will potentially decrease the length of the stem, and will considerably increase the production time. Check your night temperature records.

Critical day length of the plant is 12 hours. High light levels promote better branching with larger flowers. In most cases, it is important not to have shade on the production when possible.

- **Fertilization I:** One week after the transplant, start to feed weekly at the rate of 100–150 ppm of Nitrogen. Avoid excess of phosphorus and calcium. Best to use fertilizer with a low rate of phosphorus. A ratio N-P-K of 1-0.2-1.5 is recommended to avoid phosphorus toxicity and to promote good strong stems. Higher level of N will also favor longer stems.
- **Soil EC:** Soil EC should be monitored regularly, and should be between 1.2–1.5 depending on the soil moisture at time of sampling.
- **Fertilization II:** During the flower formation stage, moderate to high fertilization levels are required. Fertilize the crop weekly or at every watering depending on time of the year, with 100–150 ppm of nitrogen, using a fertilizer with a low rate of phosphorus. A ratio N-P-K of 1-0.2-1.5 is recommended to avoid phosphorus toxicity and to promote good strong stems. EC target between 1.2 and 1.5. Use clear water once every 3 fertilizer applications to reduce potential salt accumulation in soil if needed. Monitoring soil EC on a regular basis is an excellent way to also monitor this.
- **Netting:** To keep the stems upright, it is suggested to make flower stem training according to the structure of the plant, once they start to develop the selected stems. Rope, as used in carnation, is an option. As mentioned earlier, using a mesh system might pose problem at time of harvest by rendering difficult the pull out of the stems and the risk of damaging some while pulling them out.
- **Stem selection:** As mentioned earlier, the goal is to concentrate the maximum energy of the plants to a selected number of stems in order

to obtain greater stem lengths, plume sizes and numbers for higher market value. Stem selection to begin 4–6 weeks after transplanting in production beds, depending on climate growing conditions. Select to keep the main central stem as well as the 4–5 most developed secondary stems forming at the base of the plants where the plants form a “rosette”.



An elimination of secondary ramifications on the lower part of the selected stems – up to 1/2 to 3/4 of the height of the stems might be necessary in order to obtain the maximum stem length and choosing more a “Deluxe” or “Extra” type of spray stem presentation. This can be done 3–4 weeks after the initial stem selection.

- **Use of gibberellic acid:** We have observed that gibberellic application has medium to low impact on stem length and can lead to deformations of the plume, thus; we did not see economical value for it in our trials.
- **Control of pests and diseases:** The first strategy for a healthy Ptilotus Matilda is to keep the growing area well ventilated and prevent excess moisture. A humid environment leads to the plant having spots on the leaves (possibly botrytis) and in the most severe cases, death by root rot. Monitor plants continuously. In regards of insect, monitoring for Aphids and Thrips regularly. IPM can be conducted with good results using in bio-control: Chrysopes against Aphids and application of Teppeki – Fonicamid and Conserve – Spinosad against Thrips and Aphids, in addition as needed.
- **Harvest:** Harvest must take place preferably in the early morning before the temperature rises. The main central stems will be most likely be the first ones to be harvested.

Harvest stage is estimated to be when the main plume is 1/2 to 3/4 developed/opened and also depending on the stage of the secondary plumes. (A fully open plume will have a much shorter shelf life).

The plumes will continue to open progressively after harvest up to 100 % opening. The elimination of lower ramifications and lower leaves can be necessary according to grower's and market preferences.

Place the freshly cut stems immediately in water containing an antibacterial solution like CVBN to optimize the freshness and shelf life of the flowers. Trials have been made with other products like RVB Clear showing as well good results but more study are needed in regards of concentrations in the solution as the product seems to be more "aggressive" and tends to lead to a browning showing on the lower part of the stems.

- **Shipping of the stems:** After harvest, stems should be kept in water plus solution of CVBN or similar products, and stored in a cool chamber at 41–50 °F / 5–10 °C until shipped.

Shipping of the stems can be done either dry in boxes or in water with similar results later on in vase life. Shipping needs to be done in a cool controlled environment.



PRODUCTION SCHEDULE GUIDE LINES (SOUTH AMERICA)

Weeks after transplant

(Timing will vary depending on production temperature)

WEEKS	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
ALTITUDE / CLIMATE ZONE																						
2,600 m / 8,530' Alt.	Transplant								Training	Training	Training	Training	Training								Harvest	Harvest
2,000 m / 6,560' Alt.	Transplant							Training	Training	Training	Training	Training					Harvest	Harvest	Harvest			
1,000 – 1,600 m / 3,280 – 5,250' Alt.	Transplant						Training	Training	Training	Training	Training			Harvest	Harvest	Harvest						
< 1,000 m / 3,280' Alt.	Transplant					Training	Training	Training	Training			Harvest	Harvest	Harvest								

Crop times shown in this table are overall guidelines and will vary depending on climate and growing conditions

- Transplant in production beds
- Training of the plants
- Harvest

Note: Cultural recommendations are based on the results of the tests conducted in Central America conditions and by the French research station RATHO in Hyeres, France. Different conditions in other parts of the world can lead to differences in the results achieved.



Important (Disclaimer): No guarantee of production performance is expressed or implied in the information supplied. In any case, our guarantee would apply only over the agronomic integrity of the plant material cost bought and paid to us. All chemical products recommended are those found appropriate by other growers and are a guide rather than registered products with specific application to the crop. All other technical information has been compiled on the basis of current recognized practice by prominent growers, practices that may, and can be, improved. Better practices and technical information may become available over time and it is the responsibility of the individual grower to obtain such new information. It is not our intention to replace the technical director that each grower shall have.

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