

## African Marigold Inca

(*Tagetes erecta*)

### Germination

**Germination** – Optimum conditions for seedling development that begins the day the crop is sown until cotyledon expansion. Expect radicle emergence 3 – 5 days.

**Cover:** Seeds may be covered with a thin layer of medium vermiculite to maintain moisture levels.

**Media:**

- pH: 6.2 – 6.5. pH levels <6.0 may induce iron, manganese or sodium toxicity in Marigolds. Symptoms are exhibited on the lower leaves. Marigolds can be used as an indicator plant for low pH.
- EC: <0.75

**Light:** Light is not necessary for germination. If utilizing a chamber, providing a light source of 10 – 100 foot candles (100 – 1000 lux) will improve germination dramatically compared to seed germinated in the dark.

**Moisture:** Saturated (5) for days 1 – 3 or until radicle emergence. On days 4 – 7 reduce moisture to moist (3). Once actively growing, begin alternating between moisture levels wet (4) and medium (2). Allow media to approach level (2) before re-saturating to level (4).

**Humidity:** 100% until radicle emergence then reduce to 40%.

**Dehumidify:** Provide horizontal airflow to aid in drying down the media through evapotranspiration, allowing better penetration of oxygen to the roots.

**Temperature:** 72° – 75°F (22° – 24°C)

**Average Daily Temperature (ADT):** 67°F (19°C)

### Plug Production

**Germination** – Optimum conditions for seedling development that begins the day the crop is sown until cotyledon expansion. Expect radicle emergence 3 – 5 days.

**Cover:** Seeds may be covered with a thin layer of medium vermiculite to maintain moisture levels.

**Media:**

- pH: 6.2 – 6.5. pH levels <6.0 may induce iron, manganese or sodium toxicity in Marigolds. Symptoms are exhibited on the lower leaves. Marigolds can be used as an indicator plant for low pH.
- EC: <0.75

**Light:** Light is not necessary for germination. If utilizing a chamber, providing a light source of 10 – 100 foot candles (100 – 1000 lux) will improve germination dramatically compared to seed germinated in the dark.

**Moisture:** Saturated (5) for days 1 – 3 or until radicle emergence. On days 4 – 7 reduce moisture to moist (3). Once actively growing, begin alternating between moisture levels wet (4) and medium (2). Allow media to approach level (2) before re-saturating to level (4).

**Humidity:** 100% until radicle emergence then reduce to 40%.

**Dehumidify:** Provide horizontal airflow to aid in drying down the media through evapotranspiration, allowing better penetration of oxygen to the roots.

**Temperature:** 72° – 75°F (22° – 24°C)

**Average Daily Temperature (ADT):** 67°F (19°C)

**Plug Bulking** – Optimum conditions during the vegetative period, beginning at cotyledon expansion, needed for the root to reach the edge of the plug cell. Avoid premature flowering in the plug stages. Plants will not size up properly after transplanted if budded in the plug tray.

**Media:**

- pH: 6.2 – 6.5
- EC: 0.5 – 1.0

**Light:** Maintain light levels below 2500 foot candles (25,000 lux). Higher light levels may promote premature flowering in the plug. Short days will ensure blooms on a short compact plant

**Temperature:** 68° – 70°F (20° – 21°C). Gradually reduce to 62° – 65°F (17° – 18°C) as seedlings mature.

**Average Daily Temperature (ADT):** 67°F (19°C)

**Moisture:** Alternate between moisture levels wet (4) and moist (3). Allow media to approach level (3) before re-saturating to level (4). Avoid drought stress in plug stages to prevent premature flowering in the plug. Repeated drying down of plug may eventually promote bud abortion. However, saturated media will encourage the development of a weak root system.

**Humidity:** 40 – 70%

**Dehumidify:** Provide horizontal airflow to aid in drying down the media through evapotranspiration under cool, low light conditions.

**Fertilizers:** Feed 1 – 2 times per week at 100 – 150 ppm Nitrogen with a calcium-based fertilizer (14-2-14). Boron levels in media should be at least 0.5 ppm.

**Flower Initiation** – Optimum conditions to make plant receptive to flower initiation.

**Light:** 'Perfection' is daylength sensitive but can be tricked into blooming on short compact plants by giving them short days (9-hour days) for 2 weeks beginning at the time of initial sowing. Short days are recommended on crops sown after Feb. 15 in southern regions and Mar. 15 in northern regions. 'Antigua' and 'Inca II' are not as sensitive to daylength and need not be induced in the plug stages.

## Growing On to Finish

**Transplant Ready:** 4 – 5 weeks from sow in a '288' tray.

**Finish Bulking/Flower Initiation** – Optimum conditions during the vegetative period, beginning at transplant, needed for the root to reach the edge of the container; AND to make the plant receptive to flower initiation.

### Media:

- pH: 6.2 – 6.5 African Marigolds can be used as an indicator plant for low pH conditions. Typical symptoms of low pH (<6.0) include yellowing of lower leaves, or browning/burning of leaf edges.
- EC: 1.0

**Light:** Provide 3500 – 4500 foot candles (12 – 15 total moles or 35,000 – 45,000 lux) to hasten flower induction. Supplemental lighting under low light conditions at 350 – 450 foot candles (35,000 – 45,000 lux) will enhance shoot and root growth.

**Temperature:** 55° – 65°F (13° – 18°C) nights, 65° – 70°F (18° – 23°C) days. Heat stress will encourage flower heads to be reduced in size. 'Antigua Primrose' tends to be cool-temperature sensitive. New growth will appear "bleached" when temperatures are too cool in early Spring. Plants will "green up" once night temperatures are increased.

**Average Daily Temperature (ADT):** 67°F (19°C)

**Moisture:** Alternate between moisture levels wet (4) and moist (3). Allow media to approach level (3) before re-saturating to level (4).

**Humidity:** 40 – 70%

**Dehumidify:** Provide horizontal airflow to aid in drying down the media through evapotranspiration, allowing better penetration of oxygen to the roots.

**Fertilizers:** Alternate between a calcium-based fertilizer (15-0-15) and an ammonium-based fertilizer (20-10-20) at 150 – 200 ppm Nitrogen. Excessive ammonium applications will encourage vegetative growth.

**Growth Regulators:** If needed, 1 – 2 applications of B-Nine (daminozide) at 5000 ppm will control growth. Also responds to A-Rest (ancymidol), Bonzi (paclobutrazol), Sumagic (uniconazole) or B-Nine/Cycocel (chlormequat chloride) tank mix. 'Antigua' is a dwarf variety and may not need any PGR's.



**Common Diseases:** Alternaria Leaf Spot, Botrytis Blight, Pythium Root Rot

**Common Pests:** Spider mite, Thrips, Leafminer, Aphids, Whitefly

### **SCHEDULING**

**Antigua Total crop time:** 10 – 12 weeks

**Inca II Total crop time:** 12 – 13 weeks

**288 Plug crop time:** 4 – 5 weeks

**Transplant to finish crop time:**

Packs: 6 – 7 weeks

4" crop: 7 – 8 weeks

