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PRODUCTION GUIDELINES / SOUTH AFRICA

Tunnel Cucumbers



MANAGE THE CLIMATE. BALANCE THE CROP.

A practical guide to protected cucumber production: establish healthy plants, manage the root zone and deliver consistent fresh-market quality.

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PLAN THE TUNNEL

Match crop and structure

Scope: fresh-market cucumbers (Cucumis sativus) in tunnels or greenhouses. Soil beds and substrate bags need different irrigation and nutrition programmes.

Choose the fruit and flowering type

Confirm long English, mini or other market type before selecting seed. Parthenocarpic cultivars set fruit without pollination; gynoecious means mainly female flowers and is not the same trait. Confirm both on the seed specification. [1, 8]

Decision	Write down before ordering
Market	Accepted length and diameter, straightness, skin quality, wrap or pack, collection days and reject rules.
Production system	Soil or substrate; drainage route; water supply; backup power; crop support capacity.
Cultivar	Local seasonal performance, resistance claims, flowering type and supplier training advice.
Labour	Who will train, scout, pick, grade and record the crop each day?
Budget	Seed, substrate, energy, fertiliser, crop protection, labour, packs and transport per saleable kilogram.

Measure the climate inside the canopy

UF/IFAS describes production around 27-29°C and reduced performance with prolonged heat above 35°C. These are reference conditions. Agree local targets for light, cultivar and ventilation. [1]

Daily operating record: minimum and maximum temperature / humidity and condensation / vent position / irrigation alarms / root-zone observations / fruit load. Review changes with the crop adviser before raising plant density or extending the season.

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ESTABLISH & TRAIN

Start clean. Support early.

Prepare the tunnel and irrigation before seedlings arrive. A crop should not be used to test an unproven support or watering system.

Inspect each delivery

Inspect seedling roots, stems and leaves; retain lot identity. Three to four true leaves is a transplant reference, adjusted for plug size and nursery conditions. [1]

Stage	Practical checkpoint
Before planting	Clear the previous crop; inspect trellis anchors, wires, clips, vents and drainage. Label rows and test every irrigation zone.
Planting layout	Agree spacing for light, vigour, training and working access. Calculate plants from the actual planted area, excluding paths and service zones.
Root zone	Pre-wet substrate evenly; confirm drainage and emitter delivery. Avoid allowing water to pool around roots. [2, 3]
Training	Use a cultivar-specific umbrella, vertical or other supported system. Attach stems gently and keep fruit from rubbing against wires or clips. [1]

Balance fruit with plant strength

Remove damaged fruit and review load as light changes. Long-fruited and mini types do not share one thinning rule: mini and Beit Alpha types may carry several fruit per node. Follow the supplier's pruning programme rather than removing every lateral or keeping one fruit everywhere. [1]

Pollination check: for parthenocarpic greenhouse types, unwanted pollen can cause seeded or misshapen fruit. Discuss insect exclusion with the supplier, and ensure screens still permit sufficient ventilation. [1]

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WATER & NUTRITION

Manage the whole root zone

Build the feed plan from a laboratory water analysis, the growing medium and crop stage. Conductivity alone does not identify individual nutrient concentrations.

Use measurements to set irrigation

Media differ greatly in water-holding capacity. Schedule events from crop demand, moisture and drainage observations rather than a universal litres-per-plant rule. Monitor applied and drain EC and pH consistently; adjust with an adviser when trends show salt accumulation or inadequate supply. [2]

Measure	Interpret alongside
Emitter delivery	Collect water from representative emitters, including row ends. Compare actual flow and repair blocked or uneven outlets. [3]
Drainage	Record applied and drained volumes over the same period. Check container drainage and root health before simply adding more water.
Warm root zone	Check tank, pipe and substrate temperature during hot weather. Hot solution and poor aeration can impair roots. [3]
Feed consistency	Record batch, mixing quantities, injector setting, pH and EC. Check meter calibration and supplier compatibility instructions.

Keep the formulation farm-specific

Ask the adviser to specify nutrient concentrations, injection ratios and acceptable operating limits for the actual water. Use an appropriate filtration design and verify flow after maintenance. Keep a written response for pump, injector or power failure. [2, 3]

Useful calculation: drainage percentage = collected drain volume / applied volume x 100. For example, 15 L from 100 L applied is 15%. This is a measurement example, not a target for every crop. Collect comparable volumes and record the sampling period.

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CROP HEALTH

Scout before damage spreads

Walk a consistent route and inspect leaf undersides, growing tips, flowers, fruit and roots. Mark affected rows and retain dated photographs for diagnosis.

Warning sign	What to investigate
White leaf patches	Powdery mildew can develop on either leaf surface. Resistant cultivars and an open canopy help reduce risk. [4]
Angular yellow lesions	Downy mildew may produce grey-purple growth beneath leaves in humid conditions. It can progress quickly; obtain prompt diagnosis. [5]
Water-soaked spots / holes	Angular leaf spot can arrive with seed and spread in splash or on workers. Avoid working through wet foliage. [6]
Wilt or weak roots	Compare irrigation delivery, drainage, root colour and temperature. Submit samples before assuming a nutrient shortage.
Mosaic, distortion or insects	Record the distribution and inspect for vectors and feeding damage. A photo alone may not distinguish a virus from another cause.

Make prevention part of the routine

Keep clean and suspect areas separate during work. Review resistance claims with the seed supplier; resistance does not remove the need to scout. Check screens and entry points, remove crop waste promptly and keep a treatment and follow-up record.

Crop-protection decision: confirm current South African registration for the crop, target and protected-crop use. Follow label rates and intervals, protect workers, and check buyer residue requirements. Overseas product tables are not local spray recommendations. [9]

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HARVEST & HANDLING

Protect the skin and shape

Harvest to the buyer's agreed grade. Keep the picking interval responsive to growth and demand, and record rejects by cause.

Set a consistent picking standard

Give pickers a measured grade sample and a clear reject tray. Record harvest time, row and lot. Use clean containers, avoid rough surfaces and move picked fruit out of direct sun. Check that fruit size and pack count match the order before dispatch.

Checkpoint	Handling guidance
Temperature	UC Davis gives 10-12.5°C as the cucumber storage range, with about 95% relative humidity. [7]
Chilling	Prolonged exposure below 10°C can cause pitting and faster decay; severity depends on time and cultivar. [7]
Mixed loads	Keep cucumbers away from ethylene-producing produce such as ripening tomatoes and bananas. [7]
Storage duration	Plan rapid sale. The reference storage period is generally under 14 days, not a guaranteed shelf life. [7]
Packaging	Confirm wrapping, ventilation, pack size and condensation control with the buyer. Trial the actual pack through delivery before scaling up.

Close the loop on quality

Compare harvested mass with accepted mass and separate curved, oversize, scarred, yellow and decayed fruit. Link recurring faults to the block and harvest date, then examine climate, crop load and handling records.

Dispatch record: lot / quantity / grade / product temperature / cooling time / pack type / customer / delivery time. Retain a representative sample to check actual market life.

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FILLABLE CROP PLANNER

Your next planting

Save a copy before filling it in. Use a PDF reader that supports forms and keep the completed record with your field documents.

Farm / tunnel / previous crop

Fruit type / cultivar / seedling lot

Planting date / expected harvest window

Spacing / training system / plant count

Buyer / fruit grade / packaging

Water analysis / feed targets / drainage checks

Next action / responsible person / due date

Ready-to-plant checks

- [ ] Market grade confirmed
- [ ] Seedling lot inspected
- [ ] Training plan agreed
- [ ] Climate system checked
- [ ] Irrigation delivery tested
- [ ] Cooling and packs ready

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REFERENCES & EDITION NOTES

Sources you can follow

Independent sources reviewed on 17 September 2026. Links are clickable. Older sources support established principles; overseas dates and product approvals are not transferred to South Africa.

01. UF/IFAS - Greenhouse Cucumber Production
Cultivar behaviour, establishment, temperature and crop training.

02. UF/IFAS - Water and Nutrient Management
Media, irrigation scheduling and monitoring solution conductivity.

03. UF/IFAS - Irrigation of Greenhouse Vegetables
System uniformity, filtration, root aeration and water temperature.

04. UMN Extension - Powdery Mildew of Cucurbits
Recognition, crop resistance and canopy management.

05. UMN Extension - Downy Mildew of Cucurbits
Leaf symptoms, humidity and diagnosis.

06. UMN Extension - Angular Leaf Spot
Clean seed, sanitation and avoiding work in wet crops.

07. UC Davis Postharvest - Cucumber (1997)
Established cooling, humidity and ethylene principles.

08. Mid-Atlantic Commercial Recommendations - Cucumbers (2026/27)
Flowering types and crop-protection context; US approvals do not apply locally.

09. SA Department of Agriculture - Maximum Residue Limits
Crop registration, spray records and destination residue requirements.

About this edition. Original AgriCart editorial synthesis for planning and education. Obtain farm-specific advice before setting inputs and crop-protection programmes. No yield or shelf-life guarantee is implied. Cover image is AI-generated illustration, not a documented farm or named cultivar. Source organisations do not endorse AgriCart.