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PRODUCTION GUIDELINES / SOUTH AFRICA

Sweet Peppers

UNDER PROTECTION



MANAGE THE CANOPY. BALANCE FRUIT. KEEP QUALITY.

Fresh-market sweet peppers under tunnels, greenhouses or net structures: establish healthy plants, manage the root zone and harvest for the buyer's colour grade.

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MARKET & SYSTEM

Grow the grade you can sell

Scope: fresh sweet Capsicum annuum fruit under protection. Dried paprika is a separate product with different maturity, drying and processor requirements.

Decision / crop	Practical guidance
Buyer specification	Agree colour, fruit shape, size band, firmness, stem finish, packaging and delivery frequency. Keep written examples of acceptable and rejected fruit.
Green or coloured	Green picking and fully coloured picking create different harvest timing and fruit-load demands. Model saleable output for the intended mix.
Structure	Record whether the crop is in shade net, a plastic tunnel or a controlled greenhouse. The level of climate control changes the production plan.
Cultivar	Use local trial evidence for season, vigour, fruit quality and resistance claims. Confirm which pathogen and race each resistance claim covers.
Growing medium	Choose soil or a defined substrate system before designing irrigation and feeding. They cannot share one recipe by default.

Treat foreign trials as context

UF/IFAS reports successful open-shade production from a particular Florida trial. Its shade percentage, growing medium, harvest season and yield do not establish the best South African design. Trial the selected combination locally. [1]

Budget saleable kilograms

Include seedlings, supports, labour, water treatment, power, packhouse losses and structure maintenance. Track output by colour and grade rather than using historical overseas kilograms per square metre as a promise.

Crop brief: buyer / colour mix / cultivar / season / structure / root medium / training labour / expected picking period / local adviser.

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ESTABLISH & TRAIN

Support plants before fruit load

Commission irrigation and drainage before planting. A uniform start makes later climate and fruit-load decisions easier.

Decision / crop	Practical guidance
Transplants	Inspect foliage, growing tips and roots. Keep lot identity and reject weak or suspect plants; separate new arrivals from the established crop.
Root zone	Wet the soil or substrate evenly and check that excess water drains. Avoid burying stems unnecessarily or damaging the root ball.
Plant and stem density	Record both plants per square metre and retained stems per plant. Choose the layout for available light, cultivar vigour and working access.
Trellising	Use a support system designed for the crop load. Inspect wires, clips and anchors; keep ties from constricting stems.
Training choice	Agree a consistent single-plant training method with the cultivar adviser. Two-stem, multi-stem and supported bush systems need different pruning and labour plans.

Separate arithmetic from a recommendation

Example: 2.5 plants/m² x 2 trained stems per plant = 5 stems/m². This does not establish a suitable density. State whether floor area includes paths so comparisons between houses remain meaningful.

Keep plant work hygienic

Work from healthy to suspect areas, keep tools clean and use a validated sanitation procedure appropriate to the suspected pathogen. Remove debris before applying a suitable disinfectant. [6]

Establishment log: seedling lot / date / survival / plants and stems per area / support checks / irrigation uniformity / early symptoms.

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CLIMATE & FRUIT LOAD

Read the whole crop

A weak growing tip, heavy fruit load and poor set can have several causes. Compare crop observations with light, temperature and root-zone records.

Decision / crop	Practical guidance
Temperature	Measure daily highs, lows and duration of extremes at representative crop positions. Agree cultivar- and stage-specific settings for the actual structure.
Ventilation	Air circulation moves air within the house; ventilation exchanges it with outside air. Screen resistance and vent arrangement influence performance. [9]
Light and shade	Match shade to measured light and heat conditions. More shade can reduce heat load while also limiting crop energy supply; review both effects.
Humidity	Inspect condensation and persistent leaf wetness as well as RH readings. Dense foliage can remain wet even when a central sensor looks acceptable.
Fruit set	Review flower development, current fruit load, temperature and water delivery before changing nutrition or using a growth regulator.

Adjust crop load deliberately

Count developing fruit and record size, colour progression and growing-tip strength on marked plants. Agree thinning and pruning with the crop adviser. Reassess after a change rather than altering shade, EC and irrigation together.

Protect fruit cover

Retain enough healthy foliage to shield exposed peppers. Remove damaged or diseased material carefully and avoid sudden heavy leaf removal that exposes fruit to strong sun.

Daily crop check: temperature / humidity and condensation / light or shade status / tip growth / flowers / retained fruit / actions and response.

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WATER & NUTRITION

Manage the measured root zone

Separate source water, applied feed and root-zone or drainage measurements. An EC value indicates total conductivity, not the concentration of every nutrient.

Build a local nutrient programme

Test source water and account for its nutrient and salt contribution. Select a programme for cultivar, growth stage, climate and medium. UF/IFAS cautions against transferring cool-climate nutrient recipes directly to warmer conditions. [2]

Decision / crop	Practical guidance
Soil-grown crop	Use soil testing, root-zone moisture and locally appropriate nutrient recommendations. A substrate drain target is not a soil-irrigation rule.
Substrate crop	Measure representative applied and drain volumes over the same period. Check moisture in more than one bag or pot and inspect outlet drainage. [3]
Feed preparation	Label stock tanks and record product analysis, concentration and injector settings. Have compatibility and stock separation checked before mixing.
Meter checks	Calibrate EC and pH meters with suitable standards. Record sample point, time and units so changing methods do not look like a crop trend.
Water scheduling	Adjust frequency and dose to light, plant size, medium and observations. Do not reduce supply automatically to force fruit set.

Calculate a drainage fraction correctly

Example: 15 litres collected from 75 litres applied is 20% drainage. This is a calculation example, not a prescribed target. Check whether sampling represents the whole irrigation zone.

Root-zone review: source quality / feed and drain EC and pH / applied and drained volumes / medium moisture / roots / recent climate / agreed adjustment.

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CROP HEALTH

Keep infections out and contained

Inspect growing points, flowers, leaf undersides, crowns and roots. Record pests and symptoms by row and revisit after action.

Decision / crop	Practical guidance
Bacterial spot	Water-soaked leaf spots and raised fruit lesions warrant diagnosis. Healthy seed and transplants and reduced leaf wetness help limit risk. [4]
Root and crown decline	Dark, water-soaked root or crown tissue with wilt can indicate Phytophthora. Check drainage and water movement while arranging diagnosis. [5]
Virus-like symptoms	Mosaic, rings, distortion and stunting can overlap with other problems. Isolate suspect plants and obtain diagnostic advice before handling the whole house.
Insects and mites	Scout for thrips, whiteflies, aphids and mites appropriate to the local crop. Check live populations and beneficial organisms before choosing intervention.
Carryover	Remove crop waste and weeds, repair screens and clean equipment between cycles. Replacing plants alone does not remove contamination from a shared system. [6]

Fit intervention to the protected crop

Confirm the approved crop, target and protected-use conditions on the current South African label. Follow worker re-entry and harvest intervals and consider compatibility with biological control. [8]

Trace an outbreak

Retain seedling records, entry dates, staff routes and irrigation-zone maps. Map first symptoms and collect samples before the evidence is lost to removal or treatment.

Response record: location / crop stage / symptoms or pest / sample / action / label and interval checks / responsible person / review date.

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FRUIT DISORDERS

Diagnose before adding inputs

Not every blemish is infectious. Separate disorders, mechanical injury and disease so the response matches the cause.

Decision / crop	Practical guidance
Blossom-end rot	Inspect irrigation interruptions, roots, salts and rapid fruit growth with the nutrient supply. A calcium spray alone cannot repair damaged fruit. [7]
Sun injury	Check recent pruning, exposed fruit, shade changes and heat. Retain protective foliage and review light management.
Cracking	Review water swings and climate changes. Keep a dated record of affected fruit cohorts rather than attributing all cracks to one nutrient.
Misshapen fruit	Compare cultivar, flower stage, temperature history and pest injury. Keep samples and photographs for diagnosis.
Soft or shrivelled fruit	Check maturity, delay to cooling, temperature and physical damage. Water loss and decay need different responses. [7]

Use a reject audit

At each picking, weigh or count rejected fruit by reason and row. Compare the pattern with crop records. Set one practical corrective action and check later harvests for a change.

Avoid automatic corrective recipes

Do not apply routine boron, hormones or foliar nutrient mixtures without a justified crop need and approved use. Increasing salinity or withholding irrigation to steer growth can create new problems if the roots are already stressed.

Quality review: accepted mass / size and colour grades / disorder categories / affected rows / relevant climate and water events / next check.

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HARVEST & COOLING

Keep peppers firm and uninjured

Harvest to the buyer's colour and size specification. Use clean tools and containers and avoid tearing plants or puncturing neighbouring fruit with stems.

Decision / crop	Practical guidance
Picking	Set picking frequency from maturity and crop load. Keep harvested fruit shaded and move promptly to the packhouse.
Grading	Separate decayed, cracked, sun-damaged and soft fruit. Grade sound peppers by the agreed colour, size and shape.
Cooling target	UC Davis gives about 7.5°C as a storage reference with relative humidity above 95%. Prevent condensation and freezing. [7]
Chilling risk	Prolonged storage at 5°C can cause pitting, decay and internal discoloration. Do not put peppers into the 0°C regime used for peas. [7]
Packing	Protect against crushing and stem punctures while allowing cooling air movement. Keep containers and food-contact surfaces clean.

Validate the selling window

Published shelf-life potential assumes suitable maturity and handling. Follow retained samples from the actual lot and inspect at the expected delivery date. Do not promise storage life from a cold-room setpoint alone.

Keep wash and crop treatments distinct

If washing, use a validated food-safety process. A greenhouse surface disinfectant is not automatically approved for produce contact or irrigation. Record the exact permitted use and monitoring method.

Dispatch record: house / harvest date / colour and size grade / mass / cooling time / product temperature / packaging / customer / lot code.

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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 / house / soil or substrate system

Cultivar / colour market / seedling lot

Planting / first pick / final crop date

Plants and stems per area / training method

Buyer / colour and size / pack

Water analysis / feed and drainage plan

Next action / responsible person / due date

Ready-to-plant checks

- [ ] Market and cultivar agreed
- [ ] Supports and vents ready
- [ ] Crop health plan ready
- [ ] Healthy transplants checked
- [ ] Irrigation commissioned
- [ ] Pepper cooling arranged

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REFERENCES & EDITION NOTES

Sources you can follow

Independent sources reviewed on 18 September 2026. Links are clickable. Older sources support established principles; overseas dates and product approvals are not transferred to South Africa.

01. UF/IFAS - Bell Peppers under Open Shade
A Florida trial illustrates system dependence, not a universal shade or yield target.

02. UF/IFAS - Water and Nutrient Management
Hydroponic monitoring; foreign recipes need local validation.

03. UF/IFAS - Irrigation of Greenhouse Vegetables
Delivery, substrate moisture and irrigation-system design.

04. UC IPM - Bacterial Spot of Peppers
Seed and transplant health, leaf wetness and symptoms.

05. UC IPM - Phytophthora Root and Crown Rot
Root and crown symptoms, drainage and prevention.

06. UMass - Cleaning and Disinfecting the Greenhouse
Remove debris before disinfection; overseas product labels are not local approvals.

07. UC Davis - Bell Pepper
Maturity, water loss, chilling injury and cooling.

08. South African Government - Agricultural remedies
Registration framework; verify the current approved crop and use on the label.

09. UMass - Natural Ventilation in Greenhouses (2026)
Vent arrangement, wind, shading and air exchange.

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.