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PRODUCTION GUIDELINES / SOUTH AFRICA

Paprika

UNDER PROTECTION



PROTECTED PRODUCTION. COLOUR. DRY PRODUCT QUALITY.

A guide to paprika under shade nets or other protective structures, with measured crop management and a clear route from red pods to the drying processor.

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DEFINE THE END PRODUCT

Start with the processor

Scope: paprika peppers grown under protection for dried spice or processor intake. This is separate from fresh bell-pepper production.

Decision / crop	Practical guidance
Product identity	Agree sweet or hot paprika, cultivar, accepted plant parts and whether delivery is fresh pods, dried whole pods, flakes or powder.
Quality specification	Confirm extractable colour, pungency, moisture or water activity, foreign matter, microbial and residue requirements.
Colour	ASTA colour is a laboratory measure of extractable pigment; visual redness alone cannot establish the result. [7]
Commercial terms	Specify sampling, test method, dry-matter basis, acceptance rules, transport, drying responsibility and payment.
Trial scale	Test the cultivar, structure and processor route on a manageable area before expanding.

Do not transfer bell-pepper yield claims

Shade-house research on fresh bell peppers supports some management principles, but it does not establish dry paprika yield or profit in South Africa. Measure accepted dried output from a local trial. [1, 6]

Match the product standard

Codex distinguishes dried product styles and defines ground paprika separately from ground chilli. Agree the required preparation and labelling with the processor rather than assuming every mixture of pods, seed and stalk is equivalent. [9]

Investment decision: confirmed buyer / accepted cultivar / structure cost / labour / fresh-to-dry recovery / drying capacity / testing and transport costs.

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STRUCTURE & ESTABLISHMENT

Balance light and protection

A shade-net house reduces some weather exposure but does not provide complete climate control. Screens, nets and plastic covers have different effects.

Decision / crop	Practical guidance
Structure	Have supports, anchors and crop loads assessed for the site's wind and hail conditions. Do not attach a heavy crop to an unverified net frame.
Shade selection	Choose material using local light, heat and crop response. Shade percentages from a Florida bell-pepper trial are not a universal paprika specification. [1]
Ventilation	Check airflow through the canopy and around sidewalls. Dense screens can restrict air movement and raise humidity.
Planting system	Choose soil beds or a suitable substrate and design drainage before planting. These systems need different water and nutrition programmes.
Planting material	Use healthy, identified transplants with a known lot and suitable local performance. Keep suspect batches separate.

Plan plants and stems together

Set row spacing and density for light, cultivar vigour, support system and labour access. Record both plants per square metre and trained stems per square metre. A dense planting needs evidence that light and crop work remain adequate.

Test the irrigation first

Check pressure, filtration and delivery at representative outlets, including line ends. Pre-wet substrate evenly and confirm drainage before plants arrive. Keep a response plan for pump or power failure. [3]

Before planting: structural check / shade and airflow / row access / drainage / measured emitter output / healthy nursery lot.

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TRAINING & FRUIT SET

Keep a productive canopy

Select a support and pruning system with the cultivar adviser. A universal three-stem rule is not established for every paprika crop.

Decision / crop	Practical guidance
Support	Install suitable stakes, side strings or individual stem supports early. Check ties and attachments as crop mass increases.
Pruning	Use a written system appropriate to vigour and light. Avoid excessive removal that exposes pods to sunburn.
Fruit load	Observe flowering, retained fruit and growing tips. Adjust only after reviewing light, temperature and plant condition.
Poor set	Check heat, cold, humidity, light and water stress before diagnosing a trace-element shortage.
Pollination	Review flower development and airflow with the crop adviser. Do not automatically import a cucumber bee or thinning programme.

Measure the protected environment

Place sensors where they represent the crop. Record daily maximum and minimum temperature, humidity, condensation and ventilation actions. Compare poor-set periods with these records before changing nutrition.

Avoid routine growth-regulator recipes

The source’s blanket hormone and boron schedules are not carried forward. Any growth regulator needs a current approved use and a justified crop-specific programme. Confirm deficiency before applying trace elements. [10]

Weekly crop review: stem vigour / leaf cover / flowers / fruit load / fruit colour / climate / pruning labour / proposed change.

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WATER & NUTRITION

Manage the root environment

Set the nutrient recipe from water analysis, growing medium and crop stage. Keep applied solution and root-zone measurements distinct.

Measure delivery and drainage

Inspect emitter uniformity and root condition. In substrate systems, monitor applied and drain volumes, EC and pH consistently. Review trends with the adviser; conductivity does not identify individual nutrient concentrations. [2, 3]

Decision / crop	Practical guidance
Irrigation scheduling	Adjust events to light, plant demand and medium water-holding capacity. Avoid saturation and prolonged dry periods.
Salt accumulation	Check feed strength, source water, drainage and crop uptake. Do not flush automatically every ten days without evidence.
Blossom-end injury	Investigate moisture consistency, roots, salts and rapid growth. Routine calcium sprays do not replace a sound root-zone programme.
Fertiliser mixing	Record recipe, batch, injector settings and meter calibration. Follow compatibility instructions and maintain stock-tank hygiene.
Water treatment	Design filtration and any pathogen control for the actual water system. Do not dose a named disinfectant on a calendar without a validated use.

Use a clear drainage calculation

Example: 12 litres collected from 80 litres applied gives 15% drainage. This demonstrates the calculation, not a target. Measure over a comparable period and record where the sample was collected.

Root-zone log: water analysis / applied EC and pH / drain EC and pH / volumes / root observations / climate / adjustment.

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CROP HEALTH

Scout inside the structure

Protection changes the environment but does not exclude every pest or disease. Inspect leaves, flowers, fruit, crowns and roots.

Decision / crop	Practical guidance
Bacterial leaf or fruit spots	Use healthy seed and transplants and avoid unnecessary leaf wetness. Bacterial spot can spread with planting material and moisture; confirm diagnosis. [4]
Rapid wilt / root rot	Check drainage and dark, water-soaked root or crown tissue. Phytophthora risk makes irrigation and movement of contaminated water important. [5]
Thrips, mites or whiteflies	Inspect young growth and leaf undersides. Identify the local pest and review biological or other controls with an adviser.
Mosaic or distorted plants	Mark suspect plants and seek diagnosis. Record vector activity and nursery lot.
Pod rots	Remove affected pods from the food stream. Keep harvest containers clean and investigate injury, wet conditions and delays. [7, 8]

Prevent carryover between crops

Clear residues and weeds, inspect drains and clean equipment. In permanent structures, plan the next crop around the confirmed pathogen and growing system; replacing a few bags or changing fertiliser does not prove eradication.

Check the permitted protected-crop use

Verify current South African crop, target and use registration and follow label intervals. Confirm processor residue requirements and keep each treatment linked to the harvested lot. [10]

Scouting record: location / crop stage / pest or symptom / sample or diagnosis / intervention / harvest restrictions / follow-up.

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HARVEST & PROCESSOR INTAKE

Deliver sound red pods

Agree maturity and intake condition with the processor. Paprika colour development must be balanced against pod rot, weather and drying capacity.

Judge colour and condition together

Cultivar and maturity affect extractable colour. Some dry-pepper systems allow partial drying on the plant, but delayed harvest can increase losses. Use a local trial and processor sampling instead of waiting for every pod to become soft or shrivelled. [6, 7]

Decision / crop	Practical guidance
Picking	Use the method that minimises plant and pod damage. Separate immature, diseased and sunburned fruit.
Harvest interval	Match the interval to ripening, weather and processor intake. Record each picking rather than prescribing a fixed five-day cycle.
Containers	Use clean, suitable containers and prevent soil, leaves, stalks and foreign matter entering the lot.
Waiting time	Avoid warm, compressed piles of wet fruit. Book intake and drying capacity before harvesting.
Receiving sample	Record fresh mass, condition, cultivar and agreed quality samples. Keep the processor’s acceptance and rejection results.

Calculate actual recovery

Example only: 1,000 kg fresh pods yielding 180 kg accepted dried product is 18% recovery, or about 5.6:1 fresh-to-dry. Moisture, trimming and rejection affect the result; do not budget on a fixed conversion for every harvest.

Intake record: block / date / fresh mass / maturity / rejected mass / arrival time / drying batch / accepted dry mass.

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DRYING & QUALITY RELEASE

Dry promptly and protect quality

Use a controlled process designed with the processor or food technologist. Drying does not make mould-damaged pods acceptable.

Decision / crop	Practical guidance
Preparation	Remove defective pods and foreign matter before drying. Keep raw, drying and finished-product areas separated.
Drying	Validate loading, airflow, time and temperature for the equipment and incoming moisture. Protect against rain, dew, dust, animals and pests. [8]
Endpoint	Agree moisture and water-activity limits and test methods for the product. A single “12% moisture” rule is not sufficient to define every contract or safety control.
Mycotoxin control	Prevent fungal growth and rewetting; use risk-based testing and lot release. Drying is not a reliable way to remove toxins already present. [8]
Storage	Protect dried material from moisture uptake, heat, light and oxygen. Colour retention differs by cultivar and product form. [7]

Release against the written specification

Confirm colour, pungency, physical purity, required microbial or mycotoxin results, residue requirements and labelling. Retain batch records and a representative sample. Consult the current Codex product standard and destination requirements with the buyer. [9, 10]

Review cost per accepted dry kilogram

Include fresh-crop production, energy, labour, trimming loss, testing, packaging and rejected lots. Protected production is viable only if accepted output and price cover the full system cost.

Release record: crop lot / drying batch / endpoint results / quality tests / pack / storage condition / customer / authorising person.

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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 / structure / soil or substrate

Cultivar / paprika type / nursery lot

Planting / expected red-pod harvest window

Plants and stems per area / training system

Processor / colour / pungency / intake form

Water analysis / feed and drainage targets

Next action / responsible person / due date

Ready-to-plant checks

- [ ] Processor specification agreed
- [ ] Healthy plants inspected
- [ ] Crop health programme reviewed
- [ ] Structure and airflow checked
- [ ] Water and feed plan ready
- [ ] Drying capacity confirmed

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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 - Peppers under Open Shade
Bell-pepper evidence informs protected-crop principles, not paprika yield promises.

02. UF/IFAS - Water and Nutrient Management
Substrate, irrigation and nutrient monitoring.

03. UF/IFAS - Irrigation of Greenhouse Vegetables
Uniform delivery, drainage and root-zone conditions.

04. UC IPM - Bacterial Spot of Peppers
Seed health, moisture and symptom recognition.

05. UC IPM - Root and Crown Rot of Peppers
Drainage-related risk and root symptoms.

06. NMSU - Red Chile and Paprika Production
Cultivar, dry yield and processor capacity; overseas chemical uses are not adopted.

07. NMSU - Postharvest Handling of Dehydrated Chiles
Extractable colour, harvest quality, drying and colour retention.

08. Codex - Mycotoxins in Spices, CXC 78-2017
Prevention during harvest, drying and storage.

09. Codex - Dried Chilli and Paprika, CXS 353-2022
Product identity and quality specifications; consult the current edition.

10. SA Department of Agriculture - Residue requirements
Check crop-specific approvals, records and destination 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.