



CUCUMIS SATIVUS

Cucumber

SUBSTRATE GUIDE

Grow slab specifications for commercial cucumber production. High-drainage 50/50 blends, full EC programme from propagation through peak fruiting season.

WHAT'S INSIDE



- ✓ **Growth stage guide:** 7 stages seed to end of season
- ✓ **High-drainage** 50/50 blend rationale for cucumber
- ✓ **Propagation:** seed, grafting (Cucurbita rootstock)
- ✓ **EC & pH targets** — generative vs vegetative steering
- ✓ **Mixing with perlite** for Dutch-style high-density systems
- ✓ **Quality control:** runoff EC, moisture targets, troubleshooting
- ✓ **Climate adjustments:** summer vs winter programmes

► Discs

40mm (seed start)



► Grow Cubes

10×10 cm (propagation?)



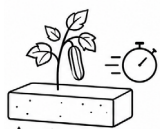
► Grow Slabs

(90/100×15×10 cm, 50/50 Pith-Chip)



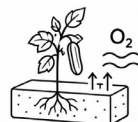
Cucumber & Coco Peat — The Perfect Match

Cucumber roots are aggressive, fast-growing, and highly sensitive to oxygen deficit. 50/50 pith-chip coco peat delivers the drainage speed and AFP that cucumber demands.



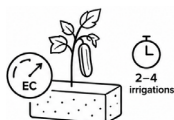
FAST DRAINAGE ESSENTIAL

Cucumber transpires 2–3× more water per kg fruit than tomato. Root zone must drain instantly — any standing water triggers Pythium within 48 hours. 50/50 blend drains in under 10 seconds.



OXYGEN AT ROOT TIPS

Cucumber root tips die within minutes without oxygen. 30–35% AFP in 50/50 blends keeps the root zone aerobic even at peak fruiting irrigation frequencies of 16–20× per day in summer.



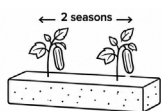
FAST EC RESPONSE

Cucumber reacts to EC changes within 2–4 irrigations. This makes coco peat ideal — EC adjustments have immediate plant effect, unlike rockwool where EC lags by 12–24 hours.



TEMPERATURE BUFFER

White bag exterior reflects solar radiation in summer. Root zone temperature must stay below 28°C — above this, oxygen dissolves out of water and root suffocation risk spikes sharply.



2-SEASON SLAB USE

With proper EC management and end-of-season flush, 50/50 slabs maintain structure for 2 full cucumber seasons. Cost per season is significantly lower than single-use rockwool.



BIOSECURITY

Each coco slab batch is steam-pasteurised (natural process) — low disease inoculum. Combined with natural Trichoderma in coco, this provides passive biocontrol against Pythium and Fusarium.

Key difference from tomato: cucumber needs more drainage

Use 50/50 Pith-Chip as standard for cucumber (vs. 70/30 for tomato). Add 10% perlite in high-humidity or summer production for maximum AFP.

ADD PERLITE

10%

for summer production
for maximum AFP

Propagation Methods

Seed start, grafting onto Cucurbita rootstock, and transplant into grow slabs — step by step.



1

SEED PROPAGATION

Standard seed-to-transplant for most varieties. Fast germination (24–36 hrs), quick root development in coco cubes.

- ▶ Sow in 40mm disc (100% fine pith, EC < 0.3 mS/cm, pH 5.8–6.0, 26–28°C)
- ▶ Germination in 24–36 hrs — 1st irrigation 48 hrs after sowing
- ▶ Transfer disc to 10×10 cm Grow Cube at cotyledon stage. EC 0.8–1.2 mS/cm
- ▶ Transplant cube to 50/50 slab when roots exit cube base (typically 2–3 weeks)

3–4 weeks to slab

EC RANGE

0.3–1.5 mS/cm

pH TARGET

5.8–6.2

RISE PRODUCTS

Rise Discs 40mm → Rise Grow Cubes 10×10
→ Rise Grow Slabs (50/50)

2

GRAFTED TRANSPLANTS (CUCURBITA ROOTSTOCK)

Grafting onto Cucurbita (pumpkin/squash) rootstock for vigour, cold tolerance, and Fusarium resistance. Standard in northern European and Korean greenhouse production.

- ▶ Rootstock (*Cucurbita maxima/ficifolia*) sown 4–5 days before scion cucumber
- ▶ Both started in 40mm discs side by side in propagation tray
- ▶ Tongue graft or cleft graft at 5–7 days — healing at 24°C, 95% RH, 7–10 days low light
- ▶ After healing, transfer to 10×10 cube at EC 1.0–1.4. Transplant to slab at 4–5 weeks

5–6 weeks to slab

EC RANGE

0.3–1.5 mS/cm

pH TARGET

5.8–6.2

RISE PRODUCTS

Rise Discs 40mm (dual start) → Rise Grow Cubes
→ Rise Grow Slabs (50/50)

3

DIRECT TRANSPLANT (BARE CUBE TO SLAB)

Short-season cucumber (spring to summer) may be transplanted earlier. Cube placed directly on slab when 2 true leaves visible, before roots exit cube.

- ▶ Reduce propagation time by 1 week — transplant earlier than standard
- ▶ Widen planting hole in slab to accommodate cube + soil contact immediately
- ▶ First week on slab: EC 1.2–1.5 mS/cm, high irrigation frequency to establish quickly
- ▶ Monitor cube-to-slab root transition — should complete within 5–7 days of transplant

2–3 wks propagation

EC RANGE

1.0–1.5 mS/cm

pH TARGET

5.8–6.2

RISE PRODUCTS

Rise Grow Cubes 10×10
→ Rise Grow Slabs (50/50 blend)

Growth Stage Guide — 7 Stages

Short-season and long-season cucumber. EC programme maintains vegetative-generative balance for continuous fruit production.



STAGE-BY-STAGE EC, PH & SUBSTRATE TARGETS

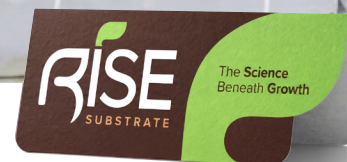
Stage	Weeks	EC (mS/cm)	pH	Blend / Product	Irrigation	Key focus
Seed Start	0–1	0.3–0.5	5.8–6.2	Discs 40mm, 100% Pith	1–2×/day	Germination, no stress
Propagation	1–4	0.8–1.5	5.8–6.2	Grow Cubes 10×10 cm	2–3×/day	Root development in cube
Transplant Establish	4–6	1.5–2.0	5.8–6.2	Grow Slabs 50/50	4–6×/day	Roots into slab, establish
Vegetative Growth	6–10	2.0–2.8	5.8–6.2	Grow Slabs 50/50	6–10×/day	Stem growth, leaf canopy
1st Fruits Developing	10–14	2.5–3.2	5.8–6.0	Grow Slabs 50/50	10–14×/day	Fruit set, generative
Peak Production	14–36	2.8–3.8	5.8–6.0	Grow Slabs 50/50	14–20×/day	Continuous yield, balance
Season End / Flush	36–42	2.0–3.0 (flush to 0.5)	5.8–6.5	Existing slabs (flush)	8–10×/day	Wind-down, slab prep

CUCUMBER SLAB BLEND COMPARISON

Parameter	50/50 Pith-Chip (Standard Cucumber)	70/30 Pith-Chip (Cooler climates)	50/50 + 10% Perlite (Summer)
AFP	30–35%	25–30%	38–44%
WHC	55–60%	60–65%	48–54%
Irrigation freq.	14–20×/day at peak	10–14×/day at peak	18–24×/day at peak
Root rot risk	Low	Moderate	Very Low
Best climate	All climates	Cold / autumn	Hot summer months
Cost efficiency	Standard	Standard	+10% perlite cost

Mix Ratios, Amendments & Slab Specs

Slab dimensions, on-site blending options, and perlite mixing for cucumber production systems.



RISE SUBSTRATES GROW SLAB OPTIONS FOR CUCUMBER

Slab size	Blend	AFP	WHC	EC (as shipped)	pH	Best for
90×15×10 cm (Standard)	50/50 Pith-Chip	30–35%	55–60%	< 0.5 mS/cm	5.5–6.5	Single stem, all varieties
100×15×10 cm (Extra Long)	50/50 Pith-Chip	30–35%	55–60%	< 0.5 mS/cm	5.5–6.5	High density rows, more plants per slab
90×15×12 cm (Deep)	50/50 Pith-Chip	28–33%	57–62%	< 0.5 mS/cm	5.5–6.5	Higher water buffer in autumn/winter production
90×15×10 cm (70/30 Blend)	70/30 Pith-Chip	25–30%	60–65%	< 0.5 mS/cm	5.5–6.5	Winter/low-temp grows with lower transpiration

ON-SITE BLENDING & AMENDMENT GUIDE

COARSE PERLITE 10–15%

Recipe: 85–90 parts 50/50 coco blend + 10–15 parts coarse perlite (3–6mm)

- ▶ AFP increases to 38–44% — maximum drainage speed for summer high-density cucumber.
- ▶ Reduces Pythium risk in humid glasshouses where overnight moisture is high.
- ▶ Perlite is chemically inert — does not affect EC or pH. Has no CEC (no nutrient holding).
- ▶ First 3–5 irrigations after filling: slightly lower runoff EC due to perlite dilution. Normal from day 4.

ADDITIONAL HUSK CHIPS (10–20%)

Recipe: Increase chip fraction to 40–50% of total blend

- ▶ Dramatic drainage increase without perlite cost. Chips from Rise Substrates carry same low EC guarantee.
- ▶ Best for second-season slabs where pith has slightly compressed — restore AFP by adding chips.
- ▶ Washed chips only — never use unwashed chips in cucumber (EC spike risk).

NO VERMICULITE FOR CUCUMBER

Not recommended for cucumber slabs

- ▶ Vermiculite compacts under root weight in long-season slabs — reduces AFP over time.
- ▶ Slightly raises substrate pH — counterproductive for cucumber (requires pH 5.5–6.2).
- ▶ Suitable only for propagation mixes, not production slabs.

MOST RECOMMENDED FOR CUCUMBER

Quality Metrics & Irrigation Guide

Monitoring programme, runoff targets, and radiation-sum irrigation for commercial cucumber production.



SUBSTRATE & RUNOFF QUALITY PARAMETERS

Parameter	Prop / Establish	Vegetative	Fruiting (Peak)	Notes
Feed EC (mS/cm)	0.3–2.0	2.0–2.8	2.8–3.8	Max 4.5 in high-Brix push
Feed pH	5.8–6.2	5.8–6.0	5.8–6.0	Keep below 6.5 at all stages
Runoff EC vs Feed	Feed EC	+ 0.5–1.2	+ 0.5–1.5	Flush if runoff > Feed + 2.0
Drain % target	10–15%	20–25%	25–35%	High drain = faster EC control
Irrigations/day	2–6×	8–12×	14–20×	Summer peak: up to 24×/day
Root zone temp	20–24°C	22–26°C	22–28°C	Critical: never above 30°C
Slab water content	65–70%	60–65%	55–65%	Check with probe or squeeze

RADIATION-SUM IRRIGATION FOR CUCUMBER

Stage	J/cm ² trigger	Shot size	First shot	Last shot	Target drain
Propagation	Timed	50–100 mL	45 min after sunrise	3 hrs before sunset	10–15%
Establish / Veg	60–80 J/cm ²	100–150 mL	25 min after sunrise	2 hrs before sunset	20–25%
Fruiting (Spring)	40–60 J/cm ²	80–120 mL	20 min after sunrise	1.5 hrs before sunset	25–30%
Peak (Summer)	30–40 J/cm ²	80–100 mL	15 min after sunrise	1 hr before sunset	30–35%
Winter / Low light	80–100 J/cm ²	100–150 mL	30 min after sunrise	1.5 hrs before sunset	20–25%
Season Flush	Manual	Full flush dose	—	—	100% drain

Cucumber critical rule: Never let the slab dry below 50% WC. Cucumber roots die within 2–4 hrs of critical drought. No recovery — replant required.

Cucumber cannot tolerate moisture stress — always err on the side of slightly more frequent irrigation rather than less.

Variety Guide & Substrate Notes

Mini, standard, and specialty cucumber types — and substrate adjustments for each.

Long / Standard Greenhouse



Kalunga

Shakira

Bayswater

Proloog

Blend 50/50 blend, 90–100×15×10 cm

EC 2.5–3.5 mS/cm

pH 5.8–6.0



Standard Dutch-wire or high-wire system. 1–2 plants per slab. Very high water demand — up to 3.5L/plant/day in summer. Maintain strict drain % to avoid salt build-up.

Mini Cucumber (Snacking)



Katrina

Socrates

Ministar

Picolino

Blend 50/50 blend, 90×15×10 cm

EC 2.8–3.8 mS/cm

pH 5.8–6.0



Higher EC tolerance. More generative naturally — avoid over-irrigation. Smaller root mass so smaller slab acceptable. High Brix focus — push EC to 3.5–4.0 for best flavour.

Baby / Gherkin



Pick Quick

Vorgebirgstrauben

Lotos

Blend 50/50 blend, compact slab

EC 2.5–3.5 mS/cm

pH 5.8–6.2



Short season (8–10 weeks). Often grown in Open Top Bags 15–20L for flexibility. Multiple harvest windows. Lower water demand than long cucumber.

Armenian / Asian Types



Suyo Long

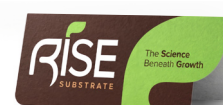
Chinese Snake

Armenian

Blend 50/50 or 70/30

EC 2.0–3.0 mS/cm

pH 5.8–6.5



Lower EC requirement. More temperature-tolerant. 70/30 blend works in cooler climates. Not commonly grown in substrate — mostly field crop — but greenhouse substrate results are excellent.



READY TO GROW?

Configure Your Cucumber Programme

Share variety, target yield, climate zone, and irrigation system. Our team will design your 50/50 slab specification, radiation-sum irrigation programme, and full EC schedule.

Also Available — Crop-Specific Brochures

→ Tomato

→ Strawberry

→ Herbs & Leafy Greens

→ Blueberry

→ Bell Pepper

→ Roses

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