

Cutting the Heat Without Cutting the Light: the Challenge of Greenhouse Growing

Under glass, the heatwave doesn't just scorch the plants. It scorches your margins.

In summer, a greenhouse can exceed 45 °C while your crops top out at 22-28 °C. The challenge is not to create shade — it is to repel the heat while letting the light through. Two requirements long thought contradictory.

By Joël Kohli, Founder & Director



Under cover, light makes the harvest, but heat undoes it. The whole challenge of summer market gardening lies in this balance: keeping the former, driving out the latter.

There is a paradox at the heart of greenhouse growing. What makes your crops grow — sunlight — is also what threatens them, as soon as the energy of that same sun turns into heat trapped under cover. The summer of 2026, the hottest ever measured in Switzerland, made this paradox burning, in the literal sense.

Under glass, the confinement effect can drive the temperature **well beyond 45 °C** during a heatwave, whereas most market-garden crops have an optimum of **22 to 28 °C**. The gap is not mere discomfort: it is a loss of harvest that can be counted.

What Overheating Really Costs the Grower

Beyond a threshold around 32 to 35 °C, the plant does not merely slow down: it gives way. The consequences are known to every grower, and they strike yield and commercial quality directly:

- **Flower abortion and drop in fruit set** — flowers yield no fruit, or young fruits fall. Less harvest, quite simply.
- **Fruit scald** — tomatoes and peppers scorched by excess heat and radiation, downgraded at sale.
- **Bolting of lettuces** — the lettuce runs to seed before it can be marketed, and becomes unsellable.
- **Soaring water needs** — the plant transpires to defend itself, irrigation soars, precisely when water grows scarce and restricted.

To these losses is added the cost of **active ventilation** — motorised vents, extractors, misting — which runs at full tilt during the hot hours, consumes energy and water, and never truly gets the upper hand when heat enters faster than it is removed.



Beyond 32-35 °C, the plant gives way: flower abortion, scald, bolting. Every excess degree under cover translates into lost harvest and wasted water.

The Limits of Traditional Whitewashing of the Panels

Faced with overheating, the traditional answer is well known: **whitewashing with chalk or lime wash**, brushed onto the panels at the start of the season. It creates shade, so it lowers the temperature — but it carries several drawbacks every grower has experienced.

It is **hard to control**: the shading cannot be finely dosed, and a layer that is too thick deprives crops of the light they need for photosynthesis. It is **messy and non-adjustable**, washing off unevenly with the rains and leaving an inconsistent finish. In short: one trades a heat problem for a light problem, with no real control over the balance between the two.

Reflect the Heat, Preserve the Light

This is precisely where a new approach changes the game. There now exist translucent thermo-reflective solar lacquers, specifically formulated for transparent supports — glass roofs, skydomes, greenhouse panels. Their principle: to filter solar energy (heat and infrared) while letting a large share of the visible light through.

In practice, this type of coating combines a high solar reflectance index (SRI of around 90) with a **translucency factor of about 70%**, and is entirely unaffected by UV rays. It is applied cleanly, by roller or airless sprayer, in a uniform, controlled layer — where the chalk was approximate. No more messy whitewash: the result is even shading, designed for the balance between heat repelled and light preserved.

One indirect benefit deserves the grower's attention: control of humidity. By smoothing the thermal peaks under cover, the coating reduces the abrupt temperature swings that cause condensation on the panels and the foliage. And that beading water is an open door to fungal diseases — downy mildew, botrytis — and disrupts the crop's water balance. Less condensation means more stable humidity, a healthier greenhouse climate, and reduced disease pressure — all conditions favouring more regular, less-treated crops.

An important point of transparency: unlike whitewash, this coating **is not designed to be removed at the end of the season**. But this permanence is not a flaw — because **its effect is very slight in winter**: in that season, the sun is low on the horizon, its radiation striking the greenhouse panels at a grazing, much weaker angle. The action of the reflective pigments then becomes marginal, and does not deprive winter crops of the scarcer, more precious light they need. The coating protects when it must — in summer — and fades when it must not — in winter.



A translucent lacquer on the supports: it reflects solar energy while letting visible light through. Even, controlled shading, where the chalk remained approximate and messy.

Proof Before Promise: the Instrumented Trial

It would be easy to claim that all this works. We prefer to measure it — and to prove it.

For one figure deserves to be stated honestly: overall translucency (70%) says nothing definite about the exact share of *photosynthetically active radiation* (PAR, the light the plant actually uses to grow) that is preserved. This is a serious question, and it deserves a measured answer, not a sales argument.

This is why we offer growers and research centres an instrumented pilot-trial approach, in four steps:

- **Baseline measurement** — temperature under cover and radiation (incident and transmitted) on an untreated control greenhouse.
- **Application** — application of the coating on a test area, following a certified protocol.
- **Comparative monitoring** — temperature differences, share of useful light preserved, real behaviour of the crop.
- **Impact report** — a quantified, co-signed summary, the basis for an informed decision before any roll-out.

This demand for proof, we apply to all our projects through the international IPMVP protocol. For market gardening, it takes on a particular meaning: it is your harvest that is at stake, and a recommendation is only worth anything if it rests on measurements made in your greenhouses, on your crops.

The Essential Harvest

Greenhouse growing lives with a tension that warming makes sharper every year: to capture the light without suffering the heat. Chalk whitewashing cut the knot by sacrificing part of the light; translucent thermo-reflective lacquers, by contrast, propose to separate the two — repelling solar energy, preserving brightness.

After the summer of 2026 and with a 2027 forecast to be hotter still, the question is no longer whether overheating under cover will prove costly, but *how much* — and how to avoid it. The answer begins with a measurement in the field. **Cutting the heat without cutting the light: it is now possible, and it can be proven.**



A translucent lacquer on the supports: it reflects solar energy while letting visible light through. Even, controlled shading, where the chalk remained approximate and messy.

Sources : Technical data on translucent thermo-reflective lacquer (SRI, translucency factor, UV filtration, water-based) · Physiology of greenhouse market-garden crops (thermal optimums, stress thresholds, bolting, fruit set) · MeteoSwiss — Summer 2026 review and Swiss Climate Scenarios 2025 · Field feedback and THERM'Reflectis instrumented-trial protocol

Do you grow under glass, and did the heatwave leave its mark on your harvest this summer? Let's talk before the next season — an instrumented trial, without obligation, to measure the real effect on your crops.

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