Grodan®

Part of ROCKWOOL Group

5-Phase Model in Large Blocks | One-Transplant System

Flower Swelling & Bulking

PHASE 4

This structured, phase-based approach enables proactive steering of the crop rather than reactive growing, helping cultivators drive uniformity, optimize inputs, and consistently achieve the desired plant architecture and yield outcomes that Grodan is known for worldwide.

Simpler crop management. More predictable outcomes.

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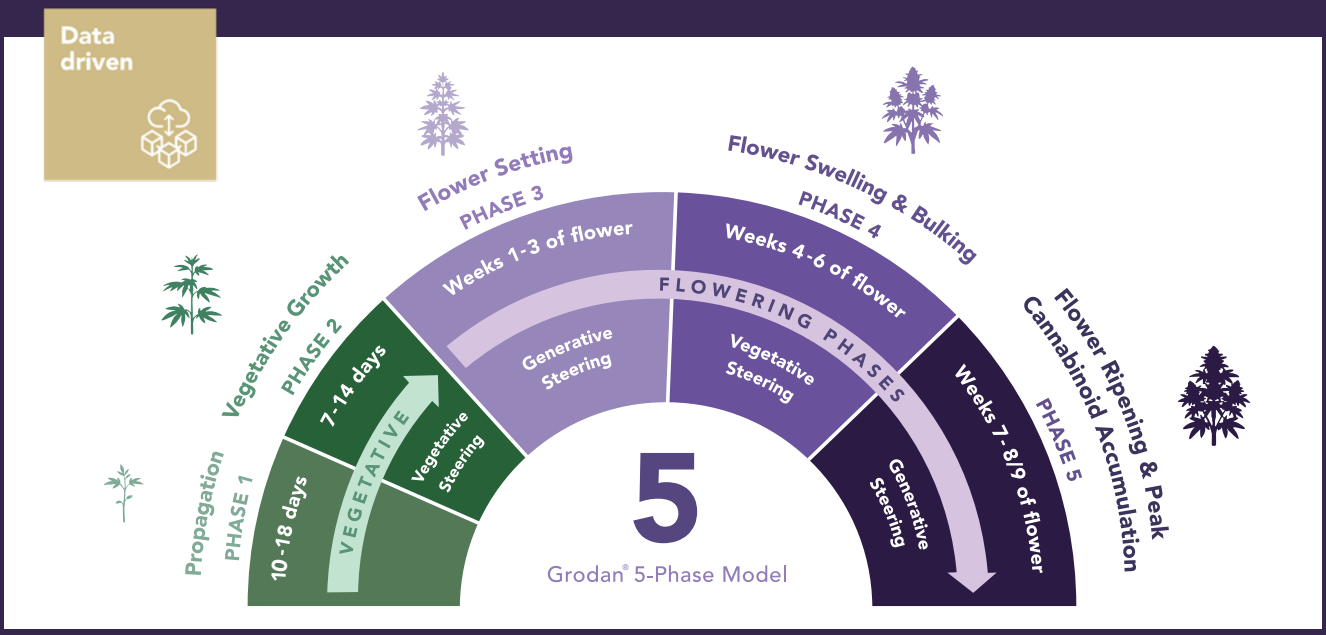
5-Phase Model in Large Blocks | One-Transplant System

A simple framework that breaks the crop cycle into 5 phases, so you know what to do and when to do it.

Grodan's latest cannabis growing advice builds on its decades-long leadership in vegetable cultivation by translating the proven 6-phase methodology into a clear, cannabis-specific 5-Phase Model.

Each chapter pairs Grodan's substrate configuration with phase-specific objectives, root zone and canopy management targets, and tailored crop steering advice, so growers can visually and quantifiably confirm they are on track at every stage of growth.

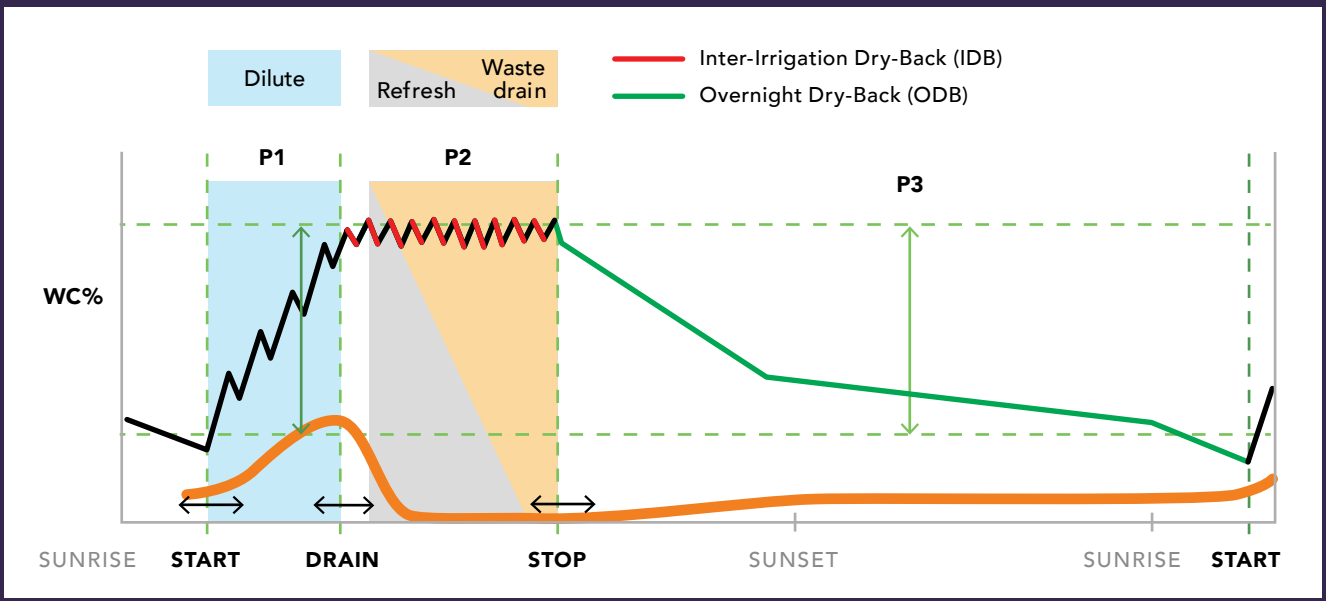


Grodan's DAY-DYNAMIC MODEL

P1 - First irrigation to first drain | P2 - First drain to last irrigation | P3 - Last irrigation to first irrigation

Inter-Irrigation Dry-Back (IDB): Dry-back in between P2 irrigation events.

Overnight Dry-Back (ODB): Dry-back from last irrigation of the day to first irrigation of the following day.



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Phase 4

Flower Swelling & Bulking

in Large Blocks | One-Transplant System

Typical duration

~21 days (weeks 4, 5, & 6 of flower)

Start of Phase

Flower sites are established at all nodes and pistils are fully emerged. Internode and shoot elongation has ceased and the plant's canopy structure and height are fixed.

End of Phase

Flowers are approaching size maturity; flower swelling and expansion have slowed; dry matter is still accumulating.

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Phase Objective

Realize maximum flower swelling, density, and calyx development by supplying adequate water and nutrients to support peak transpiration and dry matter accumulation.

Transition from generative steering to a vegetative impulse to prioritize flower swelling.

Crop Target

Flowers visibly swelling, expanding, and densifying week-over-week; calyxes stack tightly with minimal gaps; fan leaves remain green and turgid, not yellowing.

Canopy should be managed to allow adequate airflow, maximum light absorption onto flowering sites, and optimal sink:source ratios.

Climate conditions should be balanced to maintain a steady rate of flower development.

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Root zone Target

Root quality and activity should be protected to ensure crop resilience through the end of the cycle.

Now that the plant has thoroughly shifted its energy allocation toward flower development, vegetative balance should be increased substantially and root zone stress should be reduced via: frequent shots, higher daytime WC%, reduced substrate EC, and reduced overnight dry-back (P3), compared to Phase 3.

Phase 4 Root zone & Irrigation Targets

Start time	+~0.5-1 hr after lights on or 1-2% decrease in WC%
Stop time	+~1-2 hrs before lights off or stop time required to achieve 10-15% overnight dry-back (P3)
Target Day-Level WC	60-65%
Overnight Dry-Back (P3)	10-15%
Inter-Irrigation Dry-Back (P2)	2-3%
Drip EC	2.5-3.5 mS/cm
Substrate EC	4-7 mS/cm
24-Hr Drain Volume	20-30%
Steering Impulse/Shot Strategy	Vegetative/Small, Frequent

Table 4.1

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Managing the Canopy During Phase 4

Peak dry matter accumulation in the flowers during weeks 4-6 places the plant's assimilate balance under maximum demand. Developing flowers are the dominant sink for photosynthetically derived carbohydrates, and the rate at which they bulk is directly constrained by the source capacity of the canopy — that is, the functional, light-intercepting leaf area available to supply them.

If the number of active flower sites exceeds what the canopy can adequately supply, individual bud development will be carbon-limited, resulting in airy, underdeveloped flowers regardless of the quality of the root zone or nutrient strategy.

If shaded fan leaf growth is excessive, a conservative additional defoliation may be appropriate; however, the primary pruning and defoliation that sets the canopy structure should have taken place in Phase 3.

Managing the Root zone During Phase 4

The transition from Phase 3's generative steering to Phase 4's vegetative impulse is a critical strategic pivot in the cultivation cycle. Several parameters can be shifted in Phase 4 to bring back vegetative balance and encourage flower swelling:

Root zone EC can be decreased slightly by achieving consistent daily drain volumes. Substrate EC reduction should be performed gradually over the course of several days, not via sharp reductions in drip EC or excessively large runoff events.

This will maximize nutrient balance and uptake efficiency for peak flower development and prevent scenarios of prolonged osmotic stress, protecting root health and quality.

The decrease in WC overnight (overnight dry-back P3) should be reduced to bring vegetative balance and speed to the crop and encourage swelling and bulking of the flowers.

A reduction in overnight dry-back (P3) to 10-15% can be achieved by increasing the irrigation window — starting irrigation earlier in the day (but only after transpiration has begun) and by stopping irrigation later in the day.

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In Phase 4 it is especially critical to ensure proper morning re-saturation of the substrate to maintain high daytime WC%, thus providing easily available water to the plant. It is ideal to bring that substrate back to roughly 60-65% WC by the end of the P1 re-saturation phase to support maximum transpiration and photosynthesis.

Failing to do so forces the plant to expend increasing metabolic energy extracting water against the tension of drying substrate pores — energy that would otherwise be directed toward the biosynthetic processes driving flower bulk, dry matter deposition, and secondary metabolite production. The shot strategy can be adjusted to smaller, more frequent irrigation events to reinforce the vegetative signaling and keep the WC% rising in the morning.

Peak Flower Demand Is Where Irrigation Mistakes Become Expensive.

GroSens helps growers monitor root zone behavior in real time, making it easier to protect crop performance during the most valuable stage of the cycle.

See what's happening inside the root zone.

Explore GroSens Suite.

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This is what control looks like

With Grodan, you're not left guessing.

You're working with a consistent root zone, clear signals, and a system designed to be repeatable. From propagation to harvest, every phase becomes easier to manage and more predictable.

Ready to see it in your own grow?

Talk to a Grodan advisor to start a trial.

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Designed to grow

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