Grodan®

Part of ROCKWOOL Group

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

Flower Ripening & Peak Cannabinoid Accumulation

PHASE 5

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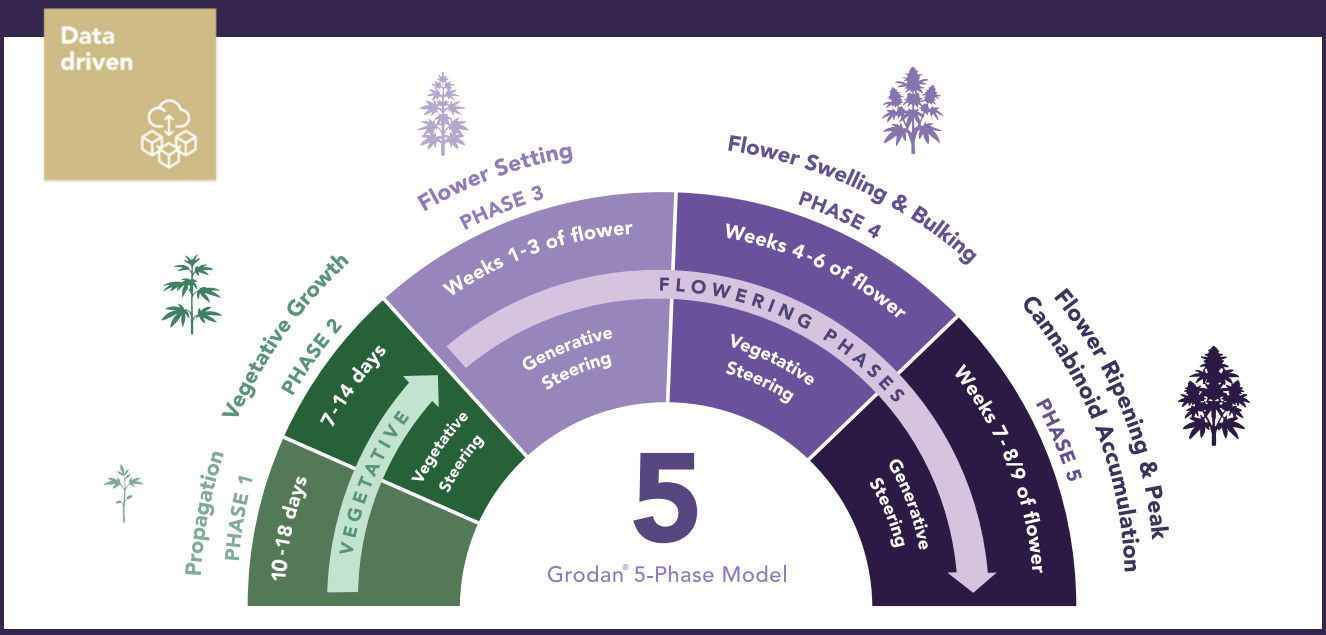
5-Phase Model in Large Blocks | One-Transplant System

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.

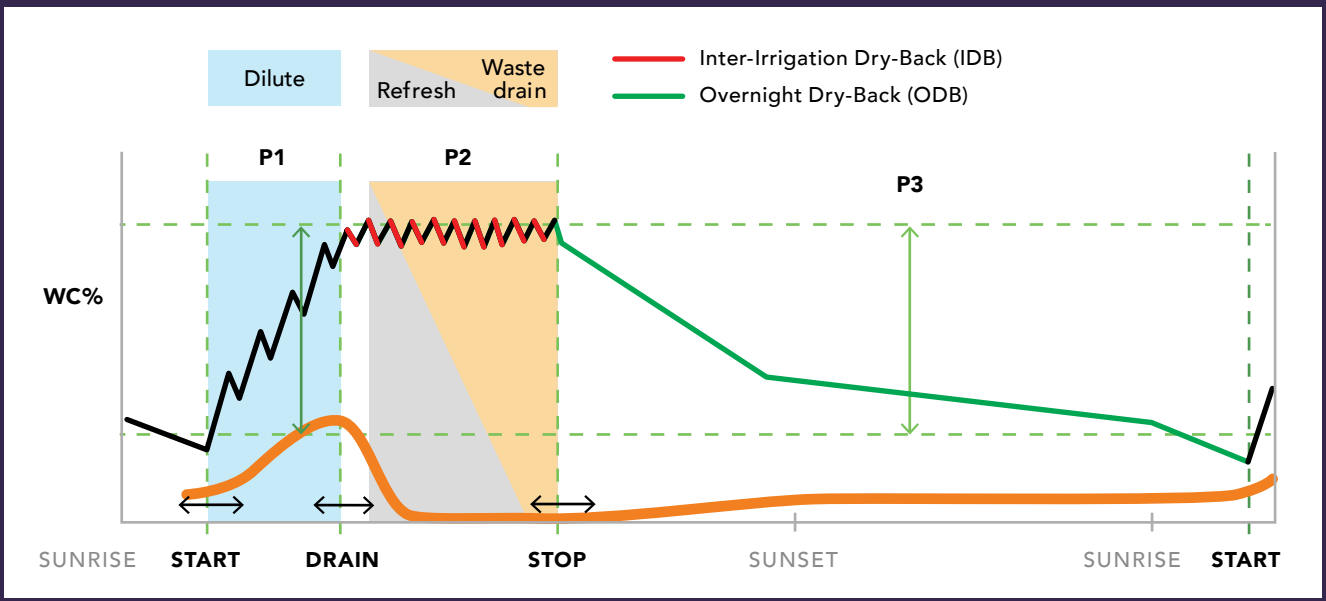


Grodan's DAY-DYNAMIC MODEL

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 5

Flower Ripening & Peak Cannabinoid Accumulation

in Large Blocks | One-Transplant System

Typical duration

~14-21 days (weeks 7 & 8/9 of flower)

Start of Phase

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

End of Phase

Plants are ready for harvest; pistils at primary bud sites predominantly turn orange/brown and dry, receding into calyx. Trichomes may be turning cloudy/amber under magnification. Some cultivars accumulate anthocyanins and darken in color.

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Phase Objective

Maximize secondary metabolite production — cannabinoids, terpenes, and flavonoids — by applying a final generative steering impulse that signals the plant toward senescence and reproductive completion.

Maintain root health, nutrient balance, and strategic climate to prevent fungal disease and microbial contaminants.

Crop Target

Deploy mild temperature, relative humidity, and CO_2 reductions that encourage flower ripening, coloration (cultivar-dependent), pistil drying, and preservation of terpenes before harvest. Fan leaves may change color in this phase if nutrient translocation to ripening flowers and younger leaves occurs — this is normal and should not prompt corrective climate or irrigation action.

Climate and airflow must be active in this phase to encourage moisture dissipation from the boundary layer around the leaves and avoid *Botrytis* spp. (bud-rot) and other microbial contamination.

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Root zone Target

Resume generative irrigation signaling by gradually reducing the maximum day-level WC% from the start of Phase 5 to the final harvest. The shot strategy should be shifted to higher volume shots at lower frequencies, targeting adequate dry-backs between irrigation events in period 2 (P2).

Larger overnight decreases (P3) in WC% can also be resumed to encourage ripening. Good oxygen penetration in the root zone is paramount in this final phase to preserve root health and integrity. As the crop approaches senescence and root activity declines, total water uptake may decrease, so resist the urge to irrigate based on the clock alone. In addition to creating drier root zone conditions overall, a mild reduction in drip EC may be implemented in the final 5-10 days, optionally, to match the decreasing nutrient demands of the crop.

However, low EC, high WC% combinations should be carefully avoided in this phase, and excessive runoff to reduce the substrate EC is not warranted.

Phase 5 Root zone & Irrigation Targets

Start time	+~1-2 hrs after lights on or 1-2% decrease in WC%
Stop time	+~2+ hrs before lights off or stop time required to achieve 20-25% overnight dry-back (P3)
Target Day-Level WC	55-60%
Overnight Dry-Back (P3)	20-25%
Inter-Irrigation Dry-Back (P2)	4-6%
Drip EC	1.8-3.0 mS/cm
Substrate EC	5-8 mS/cm
24-Hr Drain Volume	10-25%
Steering Impulse/Shot Strategy	Generative/Large, Infrequent

Table 5.1

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Managing the Canopy During Phase 5

Avoid any unnecessary pruning or deleafing as this creates open wounds where moisture accumulates and *Botrytis* spp. (bud-rot) can establish; in a dense, mature canopy with reduced airflow, any open wound is a liability.

Moderate ambient temperature reductions in this phase stimulate anthocyanin biosynthesis in receptive cultivars, deepening purple and red pigmentation, and slow terpene volatilization at the canopy surface. Both are desirable outcomes — but temperature reductions must be balanced with dehumidification requirements; relative humidity must be reduced carefully in conjunction with temperature. Canopy temperature must never be lowered beyond the point at which the dehumidification system can maintain a vapor pressure deficit (VPD) of 1.1-1.3 kPa, day and night.

Cooler air holds less moisture, and dehumidifiers have a finite removal capacity. When temperature reductions outpace dehumidification capacity, relative humidity rises and microbial contamination conditions are created at precisely the moment the crop is most vulnerable. VPD stability is the constraint — temperature reduction is only appropriate within it.

Elevated CO_2 concentrations stimulate photosynthesis and carbon fixation, which keeps the plant in a physiologically active, growth-oriented state. Ripening — senescence of reproductive tissue, trichome maturation, and the terminal accumulation of cannabinoids and terpenes — can be impaired by excessively high CO_2 levels which offer diminishing photosynthetic return, so growers may want to titrate concentrations downward in the final week of production to save resources and encourage maturation. Critically, CO_2 concentration also stimulates stomatal aperture, so growers should pay close attention to transpiration and dry-back (P2) rates when adjusting ambient concentrations.

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Managing the Root zone During Phase 5

Botrytis spp. (bud-rot) risk increases significantly as flowers become denser and begin retaining moisture. The grower's primary defense is root zone management that keeps the substrate EC sufficiently stable or elevated and prevents excessive humidity in the canopy from over-irrigating.

The target is to gradually reduce the maximum daytime WC% from approximately 60-65% at the start of this phase to 55-60% in the final weeks of production. The goal is a smooth, controlled trajectory toward harvest, not an abrupt dry-back.

This generative signal is best achieved through larger, less frequent shots, large inter-irrigation dry-backs (P2) of 4-6% in period 2, and larger overnight dry-backs (P3) (20-25%) than those achieved in Phase 4.

Any irrigation practice in Phase 5 that results in low substrate EC and/or chronically elevated WC% creates a strongly negative osmotic gradient between the root zone solution and plant tissue — driving passive water uptake beyond what transpiration demand requires. This surplus water floods into flower tissue, often causing bracts and calyxes to swell with water weight. Excessively moist floral tissue creates ideal conditions for *Botrytis* spp. (bud-rot) germination and spread.

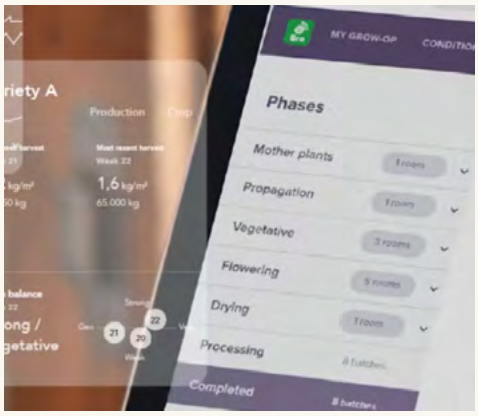
Root pressure in dark periods can also exacerbate disease as stomata close and transpiration drops to near zero while root cells continue actively pumping ions into the xylem, building osmotic pressure that drives water passively into the roots and upward into plant tissue with no transpirational outlet; this dynamic forces additional moisture into flower tissue, leaf margins, and intercellular spaces. To mitigate these risks, consider stopping irrigation on the earlier side and resuming in the morning once plants are actively transpiring, rather than irrigating close to the lights-off period.

Reducing (not eliminating) nitrate concentration in the nutrient solution during Phases 4 and 5 can support ripening and reduce disease pressure by accelerating the natural senescence of fan leaves, upregulating secondary metabolite biosynthesis, strengthening cell walls, and suppressing the production of new soft vegetative tissue that is most susceptible to fungal infection. Traditional high-volume water flushing is not recommended in Phase 5 as it creates a strong vegetative signal, can disrupt secondary metabolite accumulation, and risks root damage. Grodan block and slab technology provides excellent, stable EC control through efficient drain, without the need for excessive flushing. As the crop's metabolic demand declines in Phase 5, the drip EC and slab EC can be gradually titrated downwards while maintaining generative irrigation signals. The goal is a stable decrease in line with the crop's slowing nutritional requirements, not a sudden shock. Excessive application of water or fertigate with a low EC can reduce final flower quality and invite microbial proliferation.

The Last Weeks of Growth Carry the Highest Risk to Flower Quality

GroSens helps growers monitor root zone behavior in real time, making it easier to maintain proper dry-backs, avoid excess moisture, and finish the crop with greater consistency and control.

Protect flower quality through the final stretch.
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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