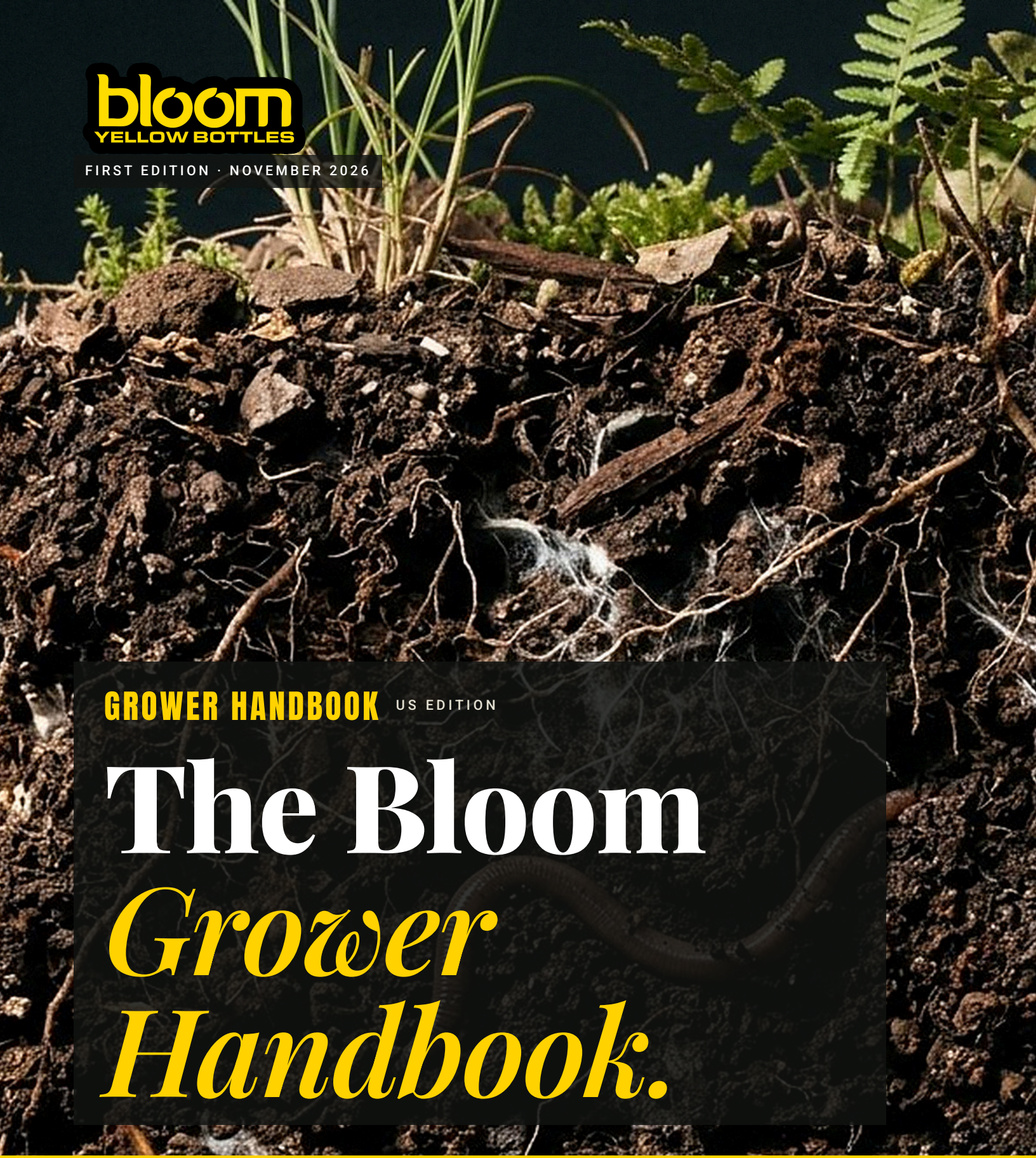


bloom
YELLOW BOTTLES

FIRST EDITION · NOVEMBER 2026

GROWER HANDBOOK US EDITION

The Bloom *Grower Handbook.*

What the research says, what's in the bottles, and how to run them. Written for growers, sourced from journals and university extension.

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How to use it

Every chapter is four pages: a cover with the short version, the evidence, the bottles and how to use them, then a grower's own words and the sources. Links in the PDF are live.

How it was sourced

Every research figure comes from a peer-reviewed journal or a university extension sheet. Bloom facts come from labels, feed charts and Bloom's own records. Grower words are verbatim.

Product images are renders. Stage and cover images are a mix of AI-generated illustrations and photos, used to show how things work, not results. Grower photos are the growers' own, used with their consent. This handbook is general growing information for legal crops. Follow your local laws and the product label. Bloom products are plant nutrient additives. They are not pesticides and are not certified organic.

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GROWER HANDBOOK



01 THE APPROACH

The Yellow *Bottle approach.*

Bloom is a set of additives you put on top of the base feed you already run. Here's the thinking: what an additive is, what the research can and can't promise, and how to try it without betting the room.

01 What an additive is

02 What the research says, and doesn't

03 One bottle per job

04 How to try it in your own room

SHORT VERSION 1

Bloom is additives on your base feed. It isn't a base nutrient and you don't need the whole range.

SHORT VERSION 2

A review of 81 humic-product studies shows a real average gain and a wide spread. Results vary.

SHORT VERSION 3

The fair answer is a side-by-side in your own room, one change at a time.

PART 01

What an additive is, *and what the research says.*

Plant scientists call a product like this a biostimulant: something applied to plants to help nutrient efficiency, stress tolerance or crop quality, whatever nutrients it contains. It isn't a fertiliser, because delivering nutrients isn't its job.[1]

That's why Bloom sits on top of a base feed. The base feeds the plant. The bottles are the extras.

≈20%

average gain in shoot and root dry weight across 81 studies of humic products.

Reported as 22% and 21% in the abstract, 19% and 20% in the results table.[2] About half the shoot studies and a third of the root studies did not beat 5%.

Shoot growth from humic products, by where they came from



Meta-analysis of 81 studies, mostly greenhouse pots, many crops. Humic substances only, not Bloom products and not cannabis-specific.[2]

It's a spread, not a promise

The authors call the response inconsistent and hard to predict next to inorganic fertiliser. The source of the humic material mattered, and so did the rate: the effect was not a straight line, and very high rates held roots back under mineral stress.[2]

Seaweed: the whole extract

A 2021 review of seaweed extracts found no single fraction reproduced everything the whole extract did, and says much of the mechanism is still unsorted. Most of that work is greenhouse and controlled-environment trials.[3]

What these reviews don't cover: they don't test Bloom bottles, and they say little about cannabis in particular. They tell you what kind of result to expect from the category: sometimes clear, sometimes nothing. That's the reason for the test on the next pages.

PART 02 & 03

One bottle per job, *26 years of it.*

Bloom has been in the US market for 26 years. The thinking hasn't changed: start with what the plant is doing this week, then choose the bottle that fits it.



On top of your base

Run the base feed you trust. Add a bottle where you want one. Most of Bloom's line is additives.

One bottle, one job

The feed chart places Roots at rooting, Ultra at the flip and Final in the last two weeks. Pick the job, pick the bottle.

By stage, weekly

Rates change as the plant does and go in the weekly feed. The feed charts show the week.

Your call

Some rooms run a bottle every feed, some once a week. That's preference. Nobody needs the whole range.

How to try it: the fair test

ONE CULTIVAR · ONE ROOM · TWO HALVES

01 **Same plants**
Clones off one mother, same age.

02 **Same room**
Light, climate, pot size and watering.

03 **Same feed**
Same base and the same EC on both halves.

04 **One change**
Add one Bloom bottle to half B only. Photo both halves weekly from the same spot, then weigh the dry flower.

Jar both halves unlabelled and see which one you reach for. Want help setting it up? Email nathan@bloomyellowbottles.com.

Bloom isn't a magic fix and doesn't replace good water, light and a base feed you trust. It's a set of tools you can test.

GROWER PROOF, AND WHERE THE NUMBERS COME FROM

Honest check

The reviews and studies here are about humic and seaweed products as a category. None of them tested a Bloom bottle, and none is a promise for your room.

Bloom's own claims are limited to what is on the label and in the feed charts. Individual results vary.

The 26 years is Bloom's time in the US market, not a trial length.



GROWER PROOF · FROM BLOOM'S REVIEWS BANK

"I've seen better results with these products than any other line I've tried."

@804growtent
Products named: Bloom line

In the grower's own words, from a DM. One grower's view, not a measured result.

Other crops

Growing fruit, veg, peppers or ornamentals? Rates and the feed schedule are on the fruit and veg feed schedule page. This handbook prints no crop rates.

Sources

1 du Jardin P (2015). Plant biostimulants: definition, concept, main categories and regulation. *Scientia Horticulturae* 196:3–14. doi.org/10.1016/j.scienta.2015.09.021

2 Rose MT, Patti AF, Little KR, Brown AL, Jackson WR, Cavagnaro TR (2014). A meta-analysis and review of plant-growth response to humic substances. *Advances in Agronomy* 124:37–89. doi.org/10.1016/B978-0-12-800138-7.00002-4

3 Ali O, Ramsubhag A, Jayaraman J (2021). Biostimulant properties of seaweed extracts in plants. *Plants* 10(3):531. doi.org/10.3390/plants10030531

Bloom facts (26 years in the US, additives on a base feed): Bloom's own history and range. Superscripts 1 to 3 are sources 1 to 3. Product images are renders. Stage and cover images are a mix of AI-generated illustrations and photos, used to show how things work, not results. Grower photos are the growers' own, used with their consent. This handbook is general growing information for legal crops. Follow your local laws and the product label.

Ready to try one bottle?

Matching page: bloomyellowbottles.us/feed-schedules · Comment or DM CREW on @bloom_crew_nate

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02 THE RANGE

The range *at a glance.*

Nineteen bottles, but you'll never use them all at once. Here's what each one is for, where it sits in the run, and how to read a rate.

01 Where each bottle sits in the run

02 What each bottle is

03 How to read a rate

04 A grower's take

SHORT VERSION 1

Most bottles are tied to a stage: rooting, veg, flip, flower, finish.

SHORT VERSION 2

Four bottles (Humate, Cal-Mag, Sea Minerals, Groigen) aren't tied to one stage. The feed chart says when.

SHORT VERSION 3

Rates are in ml per litre. 1 ml/L is 3.8 ml per US gallon.

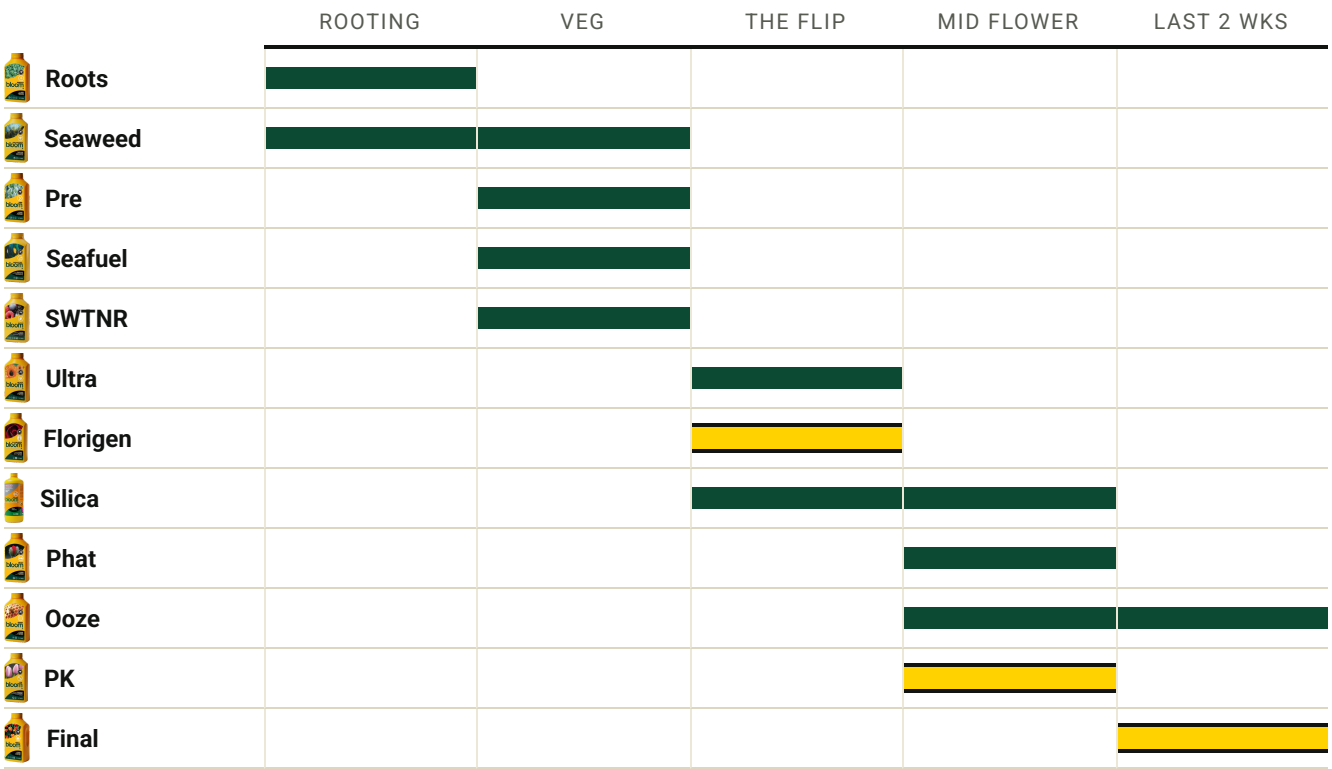
PART 01

Where each bottle *sits in the run.*

One row per stage bottle, one column per stage. Green is the standard place for it; yellow marks a spray or an as-needed bottle. Bloom's feed charts give the exact week.

The stage map

STANDARD PLACEMENT, FROM BLOOM'S FEED CHARTS



Florigen is a foliar spray at the flip. PK is used as needed. Humate, Cal-Mag, Sea Minerals and Groigen aren't shown: they aren't tied to one stage, so follow the chart for your medium. Phat is flower weeks 3 and 4; Ooze runs weeks 5 to 8; Final goes in the last two weeks.

Pick what the room needs

Nothing here says you need the full range. Plenty of growers run one or two bottles on top of their base. Start with the stage you want help with.

Base feeds are separate

Euro, Grow and Flower A+B are base nutrient pairs. The other bottles are additives that go on top of whichever base you run.

PART 02 & 03

What each bottle is, *and how to read a rate.*



Roots
New roots, cuttings and transplants



Pre
Mid veg, the frame before the flip



Ultra
The stage bottle for the flip



Phat
Flower weeks 3 and 4



Ooze
Flower week 5 to the end



Final
The last two weeks



Seafuel
Tuna and kelp



Seaweed
Southern bull kelp



SWTNR
Malted barley, seawater and seaplant extracts



Humate
Liquid humic acid



Cal-Mag
Calcium and magnesium



Groigen
Foliar, veg



Florigen
Foliar, at the flip



Sea Minerals
Trace minerals from sea water



PK
Phosphorus and potassium, as needed



Euro A+B
Base nutrient pair



Grow A+B
Base, veg



Flower A+B
Base, flower



Silica
Potassium silicate

ml/L
Rates are millilitres per litre of feed water.

3.8 ml/gal
1 ml/L is 3.8 ml per US gallon (1 gal = 3.785 L).

1 L
Feeds 1,000 L at 1 ml/L, which is 264 US gallons.

Chart
Rates change by stage and medium. The feed chart is the one to follow.

Most bottles come in 300 ml to 25 L; Silica has its own sizes. Tap a bottle to open its page. Descriptions are short on purpose: each bottle's page and label carry the detail.

GROWER PROOF, AND WHERE THE NUMBERS COME FROM



GROWER PROOF · FROM BLOOM'S REVIEWS BANK

“Ill tell you this much, the Roots and Sea minerals are AMAZING”

@hellfirefarmsjason
Products named: Roots, Sea Minerals

In the grower’s own words, from a DM. One grower’s view, not a measured result.

Other crops

Growing fruit, veg, peppers or ornamentals? Rates and the feed schedule are on the fruit and veg feed schedule page. This handbook prints no crop rates.

Sources

1. Bloom feed charts: bloomyellowbottles.us/feed-schedules (stage placement, one chart per medium).
2. Bloom product pages and labels: names, sizes and descriptions. Where a page and a label disagree, the label wins.
3. Standard Phat and Ooze schedule, and Final in the last two weeks: Bloom’s standard flower schedule.

The 19 bottle names follow the wholesale price sheet order. Product images are renders. Stage and cover images are a mix of AI-generated illustrations and photos, used to show how things work, not results. Grower photos are the growers' own, used with their consent. This handbook is general growing information for legal crops. Follow your local laws and the product label.

Not sure where to start?

Matching page: bloomyellowbottles.us/feed-schedules · Comment or DM CREW on @bloom_crew_nate

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GROWER HANDBOOK

03 THE PLANT

How the plant *uses it.*

A little plant biology makes every feed chart easier to read. Which nutrients the plant moves around, which it can't, why the symptom shows where it does, and what's in the bottles.

01 Which nutrients move, and which don't

02 What the research says about additives

03 What's in each bottle, by label

04 A grower's seedlings

SHORT VERSION 1

Some nutrients move around the plant. When they run short, older leaves show it first.

SHORT VERSION 2

Others stay put, so the new growth shows it first.

SHORT VERSION 3

The extracts in Bloom bottles are mostly plant-derived compounds. The labels list what they come from.

PART 01

Which nutrients move, *and which don't.*

Plants treat nutrients differently. Mobile ones get shifted from old leaves to new growth when supply is short. Immobile ones stay where they landed.[1]

That's why you read a leaf by its age, and why a feed chart steps through the run instead of holding one number.

70%+

of a seed's nitrogen came from the rest of the plant, mostly its leaves, in most seed crops reviewed.

Seed crops and a lab plant, not unseeded flower.[2]

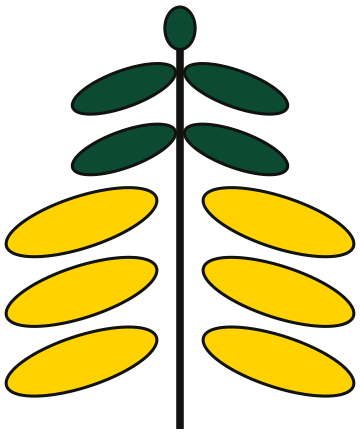
Where a shortage shows first

MOBILE VS IMMOBILE NUTRIENTS

MOVES AROUND THE PLANT

N · P · K · Mg

When these run short the plant pulls them from older growth. Symptoms show in the **older leaves** first.



STAYS WHERE IT WAS PUT

Ca · Cu · B · Fe · Mn · Zn

The plant can't move these on. Symptoms show in the **new growth** first.

Yellow leaves are the older ones, green the newer growth. Sulfur and molybdenum weren't placed by the source. A symmetrical pattern across the plant points to nutrition; a patchy one points elsewhere.[1]

pH changes who's available

Too acidic, and potassium, calcium and magnesium can be in a form roots can't take up. Too alkaline, and iron, manganese, zinc and boron can be unavailable. Test before you add anything.[1]

Testing beats guessing

Symptoms can look like pesticide drift or disease. The extension advice is a media or soil test, and a tissue test when symptoms look alike.[1]

PART 02 & 03

What's in the bottles, *by label.*

The extracts in Bloom bottles are mostly plant-derived compounds from seaweed, alfalfa, molasses and malted barley. Algal extracts are biostimulants, not fertilisers, with only trace minerals.[3,5] What each one is derived from is on its label:

 ROOTS	Durvillaea potatorum (southern bull kelp)
 PRE	Ascophyllum nodosum (brown seaweed), Durvillaea potatorum
 ULTRA	Ascophyllum nodosum, Medicago sativa (alfalfa extract)
 PHAT	Laminaria and Lessonia (kelps), boric acid, sodium molybdate
 OOZE	Molasses, Ahnfeltia, Laminaria, boric acid, sodium molybdate
 FINAL	Ascophyllum nodosum, Durvillaea potatorum, Medicago sativa
 SWTNR	Malted barley extract, seawater extract, Porphyra abyssicola (seaplant)

In every bottle above except SWTNR

0.075% humic acid from leonardite and 0.054% thiamine hydrochloride (vitamin B1). SWTNR carries 0.002% B1 and a guaranteed analysis of 0-0-0.74.

Why the source matters

In a review of humic products, material from compost and soil beat lignite, and peat showed no clear effect. For seaweed, no single piece of the extract reproduced the whole.[4,3]

Ingredient lines are read from Bloom label artwork. Check the panel on your own bottle; where a label and a website differ, the label wins.

GROWER PROOF, AND WHERE THE NUMBERS COME FROM



GROWER PROOF · FROM BLOOM'S REVIEWS BANK

“The seedlings only got ‘roots’ and theyre really happy. But the growth in the tent is nuts!”

@chrisplants
Products named: Roots

In the grower’s own words, from a DM. Pepper seedlings in cups. One grower’s view, not a measured result.

Other crops

Growing fruit, veg, peppers or ornamentals? Rates and the feed schedule are on the fruit and veg feed schedule page. This handbook prints no crop rates.

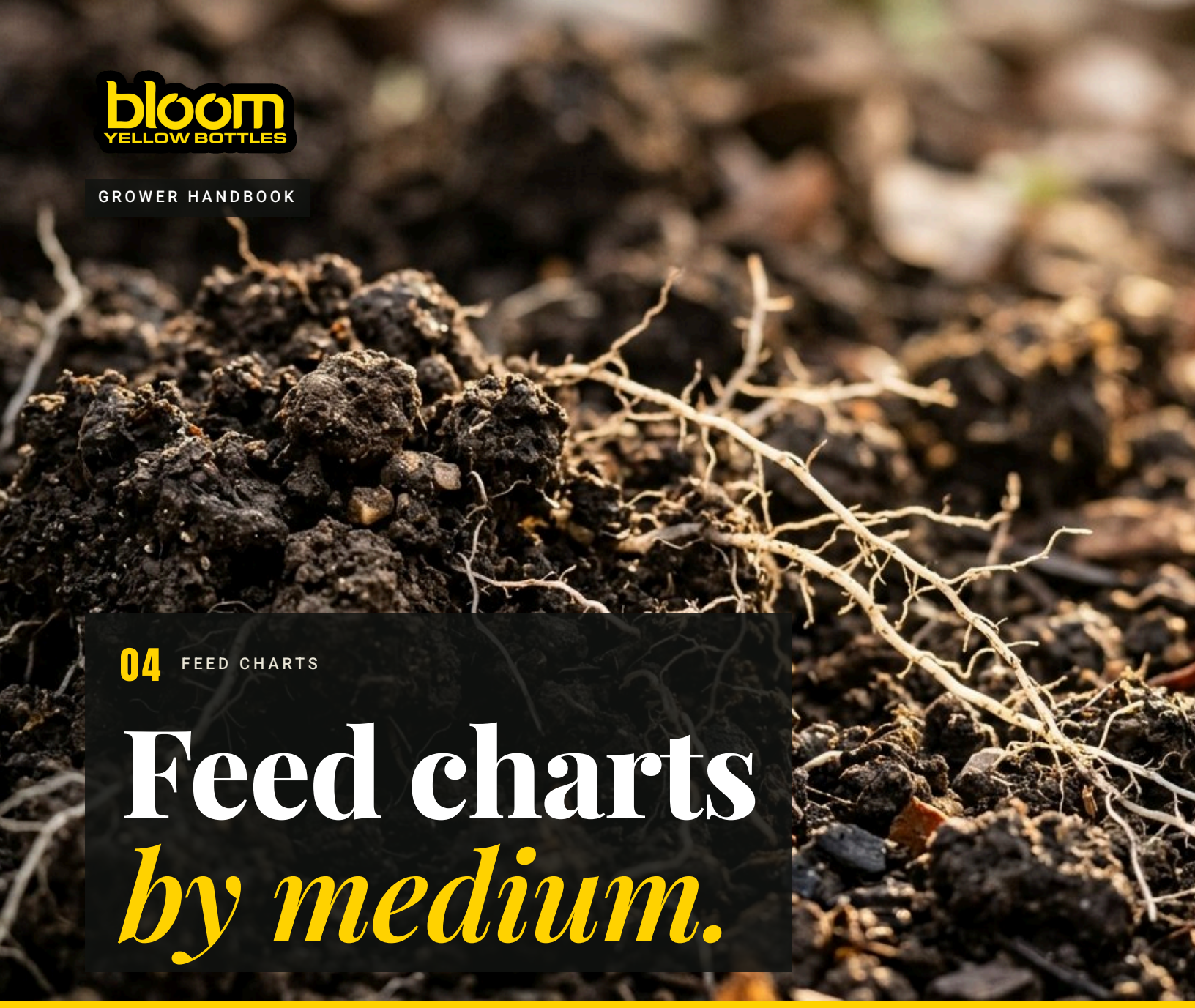
Sources

1. Shober AL, Denny GC. Identifying nutrient deficiencies in ornamental plants. University of Delaware Cooperative Extension. udel.edu fact sheet
2. Havé M, Marmagne A, Chardon F, Masclaux-Daubresse C (2017). Nitrogen remobilization during leaf senescence. *Journal of Experimental Botany* 68(10):2513–2529. doi.org/10.1093/jxb/erw365
3. Ali O, Ramsubhag A, Jayaraman J (2021). Biostimulant properties of seaweed extracts in plants. *Plants* 10(3):531. doi.org/10.3390/plants10030531
4. Rose MT, Patti AF, Little KR, Brown AL, Jackson WR, Cavagnaro TR (2014). A meta-analysis and review of plant-growth response to humic substances. *Advances in Agronomy* 124:37–89. doi.org/10.1016/B978-0-12-800138-7.00002-4
5. du Jardin P (2015). Plant biostimulants: definition, concept, main categories and regulation. *Scientia Horticulturae* 196:3–14. doi.org/10.1016/j.scienta.2015.09.021

Bloom ingredients: Bloom label artwork. Product images are renders. Stage and cover images are a mix of AI-generated illustrations and photos, used to show how things work, not results. Grower photos are the growers' own, used with their consent. This handbook is general growing information for legal crops. Follow your local laws and the product label.

Which bottle fits the job?

Matching page: bloomyellowbottles.us/roots · Comment or DM CREW on @bloom_crew_nate
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@bloomyellowbottles · @bloom_crew_nate



04 FEED CHARTS

Feed charts *by medium.*

Bloom publishes a feed chart for each way you grow. Here's how to pick yours, how to read it, and the pH and EC ranges the university extension sheets give for each medium.

01 Which chart is yours

02 pH and EC by medium

03 How to read a chart

04 A grower's line on charts

SHORT VERSION 1

There's a chart for run-to-waste, recirculating and soil. Don't mix them up.

SHORT VERSION 2

Extension sources put soilless media and soil on different pH and EC ranges.

SHORT VERSION 3

Follow the chart for your medium. Rates aren't interchangeable between charts.

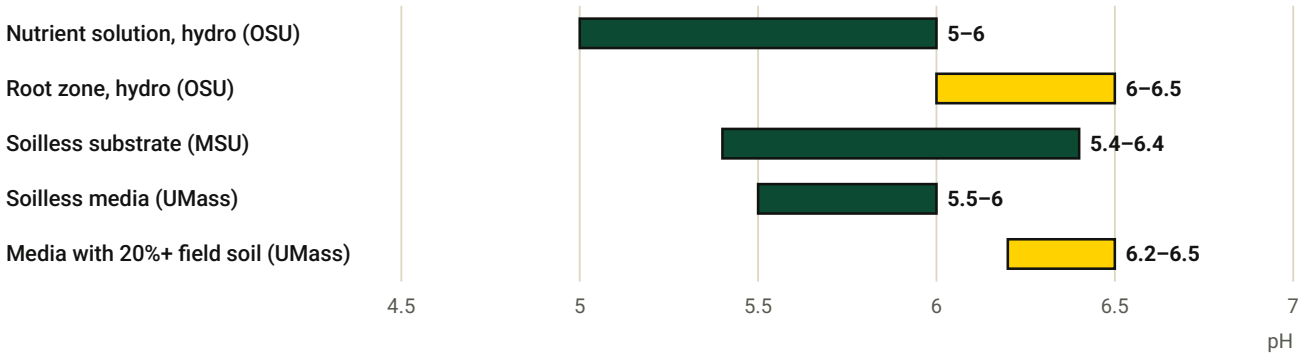
PART 01 & 02

pH and EC *by medium.*

Where the plant roots decides what the numbers should be. These are university extension ranges for greenhouse crops in general, not cannabis-specific targets.

pH ranges

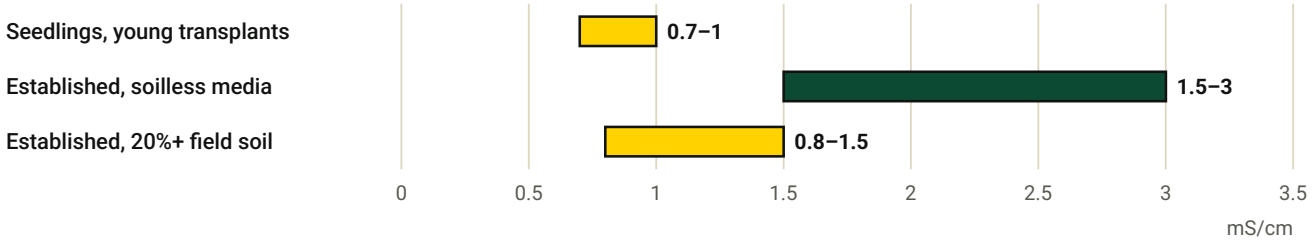
EXTENSION SOURCES, BY MEDIUM



Hydro ranges are for the nutrient solution and for the root zone (Oklahoma State).[1] Soilless substrate: Michigan State[2] and UMass.[3] Media with 20% or more field soil: UMass.[3]

EC ranges on a media test

UMASS EXTENSION, MS/CM



Compare like with like: extension advises collecting samples the same way each time and comparing against targets from the same collection method.[4]

What it means

Soilless and soil sit in different windows, and the soil window is higher on pH and lower on EC. A chart written for soil won't suit coco or hydro, and the reverse.

What it doesn't

These are not Bloom targets and not cannabis trial results. They're what extension services publish for greenhouse crops. Use them as a sanity check for your own room.

PART 03

How to read a chart, *and the flower map.*

01 **Find your medium**
Run-to-waste, recirculating or soil. Each has its own chart.

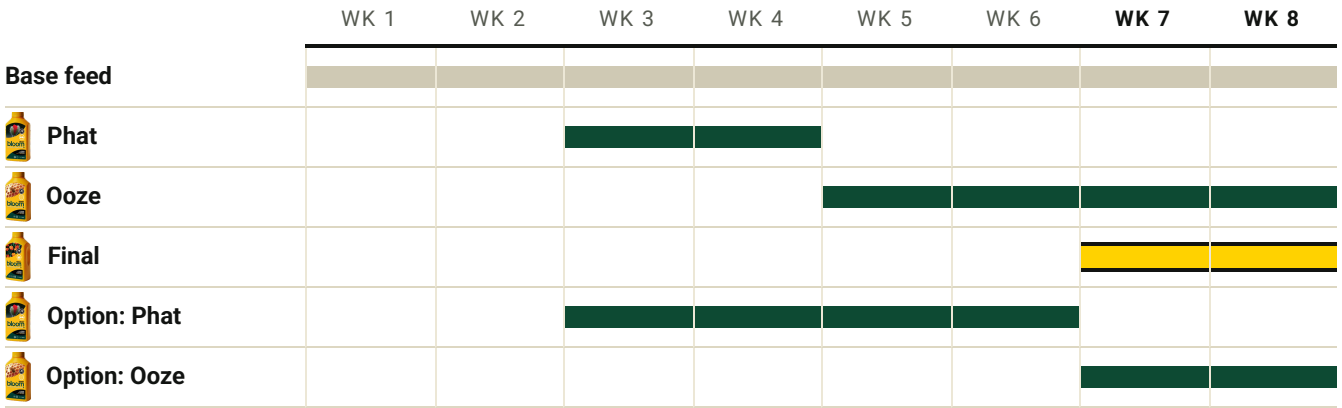
02 **Find the week**
Weeks run across. Count from the flip for flower.

03 **Read the row**
Each bottle has one rate for each week, in ml per litre.

04 **Check the water first**
Check the pH of the feed solution against the ranges on page 2.

Standard flower weeks

PHAT AND OOZE, THEN FINAL



Standard: Phat weeks 3 and 4, Ooze weeks 5 to 8, Final the last two. Some facilities run Phat for four weeks and Ooze for two: an option once you know the tools, not the main schedule.

Hydro and coco

For hydroponics, extension puts the feed solution at about pH 5 to 6 and the root zone at 6 to 6.5. Charts are for run-to-waste or recirculating; pick the one that matches your system.[1]

Soil

Media with 20% or more field soil sits higher on pH, 6.2 to 6.5, and lower on EC than soilless.[3] Use the soil chart; its rates are printed for soil.

Bloom charts give additives as a weekly feed. Some rooms run them every feed, and that's preference. Full charts: bloomyellowbottles.us/feed-schedules.

GROWER PROOF, AND WHERE THE NUMBERS COME FROM

Honest check

Extension ranges are greenhouse-crop guidance, not cannabis trial results and not Bloom targets.

Charts are printed for each medium; follow yours.



GROWER PROOF · FROM BLOOM'S REVIEWS BANK

“Euro A/B seems as easy as it gets!”

@devharmon

Products named: Euro A/B, Roots

In the grower’s own words, from a DM. Soil mix, small beds. One grower’s view, not a measured result.

Other crops

Growing fruit, veg, peppers or ornamentals? Rates and the feed schedule are on the fruit and veg feed schedule page. This handbook prints no crop rates.

Sources

1. Singh H, Dunn B. Electrical conductivity and pH guide for hydroponics. Oklahoma State University Extension. extension.okstate.edu
2. Lindberg H, Owen WG (2018). Managing substrate pH of soilless substrates. Michigan State University Extension. canr.msu.edu
3. UMass Extension Greenhouse Crops and Floriculture. Soil test report, commercial floriculture (nutrient levels and optimum pH). umass.edu fact sheet
4. Getter K (2013). pH and EC issues still a problem in some greenhouses. Michigan State University Extension. canr.msu.edu

Bloom facts: feed charts and Nate’s standard schedule. Product images are renders. Stage and cover images are a mix of AI-generated illustrations and photos, used to show how things work, not results. Grower photos are the growers' own, used with their consent. This handbook is general growing information for legal crops. Follow your local laws and the product label.

Find your chart

Matching page: bloomyellowbottles.us/feed-schedules · Comment or DM CREW on @bloom_crew_nate

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@bloomyellowbottles · @bloom_crew_nate



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GROWER HANDBOOK

05 FLOWER

Phat *and Ooze.*

The two flower bottles. Phat goes in from week three and Ooze takes over at week five. Here's what the nutrient research says about flower feeding, what's in each bottle, and how to run the pair.

01 What flower feeding research says

02 Phat and Ooze, by label

03 The standard schedule and an option

04 A grower's run

SHORT VERSION 1

Phat is flower weeks 3 and 4. Ooze is weeks 5 to 8. That's the standard schedule.

SHORT VERSION 2

In one study, flower yield peaked near 59 mg/L of phosphorus and potassium had no effect on yield.

SHORT VERSION 3

Some facilities run Phat four weeks and Ooze two. That's an option, not the standard.

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PART 01

What flower feeding *research says.*

Flower is when growers lean on phosphorus and potassium. The few controlled trials give a more modest picture than the folklore.

That's the honest starting point for any flower bottle, ours included.

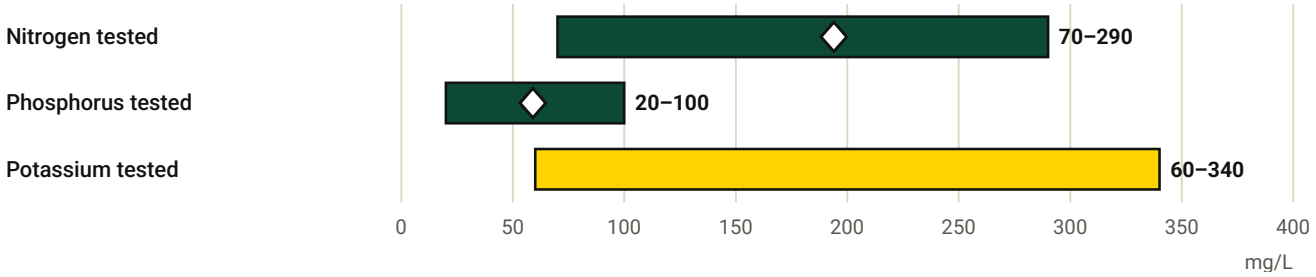
59 mg/L

phosphorus level where modelled yield peaked in the response-surface study.

One cultivar, hydroponic. Cannabinoid content didn't respond to N, P or K treatments.[1]

Nutrient levels tested in flower, and where yield peaked

MG/L IN THE FEED, ONE HIGH-THC CULTIVAR



Diamond = where modelled yield peaked: nitrogen near 194 mg/L, phosphorus near 59 mg/L. Potassium had no effect on yield across its range. Deep-water hydroponics, flowering-stage treatments only.[1]

194 mg/L

Nitrogen where modelled yield peaked in the same study. Model fit R^2 0.57.[1]

160 mg/L

Nitrogen where yield stopped climbing in a second study. One cultivar.[2]

-69 %

THCA at 320 mg/L N vs 30 mg/L N in that second study (the lowest feed left plants short of nitrogen).[2]

Read it plainly: both studies fed one cultivar through the whole of flower. They say more nitrogen than the plant needs doesn't buy quality. They didn't test Phat or Ooze, and we know of no published trial that did.

PART 02 & 03



Two bottles, *one flower run.*

Phat and Ooze cover the middle and late weeks of flower. They go on top of your base feed.

PHAT FROM	*Laminaria* and *Lessonia* (kelps), plus boric acid and sodium molybdate. 0.075% humic acid (leonardite), 0.054% thiamine hydrochloride (vitamin B1).
OOZE FROM	Molasses, *Ahnfeltia* and *Laminaria* (seaweeds), plus boric acid and sodium molybdate. 0.075% humic acid (leonardite), 0.054% thiamine hydrochloride.
RATE	**Ooze: 2.5 ml/L** (9.5 ml per US gallon). Phat: on its label and in the feed chart for your medium. Shake well before use.

2.5 ml/L
Ooze rate. 9.5 ml per US gallon.

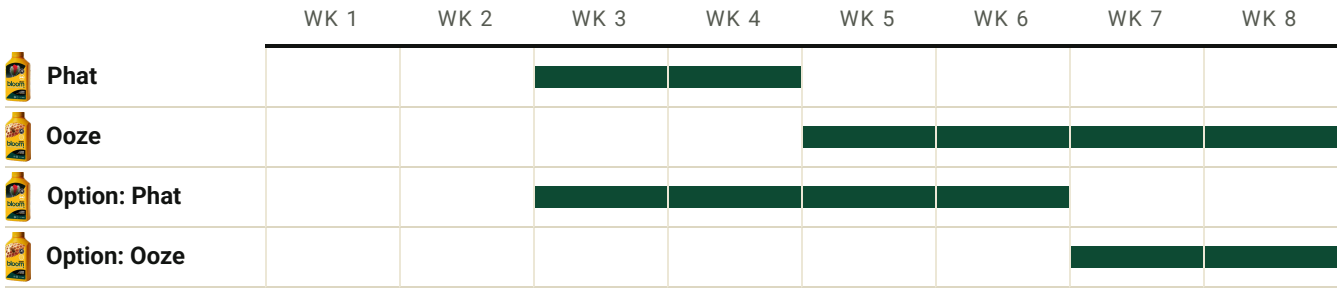
106 gal
Feed from a 1 L bottle of Ooze (400 L at 2.5 ml/L).

$1.17 /gal
Ooze per US gallon of feed, 1 L bottle (site price, 14 Nov 2026).

$0.64 /gal
From the 15 L drum. 2.5 L works out at $0.88 a gallon.

The standard schedule, and an option

8-WEEK FLOWER



Standard: Phat weeks 3 and 4, Ooze weeks 5 to 8. Option: Phat for four weeks and Ooze for two, which some facilities run once they know the tools. It's a choice, not the main schedule.

Finishing

Final goes in the last two weeks alongside Ooze. Chapter 06 covers why, and what the flush trials show.

Nobody needs both

Pick what the room needs. Some rooms run one of the pair with their own base programme.

GROWER PROOF, AND WHERE THE NUMBERS COME FROM

Honest check

We know of no published trial of Phat or Ooze, and Bloom hasn't run a controlled one. What's here about the bottles is label and schedule.

The feed research is one or two cultivars in hydroponic or soilless set-ups. Yours may differ.



GROWER PROOF · FROM BLOOM'S REVIEWS BANK

"I would agree with the grower, this run was some of the best I've produced."

@coloradofondew
Products named: Phat

In the grower's own words, from a message. He notes he didn't get to run a side-by-side. One grower's view, not a measured result.

Other crops

Growing fruit, veg, peppers or ornamentals? Rates and the feed schedule are on the fruit and veg feed schedule page. This handbook prints no crop rates.

Sources

1. Bevan L, Jones M, Zheng Y (2021). Optimisation of nitrogen, phosphorus, and potassium for soilless production of *Cannabis sativa* in the flowering stage. *Frontiers in Plant Science* 12:764103. doi.org/10.3389/fpls.2021.764103

2. Saloner A, Bernstein N (2021). Nitrogen supply affects cannabinoid and terpenoid profile in medical cannabis. *Industrial Crops and Products* 167:113516. doi.org/10.1016/j.indcrop.2021.113516 (abstract)

Bloom facts: Phat and Ooze labels (derived-from lines, read from label artwork) and Bloom's standard schedule. Product images are renders. Stage and cover images are a mix of AI-generated illustrations and photos, used to show how things work, not results. Grower photos are the growers' own, used with their consent. This handbook is general growing information for legal crops. Follow your local laws and the product label.

Ready for flower?
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GROWER HANDBOOK



06 LATE FLOWER

Finish, *don't flush.*

The last two weeks start more arguments than the other six put together. Here's what the published trials say about a water-only flush, what the plant is doing as its leaves yellow, and where Final fits.

01 What the flushing trials measured

02 Nitrogen is the lever

03 Finish it fed with Final

04 Your last two weeks, and a grower's say

SHORT VERSION 1

No published trial shows a water-only flush makes flower smoke better.

SHORT VERSION 2

In the one journal trial that leached pots right out, flower weight dropped.

SHORT VERSION 3

If anything comes down late, the research points at nitrogen. The plant is still working, so keep it fed.

PART 01

What the trials *actually measured.*

Flushing means cutting the fertiliser and running plain water for the last week or two. The idea is that it clears leftover feed out of the flower, so it burns cleaner and tastes better.

Growers have handed it down for decades. Journal-published trials have only turned up in the last couple of years.

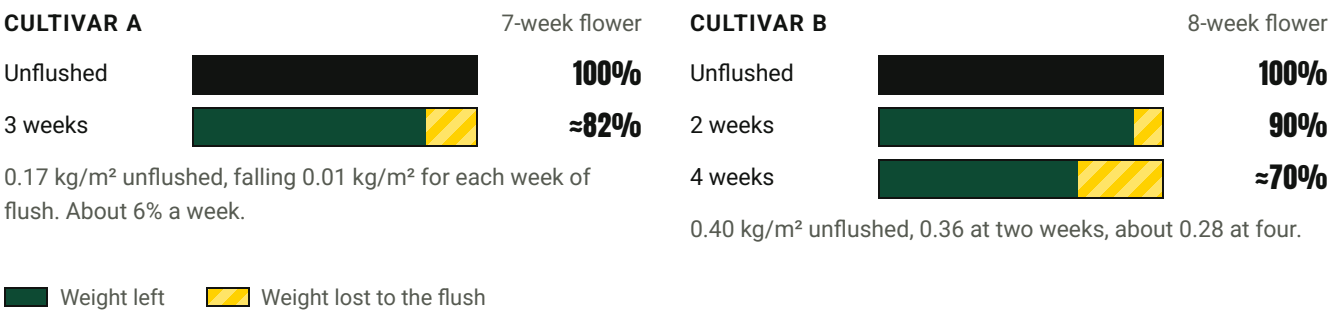
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studies the 2025 authors found showing a flush improves how flower smokes.

"No study to date has demonstrated that flushing improves inflorescence smoking quality". Clemson University, 2025.[1] That trial measured weight, minerals and cannabinoids, not smoke.

Flower weight left after a thorough flush

DRY FLOWER, % OF UNFLUSHED PLANTS



Greenhouse trial, two high-CBD cultivars in peat mix. Pots were leached with tap water until the runoff read 0.2 mS/cm or less, then given water only.[1] It did not measure smoke.

Minerals in the flower came down
Nitrogen, phosphorus and potassium in the dried flower all fell as the flush got longer.[1]

Potency per gram: mixed
THC % was unchanged in both cultivars. CBD % was unchanged in one and went up in the other.[1]

Cannabinoid yield fell
Less flower meant less CBD per square metre in both cultivars, even where CBD % rose.[1]

The other side of it

A 2024 journal study ran five medical cultivars, some fed to harvest, some on distilled water only at the end. Yield barely changed. Cannabinoids shifted in 30% of the samples examined (up in two cultivars, down in one) and terpenoids in 3%. Some flushed plants yellowed more. Those authors recommend flushing: no damage to yield or quality, and less fertiliser used.[2]

What we take from it

In the 2024 trial the flush changed very little. In the 2025 trial, where pots were leached right out, it pulled minerals down and took weight with it. Neither tested smoke. So what does the plant still need in its last two weeks? That's next.

PART 02 & 03

Nitrogen is the lever, *and where Final fits.*

160 mg/L

The nitrogen level where flower yield stopped climbing. Feeding more added nothing. One cultivar.[3]

-69 %

THCA concentration at the highest nitrogen feed (320 mg/L) against the lowest (30 mg/L). CBDA was down 63%. One cultivar.[3]

194 mg/L

About where yield peaked in a second study: one cultivar, deep-water hydroponics. Cannabinoids didn't respond to N, P or K there, unlike the first study.[4]

Read these the right way. Both studies set nitrogen for the whole of flower, not the last fortnight, and each used one cultivar. They show that extra nitrogen doesn't buy quality, not a cut-off date. As a plant finishes it moves nitrogen from ageing leaves to new growth, so a shortage shows in the older leaves first.[5,6]



Final, the late-flower bottle

In the range from the start, 26 years ago, built for this job: nitrogen comes down, feeding carries on. It goes in on top of your base feed. Two kelps and alfalfa, there to support plant health and nutrient uptake through the last two weeks. Not a flushing agent and not a base feed.

ON THE LABEL	**0.0232 – 0 – 0.1228** guaranteed analysis
DERIVED FROM	*Ascophyllum nodosum* (cold-water brown seaweed, sold as kelp), *Durvillaea potatorum* (southern bull kelp), *Medicago sativa* (alfalfa extract)
ALSO CONTAINS	0.075% humic acid from leonardite, which may increase micronutrient uptake. 0.054% thiamine hydrochloride (vitamin B1)

1 ml/L

The rate. Shake well first. That's 3.8 ml per US gallon.

264 gal

Feed from a 1 L bottle (1,000 L at 1 ml/L).

$0.27 /gal

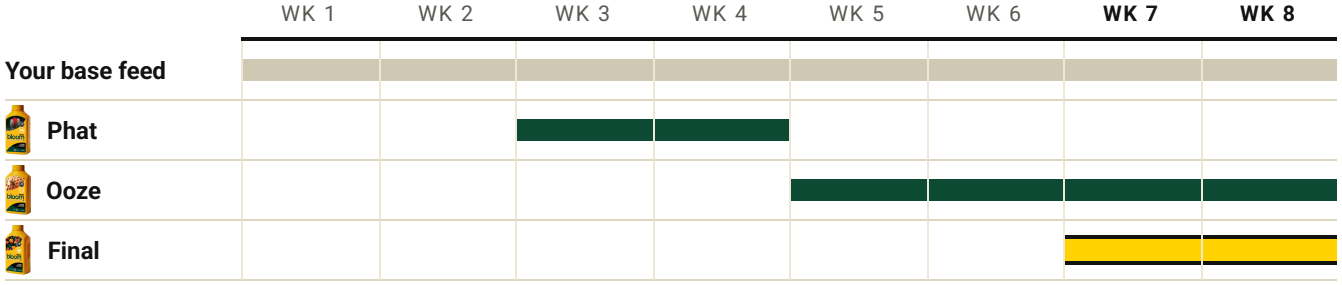
Per US gallon of feed, 1 L bottle at 1 ml/L (site price, 14 Nov 2026).

$0.15 /gal

From the 15 L drum. 2.5 L works out at $0.20 a gallon.

Where it sits in an 8-week flower

BLOOM'S STANDARD SCHEDULE



PART 04

01 **Mark the last two weeks**
Count back two weeks from harvest day: weeks 7 and 8 on an 8-week cultivar.

02 **Keep the base feed going**
Run it the way its chart says. If your programme lets you bring nitrogen down late, this is when; the plant is still working, so keep feeding.

03 **Add Final once a week**
1 ml/L (3.8 ml per US gallon) in with the weekly feed, bottle shaken. Running Ooze? On the standard schedule it stays in through week 8.

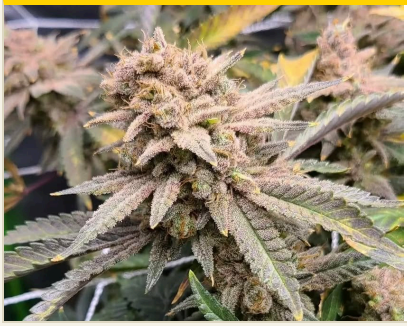
04 **Watch the lower leaves, keep notes**
When nitrogen runs short the older, lower leaves yellow first.[6] Write down what went in and what the flower weighed dry.

Side-by-side, your room

One cultivar, one room, two halves. A: plain water the last two weeks. B: base feed plus Final at 1 ml/L, weekly. Same harvest day, then weigh dry flower and jar blind. A third group (no Final) separates Final from the feed.

Honest check

Nobody has published a trial of Final against a flush, and Bloom hasn't run one. What's here about Final comes off its label and Bloom's feed charts. Yours may differ.



GROWER PROOF · FROM BLOOM'S REVIEWS BANK

"I've been using sea minerals quite a bit now that we're deep into flower and man that kelp is doing great"

@therealbestbudz
Products named: Sea Minerals

About Sea Minerals, not Final: no grower has sent a Final-specific message with a photo.

Other crops: rates and schedule are on the fruit and veg feed schedule page.

Sources

1 Alden MJ, Faust JE (2025). Exploring the legacy practice of flushing in controlled-environment production of high-CBD cannabis. *HortScience* 60(10):1818–1825. doi.org/10.21273/HORTSCI18752-25

2 Saloner A, Sade Y, Bernstein N (2024). To flush or not to flush. *Industrial Crops and Products* 220:119157. doi.org/10.1016/j.indcrop.2024.119157 (abstract)

3 Saloner A, Bernstein N (2021). Nitrogen supply affects cannabinoid and terpenoid profile in medical cannabis. *Industrial Crops and Products* 167:113516. doi.org/10.1016/j.indcrop.2021.113516 (abstract)

4 Bevan L, Jones M, Zheng Y (2021). Optimisation of nitrogen, phosphorus, and potassium for soilless production of *Cannabis sativa* in the flowering stage. *Frontiers in Plant Science* 12:764103. doi.org/10.3389/fpls.2021.764103

5 Havé M, et al. (2017). Nitrogen remobilization during leaf senescence. *Journal of Experimental Botany* 68(10):2513–2529. doi.org/10.1093/jxb/erw365

6 Shober AL, Denny GC. Identifying nutrient deficiencies in ornamental plants. University of Delaware Cooperative Extension. udel.edu fact sheet

Costs from site prices (1 US gal = 3.785 L). Images are renders and illustrations. Final is a plant nutrient additive, not a pesticide and not certified organic.

Got a question about your finish?

Matching page: bloomyellowbottles.us/final · Comment or DM CREW on @bloom_crew_nate
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GROWER HANDBOOK

07 WATER

Water, *EC and pH.*

Most feed problems start in the water. Here's what pH does to what the roots can reach, why EC is the number to trust, and why the same water can read two different ppm figures.

01 pH: the window the roots work in

02 EC, and why ppm is slippery

03 A simple routine

04 A grower on pH

SHORT VERSION 1

pH decides which nutrients the roots can use. Extension sources put most greenhouse substrates at 5.4 to 6.4.

SHORT VERSION 2

A ppm meter multiplies EC by a factor. Sources use different factors, so write EC.

SHORT VERSION 3

Test your source water first, then the mixed feed, the same way each time.

PART 01 & 02

pH is the window, *EC is the number.*

pH changes which nutrients roots can reach, even when plenty is in the water. EC measures how salty the solution is. Both belong in your log every time you mix.

pH: what sits outside the window

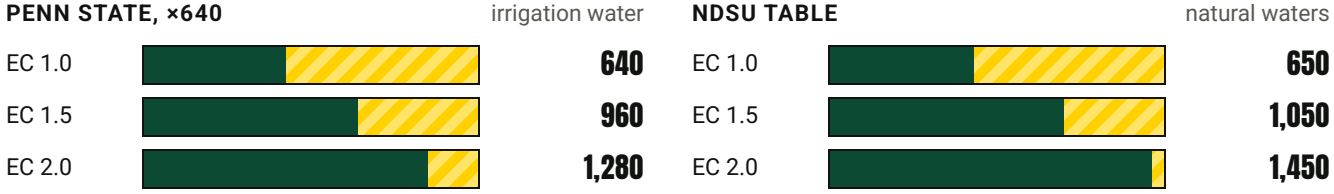
EXTENSION GUIDANCE, GREENHOUSE CROPS

Below the range	5.4 - 6.4	Above the range
Iron and manganese can be over-available. Calcium and magnesium can be short.[1,2,4]	Most greenhouse crops in soilless substrate[1]	Iron, manganese, zinc and boron can be unavailable.[2]

Hydro growers: Oklahoma State puts the nutrient solution at pH 5 to 6 (usually 5.5) and the root zone at 6 to 6.5.[3] Soil with 20%+ field soil sits higher: 6.2 to 6.5.[4]

One EC, two ppm numbers

ESTIMATED PPM (MG/L) FROM THE SAME EC, MS/CM



Penn State uses a factor of about 640 for irrigation water.[5] North Dakota State's table shows the factor climbing from 0.5 to 0.82 as EC rises, for natural waters.[6] Neither is a fertiliser-solution standard. Meters pick their own factor, so the same bucket reads differently.

So: write EC

EC is what the meter actually measures. ppm is EC multiplied by a factor someone picked. If you must quote ppm, say which factor.

Watch your source water

Penn State flags raw irrigation water above 1.0 mS/cm EC for plugs and above 1.5 for other plants as a concern, before you add anything.[5]

PART 03

A simple routine, *and a unit decoder.*

01 **Test the source water**
EC and pH of what comes out of the tap or RO, before any bottle goes in.

02 **Mix, then pH**
Add the base and bottles per your chart, mix well, then adjust pH into your window.

03 **Read EC, log EC**
Write down EC, pH, temperature and the week. Same sample method every time.[7]

04 **Calibrate the meter**
Check against a calibration solution regularly, after a battery change or a drop.[6]

1
mS/cm = 1 dS/m = 1 mmho/cm = 1,000 µS/cm.[6]

0.5
mS/cm is 500 µS/cm. Mind the unit on the meter.

5-6
Hydro nutrient solution pH, usually 5.5.[3]

6-6.5
Hydro root-zone pH.[3]

Soilless substrate
Peat and aged bark start at pH 3 to 4, so makers add lime to bring them into the window. Low substrate pH can push iron and manganese to toxic levels.[1]

Compare like with like
Extension advises collecting samples the same way each time and comparing your EC against targets from the same collection method.[7]

These are general greenhouse and hydroponic guidance. For Bloom additives, follow the chart for your medium; this chapter doesn't set rates.

GROWER PROOF, AND WHERE THE NUMBERS COME FROM



GROWER PROOF · FROM BLOOM'S REVIEWS BANK

“Notice it really lowers ph but not a problem at all for the results its showing.”

@greenmedsgarden
Products named: Ooze

In the grower’s own words, from a DM. He noticed his feed pH dropped with Ooze. One grower’s observation: always measure and adjust your own pH.

Other crops

Growing fruit, veg, peppers or ornamentals? Rates and the feed schedule are on the fruit and veg feed schedule page. This handbook prints no crop rates.

Sources

1. Lindberg H, Owen WG (2018). Managing substrate pH of soilless substrates. Michigan State University Extension. canr.msu.edu
2. Shober AL, Denny GC. Identifying nutrient deficiencies in ornamental plants. University of Delaware Cooperative Extension. udel.edu fact sheet
3. Singh H, Dunn B. Electrical conductivity and pH guide for hydroponics. Oklahoma State University Extension. extension.okstate.edu
4. UMass Extension Greenhouse Crops and Floriculture. Soil test report, commercial floriculture (nutrient levels and optimum pH). umass.edu fact sheet
5. Rhea D, Canfield C, Snyder K, Swistock B (2025). Interpreting irrigation water tests. Penn State Extension. extension.psu.edu
6. North Dakota State University Extension (WQ1923). Using electrical conductivity and total dissolved solids meters to field test water quality. ndsu.edu
7. Getter K (2013). pH and EC issues still a problem in some greenhouses. Michigan State University Extension. canr.msu.edu

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Questions about your water?

Matching page: bloomyellowbottles.us/feed-schedules · Comment or DM CREW on @bloom_crew_nate

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GROWER HANDBOOK



08 RUNOFF

Runoff and *dry-down.*

What drains out of the pot tells you what the roots are sitting in. Here's how to catch a sample, which numbers extension services give, and what a dry-down is.

01 Why read the runoff

02 How to take a sample

03 What the numbers mean

04 A grower on side-by-sides

SHORT VERSION 1

Check pH and EC regularly, before a problem shows, and write the readings down.

SHORT VERSION 2

The easiest test: water the pot, wait an hour, pour distilled water through, measure what drains.

SHORT VERSION 3

One controlled dry-down trial exists, but we haven't opened it, so there are no dry-down numbers here.

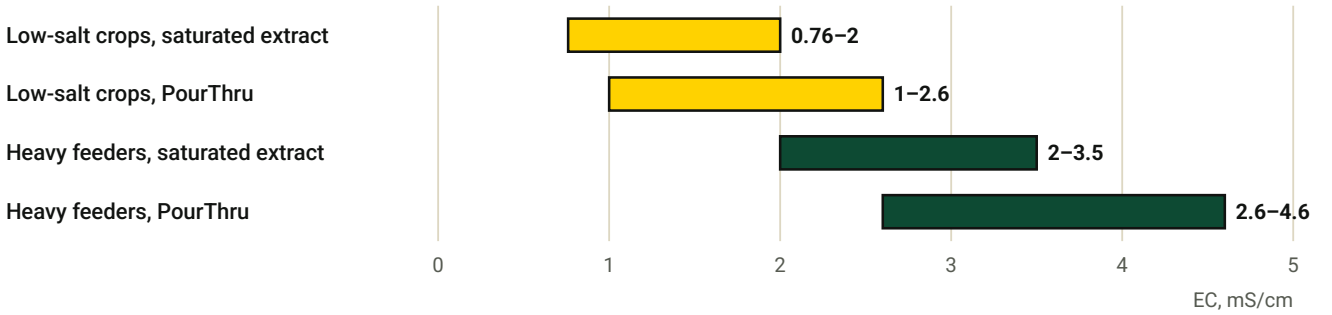
PART 01 & 02

Read what comes out, *not just what goes in.*

The feed you mix and the solution at the roots drift apart as salts build up or get used. Extension services say to check substrate pH and EC routinely, before nutrition problems show, and to log the readings over time.[1]

EC targets by sampling method

GREENHOUSE CROPS, MS/CM



Chrysanthemum and poinsettia are the heavy-feeder examples in the source. These are greenhouse floriculture targets, not cannabis targets, and the two methods read differently, so compare like with like.[1]

Watch the trend

A weekly record shows EC creeping up or pH drifting well before the plant complains. In one extension example, a clear-water application brought a climbing EC back down from about 4.0 to 3.0 mS/cm.[1]

Mind the water

High water alkalinity can push substrate pH up over time, and high substrate pH can cause iron deficiency. Get your irrigation water tested before you start.[1]

PART 02 & 03

How to take a sample, *and what a dry-down is.*

01 **Water as normal**
Irrigate the pot as part of your usual feed.

02 **Wait an hour**
The test is run about an hour after irrigation.[2]

03 **Pour distilled water through**
Pour evenly over the surface and let it drain about 10 minutes into a saucer.[2]

04 **Measure the drainage**
Read pH and EC with a meter that reads both, then log them.[1,2]

5-10
Samples per crop type, container size, substrate and feed type.[1]

1.7 oz
Leachate to collect, or 2.5% of the container volume in larger pots.[2]

4
Weeks the pH reading stayed consistent across 1 to 10 gallon pots in the Purdue test.[2]

1
Meter reading both pH and EC, temperature compensated.[2]

What a dry-down is

A planned period where the pot is allowed to dry before the next feed, instead of staying wet. One controlled trial of a late-flower dry-down exists in the journals. We haven't been able to open it, so there are no dry-down figures in this handbook.

Bloom and runoff

Bloom's bottles go in the feed, so your runoff numbers include them. Mix, check pH, read the EC, and use the chart for your medium. This chapter sets no rate.

GROWER PROOF, AND WHERE THE NUMBERS COME FROM

Honest check

These are greenhouse floriculture methods and targets. Cannabis rooms differ, so use them as a method, not a target.

We left out the dry-down study's figures because we couldn't open the paper.



GROWER PROOF · FROM BLOOM'S REVIEWS BANK

"Cant wait to do some side by side next run!"

@greenmedsgarden
Products named: Ooze

In the grower's own words, from a DM. One grower's view, not a measured result.

Other crops

Growing fruit, veg, peppers or ornamentals? Rates and the feed schedule are on the fruit and veg feed schedule page. This handbook prints no crop rates.

Sources

1. Camberato D, Lopez R, Mickelbart M. pH and electrical conductivity measurements in soilless substrates. Purdue Extension HO-237-W. ag.purdue.edu
2. Purdue and Michigan State Extension. Measuring pH and EC of crops grown in large containers (PourThru method). canr.msu.edu

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Questions about your runoff?

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GROWER HANDBOOK



09 CLIMATE AND LIGHT

Climate *and light.*

Light is the engine and humidity decides how easily the plant can use it. Here's how daily light is counted, what one controlled cannabis study found as light went up, and what VPD is telling you.

01 Counting light: PPFD and DLI

02 What one light trial found

03 VPD: humidity that makes sense

04 A grower's run

SHORT VERSION 1

DLI is light intensity times hours. 600 µmol for 12 hours is about 26 mol/m²/day.

SHORT VERSION 2

In one cultivar, flower weight kept rising in a straight line from 120 to 1,800 µmol, and potency per gram didn't move.

SHORT VERSION 3

VPD of 0.7 to 1.5 kPa is the moderate target for greenhouse crops. Very low VPD slows uptake.

PART 01 & 02

What one light trial *found.*

Cannabis is one of the few crops with a clean light-response trial. Dry flower weight rose in a straight line as canopy light went up and didn't level off in the range tested.[1]

Leaf photosynthesis did level off well before that. The canopy kept adding weight anyway.

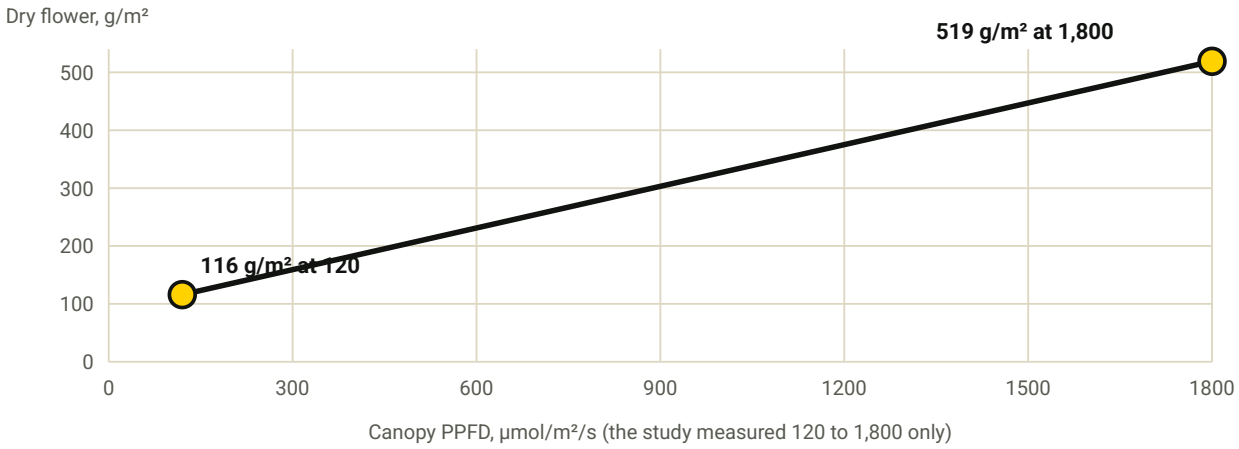
4.5×

dry flower yield from the lowest to the highest light level in the study.

One cultivar ('Stillwater'), 12/12, 81 days. Cannabinoid concentrations didn't change with light.[1]

Dry flower weight against canopy light

INDOOR LED TRIAL, ONE CULTIVAR



The study tested 120 to 1,800 µmol/m²/s. The line joins its two end results; the authors describe the response as linear.[1] At 1,800 µmol that's a DLI of about 78 mol/m²/day.

What it didn't test

Energy use wasn't measured, CO_2 and light weren't combined, and only one cultivar was grown. Total terpenes rose from 8.85 to 12.7 mg/g, but most individual terpenes didn't change.[1]

Counting it

DLI is the light plants receive in a day: intensity times duration. Greenhouse values seldom top 25 mol/m²/day, and glazing and structure can cut outdoor light by 40 to 70%.[2]

PART 03

VPD: humidity *that makes sense.*

Relative humidity changes meaning with temperature. VPD, the pull the air puts on a leaf, doesn't. At zero the air is saturated and nothing is pulled; as it rises, the plant and the substrate lose water faster.[3]

VPD bands

GREENHOUSE CROPS, KPA

Below 0.3 kPa: very low	0.7 - 1.5 kPa	Above 1.5 kPa: high
Little water movement, little nutrient uptake. Right for rooting cuttings, not for rooted plants.[3,4]	Moderate. A target for greenhouse crops.[3]	Water loss is high and photosynthesis of some crops can fall.[3]

The source also names a band between 0.3 and 0.7 kPa that the text we read doesn't describe, so it's left blank. There are no cannabis stage-by-stage VPD targets in the research we could open.[3]

0.0036
DLI per hour = PPFD × hours × 0.0036.

26 mol
600 µmol × 12 h × 0.0036 = 25.9 mol/m²/day.

78 mol
1,800 µmol for 12 hours.

0.3 kPa
VPD recommended early in rooting cuttings.[4]

Light, climate, feed

More light means a bigger demand for water and nutrient. Chapters 04 and 07 cover the pH and EC side. Bloom's feed charts don't change with your light, so read your plant and your numbers.

Keep notes

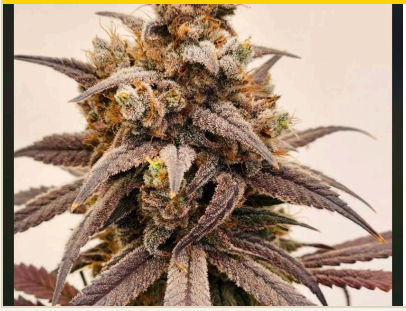
Log PPFD, hours, temperature, RH and what you fed. Change one thing, wait, and compare.

GROWER PROOF, AND WHERE THE NUMBERS COME FROM

Honest check

The light study used one cultivar in one indoor setup. It says what happened there, not what will happen in your room.

VPD bands come from greenhouse extension guidance, not cannabis trials.



GROWER PROOF · FROM BLOOM'S REVIEWS BANK

“The Yellow Bottles plant is really showing off.”

@therealbestbudz
Products named: Ultra

In the grower’s own words, from a DM, written in the second week of flower. One grower’s view, not a measured result.

Other crops

Growing fruit, veg, peppers or ornamentals? Rates and the feed schedule are on the fruit and veg feed schedule page. This handbook prints no crop rates.

Sources

1. Rodriguez-Morrison V, Llewellyn D, Zheng Y (2021). Cannabis yield, potency, and leaf photosynthesis respond differently to increasing light levels in an indoor environment. *Frontiers in Plant Science* 12:646020. doi.org/10.3389/fpls.2021.646020
2. Torres AP, Lopez RG. Measuring daily light integral in a greenhouse. Purdue Extension HO-238-W. ag.purdue.edu
3. Runkle E (2021). Water vapor-pressure deficit. Michigan State University Extension (Greenhouse Product News). canr.msu.edu
4. Runkle E. Propagation pointers; Improve rooting of cuttings; Indoor propagation. Michigan State University Extension. canr.msu.edu

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Dialling in your room?

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10 CUTTINGS

Cuttings *and clones.*

A cutting has no roots, so it can't drink. Everything about rooting is about keeping it hydrated until it can. Here's what extension research says about humidity, warmth and light, and where Roots fits.

01 Keep it hydrated

02 Warm roots, cooler air

03 Where Roots fits

04 A grower's cuttings

SHORT VERSION 1

Early on, very high humidity (VPD about 0.3 kPa) keeps cuttings hydrated. Ease off as roots form.

SHORT VERSION 2

A root zone of 72 to 75°F with air about 5°F cooler favours roots over shoots.

SHORT VERSION 3

Roots is the Bloom bottle for new roots. Rates are on the chart.

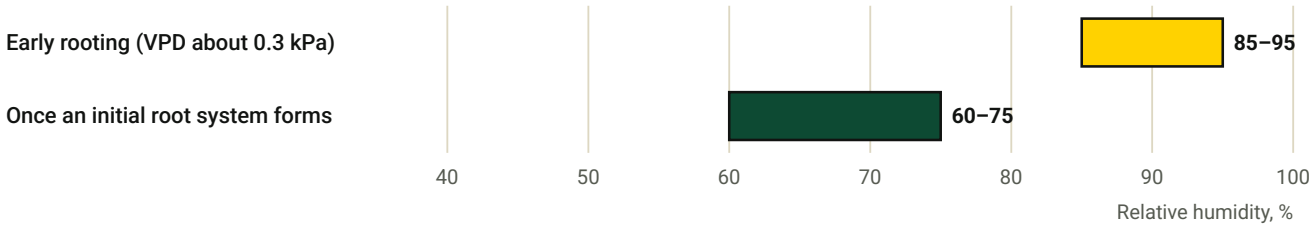
PART 01 & 02

Keep it hydrated, *then ease off.*

Early in propagation, VPD of 0.3 to 0.4 kPa is recommended (85 to 90% relative humidity at 73°F) so water loss is slow. As cuttings develop roots, raise the VPD to promote root development and uptake.[1]

Humidity by rooting stage

MICHIGAN STATE EXTENSION, ORNAMENTAL CUTTINGS AND PLUGS



Early rooting: 90 to 95% RH, or 0.3 kPa VPD.[2] Once there is an initial root system, 60 to 75% worked well in indoor propagation, and too high a humidity can mean less developed roots and more disease.[3]

72-75 °F

Root-zone temperature recommended. Bottom heat is usually needed to reach it.[1]

5 °F

Air about 5°F cooler than the media favours root growth over shoot growth.[2]

200 µmol

Rough ceiling on light intensity in early rooting, rising as roots develop.[2]

Scope: these are ornamental cutting and plug guidelines. Cannabis clones are similar, but not the same plant, so treat the numbers as a starting point.

PART 03



Where Roots fits.

Roots is the Bloom bottle for new roots, cuttings and transplants. It's made from *Durvillaea potatorum*, southern bull kelp, with 0.075% humic acid from leonardite and 0.054% thiamine hydrochloride (vitamin B1) on the label. It goes in the water you give the cuttings and young plants; the feed chart gives the rate.

01 **Light, porous medium**
Rooting slows in a heavy mix that holds a lot of water.[2]

02 **Humidity first, then ease off**
High early, then lower as roots appear.[1]

03 **Warm roots**
Bottom heat to 72 to 75°F; air a little cooler.[1,2]

04 **Feed once roots form**
Extension suggests a light fertilizer, such as an occasional watering at 150 ppm nitrogen, once roots develop.[2]

Keep it clean

Sanitation matters when handling cuttings and in the rooting space. Cover bare soil to stop algae building up.[2] Chapter 11 has more.

Test it

Cut matched tips from one mother. Root half with Roots in the water and half without. Same room, same medium, same dome. Photo them on the same days and count rooted tips.

GROWER PROOF, AND WHERE THE NUMBERS COME FROM

Honest check

The humidity, temperature and light numbers are ornamental extension guidance. Bloom hasn't published a controlled rooting trial.

Auxin rooting compounds appear in the same extension articles. We don't cover or recommend them here.



GROWER PROOF · FROM BLOOM'S REVIEWS BANK

"Soaked root riot plug in sea minerals and roots mix with some water."

@bige

Products named: Roots, Sea Minerals

In the grower's own words, from a DM. He sowed seed in plugs rather than rooting cuttings, and the photo is from later in his run. One grower's view, not a measured result.

Other crops

Growing fruit, veg, peppers or ornamentals? Rates and the feed schedule are on the fruit and veg feed schedule page. This handbook prints no crop rates.

Sources

1 Runkle E. Propagation pointers; Improve rooting of cuttings; Indoor propagation. Michigan State University Extension. canr.msu.edu (superscripts 1 to 3: Propagation pointers, Improve rooting of cuttings, Indoor propagation).

Product images are renders. Stage and cover images are a mix of AI-generated illustrations and photos, used to show how things work, not results. Grower photos are the growers' own, used with their consent. This handbook is general growing information for legal crops. Follow your local laws and the product label.

Rooting a batch?

Matching page: bloomyellowbottles.us/roots · Comment or DM CREW on @bloom_crew_nate

nathan@bloomyellowbottles.com · (970) 556-1678 · bloomyellowbottles.us

@bloomyellowbottles · @bloom_crew_nate

bloom YELLOW BOTTLES

GROWER HANDBOOK



11 CLEAN SYSTEMS

Keeping *it clean.*

A recirculating system shares everything, water and trouble alike. Here's what extension and journal sources say about root disease in hydroponics, what slows it down, and a short clean-up routine.

01 How trouble travels

02 What slows it down

03 A short routine

04 A grower's tank

SHORT VERSION 1

Root disease spreads quickly through shared, recirculated water.

SHORT VERSION 2

Well-aerated, cooler water and tidy surfaces and tools all help.

SHORT VERSION 3

Cover bare soil, clean tools between plants, and keep records.

PART 01 & 02

How trouble travels, *and what slows it.*

In a recirculating system the nutrient solution can carry a root pathogen from one plant to all of them. Pythium is one of the most common and destructive root pathogens in recirculating hydroponics.[1,2]

Researchers have studied several ways to treat the solution before it goes round again, including heat and filtration.[2]

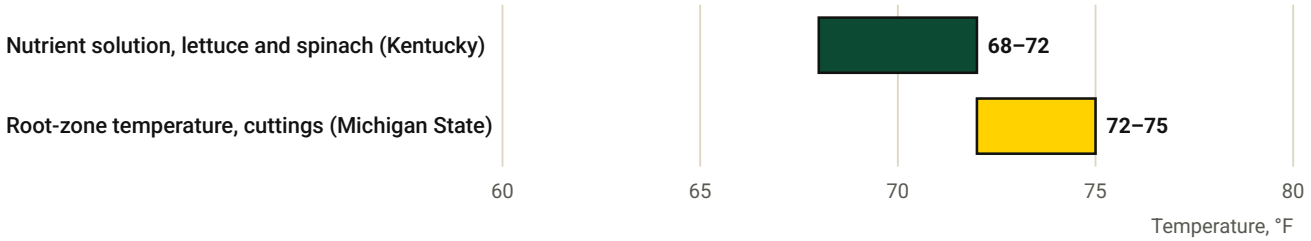
8 ppm

dissolved oxygen at saturation, which can reduce Pythium zoospore survival.

Kentucky greenhouse extension. Lettuce and spinach system, not cannabis.[1]

Temperatures extension gives

DIFFERENT CROPS AND STAGES, °F



Cooler water (68 to 72°F) is optimal for spinach and lettuce and can slow Pythium survival and infection.[1] Cuttings want a warmer root zone, 72 to 75°F.[3] These are different jobs: don't apply one crop's number to another.

Surfaces and tools

Good sanitation reduces Pythium survival and introduction. Tools, gloves and net cups moved between plants and systems are common ways to carry it.[1]

Cover the bare bits

Cover bare soil to prevent algae build-up, and handle cuttings cleanly to avoid spreading viruses and pathogens.[3]

PART 03

A short routine, *between runs.*

01 **Drain and look**
Empty the tank. Check roots and the inside of lines for slime or discolouration. Darkly discoloured, soft roots are a warning sign.[1]

02 **Clean the surfaces**
Use a surface cleaner suited to the surface; extension notes not all surfaces are treated alike.[1]

03 **Clean the tools**
Scissors, knives, net cups and gloves between systems or plants.[1]

04 **Aerate and keep cool**
Aim for well-aerated solution, and keep water on the cooler side for the crop.[1]

1
Tank cleaned and rinsed before each fill.

0
Bare soil left uncovered in the rooting space.[3]

∞
Notes: date, EC, pH and what you saw.

1
Change at a time, then wait.

Treating the solution

Research covers heat, filtration and other treatments for recirculating solutions, each with trade-offs in cost and effect on the solution.[2] That's a system design choice, so read the source before you buy gear.

Bloom and a clean system

Bloom bottles go into your feed water. They aren't a disinfectant, and we don't claim they prevent or treat root disease. Mix fresh, use clean containers, and follow your chart.

GROWER PROOF, AND WHERE THE NUMBERS COME FROM

Honest check

Root-disease research here is on lettuce, spinach, tomato and cucumber systems, not cannabis. Treat it as method.

No Bloom product is claimed to prevent or treat disease.



GROWER PROOF · FROM BLOOM'S REVIEWS BANK

"I have noticed tighter node spacing and a very rich green to the vegetation. Overall, I am impressed."

@devharmon

Products named: Euro A/B, Roots

In the grower's own words, from a DM. A soil-mix grower; one grower's view, not a measured result.

Other crops

Growing fruit, veg, peppers or ornamentals? Rates and the feed schedule are on the fruit and veg feed schedule page. This handbook prints no crop rates.

Sources

1. University of Kentucky greenhouse extension (e-GRO alert E706). Pythium and root disease in hydroponic systems. greenhousehort.ca.uky.edu
2. Ehret DL, Alsanius B, Wohanka W, Menzies JG, Utkhede R (2001). Disinfestation of recirculating nutrient solutions in greenhouse horticulture. *Agronomie* 21. hal.archives-ouvertes.fr
3. Runkle E. Propagation pointers; Improve rooting of cuttings; Indoor propagation. Michigan State University Extension. canr.msu.edu

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Cleaning up between runs?

Matching page: bloomyellowbottles.us · Comment or DM CREW on @bloom_crew_nate

nathan@bloomyellowbottles.com · (970) 556-1678 · bloomyellowbottles.us

@bloomyellowbottles · @bloom_crew_nate



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GROWER HANDBOOK

12 TROUBLESHOOTING

Troubleshooting.

Before you change the feed, work out what the plant is telling you. Here's a calm order of checks: where the symptom shows, whether it's symmetrical, what the pH is doing, and what a test says.

01 Look: where, and how it spreads

02 Check: pH and EC

03 Test, then change one thing

04 A grower's transplant

SHORT VERSION 1

Old leaves first points to a mobile nutrient. New growth first points to an immobile one.

SHORT VERSION 2

pH can lock a nutrient out of reach even when plenty is in the water.

SHORT VERSION 3

Change one thing at a time, and keep notes.

PART 01 & 02

A calm order *of checks.*

From symptom to fix

WORK DOWN, ONE BOX AT A TIME

1 LOOK
Which leaves show it first, old or new? Is it spread evenly across the plant, or patchy?

↓

OLD LEAVES FIRST
Mobile nutrient: nitrogen, phosphorus, potassium or magnesium.[1]

NEW GROWTH FIRST
Immobile: calcium, copper, boron, iron, manganese or zinc.[1]

↓

2 CHECK THE WATER
Measure the pH and EC of the feed and of what drains out. Is the pH inside your window?

↓

3 TEST
A media or soil test, and a tissue test when symptoms look alike.[1]

↓

4 CHANGE ONE THING
Adjust one variable, note it, and give the plant time before the next move.

Deficiency symptoms tend to spread symmetrically across the plant; biotic problems tend to look patchy. Symptoms can also be mistaken for pesticide drift or disease.[1]

pH too low

Iron and manganese can reach toxic levels,[2] and calcium and magnesium may run short.[3]

pH too high

Iron, manganese, zinc and boron can become unavailable,[1] and high-pH deficiencies are often tied to very alkaline water.[2]

PART 02 & 03

Symptom lookup, *and what to do first.*

NUTRIENT	Mobility	Shows first in	Symptom named in the source
Nitrogen (N)	Mobile	Older leaves	Older leaves yellow
Phosphorus (P)	Mobile	Older leaves	—
Potassium (K)	Mobile	Older leaves	—
Magnesium (Mg)	Mobile	Older leaves	—
Calcium (Ca)	Immobile	New growth	—
Boron (B)	Immobile	New growth	Distorted, misshapen new leaves
Iron (Fe)	Immobile	New growth	—
Manganese (Mn)	Immobile	New growth	—
Zinc (Zn)	Immobile	New growth	—
Copper (Cu)	Immobile	New growth	—

Sulfur and molybdenum weren't placed by the source. It describes only nitrogen and boron symptoms in words, so the rest are shown by location only.[1]

01 **Don't chase it with the feed**
A feed problem and a pH problem look the same. Check pH and EC before you add anything.

02 **Look at the pattern**
Even across the plant points to nutrition. Patchy points elsewhere.

03 **Test**
Substrate or soil test; tissue test if symptoms look alike.

04 **One change, then notes**
Date it, note it, and wait before the next move.

Soilless media

Optimal substrate pH for most greenhouse crops is 5.4 to 6.4; peat and bark start at 3 to 4 and are limed up into range.[2]

Hydro

Oklahoma State puts the nutrient solution at pH 5 to 6 (usually 5.5) and the root zone at 6 to 6.5.[4]

GROWER PROOF, AND WHERE THE NUMBERS COME FROM

Honest check

This chapter is general extension guidance for greenhouse and ornamental crops, not a diagnosis of your plants.

If something looks wrong and the checks don't explain it, send a photo and your numbers.



GROWER PROOF · FROM BLOOM'S REVIEWS BANK

"when I transplanted them I watered in some roots and sea minerals and there was Zero signs of shock/ setback!"

@bige

Products named: Roots, Sea Minerals

In the grower's own words, from a DM. One grower's view, not a measured result; check your own water and pH.

Other crops

Growing fruit, veg, peppers or ornamentals? Rates and the feed schedule are on the fruit and veg feed schedule page. This handbook prints no crop rates.

Sources

1. Shober AL, Denny GC. Identifying nutrient deficiencies in ornamental plants. University of Delaware Cooperative Extension. udel.edu fact sheet
2. Lindberg H, Owen WG (2018). Managing substrate pH of soilless substrates. Michigan State University Extension. canr.msu.edu
3. UMass Extension Greenhouse Crops and Floriculture. Soil test report, commercial floriculture (nutrient levels and optimum pH). umass.edu fact sheet
4. Singh H, Dunn B. Electrical conductivity and pH guide for hydroponics. Oklahoma State University Extension. extension.okstate.edu

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Stuck? Send us a photo.

Matching page: bloomyellowbottles.us/feed-schedules · Comment or DM CREW on @bloom_crew_nate

nathan@bloomyellowbottles.com · (970) 556-1678 · bloomyellowbottles.us
@bloomyellowbottles · @bloom_crew_nate



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GROWER HANDBOOK

Photo: @therealbestbudz, the grower's own

13 GROWERS

Growers' *results.*

Real words from growers, taken from their DMs and comments, with their own photos. Nothing here is edited to change what they meant, and none of it is a promise for your room.

01 What growers name most

02 In their words

03 What this can't tell you

04 One more grower

SHORT VERSION 1

Growers name Ooze, Roots and Phat most often in the reviews bank.

SHORT VERSION 2

These are opinions and observations, not trial data.

SHORT VERSION 3

Results vary. The fair test is your own room.

nathan@bloomyellowbottles.com · (970) 556-1678 · bloomyellowbottles.us · @bloomyellowbottles · @bloom_crew_nate

PART 01

What growers *name most.*

Bloom keeps a bank of the messages growers send. It's the closest thing to a long-running field record the range has.

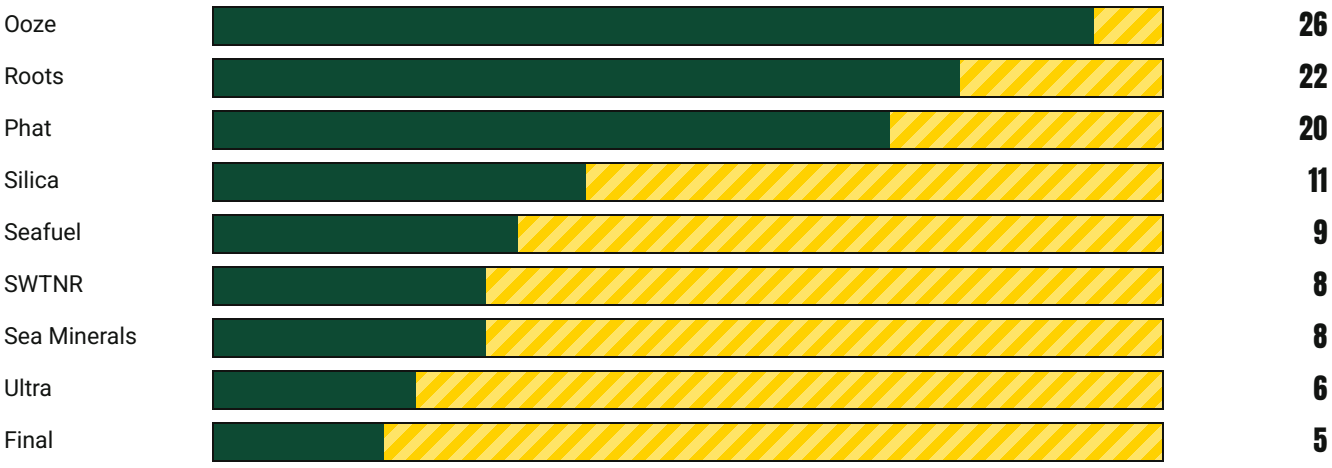
It isn't a trial. Growers choose what to write about and what to send.

85

growers in the reviews bank, 164 messages in all.

Consent cleared before any quote or photo is used.

Growers who named each product



From Bloom's reviews bank: 164 messages from 85 growers, with consent cleared. Counts are unique handles per product, a few handles merged by hand where one grower uses two. A count says how often a bottle gets named, not how well it works.

How we use these

Quotes are the grower's own words, never reworded or trimmed to change what they meant. We don't print yield or potency claims, and we don't say a bottle caused anything.

Why the counts differ

A count only shows how often a bottle gets named. It says nothing about how well it works.

PART 02

In their words, *not ours.*

"I've seen better results with these products than any other line I've tried."

@804growtent · Bloom line

"Roots and sea minerals have been key to getting my plants to where they are and this happy."

@bige · Roots, Sea Minerals

"The seedlings only got 'roots' and theyre really happy. But the growth in the tent is nuts!"

@chrisplants · Roots

"I would agree with the grower, this run was some of the best I've produced."

@coloradofondew · Phat

"The Yellow Bottles plant is really showing off."

@therealbestbudz · Ultra

"Loving the ooze so far!! Notice it really lowers ph but not a problem at all for the results its showing."

@greenmedsgarden · Ooze

"I have noticed tighter node spacing and a very rich green to the vegetation. Overall, I am impressed."

@devharmon · Euro A/B, Roots

"Okay so i fed some roots, for the first watering during the transplant last night, i went back today and check one them, and they where praying so hard to the sun."

@tojo · Roots

What this can't tell you

These are single growers, single runs, with no controls. Lights, cultivars, base feed and water all differ. Nothing here shows Bloom caused the outcome.

What it can

It shows which bottles growers reach for, how they describe the experience, and which questions come up. That's why the handbook points you to a side-by-side in your own room.



@coloradofondew · the grower's own photo



@greenmedsgarden · the grower's own photo

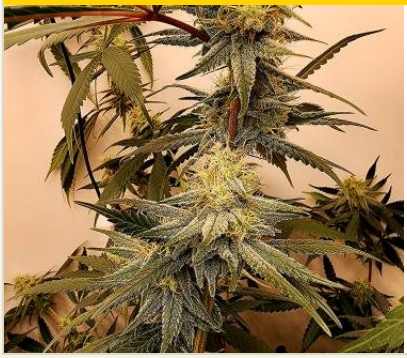


@devharmon · the grower's own photo



@hellfirefarmsjason · the grower's own photo

GROWER PROOF, AND WHERE THE NUMBERS COME FROM



GROWER PROOF · FROM BLOOM'S REVIEWS BANK

"The 3rd will be the 14th day of flower! The Yellow Bottles plant is really showing off."

@therealbestbudz
Products named: Ultra

In the grower's own words, from a DM; the photo is his. One grower's view, not a measured result.

Other crops

Growing fruit, veg, peppers or ornamentals? Rates and the feed schedule are on the fruit and veg feed schedule page. This handbook prints no crop rates.

Sources

1. Bloom reviews bank: 164 messages from 85 growers, consent cleared, kept by Bloom. Quotes are verbatim from the grower's message; spelling is theirs.
2. Counts: unique handles per product, merged by hand where one grower uses two handles. Anonymous senders excluded.

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Want to share your run?

Matching page: bloomyellowbottles.us/reviews · Comment or DM CREW on @bloom_crew_nate
nathan@bloomyellowbottles.com · (970) 556-1678 · bloomyellowbottles.us
@bloomyellowbottles · @bloom_crew_nate



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GROWER HANDBOOK

14 COMPATIBILITY

Who covers *what.*

Bloom is a set of bottles that go on top of the base feed you already run. Some bottles overlap on a job. Here's who covers what across the range, so you don't double up by accident.

01 The coverage map

02 Where bottles overlap

03 Humic: count it once

04 A grower's mix

SHORT VERSION 1

Most bottles have one main job. A few ingredients show up in more than one bottle.

SHORT VERSION 2

Humic acid is on the label of six bottles, and Humate is a liquid humic acid on its own.

SHORT VERSION 3

Run a side-by-side before you add a second bottle that covers the same job.

PART 01 & 02

The coverage map.

Big dot: the bottle's main job. Small dot: an ingredient that appears on its label. Shaded columns are where bottles overlap.

Who covers what, across the Bloom range

PRODUCT PAGES AND LABELS

	ROOTING	CARBS	HUMIC	TRACE MINERALS	CA + MG	SILICA	FOLIAR	BASE FEED
Roots	●		○					
Pre			○					
Ultra			○					
Phat			○	○				
Ooze		○	○	○				
Final			○					
Seafuel								
Seaweed								
SWTNR		●						
Humate			●					
Cal-Mag					●			
Groigen							●	
Florigen							●	
Sea Minerals				●				
PK								
Euro A+B								●
Grow A+B								●
Flower A+B								●
Silica						●		

Humic acid at 0.075% (from leonardite) is on the Roots, Pre, Ultra, Phat, Ooze and Final labels. Phat and Ooze list boric acid and sodium molybdate, and Ooze lists molasses. Euro, Grow and Flower A+B are base nutrient pairs; all other bottles are additives.

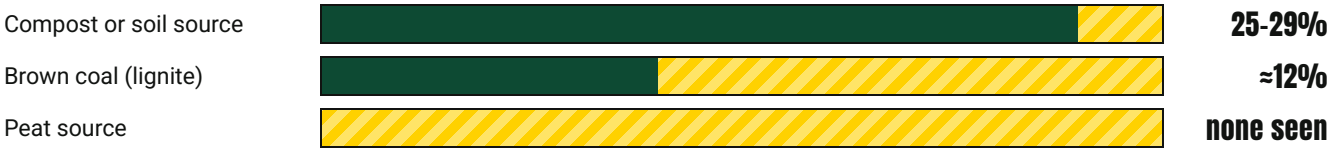
PART 02 & 03

Humic: count it once, *and test the rest.*

The one overlap worth planning is humic acid. If you run Humate on top of the six bottles that already carry a little, you're adding it from several places. Source and rate matter, so don't double up blind.[1]

Humic material is not all the same

GAIN IN SHOOT DRY WEIGHT, HUMIC PRODUCTS



Meta-analysis of 81 mostly greenhouse studies, humic products in general. Not Bloom Humate, not cannabis-specific.[1]

If you run your own humic or mineral product

Treat Bloom's Humate and Sea Minerals as optional and test them. Your own product may already cover the job.

Base feeds

Bloom's bottles sit on top of whichever base you use. Euro, Grow and Flower A+B are Bloom's own base pairs. The additives work with any base you trust.

Run the fair test

HALF A VS HALF B

01 **Half A**
Your base feed and your current bottles.

02 **Half B**
The same, plus the one bottle you're testing.

03 **Same everything else**
Plants, room, base, EC and pH.

04 **Photo and weigh**
Weekly photos from one spot, dry weight at the end.

GROWER PROOF, AND WHERE THE NUMBERS COME FROM

Honest check

The humic research is on humic products in general; it didn't test Bloom's bottles.

Confirm current labels and rates on each bottle and in the feed chart.



GROWER PROOF · FROM BLOOM'S REVIEWS BANK

"everything is growing beautifully in my soil mix"

@devharmon

Products named: Euro A/B, Roots

In the grower's own words, from a DM. He runs his own humic source alongside Bloom. One grower's view, not a measured result.

Other crops

Growing fruit, veg, peppers or ornamentals? Rates and the feed schedule are on the fruit and veg feed schedule page. This handbook prints no crop rates.

Sources

1. Rose MT, Patti AF, Little KR, Brown AL, Jackson WR, Cavagnaro TR (2014). A meta-analysis and review of plant-growth response to humic substances. *Advances in Agronomy* 124:37–89. doi.org/10.1016/B978-0-12-800138-7.00002-4
2. Bloom product pages and labels: bottle jobs and ingredient lines (derived-from lines read from label artwork).
3. Bloom feed charts: stage placement.

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Not sure what to add?

Matching page: bloomyellowbottles.us/feed-schedules · Comment or DM CREW on @bloom_crew_nate

nathan@bloomyellowbottles.com · (970) 556-1678 · bloomyellowbottles.us
@bloomyellowbottles · @bloom_crew_nate



15 CONTACT

Talk to *Nate.*

Got a question about your run? You can ask Nate directly. Here's how to reach him, what to send so he can actually help, and where every bottle's page lives.

01 How to reach us
02 What to send
03 Every bottle, one tap
04 A grower on the line

SHORT VERSION 1

Email, call, or DM on Instagram. Nate reads the replies.

SHORT VERSION 2

Send your medium, the week, your numbers and a photo.

SHORT VERSION 3

Every bottle has its own page with sizes and the label.

PART 01 & 02

How to reach us, *and what to send.*

EMAIL	PHONE	WEBSITE
nathan@bloomyellowbottles.com	(970) 556-1678	bloomyellowbottles.us

INSTAGRAM	INSTAGRAM	KEYWORD
@bloomyellowbottles	@bloom_crew_nate	Comment or DM CREW

Nate reads and answers the DMs himself. For a first message, Comment or DM **CREW** to @bloom_crew_nate and you'll be pointed to real grower results and a way to chat.

The six things that get you a useful answer

SEND THESE IN YOUR FIRST MESSAGE

01 Your medium
Coco, hydro (run-to-waste or recirculating) or soil.

02 Stage and week
Veg, flip, flower week 4, and so on.

03 What you're feeding
Your base, and which Bloom bottles at what rates.

04 Your numbers
pH and EC of the mixed feed, and of the runoff if you take it.

05 Photos
An older leaf and a newer one, and the whole plant.

06 What changed
Anything new: water, light, base, bottle.

Why numbers matter

pH decides what roots can reach, and EC is the number a meter really measures. With both, a symptom stops being a guess. Chapters 07 and 12 cover them.

Not sure which chart?

Pick your medium, then the week. Chapter 04 shows how, and the charts live at bloomyellowbottles.us/feed-schedules.

PART 03

Every bottle, *one tap.*

Each page carries sizes (300 ml, 1 L, 2.5 L, 15 L, 25 L), the label and the details. In the PDF, tap a bottle.


Roots


Pre


Ultra


Phat


Ooze


Final


Seafuel


Seaweed


SWTNR


Humate


Cal-Mag


Groigen


Florigen


Sea Minerals


PK


Euro A+B


Grow A+B


Flower A+B


Silica

Feed charts

One chart per medium: run-to-waste, recirculating and soil. bloomyellowbottles.us/feed-schedules

Grower results

Real messages and photos from growers: bloomyellowbottles.us/reviews

GROWER PROOF, AND WHERE THE NUMBERS COME FROM



GROWER PROOF · FROM BLOOM'S REVIEWS BANK

“Dude….the roots are KILLER !!! Hell yeah!”

@jason_capsaicin_
Products named: Roots

In the grower’s own words, from a DM. He grows peppers. One grower’s view, not a measured result.

Other crops

Growing fruit, veg, peppers or ornamentals? Rates and the feed schedule are on the fruit and veg feed schedule page. This handbook prints no crop rates.

Sources

1. Contact details: Bloom Yellow Bottles. Bottle names and sizes: Bloom product pages and price sheet order.
2. How this handbook was sourced: every research figure comes from a peer-reviewed journal or a university extension sheet, checked against the page; Bloom facts come from labels and Bloom’s own charts; grower words are verbatim.

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Talk to Nate
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