Automatic Series

Day-Neutral Technical Cultivation Brief

Phylos day-neutral cannabis and hemp genetics produce uniform, day-neutral F1 hybrid Production-Ready Seeds™. The primary defining feature of the Automatic Series is that the flowering period is triggered by degree days rather than daylight length as with photosensitive cultivars. Promoting healthy root development is key to vigorous growth and a successful production; day-neutral roots are easily shocked—and when stressed, plants may be stunted and switch into early flowering. External factors (temperature, humidity, water, nutrients) and production system (planting density, pot size, infrastructure) affect plant biomass, cannabinoid levels, and maturity. Below are the basics for a successful Phylos Automatic Series season.

Life Period**

Growth Media

- Day-neutral plants do best in a well-draining, soilless media that allows for good seed-to-soil contact.
- Soil Temperature Indoors 70-75°F

Sow / Transplant

- We recommend direct sowing into growth media at an ideal depth of ¼ inch but no deeper than ½".
- **Transplanting is not recommended,** but if it is necessary, use stabilized soil (ellepot or similar) and transplant within 7-10 days after sowing (or before roots reach the edge of the container). If transplanting, limit root disturbance altogether.
- We advise against using rock wool due to the difficulties of maintaining proper seed-media contact.
- Seedlings need high light intensity immediately after germination to prevent plant stretch: 350 - 450 PPFD after seed sowing.
- We do not recommend using propagation domes as it keeps humidity levels too high for seedling health.
- Avoid saturated conditions, but keep the growth media evenly moist, especially during the first three weeks of cultivation.

Lighting Regime

- Unlike clonal production, seeds require higher light intensity (350-450PPFD) immediately at emergence.
- Apply an 18:6 light cycle during the vegetative and flower stages for optimal results.

Spacing

- Final pot spacing should be between 0.5 - 2.0 ft^2/plant.
- Plant density will affect growth habits. Higher density plantings will result in higher yield per ft^2. Lower-density plantings result in higher-quality flower.
- One of the benefits of day-neutral is the ability to grow more plants in less space.

Soil Salts and pH

- Monitoring pH and EC are critical to plant performance. Media pH should range between 5.8-6.2 and EC 0.5-3.0. See Table 1 for recommended EC.
- Frequent media and pour-through tests will help determine appropriate EC and help with fertilizer calculations. It is good practice to calculate the base EC of the water source to add to the equation.
- A reputable fertilizer provider will have personalized feeding recommendations based on your specific grow conditions. Follow a balanced feed plan like FloraPro Grow, FloraPro Bloom, and FloraPro Cal+Micros per their recommendations.

Vegetation

- Day-neutral varieties are low-touch plants that do not typically require topping or de-leafing.

***Timing depends on variety, production system and environment, and planting density.*

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Controlled Environment

Ideal RH
50-70%

Promote best growth with ambient temperatures 65-80°F (will tolerate 55-90°)

400-500 PPFD
18 hours light
6 hours dark
Target DLI 30

Table 1. Recommended Electrical Conductivity (EC), Daily Light Integral (DLI), and Vapor Pressure Deficit (VPD) for indoor & greenhouse day-neutral productions using reverse osmosis (RO) water.

Day (Indoor/Greenhouse)	1-21	22-28	29-58	59-65
Day (Outdoor)	1-21	22-28	29-68	69-75
Growth Phase	Seedling/Veg	Late Veg/First Pre-Flower	Flower	Pre-harvest
EC	0.8-2.0	1.8	2.0-3.0	0.5
DLI	20-30	25-30	30-35	28-30
VPD	0.8-1.0	1	1.2	1.5

Lighting

- Management of light intensity throughout all growth phases is critical. It has lasting effects on plant maturation and yield.
- While day-neutral plants do not require a change in light duration to trigger flowering, they do respond to light intensity.
- We recommend 20 DLI (Daily Light Integral) at sowing with an optimal increase to 30 DLI from mid-veg to maturity.
- Supplemental lighting is helpful during shorter day lengths or in low-light regions.
- Calculate the required time length (hours) by comparing your PPFD (Photosynthetic Photon Flux Density or light intensity) in Table 2.

Table 2. Calculation of DLI exposure based on light intensity (PPFD). Identify the PPFD in the facility at the plant canopy level.

PPFD	1	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
Hours	DLI																			
1	0.0036	0.4	0.5	0.7	0.9	1.1	1.3	1.4	1.6	1.8	2	2.2	2.3	2.5	2.7	2.9	3.1	3.2	3.4	3.6
2	0.0072	0.7	1.1	1.4	1.8	2.2	2.5	2.9	3.2	3.6	4.0	4.3	4.7	5.0	5.4	5.8	6.1	6.5	6.8	7.2
3	0.0108	1.1	1.6	2.2	2.7	3.2	3.8	4.3	4.9	5.4	5.9	6.5	7.0	7.6	8.1	8.6	9.2	9.7	10.3	10.8
4	0.0144	1.4	2.2	2.9	3.6	4.3	5.0	5.8	6.5	7.2	7.9	8.6	9.4	10.1	10.8	11.5	12.2	13.0	13.7	14.4
5	0.0180	1.8	2.7	3.6	4.5	5.4	6.3	7.2	8.1	9.0	9.9	10.8	11.7	12.6	13.5	14.4	15.3	16.2	17.1	18.0
6	0.0216	2.2	3.2	4.3	5.4	6.5	7.6	8.6	9.7	10.8	11.9	13.0	14.0	15.1	16.2	17.3	18.4	19.4	20.5	21.6
7	0.0252	2.5	3.8	5.0	6.3	7.6	8.8	10.1	11.3	12.6	13.9	15.1	16.4	17.6	18.9	20.2	21.4	22.7	23.9	25.2
8	0.0288	2.9	4.3	5.8	7.2	8.6	10.1	11.5	13.0	14.4	15.8	17.3	18.7	20.2	21.6	23.0	24.5	25.9	27.4	28.8
9	0.0324	3.2	4.9	6.5	8.1	9.7	11.3	13.0	14.6	16.2	17.8	19.4	21.1	22.7	24.3	25.9	27.5	29.2	30.8	32.4
10	0.0360	3.6	5.4	7.2	9.0	10.8	12.6	14.4	16.2	18.0	19.8	21.6	23.4	25.2	27.0	28.8	30.6	32.4	34.2	36.0
11	0.0396	4.0	5.9	7.9	9.9	11.9	13.9	15.8	17.8	19.8	21.8	23.8	25.7	27.7	29.7	31.7	33.7	35.6	37.6	39.6
12	0.0432	4.3	6.5	8.6	10.8	13.0	15.1	17.3	19.4	21.6	23.8	25.9	28.1	30.2	32.4	34.6	36.7	38.9	41.0	43.2
13	0.0468	4.7	7.0	9.4	11.7	14.0	16.4	18.7	21.1	23.4	25.7	28.1	30.4	32.8	35.1	37.4	39.8	42.1	44.5	46.8
14	0.0504	5.0	7.6	10.1	12.6	15.1	17.6	20.2	22.7	25.2	27.7	30.2	32.8	35.3	37.8	40.3	42.8	45.4	47.9	50.4
15	0.0540	5.4	8.1	10.8	13.5	16.2	18.9	21.6	24.3	27.0	29.7	32.4	35.1	37.8	40.5	43.2	45.9	48.6	51.3	54.0
16	0.0576	5.8	8.6	11.5	14.4	17.3	20.2	23.0	25.9	28.8	31.7	34.6	37.4	40.3	43.2	46.1	49.0	51.8	54.7	57.6
17	0.0612	6.1	9.2	12.2	15.3	18.4	21.4	24.5	27.5	30.6	33.7	36.7	39.8	42.8	45.9	49.0	52.0	55.1	58.1	61.2
18	0.0648	6.5	9.7	13.0	16.2	19.4	22.7	25.9	29.2	32.4	35.6	38.9	42.1	45.4	48.6	51.8	55.1	58.3	61.6	64.8
19	0.0684	6.8	10.3	13.7	17.1	20.5	23.9	27.4	30.8	34.2	37.6	41.0	44.5	47.9	51.3	54.7	58.1	61.6	65.0	68.4
20	0.0720	7.2	10.8	14.4	18.0	21.6	25.2	28.8	32.4	36.0	39.6	43.2	46.8	50.4	54.0	57.6	61.2	64.8	68.4	72.0
21	0.0756	7.6	11.3	15.1	18.9	22.7	26.5	30.2	34.0	37.8	41.6	45.4	49.1	52.9	56.7	60.5	64.3	68.0	71.8	75.6
22	0.0792	7.9	11.9	15.8	19.8	23.8	27.7	31.7	35.6	39.6	43.6	47.5	51.5	55.4	59.4	63.4	67.3	71.3	75.2	79.2
23	0.0828	8.3	12.4	16.6	20.7	24.8	29.0	33.1	37.3	41.4	45.5	49.7	53.8	58.0	62.1	66.2	70.4	74.5	78.7	82.8
24	0.0864	8.6	13.0	17.3	21.6	25.9	30.2	34.6	38.9	43.2	47.5	51.8	56.2	60.5	64.8	69.1	73.4	77.8	82.1	86.4

0–5 | 5–10 | 10–15 | 15–20 | 20–25 | 25–30 | 30–35 | 35–40 | 40+

Tips for Success

The key to growing day-neutral varieties is maximizing the vegetative growth and minimizing stressors, such as:

- Transplanting, which may cause root disturbance
- Keeping plants in trays longer than necessary
- Saturated soil conditions
- Low light conditions
- Low-temperature conditions

Optimize your planting density with key insights from our latest greenhouse trial.

Access the complete report for all the details.
phylos.bio/density-trial

Support

Contact us directly at support@phylos.bio with any technical cultivation questions. We are available M-F 8am-5pm PST.

1. "DLI (Daily Light Integral) Chart - Understand Your Plants' PPFD & Photoperiod Requirements." LEDTonic, 28 May 2019, https://www.ledtonic.com/blogs/guides/dli-daily-light-integral-chart-understand-your-plants-ppfd-photoperiod-requirements. Accessed 2 Dec. 2021.

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