## GrowerFacts

## Easy Wave ${ }^{\circledR}$ Petunia

## P. x hybrida

Seed Count (Pelleted): 33,000 S./oz. (1,200 S./g)

## Plug Production

Note: Because their spreading habit begins after transplanting, Easy Wave plugs can be produced like other petunia plugs.

## Media

Use a well-drained, disease-free seedling medium with a pH of 5.5 to 6.0 and EC about $0.75 \mathrm{mS} / \mathrm{cm}$ (1:2 extraction).

## Sowing

Covering Easy Wave seed is not recommended. Water adequately after sowing to completely dissolve the pellet.

Stage 1 - Germination takes approximately 4 days. Soil temperature: 72 to $76^{\circ} \mathrm{F}$ ( 22 to $24^{\circ} \mathrm{C}$ )
Light: Lighting is optional. Burgundy Star, Pink and Plum Vein benefit from light during germination.
Moisture: Keep soil very wet (level 5) during Stage 1 for optimal germination.
Humidity: Maintain 100\% relative humidity (RH) until radicles emerge.

## Stage 2

Soil temperature: 68 to $75^{\circ} \mathrm{F}\left(20\right.$ to $24^{\circ} \mathrm{C}$ )
Light: Up to 2,500 f.c. (26,900 Lux)
Moisture: Start to slightly reduce soil moisture (level 4) to allow root to penetrate into the media.
Fertilizer: Apply fertilizer at rate 1 (less than 100 ppm N/less than $0.7 \mathrm{mS} / \mathrm{cm} \mathrm{EC}$ ) from nitrate-form fertilizers with low phosphorous.

## Stage 3

Soil temperature: 65 to $70^{\circ} \mathrm{F}$ ( 18 to $21^{\circ} \mathrm{C}$ )
Light: Up to 2,500 f.c. $(26,900$ Lux)
Moisture: Allow media to further dry until the surface becomes light brown (level 2) before watering. Keep the moisture to wet-dry cycle (moisture level 4 to 2 ).
Fertilizer: Increase fertilizer to rate 2 (100 to 175 ppm N/0.7 to $1.2 \mathrm{mS} / \mathrm{cm} \mathrm{EC}$ ). If growth is slow, apply a balanced ammonium and nitrate-form fertilizer with every other fertilization. Maintain medium pH 5.8 to 6.2 and EC between 1.0 and $1.5 \mathrm{mS} / \mathrm{cm}$ (1:2 extraction).

Growth Regulators: Control plug growth first by environment, nutrition and irrigation management, then with chemical plant growth regulators if needed. Minimize ammonium-form nitrogen fertilizer to avoid seedling
elongation. Temperature differential (DIF) can also be used to minimize height. Test all chemical plant regulators first.

In North American conditions: Apply B-Nine/Alar (daminozide) 1 to 2 applications at $5,000 \mathrm{ppm}$ (6.0 $\mathrm{g} / \mathrm{l}, 85 \%$ formulation or $7.8 \mathrm{~g} / \mathrm{l}, 64 \%$ formulation) as a spray. The first application should be made when plugs have 2 to 3 true leaves. A second application can be made 7 days later. This treatment can improve basal branching of mature plants.

In Northern European conditions: 1 to 3 applications of B-Nine/Alar (daminozide) at 1,250
ppm ( $1.5 \mathrm{~g} / \mathrm{l}, 85 \%$ formulation or $2.0 \mathrm{~g} / \mathrm{l}, 64 \%$ formulation) spray has been tested and shown effective if needed.

## Stage 4

Soil temperature: 60 to $65^{\circ} \mathrm{F}\left(16\right.$ to $18^{\circ} \mathrm{C}$ )
Light: Up to 5,000 f.c. $(53,800$ Lux) if temperature can be controlled.
Moisture: Same as Stage 3.
Fertilizer: Same as Stage 3.

## Growing On to Finish

Container Size
1801 flats \& Wave-Pink Packs: 1 plant per cell
4-in. (10-cm) pots: 1 plant per pot
6-in. (15-cm) pots: 1 to 3 plants per pot
10-in. (25-cm) baskets: 3 to 4 plants per basket

## Media

Use a well-drained, disease-free, soilless medium with a pH of 5.5 to 6.2 and a medium initial nutrient charge.

## Temperature

Nights: 57 to $65^{\circ} \mathrm{F}\left(14\right.$ to $\left.18^{\circ} \mathrm{C}\right)$
Days: 61 to $75^{\circ} \mathrm{F}\left(16\right.$ to $24^{\circ} \mathrm{C}$ )
Easy Wave petunias can tolerate temperatures as low as $35^{\circ} \mathrm{F}\left(2^{\circ} \mathrm{C}\right)$; however, keep in mind that crop timing (time to flower) is related to daily average temperature when grown under proper daylength. Easy Wave plants will take longer to flower when grown in cooler conditions.

## Light

Keep light levels as high as possible while maintaining moderate temperatures.

## Fertilizer

Easy Wave petunias require more fertilizer than is usually recommended for petunias. For best results, apply nitrateform with low phosphorus fertilizer at rate 4 (225 to 300 ppm $\mathrm{N} / 1.5$ to $2.0 \mathrm{mS} / \mathrm{cm} \mathrm{EC}$ ) every other irrigation. Apply a balanced ammonium and nitrate-form fertilizer with low phosphorus as needed to encourage growth and balance medium pH . Maintain medium pH 5.8 to 6.2.

For constant fertilizer program, can apply fertilizer at rate 3 ( 175 to 225 ppm N or 1.2 to $1.5 \mathrm{mS} / \mathrm{cm} \mathrm{EC}$ ) while maintaining the above recommended EC and pH ranges.

## Growth Regulators

In North American conditions: Use B-Nine/Alar (daminozide) at $5,000 \mathrm{ppm}(5.9 \mathrm{~g} / \mathrm{l}, 85 \%$ formulation or 7.8 $\mathrm{g} / \mathrm{l}, 64 \%$ formulation) at 7 days after transplant. Follow these with a Bonzi drench at 3 to 5 ppm ( 0.8 to $1.3 \mathrm{ml} / \mathrm{l}, 0.4 \%$ formulation) depending on environmental conditions. If additional PGR is needed, a Bonzi (paclobutrazol) spray at $30 \mathrm{ppm}(7.5 \mathrm{ml} / \mathrm{l}, 0.4 \%$ formulation) will help hold the finished crop.

In northern European conditions: Use B-Nine/Alar at $5,000 \mathrm{ppm}(5.9 \mathrm{~g} / \mathrm{l}, 85 \%$ formulation or $7.8 \mathrm{~g} / \mathrm{l}, 64 \%$ formulation) at 7 days after transplant. Follow these with a Bonzi drench 6 to 8 ppm ( 1.5 to $2.0 \mathrm{ml} / \mathrm{l}, 0.4 \%$ formulation) depending on environmental conditions. If additional PGR is needed, a Bonzi spray at $30 \mathrm{ppm}(7.5 \mathrm{ml} / \mathrm{l}, 0.4 \%$ formulation) will help hold the finished crop.

## In all conditions:

Burgundy Velour, Plum Vein and Red Velour are more vigorous within the Easy Wave group. They can take higher rates of paclobutrazol drench (1 to 2 ppm more) than the others.
For hanging basket production, Burgundy Velour will benefit from one additional Bonzi 30 ppm spray.

Note: Topflor can be used in place of Bonzi at $2 / 3$ the rate of Bonzi.

To determine the best rate for your conditions, we recommend that you conduct an in-house trial.

## Photoperiod

Wave petunia lighting requirements vary by location, variety and production week. Refer to the Photoperiodic Lighting Chart.

Easy Wave petunias are less sensitive to daylength than Wave petunias. Most Easy Wave varieties will flower successfully at 10 hours. Easy Wave Pink, Plum Vein and

Red Velour flower best with 11-hour daylength. The crop time for Easy Wave varieties will be shorter with longer days, such as 12 hours.

When producing Easy Wave petunias early in the year when days are short, decrease crop times by using photoperiodic lighting after transplanting. Day extension or night break lighting are acceptable.

## Crop Scheduling

Sow to transplant (288-cell plug): 5 to 6 weeks
Transplant to flower: 4 to 7 weeks
Total Crop Time:

| Container Size | Number <br> of <br> Plants | Spring | Summer |
| :--- | :--- | :--- | :--- |
| 1801 flats, Wave- <br> Pink Pack | 1 plant <br> per cell | 10 to 12 <br> weeks | 8 to 10 <br> weeks |
| 4-in. (10-cm) pot | 1 plant <br> per pot | 10 to 12 <br> weeks | 8 to 10 <br> weeks |
| 6-in. (15-cm) pot | $2-3$ <br> plants <br> per pot | 10 to 12 <br> weeks <br> weeks 10 <br> week | 3-4 <br> plants <br> per <br> basket |
| 10 to 13 <br> weeks <br> basket | 8 to 11 <br> weeks |  |  |

## Common Problems

No major problems will occur if good cultural and IPM practices are used.

## Home Gardener "Green Thumb" Tips

Choose a full sun location for Easy Wave petunias at least 6 hours of direct sunlight is best. For best results, feed with an all-purpose fertilizer every 7 to 10 days, especially when grown in containers. Apply fertilizer at the recommended package rates.

Space 12 in . ( 30 cm ) apart in the garden. Plants will spread 2.5 to 3 ft . ( 75 to 90 cm ) and grow 8 to 12 in . ( 20 to 30 cm ) tall.

Note: Growers should use the information presented here as a starting point. Crop times will vary depending on the climate, location, time of year and greenhouse environmental conditions. Chemical and PGR recommendations are only guidelines. It is the responsibility of the applicator to read and follow all the current label directions for the specific chemical being used in accordance with all regulations.

## PanAmericanSeed

## Photoperiodic Lighting Chart

These tables will help you to decide when you need to light the different Wave Petunia family varieties and choose the right variety for you. For example, if you want to produce Wave petunia during week 6 to week 20 in Kalamazoo, MI ( $\mathrm{N} 42.5^{\circ}$ ), you need to light group 3 varieties for 3 weeks, group 4 varieties for 6 weeks, but you don't need to use photoperiodic light for group 1 and group 2 varieties.

## Daylength Requirements for Flowering Wave ${ }^{\circledR}$ Petunia Varieties

| Group | Min. Daylength <br> Requirement ${ }^{*}$ | Variety |
| :---: | :---: | :--- |$\quad$| Easy Wave ${ }^{\circledR}$ Berry Velour, Pink Passion, Burgundy Star, Coral Reef, Neon Rose, Red, Rosy |
| :--- |
| Dawn, Silver, Violet, White, and Yellow; Shock Wave ${ }^{\circledR}$ Coral Crush, Denim, Pink Shade, Red, |
| Yellow |

*Speed of flowering increases at longer daylengths.
**Wave Purple Improved requires 11.5 hours daylength or one week less of photoperiodic lighting compared to Purple Classic.

## Production Weeks When Lighting is Required for Different Wave Petunias Based on Latitude

( N : Natural Daylength, L: Photoperiodic Lighting--daylength extension to 14 hours or night interruption from 10PM to 2AM by using HID or incandescent lights)


| Week | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 9 |  | 14 | 2 | 34 | 4 | 5 | 6 | 47 | 48 | 49 | 50 | 51 | 2 |
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| Group 1 | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |  | N | N |  | N | N | N | N | N | N | N | N | N |
| Group 2 | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |  | N | N |  | N | N | N | N | L | L | L | L | L |
| Group 3 | L | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |  |  | N | L | L | L | L | L | L | L | L |
| Group 4 | L | L | L | L | L | L | L | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L | L |  |  | L | L | L | L | L | L | L | L | L |

Latitude N $35^{\circ}$, For cities such as: Atlanta, GA; Charlotte, NC; Little Rock, AR; Los Angeles; CA, Oklahoma City, OK

| Week | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 8 | 39 | 40 | 41 | 42 | 33 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 |
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| Group 1 | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L | L | L | L |
| Group 2 | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L | L | L | L | L | L | L |
| Group 3 | L | L | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L | L | L | L | L | L | L | L | L |
| Goup | L | L | L | L | L | L | L | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L | L | L |  | L | L | L | L | L | L | L | L |  |

Latitude ${\mathrm{N} 40^{\circ}}^{\circ}$, For cities such as: Baltimore, MD; Cincinnati, OH; Columbus, OH; Denver, CO; Indianapolis, IN; Philadelphia, PA; Salt Lake City, UT

| Week | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 1 | 2 | 3 | 44 | 45 |  | 7 | 8 | 49 | 50 | 51 | 52 |
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| Group 1 | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L | L | L | L | L L | L |
| Group 2 | L | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |  | N | L | L | L | L | L | L | L L | L |
| Group 3 | L | L | L | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |  | L | L | L | L | L | L | L | L | L |
| Group 4 | L | L | L | L | L | L | L | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L | L | L | L | L | L | L |  | L |  | L | L | L |

Latitude N42.5º, For cities such as: Boston, MA; Buffalo, NY; Chicago, IL; Cleveland, OH; Kalamazoo, MI; Grand Rapids, MI; Toledo, OH

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| Group 1 | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L | L L | L | L | L L | L L |  |
| Group 2 | L | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L L | L L | L L | L | L | L L | L L |  |
| Group 3 | L | L | L | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L L | L L | L L | L | L | L | L | L L | L L |  |
| Group 4 | L | L | L | L | L | L | L | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L | L | L | L L | L | L L | L | L | L | L | L | L | L |


| Week | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 373 | 383 | 39 | 40 | 414 | 424 | 434 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 |
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| Group 1 | L | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L | L | L | L | L | L | L | L |
| Group 2 | L | L | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L | L | L | L | L | L | L | L | L |
| Group 3 | L | L | L | L | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L | L | L | L | L | L | L | L | L | L | L |
| Group 4 | L | L | L | L | L | L | L | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L | L | L | L | L | L | L | L | L | L | L | L | L |

Latitude $\mathrm{N} 50^{\circ}$, For cities such as: Seattle, WA; Vancouver, BC; Winnipeg, MB

| Week | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 0 | 1 | 2 | 3 | 44 | 5 |  | 7 | 48 | 49 | 50 | 51 | 2 |
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| Group 1 | L | L | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L | L | L | L | L | L | L | L | L |
| Group 2 | L | L | L | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L | L | L | L | L | L | L | L | L | L |
| Group 3 | L | L | L | L | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L | L | L | L | L | L | L | L | L | L | L |
| Group 4 | L | L | L | L | L | L | L | L | L | L | L | L | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | L | L | L | L | L | L | L | L | L | L | L | L | L |

