



GrowerFacts Extra
Echinacea – Spring Forcing
Additional Culture Research

from

PanAmericanSeed[®]

Echinacea

Spring Forcing, published 2021

PanAmericanSeed.

OBJECTIVE

To illustrate how to use long days to produce uniformly flowering Echinacea plants for early Spring and Mother's Day, targeting week 18.

MATERIALS

- F1- hybrid Echinacea Artisan™ Collection
- Echinacea PowWow® Wild Berry
- Echinacea 'Cheyenne Spirit'



Artisan Red Ombre



PowWow Wild Berry



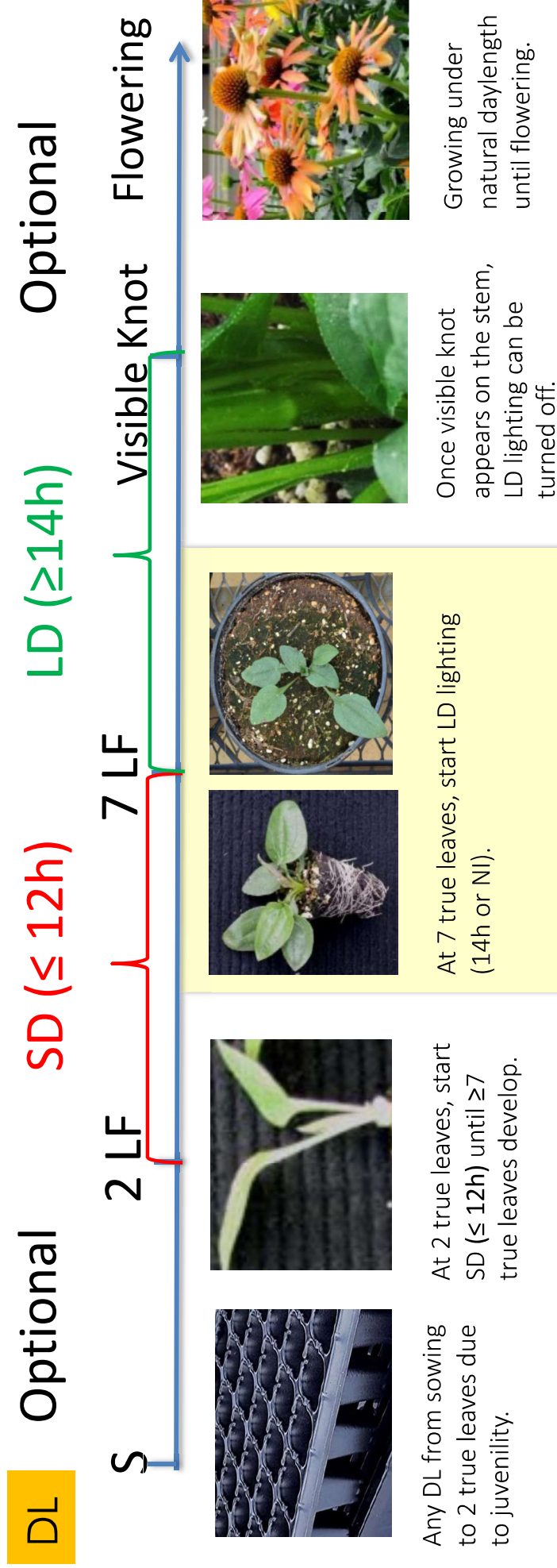
'Cheyenne Spirit'

Echinacea

Spring Forcing, published 2021

KieftSeed™

Daylength (DL) Manipulation



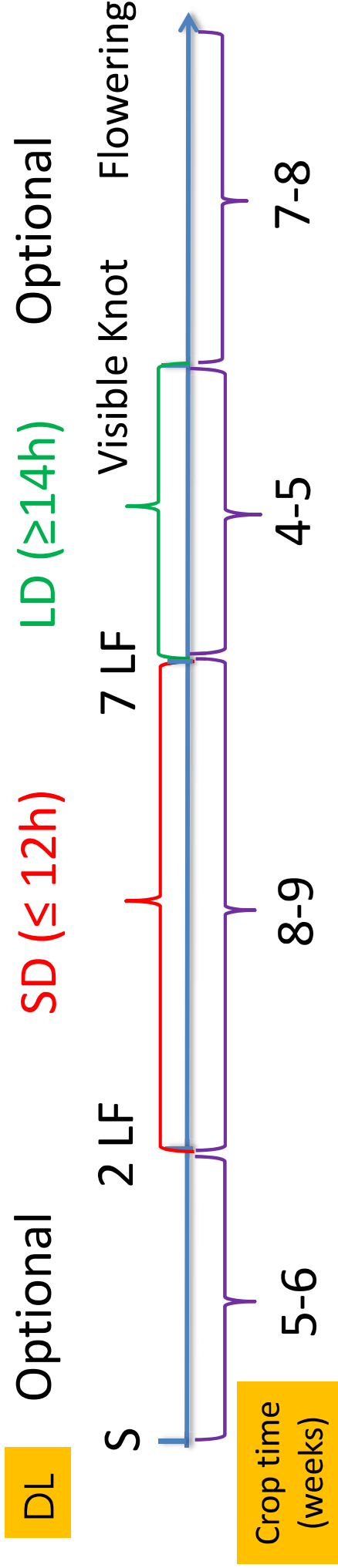
Note: Under higher DLs (≥ 15 mole), LD lighting may not be necessary for less daylength sensitive varieties, such as Artisan Red Ombre, as higher DLI could substitute for LD to some degree and improve uniformity.

Echinacea

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Crop time based on ADT 68°F/20°C



Total crop time is ~25-26 weeks at ~68°F/20°C ADT and ~9.5 mol·m⁻²·d⁻¹ DLI.

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Spring Forcing for Mother's Day, Target Week 18

SPRING FORCING PROGRAM

- Week 44
 - Sow in 288-cell or larger-sized plug tray
- Week 50
 - Transplant to 128-cell plug tray or final container
 - Start SD (2 true leaf stage)
- Week 6
 - Transplant to final container if needed
 - Start LD lighting (≥ 7 true leaves)
- Weeks 11
 - Stop LD Lighting (visible knot stage) and then grow under natural daylength
- Week 18
 - Finish
- Total crop time is ~25 to 26 weeks at $\sim 68^{\circ}\text{F}/20^{\circ}\text{C}$ ADT and DLI of $\sim 9.5 \text{ mol}\cdot\text{m}^{-2}\cdot\text{d}^{-1}$



Without Long Day

With 4 weeks of LD Lighting

Photo taken on 5/10/2019, Elburn, IL

Echinacea

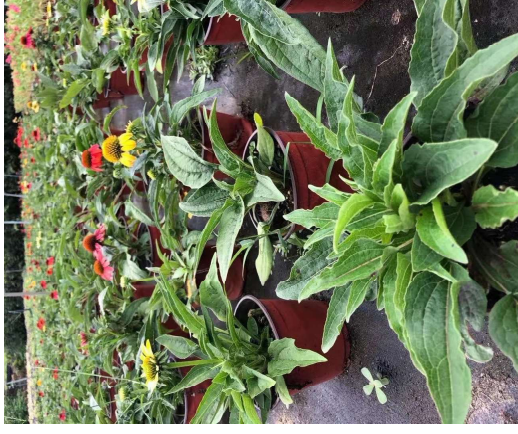
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KEY POINTS FOR SUCCESS:

- Grow plants under natural short days (≤ 12 h) between 2 to min. 7 true leaf stage.
- LD lighting from min. 7 true leaves to visible knot.
- LD treatment can be DL extension to 14 hours or NI from 10 pm to 2 am.

Successful Spring Forcing by a Grower



Early May without LD
(SZ, South of China)



Early May with LD (14h)
(SZ, South of China)