A Potential New Crop:
Leafystem Coreopsis, Leafstem Tickseed (*Coreopsis calliopsidea* (DC.) A. Gray)

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Thank you to Neil Anderson for obtaining seeds of *Coreopsis calliopsidea* and for giving me a crop that actually produced flowers.

Taxonomy

Coreopsis calliopsidea (de Condolle.) A. Gray is commonly known as leafystem coreopsis or leafstem tickseed and is also known as *Agarista calliopsidea* (DC.) as well as *Leptosyne calliopsidea* (USDA, 2013).

Distribution & Habitat

Leafystem coreopsis is a member of the Asteraceae family, a dicot, and an annual herb that is only found in the United States in California (CalFlora, 2013). This coreopsis species is found in foothill woodland, valley grassland, Joshua tree woodland, and creosote bush scrub plant communities between elevations of 500 and 3200 feet (CalFlora). Sources have noted that this coreopsis performs well in dry open and gravelly ground, such as alkaline playas, floodplains, and deep sands (Kiel, 2012). Within California, the species is limited latitudes of 34.5° N to 38° N. Within this native region, leafystem coreopsis is in flower from as early as February until as late as June (Kiel). The plants form in large clusters from self-sowing (see Appendix Image 1).

Description

This annual herb has a tap root system with a ray and disk flower. Leaves are basal and alternate, with the petiole 1-5 mm, the blade 1-5 cm, with two pinnately divided segments 1-2 mm wide and adaxial grooves. The solitary head is born on a stem up to 40 cm and is involcre bell-shaped with four to six triangular-ovate outer phyllaries of 3-8 mm that are fused at the base. There are generally eight inner phyllaries of 8-10 mm across, ovate and acute, fused to the disk. The eight ray petals are obovate and yellow in color (see Image 2). The disk flowers range in number from 15 to more than 50 with a corolla of approximately 5 mm (Kiel, author's observations).

Uses

Historically, this species was used to make a yellow dye by the indigenous peoples in central California (US Congress, 1984). In addition, it has been noted that leafystem coreopsis attracts many bees and other forms of wildlife (Huxley, 1992).

There are currently no cultivars on the market, nor is the crop used commercially in any capacity.

Propagation

Coreopsis calliopsidea is seed propagated, with total time to flower being 42 days (see Appendix Table 1). 367 seeds were sown germination mix in two 288 flats, 79 seeds were covered with vermiculite. Both treatments were germinated at a constant temperature of 70°F, with zero DIF. Lights on for 16 hrs (0600-2200 HR) at 150 umol of light per day. Seeds were misted every seven minutes for five seconds per misting. Seeds were kept in the mist house for two weeks, but could have been taken out after one week. Germination was 95% after two weeks, and covering with vermiculite made no significant difference in germination. No dormancy was exhibited. Flats were

transferred to capillary mats for two weeks and received fertilizer with 50 ppm N calcium nitrate ($CaNO_3$) using a "hozon proportioner" (Anderson, 2013). Greenhouse conditions were 65°F day and night, with a 50°F early morning dip for two to three hours. Light conditions were the same as the mist house. Seeds were transplanted into a 10" pot and 4-packs and received a constant liquid feed of 125 ppm N CLF 15-5-15 Cal-Mag. Plants responded well to deadheading after seven weeks by producing more low-growing flowers as well as sending more upright flower shoots.

Specifications & Market Niche

The ideal leafystem coreopsis will have full fluffy foliage to 13 cm, with several low flowers (10-15 cm) per plant and one to two tall flower stems per plant (20-40 cm). (Appendix Images 2, 3). Target sales will be dependent on climate, with warmer climates starting in spring and cooler climates waiting summer. This plant will be used for annual bedding material and would also work well in containers. In addition, this plant might do well as a direct-sow plant for gardeners who have a well-drained and full-sun site. If desired, this plant could be forced year round, as it performed wonderfully in the greenhouse conditions provided. Holidays for baskets could include Mothers and/or Fathers Day, or even earlier spring holidays in southern climates. This native plant is extremely drought and heat tolerant, making it an excellent candidate for containers (CalFlora, 2013). It produces multiple blooms and has an erect habit, but also interest at the base of the plant with its delicate foliage and several low-growing flowers.

Leafystem coreopsis looks quite similar to *Cosmos bipinnatus*, but with shorter, wider, yellow petals. The attractiveness of the bright yellow flowers and the shorter petals make leafystem coreopsis potentially very successful on the annual bedding plant market, especially if the climate is becoming hotter and drier. This product could be available fairly soon, as there are massive fields in the Mojave region in California that could be used to collect seed.

Cultural Requirements

This plant is not winter hardy. *Coreopsis calliopsidea* performs well in high heat with minimal irrigation. Soil should be well-drained, even gravelly type might be okay. Based on its native habitat of growing in the desert, this species most likely does not require much supplemental nutrition, but it did perform well with the constant liquid feed of 125 ppm N CLF 15-5-15 Cal-Mag.

No plant growth regulators were used, but perhaps further research could assess whether a product such as Bonzi at 15 ppm could be used in Stage 1 to control growth (more research is needed). Seeds were germinated in a 288 flat, then transplanted into a 10" pot (7 to a pot) as well as a flat of 4-packs. The plants in the 10" pot looked great, maybe a little crowded and the flat of 4-packs was too

crowded. If plants are to be sold in a flat they should be in at least 3½" pots. No pests or disease were noted on the plants in the greenhouse. See Appendix Table 1 for schedule.

Literature Cited

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Webber, C. 1958. Photo ID: 8120318145730043 © 1998. Used with permission by California Academy of Sciences. Accessed from CalPhotos Photo Database on April 27, 2013

Appendix

Image 1. Photo credit © Charles Webber. 1958.
A large clump of leafystem coreopsis in the Mojave region of CA

Image 2. Photo by author.
Coreopsis calliopsidea grown in controlled environment

Image 3. Photo credit © Charles Webber, 1998.
Coreopsis calliopsidea growth habit.

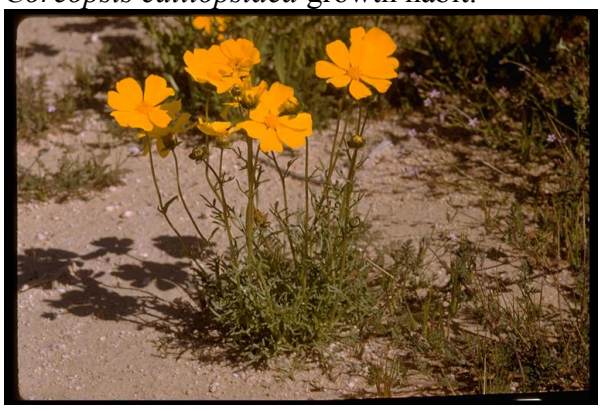

Table 1. Proposed Production Schedule for *Coreopsis calliopsidea* by week

1	2	3	4	5	6	7
Sow	Capillary mats	Transplant or Ship Plugs	Grow on	Bud Initiation	Flower development	Saleable product

Week 1 – Sow – Sow in germination mix in 288 flats. Radicles will emerge in as few as 5 days. There is no need to cover with vermiculite, this was my experiment and it had no effect on germination.
Week 2 – Cap mats – After radicles have emerged, the flats can be transferred to capillary mats for the remainder of seedling germination. Fertilize with 50 ppm N calcium nitrate.
Week 3 – Ship or Transplant into either 10" pots (5 to a pot), 3½" pots in a flat, or 3-packs for growing on. Begin fertilizing daily with 125 ppm N CLF 15-5-15 Cal-Mag.
Week 5 – Buds should be present.
Week 6 – Tall, erect flowers should be present, with buds initiating in the lower growth of foliage.