

Tips for Producing Vinca Plugs

VINCA CAN BE A CHALLENGING CROP TO PRODUCE, ESPECIALLY FOR EARLY SPRING SALES. HERE ARE SOME TIPS TO HELP YOU PREPARE VINCA PLUGS BEFORE TRANSPLANT.

By Ron Derrig

Vinca is one of the most recognized annuals for use in high light and dry landscapes, and varieties with improved resistance to *Phytophthora* Aerial Blight and novel flower colors have further enhanced consumer appeal. Unfortunately, vinca can still be a challenge to produce, especially for early season sales. Following are tips on producing vinca plugs, starting with media selection through preparing the plugs for transplant.

Stage I: Germination & Radicle Emergence

To prevent nutrient deficiency and *Thielaviopsis* root rot, adjust the amount of limestone incorporated in the plug media to maintain the pH between 5.5 and 5.8. Do not incorporate fertilizer in the media, or blend a low amount in the media to maintain the media EC at less than 0.60, tested via saturated media extract method.

Lightly dibble the filled plug trays prior to

sowing to help maintain high relative humidity in the microclimate surrounding the seed during germination, but do not dibble too deep to prevent excessive compaction of the media.

Apply enough water after sowing the seed to the point where a small amount of water is dripping from the drainage holes, and maintain 95 to 100 percent rooting hormone in a dark germination chamber. It is extremely important to saturate the media prior to moving the plugs into the chamber and to maintain high relative humidity in the chamber so the media

prevent the media from drying down.

Even though some older varieties will germinate at a lower temperature, maintain 76 to 80° F soil temperature until radicle emergence to improve germination percentage and uniformity of germination.

Cover the seed with medium layer of vermiculite to

exclude light and maintain 100 percent relative humidity in the microclimate surrounding the seed. If there is a challenge with roots growing on the media surface after germination, cover seeds with plug media instead of vermiculite, and scrape off excess media to prevent roots from growing into neighboring cells.



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is wet (level 4) at radicle emergence. If the media is moist (level 3) when the plug trays are removed from the chamber, the germination percentage may be lower than desired. When germinating vinca seed in the greenhouse, place inverted web trays on the plug trays, and cover with black or white-on-black plastic to maintain high relative humidity and exclude light. If needed, place plug trays on perforated plastic to

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Stages II-IV: Stem/Cotyledon Emergence & True Leaf Development

Remove plug trays from the germination chamber when majority of the seeds in the plug trays have 2 to 4 mm long radicles. Remove the plug trays on a per variety basis, as some varieties will germinate faster than other varieties, and remove plug trays on the upper shelves before the lower shelves, if there is temperature stratification and uneven germination in the chamber. Removing the plug trays too soon may reduce germination percentage, while leaving the plug trays in the chamber until gooseneck stage will result in undesirable stretch.

There is a higher risk of roots growing on the media surface when the media is too wet and too cool after radicle emergence. Maintain 72 to 74° F soil temperature and “medium to moist” (between levels 2 and 3) soil moisture after radicle emergence, until first true leaf development, and then maintain 70 to 72° F soil temperature for optimum root growth. Once roots have grown to the bottom of the cells, begin the wet/dry process to encourage root development and prevent algae, fungus gnats and shoreflies.

If early growth control is desired to reduce hypocotyl stretch, spray plug trays with A-Rest (ancymidol) between radicle emergence and cotyledon expansion. The most common A-Rest rate applied on young vinca is 2 ppm, applying $\frac{3}{4}$ gallon per 200 square feet, but rates vary between $\frac{1}{2}$ and 4 ppm. Avoid spraying A-Rest on PGR-sensitive varieties, such as Polka Dot, and trial on a limited basis on all varieties to determine the best rate and volume to apply. The early A-Rest application will cause the cotyledons to bend downwards slightly, and the first set of true leaves may develop with a slight twist. If the cotyledons are severely bent downwards and the second or third set of true leaves have a slight twist, the A-Rest rate is too high. When additional growth control is desired on vigorous varieties, spray B-Nine (daminozide) at 2,500 to 5,000 ppm, adjusting the rate based on vigor, fertility program and environment. There is less of a need to spray A-Rest when seedlings are grown under high light intensity or under HID/LED lamps; if growth control can be maintained by only spraying B-Nine, do not spray A-Rest on young seedlings. Do not apply paclobutrazol, flurprimidol or uniconazole on vinca plugs. Most importantly, always apply growth regulators on a per variety basis, based on the vigor of the seedlings and environment.

Downward cupping of the cotyledons may also be from cool temperature and/or excessive negative DIF, but the true leaves will not twist from a temperature response.

Fertilize vinca after first true leaf emergence on a constant basis with 65- to 75-ppm nitrogen, 15-ppm phosphorus pentoxide formulation,



Top: Vinca roots growing on media surface from cool temperature and excessive soil moisture after radicle emergence.
Bottom: Twisted immature foliage is a sign of excessive growth control from spraying ancymidol.

adjusting the nitrogen based on the desired leaf size, but maintain low phosphorous to assist with growth control. Select high nitrate formulation, such as 13-2-13 or 15-3-16, to enhance foliage tone, and monitor the media pH since high nitrate fertilizers can gradually increase the media pH. To prevent micronutrient deficiency when maintaining a low fertility program, supplement with

micronutrients to maintain 1-ppm iron, $\frac{1}{2}$ -ppm manganese, $\frac{1}{4}$ -ppm boron, $\frac{1}{2}$ -ppm zinc, $\frac{1}{4}$ -ppm copper and $\frac{1}{10}$ -ppm molybdenum in the fertilizer solution. Maintain media EC less than 1.2, tested via saturated media extract method, to prevent Thielaviopsis and Pythium root rot infection from high soluble salts.

Adjust the fertility program and water alkalinity

as needed to maintain the media pH between 5.5 and 5.8, no higher than 6.0. Maintain the water alkalinity for plug production between 40- and 65-ppm calcium carbonate (45- to 80-ppm bicarbonate), as higher water alkalinity may gradually increase the media pH over time, depending on the amount and type of limestone incorporated in the media. The root activity of vinca will also increase the media pH, so produce vinca in a low limestone media to prevent having to fertilize with a high ammonium formulation to reduce the pH, which will promote lush growth and predispose seedlings to Thielaviopsis root rot infection.

For optimum plant quality, maintain light intensity between 4,000 and 6,000 foot-candles and a minimum average daily light integral of 12 mols/day. During low light conditions, supplement with HID/LED lighting at 450 to 700 foot-candles.


To prevent Pythium and Thielaviopsis root rot, drench mefenoxam + fludioxonil combo at first true leaf development, and drench etridiazole + thiophanate-methyl combo within a week prior to transplant. If the media pH can be maintained between 5.5 and 5.8, and soil temperature at least 70° F, another option is to apply only one fungicide combo drench when plugs are three to three and a half weeks old. Avoid holding mature plugs for transplant to further prevent Thielaviopsis root rot infection.

To prevent Botrytis, Rhizoctonia, Phytophthora and fungal leaf spot pathogens, avoid prolonged leaf moisture, and when the environment is conducive to disease infection, spray every seven days with broad-spectrum fungicides, such as rotating chlorothalonil, azoxystrobin, iprodione, and mandipropamid + thiophanate-methyl combo.

To prevent fungus gnats and shoreflies, manage the soil moisture to prevent algae growth on the media surface. If needed, drench cyromazine or pyriproxyfen for prevention, and drench chlorpyrifos, bifenthrin or azadirachtin for control. Another option is to apply Steinernema nematodes, and/or Hypoaspis mites for prevention and control of fungus gnat and shorefly larvae.

Always inspect plugs prior to transplant, especially vinca, and never transplant plugs with a weak root system, discolored roots, and/or chlorotic foliage, as there is a very high

chance the plants will die or there will be uneven growth after transplant. Do not allow plugs to sit overnight in a cold warehouse prior to transplant to prevent loss and uneven growth after transplant. If vinca plugs must be held for transplant, store at 48 to 54° F with at least 10 foot-candles of light.

Tips for successful production of vinca transplants will be available in the April issue. 

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