

Zamia integrifolia

coontie, Florida arrowroot

SEED COLLECTING

- **When to collect**– Plants are dioecious. Collect fruits from female plants once the strobilus naturally decomposes (Figure 1). Seeds are enclosed in a 2.5 cm. fleshy sarcotesta (seed coat) ranging in color from orange to salmon. Fruits are available all year. Fruiting strobili are most likely to form in numbers en masse in recently burned pinelands, a few months after the burn.
- **How to collect** –Collect ripe fruits by hand.
- **How to clean seed** –Begin processing fruits soon after receiving. The sarcotesta must be removed from seeds prior to planting (Figure 2). Allow sarcotesta to dehydrate slightly, but not fully. We accomplish this by spreading fruits in a tray where they sit in the sun for a few weeks. Use a knife to scrape away the dehydrated sarcotesta from the seeds. To process in bulk, one method is to place seeds into a 5-gallon bucket with some water and abrade the sarcotesta using a wire disk brush attached to a hammer drill. Apply pectinase and soak for several weeks. The author applied 10 drops pectinase and soaked for 6 weeks. Seed viability was negatively impacted resulting in a low germination rate. Bulk processing method needs to be refined. Gloves should be worn during seed cleaning; cycad seeds contain a neurotoxin.

PROPAGATION BY SEED

- **Pre-treatment** – Conduct a “float test” prior to planting by placing all seeds in a bucket of water. Discard any seeds that float.
- **Sowing methods**–Direct sow seeds in large tubes (Stuewe and Sons D40L). Sow one seed per tube using standard potting mix as the media (Figure 3). Seeds should be sown approximately 2.5 cm. below soil line. Incorporate 2/3 teaspoon Florikan CRF 18-6-8 time release fertilizer at time of planting.
- **Expected time to germinate** – 6 weeks according to [a UF blog](#)
- **Expected germination rate (%)**-
- **Path to finished product**- See “sowing methods” above. Additional transplants steps are not required. Space plants in stands using every other available slot for increased air circulation between plants. Optimal growth occurs under 60% shade. Water schedule is 1x weekly for 30 minutes in the dry season/winter months. Increase watering to 2x weekly during the growing season/summer months. Finish product is in large tubes. Plants stand approximately 30 cm. at completion, support multiple, deep green fronds, and actively flush new growth. Root tips should be visible at the base of the tube. On bare root plants, full extension of the tap root should extend the length of the pot (Figure 2). Coralloid roots (unique to cycads) may also be present.
- **Time to finished product** -
- **Expected quantity at end (% of seeds sown)** -

PROPAGATION BY CUTTINGS

Coontie does not propagate by cuttings. Divisions from mature plants are possible.

COMMENTS

Coontie is the host plant for *Eumaeus atala*, atala butterfly. Caterpillars will eat or disfigure foliage as they feed. Damage is most pronounced on younger fronds though older leaves may be eaten by larger instars (Figure 5). Remove caterpillars by hand.

Plants do not tolerate excess watering or moisture retentive soil mixes. Good air circulation is imperative. Coontie is susceptible to both scale insects and mealy bugs. Horticultural oil application at the onset of scale insect observation will eliminate pests. If insecticides must be used, ensure plants are located where atala will not oviposit. Limit applications of horticultural oil to the dormant season. Use a Group 4A insecticide early in the production process for systemic control of mealybugs. Alternate mode of action per label for subsequent applications.

Seeds of Coontie are recalcitrant, which means they cannot be stored long-term in the freezer. However, monthly germination trials at Fairchild using cleaned seeds stored in an air-conditioned office have shown that seeds remain viable at least for at least one year.

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Figure 1. A female coontie cone in a pine rockland. Collection of the seeds could be made now, as the strobilus scales are moving apart and decomposing, or after they have completely decomposed and the (older) fruits are piled at the base of the coontie fronds. (JP)



Figure 2. Coontie seeds with sarcotesta removed (BH).



Figure 3. Coontie seeds direct-sown into individual tall pots (BH).



Figure 4. An approximately 1-year-old coontie seedling in a tall pot, and the taproot with soil removed.



Figure 5. Late-instar atala larvae can completely defoliate a coontie plant but this does not hurt the plant. Coonties have enough starch stores to fully recover (Sam Wright).