

# **Andromonoecy in *Gynandropsis gynandra* (L.) Briq. (Cleomaceae) and effects on fruit and seed production**

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## **Abstract**

Spider plant (*Gynandropsis gynandra*) is a traditional leafy vegetable widespread in sub-Saharan Africa and tropical Asia that is also valued for its medicinal properties. Developing a breeding program for the species requires detailed knowledge of its phenology, floral morphology and pollination system. This study investigates the effects of floral morphology and pollination mechanisms on the reproductive success in *G. gynandra*. The experiments were conducted in two locations in Benin. A split-plot design was used with four randomized complete blocks. Three accessions were randomly assigned to the whole plots and five treatments including natural self-pollination, hand self-pollination, geitonogamy, open pollination and hand cross-pollination were randomized over the sub-plots. We observed that individual plant exhibited 70% of staminate (male) flowers and 30% of hermaphrodite flowers. *G. gynandra* was andromonoecious representing functionally staminate short gynoeceum floral type and functionally hermaphrodite medium and long gynoeceum floral types. All of the flowers need one week from the bud's appearance to the blooming flowers. Anthesis occurred during the night. Open pollination and hand cross-pollination led to higher fruit and seed set. Natural self-pollination and hand self-pollination resulted in lower fruit and seed production. *G. gynandra* is a self-compatible and predominantly out-crossing species. Cross-pollination resulted in a significant increase in fruit set. This study set the ground for the development of improved cultivars in *G. gynandra*.

**Keywords:** Andromonoecy, Anthesis, *Gynandropsis gynandra*, Hermaphroditism, Pollination systems.