Breeding Rhizomal Perennial Peanut for Ornamental Use: Increasing Flower Size

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❖ Background:
Rhizomal peanut is quite tolerant and easy to care for[4]. It would be a great plant to use for fostering interest in our field and opening communication with the public.

Gather germplasm (*A. glabrata* and *A. pintoi*)

Plant 20 each (10 untreated/control crosses and 10 treated)

Soak apical meristem of seedlings[2] in 0.5% solution colchicine for 4 hours [1]

After a week of growth, take leaf tissue for ploidy analyzation (discard non-polyploids)

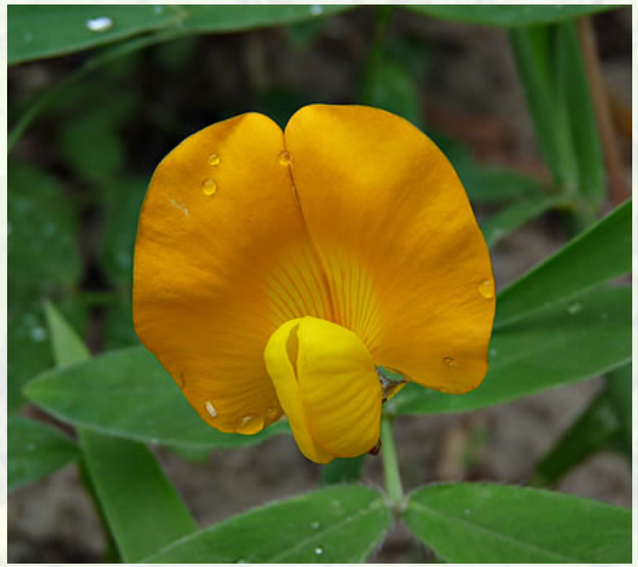
After 30 days, select for flower abundance, flower size (diameter), length of flowering period, and flower color

Make crosses

Select progeny and collect seed

Can polyploidy and cross breeding improve rhizomal perennial peanut for ornamental use?

Arachis pintoi



Arachis glabrata

Resources:
(1) Aina, O., Quesenberry, K., & Gallo, M. (2012). In vitro induction of tetraploids in Arachis paraguariensis. *Plant Cell, Tissue and Organ Culture (PCTOC), 111*(2), 231-238. doi:10.1007/s11240-012-0191-0
(2) Biswas, A. K., & Bhattacharyya, N. K. (1972). Induced Polyploidy in Legumes. *Cytologia, 37*(4), 605-617. doi:10.1508/cytologia.37.605
(3) Krapovickas, A., Gregory, W., Williams, D., & Simpson, C. (2007). TAXONOMY OF THE GENUS ARACHIS (LEGUMINOSAE). *Bonplandia, 16*, 7-205.
(4) Rouse, R. E., Miavitz, E. M., & Roka, F. M. (2004). Guide to Using Rhizomal Perennial Peanut in the Urban Landscape. UF/IFAS Extension, 1-9. Retrieved from https://edis.ifas.ufl.edu/ep135.
(5) Sattler, M. C., Carvalho, C. R., & Clarindo, W. R. (2015). The polyploidy and its key role in plant breeding. *Planta, 243*(2), 281-296. doi:10.1007/s00425-015-2450-x

❖ Expected results:
Inducing polyploidy will double chromosome number, affecting plant characteristics. Flower size[1] and length of flowering period[2] will increase, while color will intensify[5]. Breeding these polyploids will allow for further improvement and selection of desired traits. After multiple breeding cycles, surveys and focus groups will be utilized to focus plant improvement on consumer preference.

❖ Considerations:
- Limited effect of polyploidy on flower size
- Sterility[3]
- Growing period (2-3 months)