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INTRODUCTION

The control of sexual reproduction in cultivated yams *Dioscorea rotundata* remains largely unknown despite its importance for plant breeding programs. The species is mainly dioecious with several monoecious cultivars that are often subject to spontaneous sex changes (Denadi al., 2020). In addition, many useful cultivars that could be used as parents in a hybridization program never flowered or showed irregular and sparse flowering (few flowering plants, few inflorescences per plant or few flowers per inflorescence) (Asiedu et al., 1998). This study aims to highlight the phytohormonal control of flowering and sex expression of monoecious *D. rotundata* cultivars.

MATERIAL AND METHODS

Study site: CREFIISDA, Zogbodomey, Benin, 6°56' 08" N, 1° 58' 24" E

E1: Katala & Laboko (Mo)

E2: Gnidou & Anago (F), Flou (M), Katala (M,F,Mo)

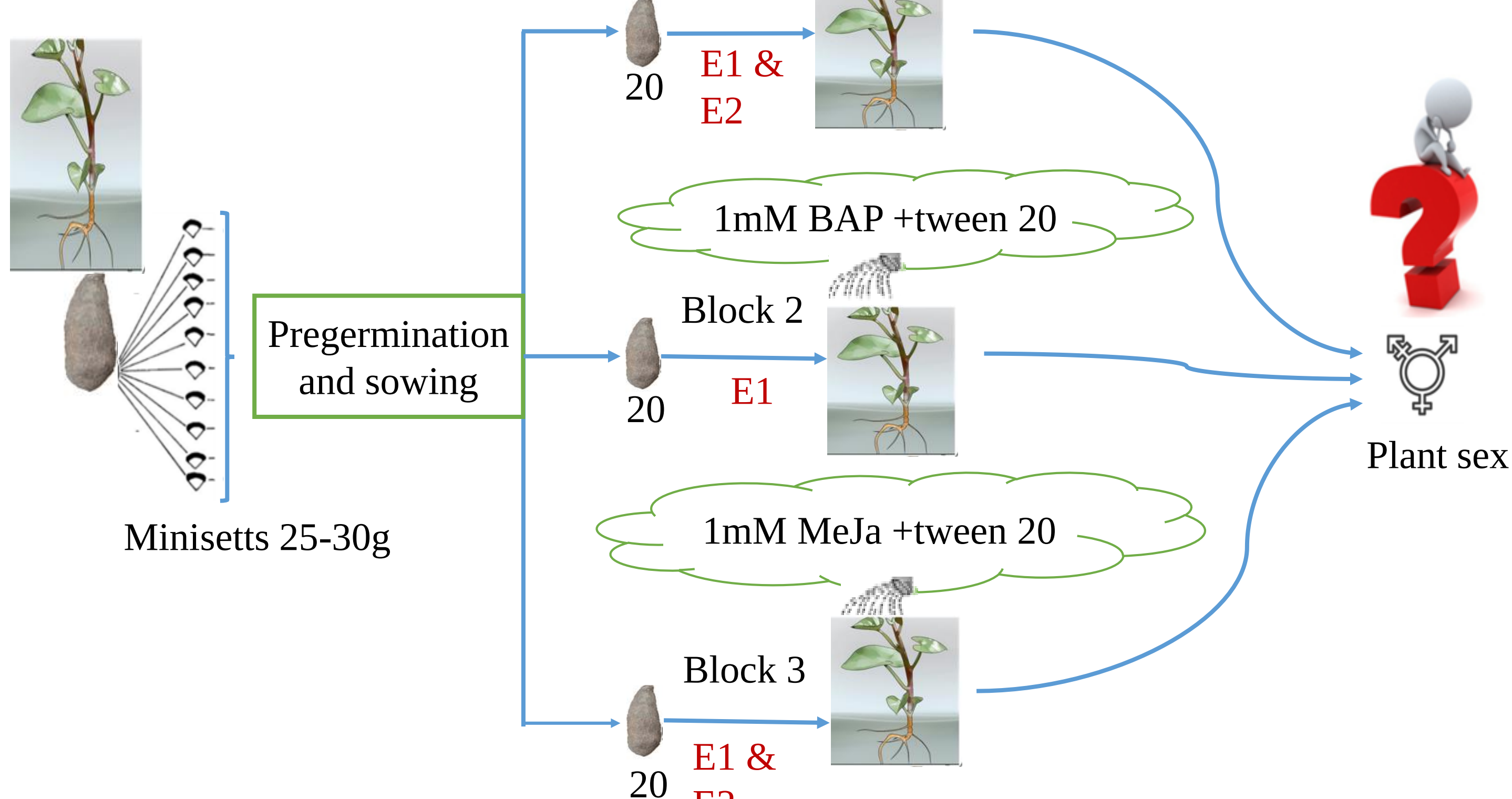


Figure 1: Experimental design. E1 = Experiment 1; E2 = Experiment 2.

RESULTS

Methyl jasmonate (MeJa) had a masculinizing effect in monoecious cultivars

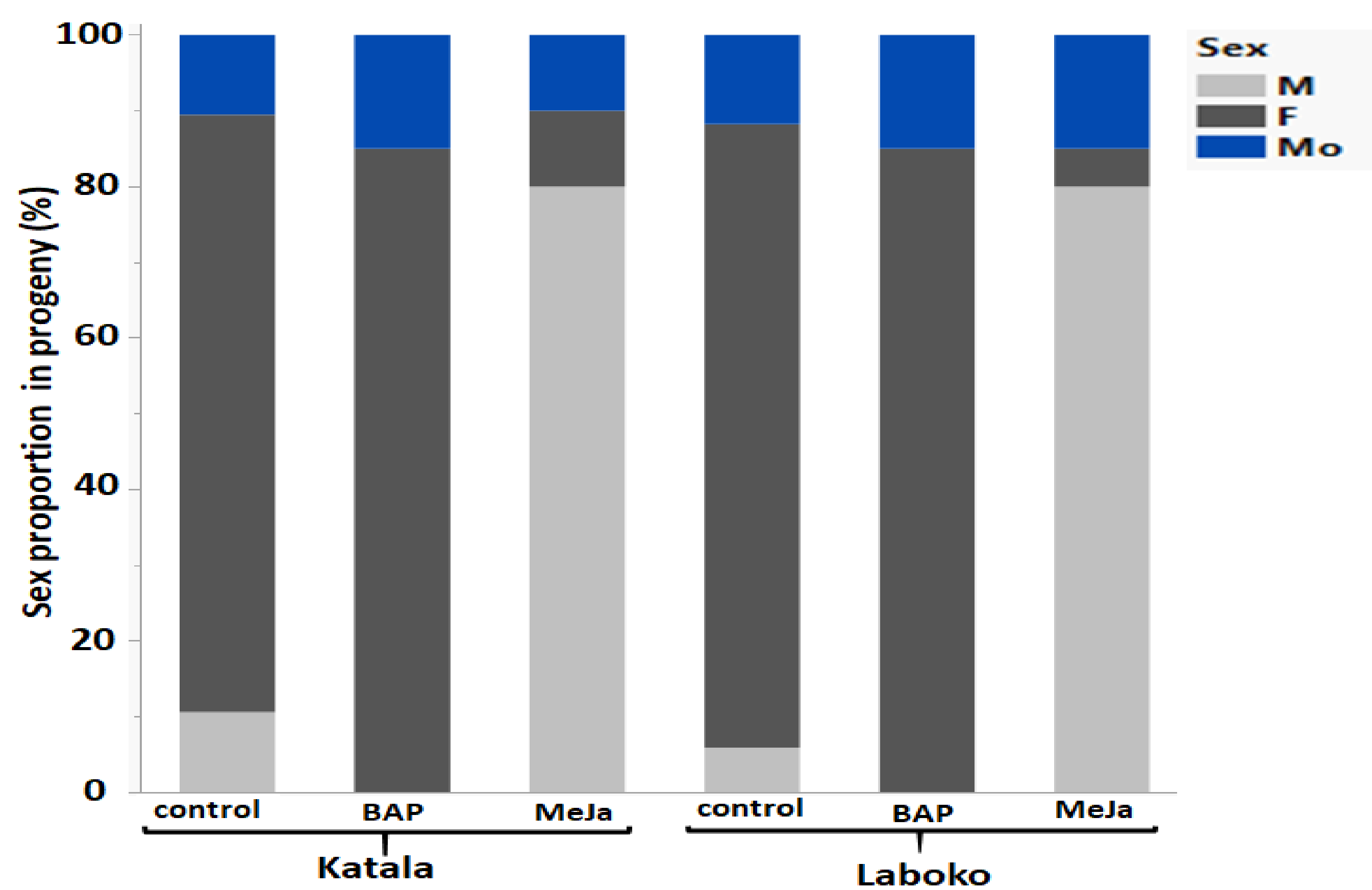


Figure 2 : Sex ratio in progeny of monoecious cultivars treated by BAP and MeJa

BAP accelerated, synchronized and increased female flowering

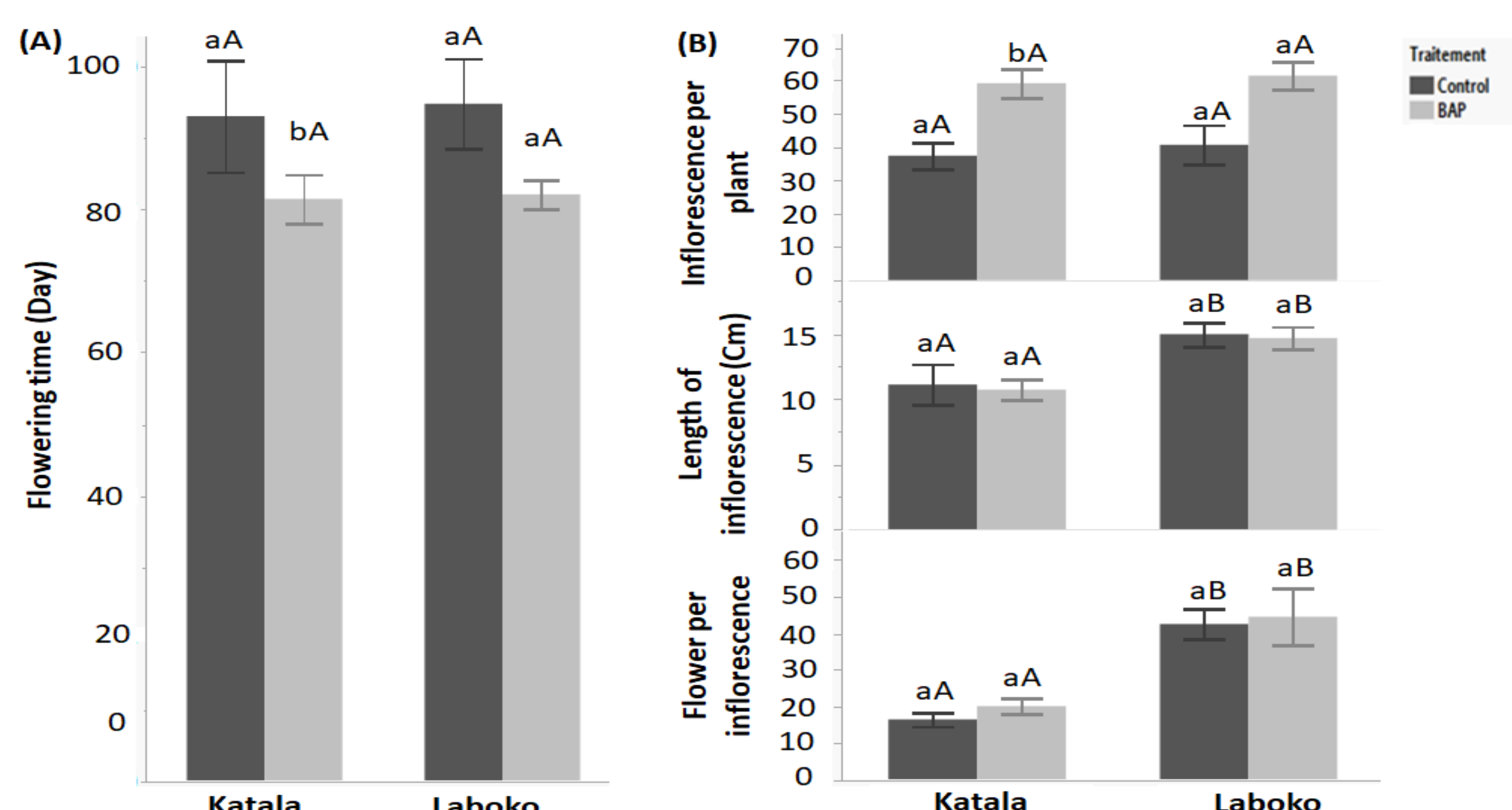


Figure 3: Effect of BAP on female flowering time (A) and flowering intensity (B)

Masculinizing effect of MeJa was confirmed in monoecious cultivars

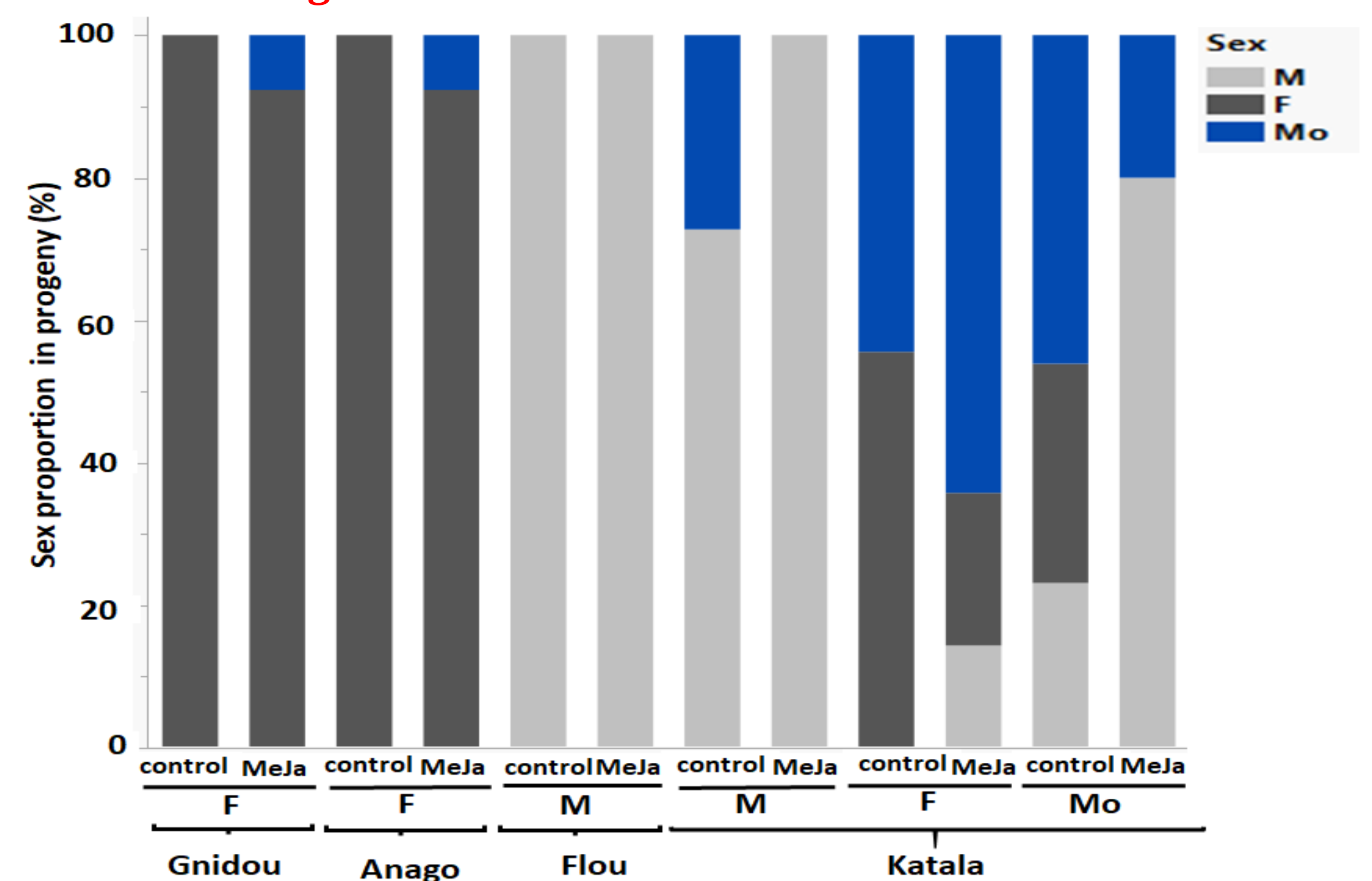


Figure 4: Sex ratio in progeny of female, male and monoecious cultivars treated by MeJa

MeJa accelerated and increased flowering in male, female and monoecious cultivars

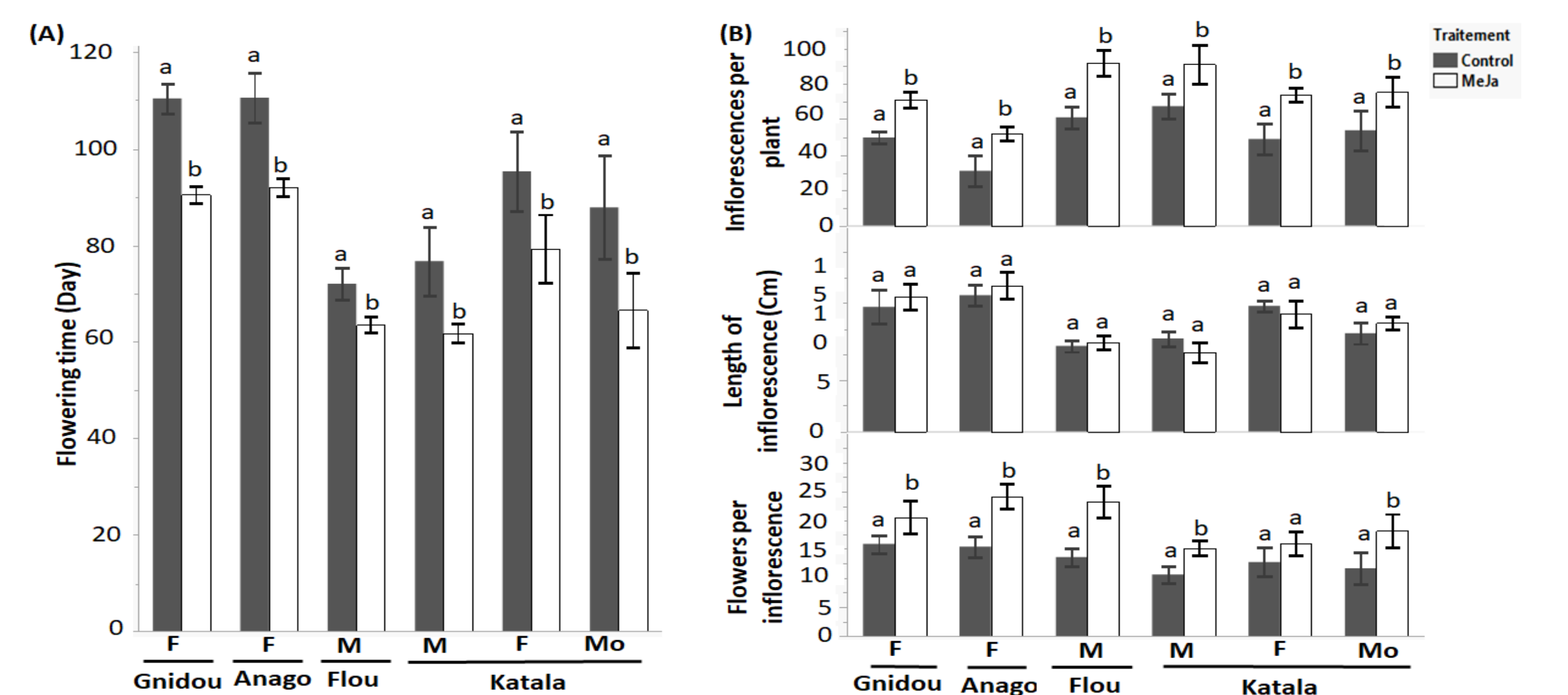


Figure 5: Effect of MeJa on male, female and monoecious flowering: time (A) and intensity (B)

MeJa caused malformations such as inflorescence and flower branching, multiple cycles of sepals, and especially the formation of sterile flowers in female cultivars.

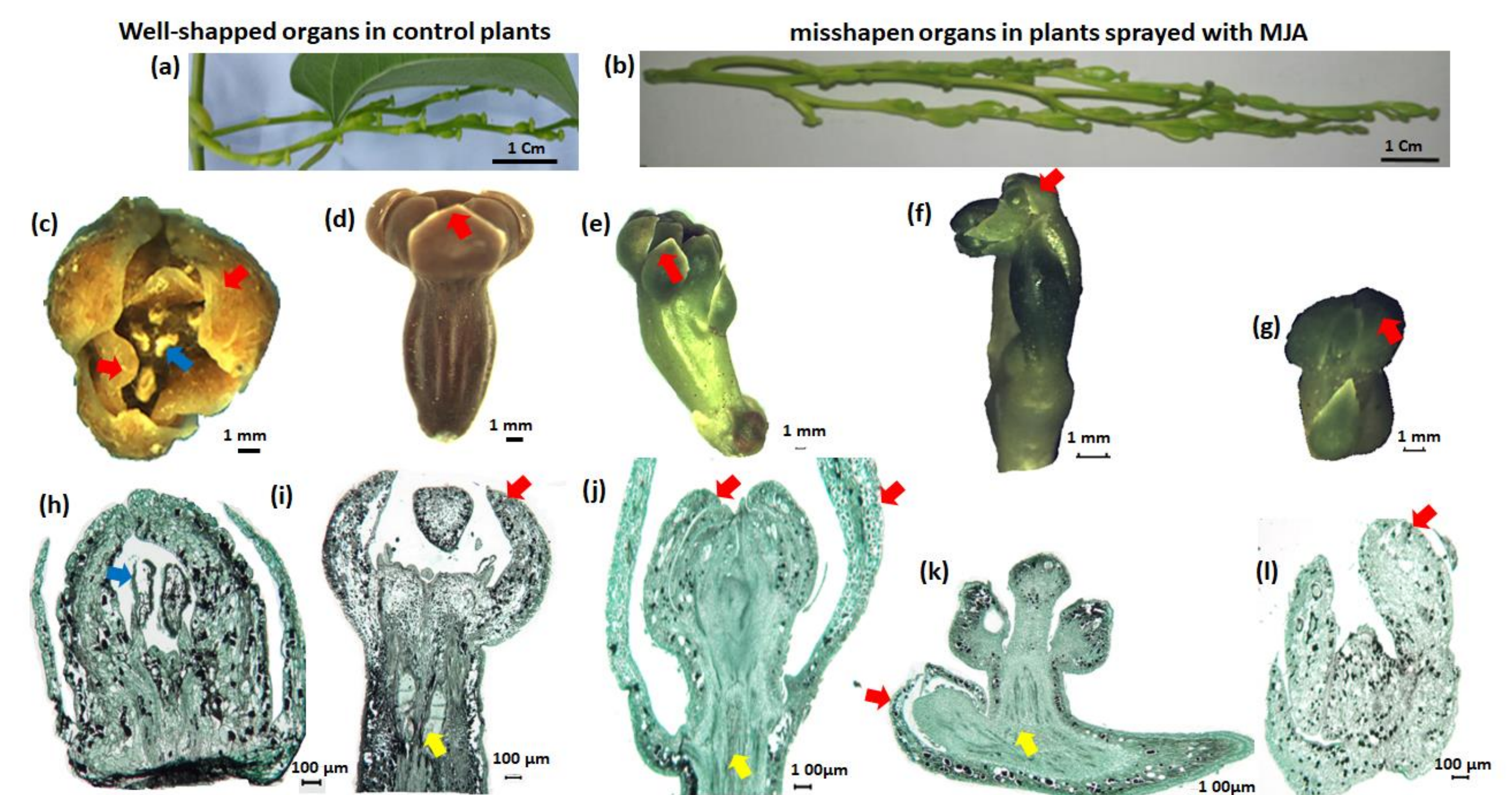


Figure 6: Impact of MeJa on flower development in female dioecious plants (Gnidou and Anago). (a and b): female inflorescence; (c): well-shaped male flower; (d): well-shaped female flower; (e-g): misshapen female flowers; (h): longitudinal section of well-shaped male flower; (i): longitudinal section of well-shaped female flower; (j-l): longitudinal section of misshapen female flowers.

CONCLUSION

The results of this study showed that sex expression in cultivated yams *D. rotundata* can be modulated by exogenous hormone application. In monoecious and female yams, methyl jasmonate led to masculinization of flowers with early and abundant flowering. However, malformations were observed in floral organs of the female plants, notably the formation of sterile flowers. On the other hand, our results did not allow to draw any conclusions about the action of BAP on sex expression. Nevertheless, it was found that BAP could also cause an early and abundant flowering as well as synchronization of flowering in females.

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