

SOME NEW OBSERVATIONS IN *FURCRAEA FOETIDA* L.

A.B. NADAF, S.R. SHUKLA & S. KRISHNAN
Department of Botany, Goa University, Goa - 403 206

ABSTRACT

Furcraea foetida reproduces vegetatively by producing bulbils on the inflorescence axis and sexually by producing flowers on the terminal panicles. In the present study, it was observed that the bulbils give rise to secondary inflorescence (bulbiferous inflorescence), which gives rise to both flowers and secondary bulbils. The production of flowers from bulbils is very unusual phenomenon and a new observation. Thus, it is interesting that vegetatively reproducing organs (bulbils) giving rise to sexually reproducing organs (flowers) directly on the mother plants in *F. foetida*.

Furcraea foetida is a perennial herb; commonly known as 'Mauritius hemp' or 'False agave'. It is cultivated in gardens as an ornamental plant because of its spectacularly showy, variegated open rosette of leaves.

Furcraea foetida is a monocarpic plant (flowers once in a life time) belong to family Agavaceae. The main inflorescence of the plant arise from the centre of the rosette leaves and height ranging up to nine meters (Fig. 1). Inflorescence is branched and usually holds greenish flowers on terminal large widely branched panicles.

The present report records some interesting observations in *Furcraea foetida*. The large inflorescence axis bears numerous bulbils as a vegetatively reproducing organs. Large number of

bulbils are produced in the axial of leafy bract (Fig. 3). Among the bulbils a few of them produces the secondary inflorescence or panicle, which give rise to bulbils again (Fig. 5b). This kind of bulbils are called as secondary bulbils. Since this secondary inflorescence is of bulbiferous origin we name this as bulbiferous inflorescence. The most interesting observation is that the bulbiferous inflorescence not only produces secondary bulbils, but also produces flowers (Fig. 2,4, 5c). This phenomenon is very unusual that the flowers are not produced directly from the main inflorescence axis, but produced from the vegetatively reproducing bulbils. These flowers are bisexual and prominent pollen grains were found in the anther. When the stigma was receptive, artificial pollination were carried out to bring out fertilization. However, a

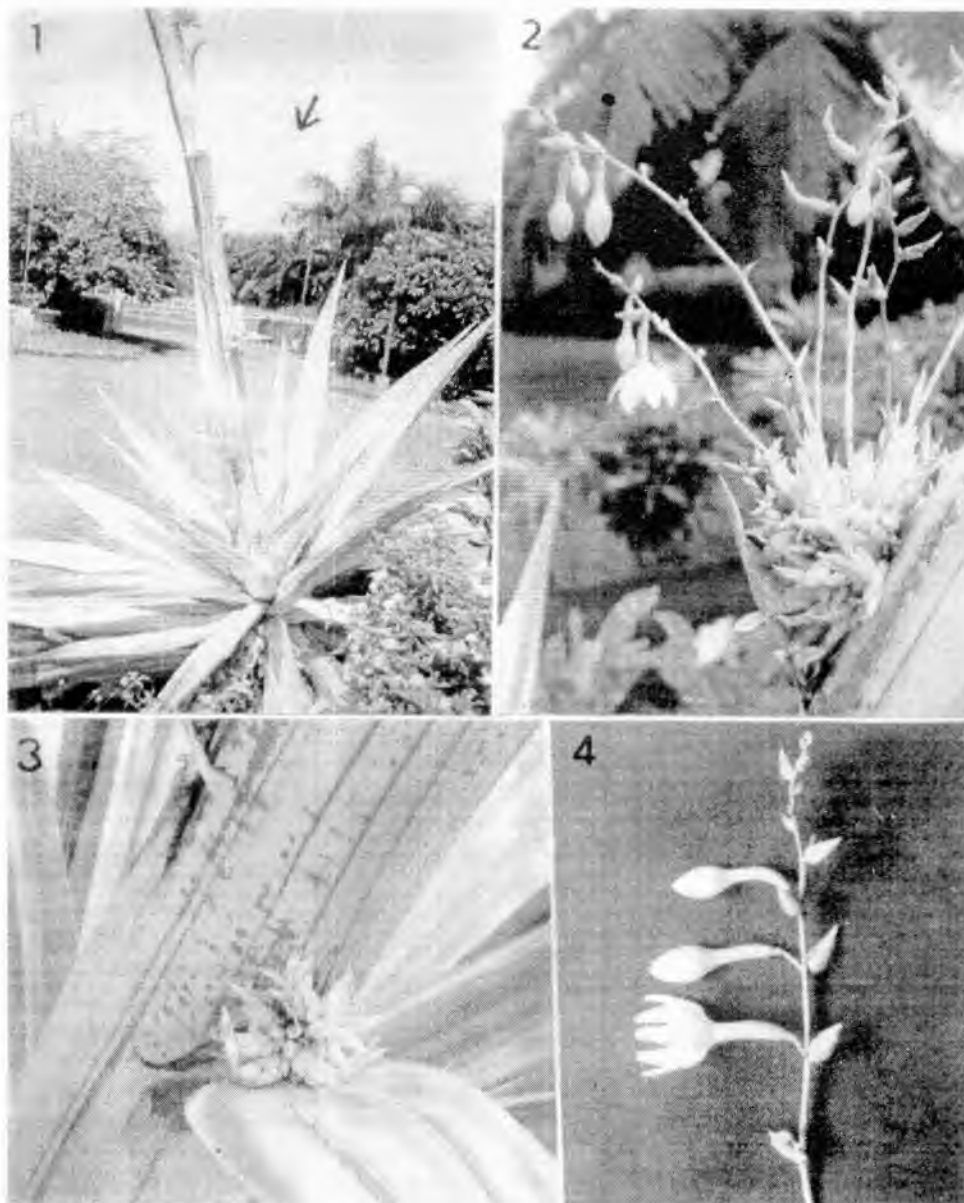


Fig. 1. *Furcraea foetida* plant showing the bulbiferous inflorescence on the main inflorescence axis (arrow), **Fig. 2.** Closer view of the bulbiferous inflorescence showing flowers and secondary bulbils. **Fig. 3.** Normal bulbils in the axil of bract. **Fig. 4.** Bulbiferous inflorescence showing secondary bulbils and flowers.



Fig. 5. Diagrammatic representation of bulbils and flowers of *Furcraea foetida* L.

(a) Normal bulbil from terminal widely branched panicle, (b) Bulbiferous inflorescence showing only secondary bulbils, (c) Bulbiferous inflorescence showing secondary bulbils and flowers.

few days after pollination flowers were withered and shed.

Some of the bulbiferous inflorescence produces only secondary bulbils without any flowers (Fig. 5b). The average length of bulbiferous inflorescence is about 30 cm, bears about 10 secondary bulbils and there are about 8 flowers. Figure 5 summarises the normal bulbils without any bulbiferous inflorescence, bulbils with bulbiferous inflorescence bearing only secondary

bulbils and bulbiferous inflorescence bearing with flowers and secondary bulbils.

Attempts were made to grow these bulbiferous inflorescence in earthen pots independently by detaching them from mother plant. It was found that the bulbiferous inflorescence grows further, gives rise to secondary bulbils and secondary bulbils reaches up to the size of the mother bulbils, then detaches and later the bulbiferous inflorescence dries.

Nobel (1988), reported that many species of *Agaves* primarily reproduce vegetatively, either from 'offshoots' (ramets) produced on rhizomes (underground stem) or by bulbils on the inflorescence. As per the natural plant cycle, it is expected that the bulbils should detach from the mother plant and develop into a mature plant and this mature plant usually reproduces by setting either offshoots or bulbils or flowers directly on the terminal large widely branched panicles and not through bulbils as we showed in this article. It is interesting to note that after detachment of bulbils from the mother plant it takes about 7 years to give rise to main inflorescence and flowers on its terminal widely branched panicles, but when flowers are produced through bulbils on the axis of the main inflorescence it takes only a few days. The authors have observed many *F. foetida* plants in flowering condition and in all those plants, flowers are produced directly on the widely branched panicle and not through bulbils. However, no seed setting was recorded.

Vivipary is the phenomenon where the

seeds get germinated on the mother plant itself. In fact the seed is the total outcome of sexual reproduction. Bulbils are vegetatively reproducing organs. Thus, the present observation can not be taken as a vivipary and it may be a new phenomenon where the vegetatively reproducing organs are giving rise to the sexually reproducing organs directly on the mother plant.

ACKNOWLEDGEMENT

We thank Prof. R.M. Pai (Retd.), Department of Botany, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad for going through the manuscript and making critical comments.

REFERENCES

- GRAF, A.B. 1992. *Hortica*. Roehrs Company Publishers, USA.
- PULLAIAH, T. 1997. *Flora of Andhra Pradesh (India)*. Vol. III. *Monocotyledons*. Scientific Publishers (India), Jodhpur.
- NOBEL, P.S. 1988. *Environmental biology of Agaves and Cacti*. Cambridge University Press.