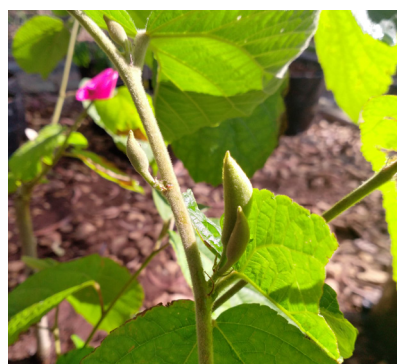


## Screw tree (*Helicteres isora* Linn) productivity enhancement through branch pruning techniques



### 1. Introduction

The fruit of the screw tree (*Helicteres isora*) ('kayu ules' in Indonesian; 'usak ne'o in the local language) is used for medicine ('jamu'). This plant is a shrub species that grows to 4 m, with 9–12 stems. The fruit consists of five follicles that form spirals. The young fruit is green and, when mature, brown. The length and diameter of the mature fruit is 55.95 mm and 7.22 mm on average, respectively, with 55.29 mm of fruit stem.

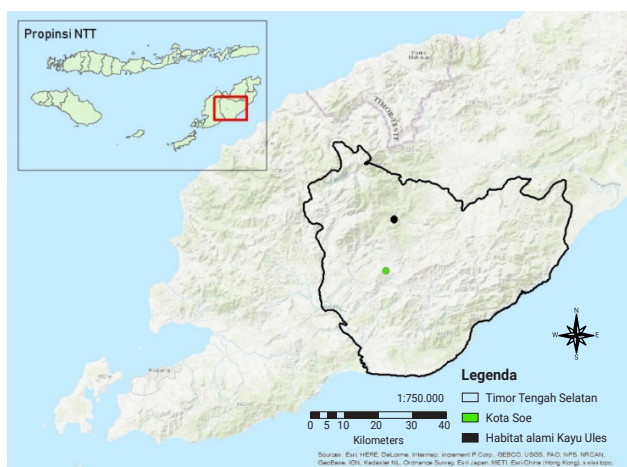
As a medicinal plant, screw tree has an economic value with the potential to be traded. Given its importance, improving productivity is the key to acquiring an optimum result. Research has undertaken to obtain information on how different pruning techniques under different light conditions influence fruit productivity of the screw tree. The research was carried out in the tree's natural habitat in Bosen Village, Soe District, East Nusa Tenggara Province.

### 2. Methods

The research study is being carried out into August 2019, the month which is the peak fruiting season. Two treatment factors were applied that consisted of light conditions and pruning techniques (Table 1). The location of the natural habitat of the screw tree is presented in Figure 1. The pruning was applied in November 2018 to 40 trees under two light conditions. Each tree received five different pruning techniques, totalling 200 stems.

**Table 1.** Treatments applied to screw tree specimens in their natural habitat

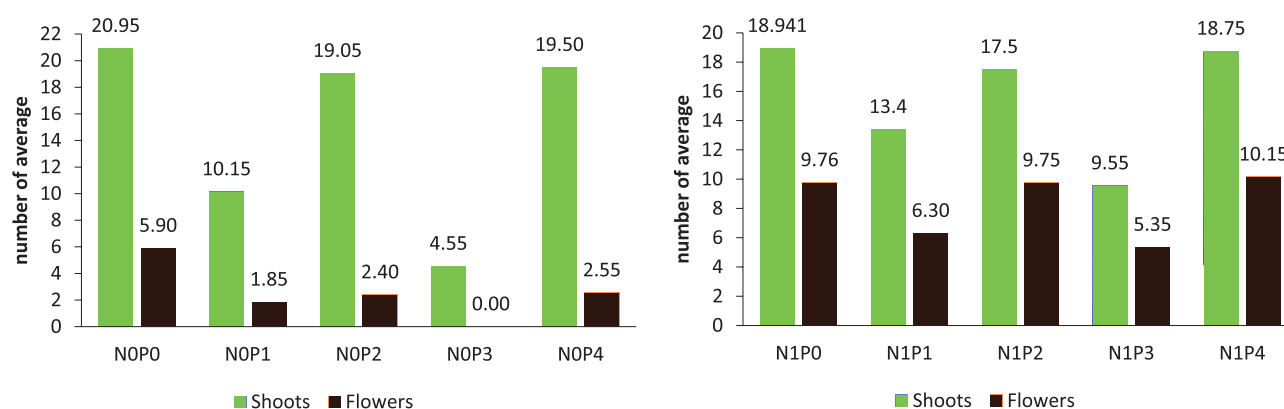
Light condition	Pruning technique
Open area (N0)	Control (no pruning) (P0)
	Pruning all branches leaving only the main stem (P1)
	Pruning all branches 30 cm from the tip of the branch (P2)
	Pruning half of the main stem (P3)
	Pruning all branches from the tip until third node (P4)
Shaded area (N1)	Control (no pruning) (P0)
	Pruning all branches leaving only the main stem (P1)
	Pruning all branches 30 cm from the tip of branch (P2)
	Pruning half of the main stem (P3)
	Pruning all branches from the tip until third node (P4)



**Figure 1.** Natural-habitat experimental site

### 3. Results

The growth of shoots in the open area tended to be higher than in shaded area. NoPo (20.95), NoP2 (19.05) and NoP4 (19.50) were the best pruning techniques in producing shoots in the open area. Nevertheless, flower production appeared better in the shaded than the open area, which was best with pruning techniques N1P4 (10.15). The data was collected in March 2019.



**Figure 2.** Shoots and flower production under two light condition, open area (left) and shaded area (right) for five pruning techniques

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In order to see whether pruning techniques had any effect on fruit production, further data will be collected in August 2019. The data will focus on production and characteristics (individual fruit weight, fruit weight in total for each pruning techniques, fruit length and diameter).

### 4. Challenges

Several challenges were encountered during the study.

- 1 Access to the site is arduous, meaning extra time needed for monitoring.
- 2 Reaching the site becomes more arduous and dangerous in the wet season because of the risk of lightning strike and injuries from falls on the slippery track.
- 3 The screw trees grow on sloping land and it is difficult to reach specimens on the upper slopes.
- 4 The stems of the screw tree are mostly overlapping, making it difficult to detect which branches belong to which trees.