

## Awareness about *Exacum* species (Binara/Ginihiriya) Among the University Students of Sri Lanka

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### Abstract

There are eight *Exacum* species available in Sri Lanka. The genus *Exacum* is at risk of extinction due to various reasons. In some areas, the local populations of *Exacum* have been eliminated due to weed controlling. The value of *Exacum* with colourful flowers in landscaping has not been recognized by the floriculture industry in Sri Lanka yet. A study was conducted to investigate the awareness about *Exacum* species in Sri Lanka. Semi-structured interviews were carried out among the purposely chosen undergraduates representing all districts of Sri Lanka using a pre-tested questionnaire. Progress group discussions were conducted using five to seven students in a group and with two groups from each 25 Districts. Survey revealed that respondents from Kilinochchi, Batticaloa and Vavuniya Districts do not possess a clear idea about Binara plant. Less than 11% of the respondents in the sample have never seen a live specimen of Binara and only 30% knew that the Binara plant is endemic to Sri Lanka. According to the survey, Binara plants have been removed from their natural habitats during the past few decades. Major reasons for the extinction of Binara were land fragmentation (35%), clearing lands for cultivations (32%) and use of chemical weedicides (29%). Awareness programmes are needed to disseminate the knowledge about Binara in all Districts. The habitats from where the plant has been recorded need to be protected as soon as possible.

**Keywords:** Endemic, *Exacum* species, Progress, Group discussion

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### Introduction

Within the genus *Exacum*, *E. axillare*, *E. macranthum*, *E. pallidum*, *E. trinervium*, *E. walkerii*, *E. pedunculatum*, *E. petiolare* and *E. sessile* are found in Sri Lanka. In the National Red List of Sri Lanka (2012), the *Exacum pedunculatum* is listed as critically endangered, and out of the eight species of *Exacum* found in Sri Lanka, four have been recognized as endangered and five as endemic (Risidra, 2015). It is an annual or perennial, erect, glabrous herb; stem often branched, more or less 4-angular. Leaves are sessile or shortly petiolate, ovate to elliptic or lanceolate, entire and 3-5-nerved at base. Flowers are generally born on leafy, dichotomous cymes, occasionally solitary by abortion of lateral buds of cyme, and 4-5-merous. Bracts are foliaceous. Calyx is deeply lobed, enlarged and persistent in fruit; lobes dorsally keeled and winged or flat. Corolla is rotate, often persistent in fruit; tube short, broadly cylindrical; lobes contorted in bud, ovate to elliptic or oblong and acute or obtuse at apex. Seven species are within the range of blue colour except *Exacum walkerii*, which is white. Stamens are inserted in throat of corolla; filaments very short, dilated at base; anthers attenuate towards apex or uniformly broad, 2-celled, the cells poricidal and rarely laterally dehiscent. Ovary is 2-celled by intrusion of the locular wall; placenta large, appearing axile;

style long, declinate and stigma capitate or 2-lobed. Capsule is globose or ovoid, septicidally 2-valved; seeds numerous, minute and angular. According to the literature, *Exacum* species can be found in Kandy, Nuwara Eliya, Matale, Trincomalee, Kalutara, Colombo, Galle, Ratnapura, Puttalam, Kurunegala, Anuradapura and Badulla Districts (Sumanasinghe *et al.*, 2012).

*Exacum* has a high potential to in floriculture industry of Sri Lanka, probably targeting export market. On the other hand, to conserve the endangered genus, people should know what *Binara* plant is. However, not many people know about this beautiful plant. Therefore, the study was aimed to investigate the awareness about *Exacum* species in all Districts in Sri Lanka and about their availability.

### Materials and Methods

A field survey was carried out among the 250 undergraduate students in Faculty of Agriculture, University of Ruhuna, Sri Lanka, between January and March in 2015. Group discussions were carried out with purposely sampled undergraduates representing all Districts of Sri Lanka, using a pre-tested structured questionnaire. A group contained five to seven students and two groups for each 25 Districts. Data were analyzed descriptively and

presented with appropriate descriptive tools.

### Results and Discussion

*Exacum* (Binara) species are rare to find and endangered in Sri Lanka. Figure 1 shows that, respondents from Kilinochchi, Batticaloa and Vavuniya Districts are not familiar with the *Exacum* species because their living areas are not the natural habitats of Binara. Respondents who live in Matale, Rathnapura, Monaragala, NuwaraEliya, Gampaha and Kalutara districts had some idea about Binara, of which respondents in Matale district knew the most. On average, 35% of the respondents have heard about Binara whereas the awareness in Matale District alone was 70%. Those respondents knew that Binara is an endemic plant. Considerable awareness was observed among the respondents from Rathnapura, NuwaraEliya, Monaragala and Gampaha. Outbreak of *Exacum pedunculatum* which is a rare species of Binara was discovered in 2012 from the Lenadora area which is between Naaula and Dambulla. That reason may have caused to increase the attention towards *Binara* in Matale district.

More than 89% of the respondents have never seen a live specimen of Binara. According to the survey, 50% of the respondents in Matale district have seen live specimen. Existing knowledge about the nature among matured people is not transferred to the younger generations because modern-day activities leave a gap in the relationship between younger generation and nature. Respondents, those who knew about Binara plant said that, in the past, Binara plants were observed frequently but now, they are rare to see. That indicates the extent to which the human activities have lead to

the extinction of this endemic plant in natural habitats. However, 18% of the respondents have seen Binara in Sri Lanka through different ways such as television, newspapers, books, magazines, web pages and stamps. According to the survey, 35% respondents said that extinction of Binara plant from their natural habitats occurred mainly due to the land fragmentation; the second most important reason was the clearing forests for cultivations. This process in turn, seems to be further aggravated by factors such as weak governance and increasing global demand for certain crops that can be grown for good profits. The pressure on the forest has been most evident in the wet and intermediate climate zones where only fragments of the once widespread natural forest cover are all that remain (FAO, 1997; Atkinson, 2009).

Of all, 29% respondents stated that use of agrochemicals, such as weedicides, also caused the extinction of Binara from their native lands. Less than 4% said that, natural disasters, ornamental use and exporting also must have caused the extinction of Binara plant.

### Conclusion

Lack of knowledge about Binara plant was observed among the university students in most of the Districts in Sri Lanka. Thus, awareness programs are needed, and hence suggested, to protect Binara plant in their natural habitats.

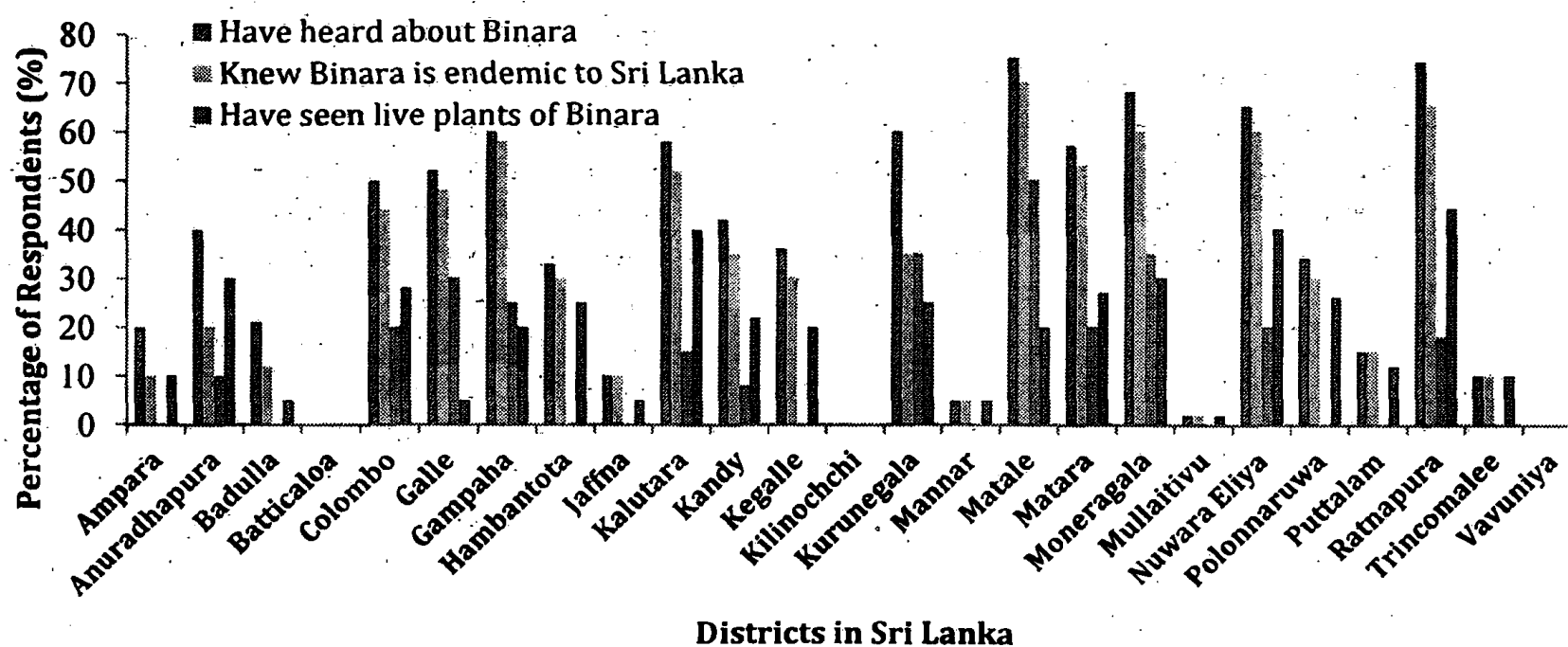


Figure 1: Awareness about *Exacum* species among Districts in Sri Lanka (n=250)

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