EX-SITU CONSERVATION OF SOME RARE ENDEMIC AND MEDICINAL PLANT SPECIES FROM AKOLE TALUKA (MS) INDIA

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ABSTRACT

Due to various factors such as changing environmental conditions, biotic factors, destruction of habitat etc. some endemic and medicinal species are facing threats for their existence. Conservation and sustainable utilization of plant resources are recognized as one of the vital segment in the natural resource management. This paper deals with the experience of efforts of promoting conservation and cultivation of some selected plant species in Akole Taluka. The genra *Ceropegia* L. *Dioscoria* L. *Gloriosa* L. became rare due to habitat destruction and local consumption of tubers for food and medicine by rural communities. Seeds and tubers Attention:of *Ceropegia mahabalei* Hem. et. Ansari, *C. sahyadrica* Ansari et. Kulkarni, *C. oculata* Hook., *C. hirsuta* Wt. An., *C. media* (Hub) Ansari, *C. bulbosa* Roxb., *Dioscorea belophylla* (Prain) Haines , *D. oppositifolia* L., *D. pentaphylla* L., *D. bulbifera* L. and *Gloriosa superba* L. were collected and tried for ex-situ conservation. Propagation through seed shows successful results. Transplantation through tubers requires similar ecological conditions. Well-drained soil, rich organic matter and sunny positions are good for *Dioscorea* L. Seeds of *Gloriosa* L. germinate well in wet and damp soil. Plants require rich organic soil and sunny situation. Conservation measure includes, uprooting of plants should be prohibited, propagation through seeds should be done and propagation through tissue culture should be tried. Local communities should be informed and motivated for their conservation and cultivation. Some species may incorporate in crop plants and can be cultivated as a commercial crop plants.

Key words: - Ex-situ conservation, Rare, Endemic, Medicinal plant, Akole Taluka.

INTRODUCTION

Conservation of biological diversity is one of the essential needs to save our natural wealth. The local inhabitants are custodians and maintaining diversity of wild plants, crop and medicinal plants etc. with there indigenous traditional knowledge. Due to modern impact of civilization, changing environmental conditions, destruction of habitat has been created problems to their existence. More and more plant species therefore are getting in to red data book of threatened plant species. It deals directly to conserve wild plants in their natural habitat.

The present work deals with the experience of efforts of promoting conservation and cultivation of some selected plant species in Akole Taluka. Akole comes in northwest part of Ahmednagar district, situated in Sahyadri ranges of Western Ghats region in Maharashtra. Climate is highly humid in rainy season and dry in summer. The forest has great potentiality both from economical and botanical point of view. The rare endemic and medicinal plant species are abundant in this region and can be exploited due to improper management. Harvesting, grazing, shifting cultivation and uprooting of plant species for the purpose of food, fodder and medicines by tribal and local people are found the major cause for their threats.

In past few years some reports have been appeared on the floristic studies (Santapaui and Irani 1962, Wadhawa and Ansari 1968, Ansari 1971, 1982, 1984, Ansari and kulkarni 1982, Shirke 1984, Mahabale and Chaudhari 1987, Yadav et.al. 1990, Pradhan and singh 1999, Sharma *et al* 2001) of Akole Taluka. Very little work has been done on their conservation and propagation. Some of the species may be lost without receiving any attention. Hence there is an urgent need to propagate and conserve each and every plant species.

MATERIALS AND METHODS

The present work is based on ex-situ conservation of some rare, endemic and medicinal plant species. The selected plant species were collected and identified with the help of standard floras and books (Cooke 1967, Nayar and Sastry 1988, Pradhan and Singh 1999, Sharma *et al.* 2001). Tubers and seeds of some species of the genera *Ceropegia* L., *Dioscorea* L. and *Gloriosa* L. were collected and tried for propagation (Table-I). Collection of seeds was not easy because the fruits take more rime for maturity and they burst

immediately. Collected seeds were labeled and stored in laboratory. Seedlings were made and transplanted under similar ecological conditions. Ex-situ conservation mode was designed in certain pockets by involving local people.

RESULTS AND DISCUSSION:

The ex-situ conservation efforts were found to be highly successful. Collected species of genera *Ceropegia* L., *Dioscorea* L. and *Gloriosa* L. becomes rare due to habitat destruction and local consumption for food and medicine by rural communities. Investigation includes their status, morphological features and conservation measures.

Ceropegia L., is the genus of over 200 succulent plant species with worldwide distribution. The genus becomes rare due to habitat destruction and consumption of tubers as food and medicine by rural communities. Six species of *Ceropegia* L. were collected from different parts of the study area. Investigations include their present position, location and morphological features. Transplantation and propagation through tubers and seeds under ex-situ conservation shows successful results. It requires similar ecological condition and climate. Soil is also an important factor. *C. mahabalei* Hem. et. Ansari and *C. media* (Huber) Ansari, surviving well under similar soil. *C. bulbosa* Roxb. can be grown in every type of soil.

Dioscorea L. named after the Greek physician Dioscorides. This is very large genus of about 600 species is found through the topics as well as in temperate region. Many species produce poisonous tubers. But there are about 10 species that are edible after being cooked. These are slender climbing plants and the tubers can be formed below and above ground. The alternate leaves are heart shaped and spike of tiny flower are either solitary or cluster. The fruits are capsules containing winged seeds. Local people use the tubers as a food after cooking. Inflorescence of *D. pentaphylla* L. is known for nutritious vegetable.

Four species were identified from the study area. Seeds and tubers were collected. Propagation through tubers and seeds were found successful. The tender plants require good drainage and fertile soil with high organic content. *Dioscorea bulbifera* L. having aerial bulbils in the axis of leaves. After flowering and fruiting, the plants die back to a perennial root system every year. Plants require support, as it is climber.

Gloriosa L. is commonly known as glory lily or climbing lily. It is herbaceous with underground cylindrical tubers rhizome. Leaves sessile, alternate; flowers showy, solitary, at first greenish becoming yellow and finely scarlet; fruit capsule, containing many seeds. Plants climb over low shrubs and through long grass by means of coiled tendril like tips of the leaves. They are widely grown for their decorative, brightly colored flowers, which make long lasting and most attractive cut flowers. In autumn or in tropical dry season the plant die back to dormant tubers.

In the present investigation, seeds and tubers were collected and propagated seeds show successful results in germination. It grows well in red sandy lome

Table.I. Plants selected for ex-situ conservation.

Botanical name	Local name	Family	Parts used	Status
Ceropegia mahabalei Hem. et. Ansari	Gauti kharpudi	Asclepidaceae	Tubers	Endangered /endemic
C. sahyadrica Ansari et. Kulkarni	Pandhri kharpudi	Asclepidaceae	Tubers	Rare/ endemic
C. oculata Hook.	Mor kharpudi	Asclepidaceae	Tubers	Locally rare
C. hirsuta Wt. An.	Kharpudi	Asclepidaceae	Tubers	Locally rare /endemic
C. media (Hub) Ansari	Medi kharpudi	Asclepidaceae	Tubers	Locally rare
C. bulbosa Roxb.	Kanwel	Asclepidaceae	Tubers	Locally rare/ endemic
Dioscorea belophylla Haines	Tamboli	Dioscoreaceae	Tubers	Rare
D. oppositifolia L.	Karand	Dioscoreaceae	Tubers	Locally rare
D. pentaphylla L.	Chaicha wel	Dioscoreaceae	Tubers &Flow.	Locally rare
D. bulbifera L.	Kadu-karand	Asclepidaceae	Tubers &bulbs	Locally rare
Gloriosa superba L.	Kal-lawi	Asclepidaceae	Tubers	Locally rare

soil with good drainage. It requires hot and humid climate. Seedlings may transplant in the suitable forest field. Plants are raised from tubers. Tubers are planted in the bed during rainy season. Plants require support, as it is climber. They have to grown without using chemical fertilizer.

CONCLUSION

Changing environmental conditions, biotic factors, destruction of habitat improper harvesting of natural resources, shifting cultivation are the main causes for the existence of some important plant species. Efforts of promoting conservation and cultivation are the only remedies. It deals directly to conserve wild plants in the natural habitat.

Present work has involved three important components. Identification of rare, endemic and medicinal plants for conservation through ethno-botanical studies, standardization of propagation practices by nursery studies and the transfer of cultivation and conservation knowledge to different local communities.

The species of genera like *Ceropegia* L., *Dioscorea* L. and *Gloriosa* L. (Plate -I) were found locally rare. This is due to habitat destruction and local consumption of tubers for food and medicine by rural communities. Seeds and tubers of *Ceropegia mahabalei* Hem. et. Ansari, *C. sahyadrica* Ansari et. Kulkarni, *C. oculata* Hook., *C. hirsuta* Wt. An., *C. media* (Hub) Ansari, *C. bulbosa* Roxb., *Dioscorea belophylla* (Prain) Haines, *D. oppositifolia* L., *D. pentaphylla* L., *D. bulbifera* L. and *Gloriosa superba* L. shows successful propagation. Inflorescence of *Dioscorea pentaphylla* is known for nutritious vegetable. Transplantation requires similar ecological condition. Soil is an important factor. *Ceropegia mahabalei* L. needs well-drained and humid climate. Seedlings of *C. media* (Hub) Ansari, *C. bulbosa* Roxb. and *C. hirsuta* Wt. surviving well under similar soil. *C. sahyadrica* Ansari et. Kulkarni fail to survive after two years. Seed germination in *Dioscorea belophylla* (Prain) Haines, *D. pentaphylla* L., was found successful. The tender plants require good drainage and fertile soil. Seeds of *Gloriosa superba* L. require hot and humid climate. Transplantation with the participation of local communities is effective. Such conservation efforts in natural habitats would contribute towards natural resource management in effective way.

Towards the conservation point of view, tissue culture technique should be tried for multiplication. Plants should be conserved in protected areas. They can be transplanted under similar ecological condition. Uprooting of plants should be prohibited. Some of the species may incorporate in crop plant as a commercial crop.

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