VI- Summary And Conclusions

The genus Crinum with about 100 species widely distributed in tropical and subtropical regions of the world is represented by about 12 species in India. Of the 12 species, C. brachynema, C. eleonorae and C. woodrowii are endemic to Maharashtra and are restricted to their type locality, hills around Mahableshwar. Of them C. brachynema and C. eleonorae belonging to section Brachynema are very peculiar in having stamens with very short filaments. Recently a closely related taxon, C. trifidum has been described from Africa. All the three species endemic to Mahabaleshwar hills are under threat and needs immediate steps for their conservation.

During field survey for collection of Crinum species an interesting naturally occurring tetraploid has been collected from various localities along western ghats. Critical observations on morphological characters, cytology, meiosis and reproduction indicated that it is closely related to Crinum asiaticum, however, differs from it in having narrow neck, dark-green glaucous, smaller leaves and in ploidy level confirming the novelty of the species. It will be described as a new species in due course.

Critical observations on morphology of Crinum species have revealed that the leaf characters, corolla shape, petal size and shape, nature of stamens and length

of filament are of more taxonomic value in identification of Crinum species. Instead of leaf size, leaf, length-breadth ratio and leaf x breadth values seem to be more reliable and constant for a taxon. Although neck characters vary to some extent, it is useful in taxonomy of Crinum species. Similarly shape of corolla, petal size, tepal length-breadth ratio and tepal length x breadth values are more reliable in identification of species. Stamen filament length and nature is of diagnostic value. Crinum asiaticum can be distinguished from all other Crinum species occuring in Maharashtra by it's bent filaments and gray-white pollen. Crinum brachynema and C. eleonorae could be separated from remaining species by their very short-filaments. After critical studies, a modified key to identify Crinum species occuring in Maharashtra is given, however Crinum species breed freely complicating the problem of species identification.

Phenological events are common and similar to all the species of Crinum occuring in Maharashtra. All the species of Crinum of Maharashtra are night blooming and C. latifolium is pollinated by nocturnal Hawk-moth. Probably Hawk-moth is main pollinater of Crinum species in Maharashtra. All the species of Crinum except C. asiatcum show period bulb dormancy.

Meiosis in flower bud takes place in February while inflorescences are in the bulbs. Most of the species flower during May to June, however in C. defixum and C. pratense flowering is late mainly in month of July. Vegetative growth is seen during June to september and then aerial parts die and bulbs enter into dormany. Studies on palynology, leaf anatomy, cuticle and vessels are of little significance in taxonomy of Crinum species.

Cytological studies revealed that there is gross similarity in chromosome morphology in different species of Crinum. The chromosomes can be grouped into four categories and a general karyotypic formula for genus Crinum may be represented as 2L + 2 SATM + 10 M + 4S. In genus Crinum there is a characteristic pair of long median (m) chromosomes and a pair of medium submedian (Sm) SAT chromosomes show variations in centromeric position. Similarly 4 short chromosomes are mainly metacentric or submetacentric. These medium and short chromosomes show variations in centrometric position and chromosome length in different species of Crinum.

Present investigation on karyotypes support that the genus Crinum is a homogeneous group of species with basic chromosome number X = 11. Chromosome number 2n = 22 and n = 11 has been reported for C. brachynema, C. pratense for first time. Karyotype of these species matches with general karyotypic formula for genus Crinum.

Presence of B-chromosomes ranging from 1-4 is reported for first time in Crinum pratense.

Meiosis has been studied in three species of Crinum viz. C. defixum, C. latifolium and tetraploid of Crinum spp. Meiotic studies on tetraploid Crinum species revealed that the meiosis is fairly normal however, laggards, chromosomal bridges were observed which is obvious due to tetraploid nature of the species. Studies shows that it is an allotetraploid.

Hybridization experiment, support that Crinum species hybridize freely and interspecific incompatibility is weakly developed. Previous studies and present investigation indicate that evolution is active in genus Crinum. It forms an ideal material for cytogenetical studies.