SUMMARY
AND
CONCLUSIONS
SUMMARY AND CONCLUSIONS

Morphological, Cytological, Breeding and Seed protein electrophoresis data have been utilized for delimitation of *Bidens* species from South India. Following is the brief summary of the results.

1) Twenty different populations of *Bidens* species were collected from Karnataka, Kerala, Tamil Nadu and Andhra Pradesh states have been analysed morphologically. Comparative analysis of qualitative and quantitative characters reveal that all these populations fall into two categories i.e., *B. pilosa* var. *β minor* (Bl.) Sherff and *B. bipinnata* L.

2) Cytological studies reveal that both the species *B. pilosa* var. *β minor* and *B. bipinnata* are hexaploids with 2n=72 and n=36 chromosomes.

3) *B. pilosa* var. *β minor* and *B. bipinnata* showed intraspecific karyotypic variation and karyotypic polymorphism is evident. Karyotypes of both species were asymmetrical.

4) Meiotic behaviour of chromosomes in *B. pilosa* var. *β minor* and *B. bipinnata* was normal and both species showed 36 bivalents at metaphase I and subsequent stages were also normal. However, 1 to 2 quadrivalents were noticed frequently at diakinesis in the populations of *B. pilosa* var. *β minor*. 
5) 2C nuclear DNA content is determined in seventeen populations of *B. pilosa* var. *β minor* and the 2C DNA values ranged from 27.0 to 29.02 pg, thus 7% variation is evident among populations. In three populations of *B. bipinnata* 2C DNA value was 31.70 pg.

6) Hybridization between the populations of *B. pilosa* var. *β minor* produced vigorous hybrids. Similarly crosses between populations of *B. bipinnata* produced viable hybrids. This data reveal that there is unrestricted gene flow between individuals of the same taxon.

7) Crosses between populations of *B. pilosa* var. *β minor* and *B. bipinnata* and reciprocal crosses failed to produce seeds. These crosses established that despite of same chromosome number and sympatric distribution there is a definite reproductive barrier between *B. pilosa* var. *β minor* and *B. bipinnata*.

8) Five populations of *B. pilosa* var. *β minor* showed striking degree of similarity in seed protein profiles. Where as two materials of *B. bipinnata* showed polymorphism and difference in seed protein profile between species is evident.
9) Morphological, Cytological, hybridization and seed protein profile data of the *Bidens* populations showed that *Bidens* section Psilocarpaea is represented in South India only by *B. pilosa* var. *β minor* (Bl.) Sherff and *B. bipinnata* Linn. The occurrence of *B. biternata* (Lour.) Merr. and Sherff as suggested by earlier taxonomists could not be established during the present biosystematic investigation.