

### SUMMARY

Critically analyzing all angles from physiology, biochemical response of the bioassay seeds viz *Vigna* and *Senna* (Chapter-1) to Prediction With T.E.S.T. (Chapter-2) and cytological perspective (Chapter-3) help reveal that all the weeds taken for study potentially render allelopathic action on *Vigna radiata* and *Senna occidentalis* seeds. Allelopathy is thus a dose and response phenomenon dependant on the concentration of allelochemicals i.e. higher the concentration of extracts and or leachates greater is the resistance to the percentage as well as speed of germination of the seeds and their respiratory activities as indicated by reduced stainability with TTC with a concomitant increase of the  $T_{50}$  values clearly evident from tables in Chapter-1. Also the observed data on the percentage speed of *Vigna* and *Senna* seeds germination with elapsed time each twenty four hours interval till 168 hours help to establish the relative allelopathic potential of the weeds in an ascending order i.e. *Alternanthera sessilis* < *Parthenium hysterophorus* < *Desmostachya bipinnata*. It is also corroborated from (Chapter-3) that the value of aberration percent C.A.I.% were higher in the treated samples of *Desmostachya sp* than *Parthenium sp.* and *Alternanthera sp* with increasing order of concentration of extract or leachates i.e.(1:5>1:10>1:20) Chromosomal Abnormality Index (C.A.I). is also seen to be directly proportional to cytotoxicity and hence magnitude of allelopathy ,establishing the above mentioned order of hierarchy of allelopathy.

A very interesting inference emanates that *Desmostachya bipinnata*- a monocotyledonous weed with  $C_4$  mode of photosynthesis in this case is allelopathically more vigorous than the other two dicotyledonous weeds *Parthenium hysterophorus* with  $C_3$  and *Alternanthera sessilis* with  $C_3$  mode but more inclined in tendency towards a  $C_3$ - $C_4$  intermediate mode of photosynthesis during

allelochemical stress raising questions as to whether monocotyledonous weeds or dicotyledonous weeds- which are more allelopathic? Further research is thus relevant to know the interaction of other dicotyledonous and monocotyledonous weeds species on both wild weed species and domesticated crop species for a better comparative understanding of the allelopathic mechanisms of wild versus domesticated, dicotyledonous versus monocotyledonous,  $C_3$  versus  $C_4$  and  $C_3$ - $C_4$  intermediate crop plants opening a plethora of research avenues in the plant-plant cross talk mechanisms adding new dimensions in allelopathy research.