Conclusion
CONCLUSION

The invasion of plants depends upon invasibility or susceptibility of the ecosystems and invasive traits of invaders suitable for the available ecosystem. In the present study, the invasibility of a field and invasive traits of 2 species was studied with special reference to the adaptability of species to variable soil moisture conditions. The impact of some factors like light, root exudates of the host community and structure of the community have also been studied and compared.

It emerged from the findings that plant invasion are governed by the susceptibility of the ecosystem, invasive traits of the species and facilitation by the host community. The patchiness present in the field due to dominance of variable native species may have made available certain vacant niches for the occupation by the invasive species. The species having adequate adaptations to water stressed conditions may have been suitable settlers.

As noted in the present study, *Mirabilis jalapa* reduced the reproductive span but increased seed production under stressed conditions of field. The tuberous storage roots helped them as buffers for water stress conditions. *M. jalapa* developed invasive ties with *Parthenium hysterophorus*. The root exudates of *Parthenium* did not affect the growth of *M. jalapa* instead provided cover and shade to newly germinated seedlings of *M. jalapa* in the month of January. The root exudates of *M. jalapa* on the other hand promoted the growth of *Parthenium hysterophorus*. Thus prior invasion of *Parthenium* caused invasional meltdown and led to the invasion of *M. jalapa*. After the invasion of *M. jalapa*, both the species developed mutualism.

As evident from the summary tables the moisture stress reduced plant height, leaf number, leaf area, relative water content and stomata number in *Mirabilis jalapa* and
Ruellia tuberosa. But root exudates of selected component species did not affect the growth of both the species. Shade enhanced some growth parameters in *M. jalapa* but decreased in *R. tuberosa*. This indicates that *M. jalapa* preferred mesophytic conditions and *R. tuberosa* has higher adaptation to xerophytic conditions. The stomata number and leaf tissue area in both the species had greater adaptability to variable light and showed reduction in response to shade. A comparative account of the responses of both the selected species revealed that *M. jalapa* had greater affinity to invasion as the vegetative and reproductive growth increased under field conditions as compared to pot. But, *R. tuberosa* developed adaptability to xeric conditions with some growth reductions.

The *Ruellia tuberosa* preferred drier parts of the field for the invasion. The water stressed conditions first reduced the species diversity in drier parts of the field and increased the invasibility of the stress tolerant *Ruellia tuberosa*. The water scarcity may be considered as a disturbance. The stomata number in *Mirabilis jalapa* increased at their respective sites which in turn increased the CO₂ intake and fixation. The higher CO₂ intake and fixation at early stage may have caused greater nutrient uptake by *M. jalapa* as compared to native species.

It may be inferred that the autecological studies in all ranges of invasive species environment may prove to be helpful in working out specific invasive traits of the species and possible invasibility of ecosystem. Such studies may be helpful in developing models of plants invasion at local, regional and continental scales. The autecological life cycles of both the species have been helpful in the assessment of overall adaptability of the species by means of reductions in the span of the life cycles and corresponding increase in the seed output under field conditions. Thus the autecological studies shall be emphasized for drawing sound conclusions related to invasive traits of the species.
Some of the common invasive traits in both the species are reduction in the span of life cycle, adaptability to water stress conditions specifically in *Ruellia tuberosa*, ability of invasional metdown by *Mirabilis jalapa* through *Parthenium hysterophorus* and plasticity in the development and function of stomata under stressed field condition. The fasciculated roots of *M. jalapa* served as food reservoir. Faster growth of *M. jalapa* soon after germination and high reproductive capacity during short reproductive phase were the invasive traits. The field under extreme drought were susceptible for the invasion of *R. tuberosa* and occasional increase in soil moisture increased the invasibility of the field for *M. jalapa*. 