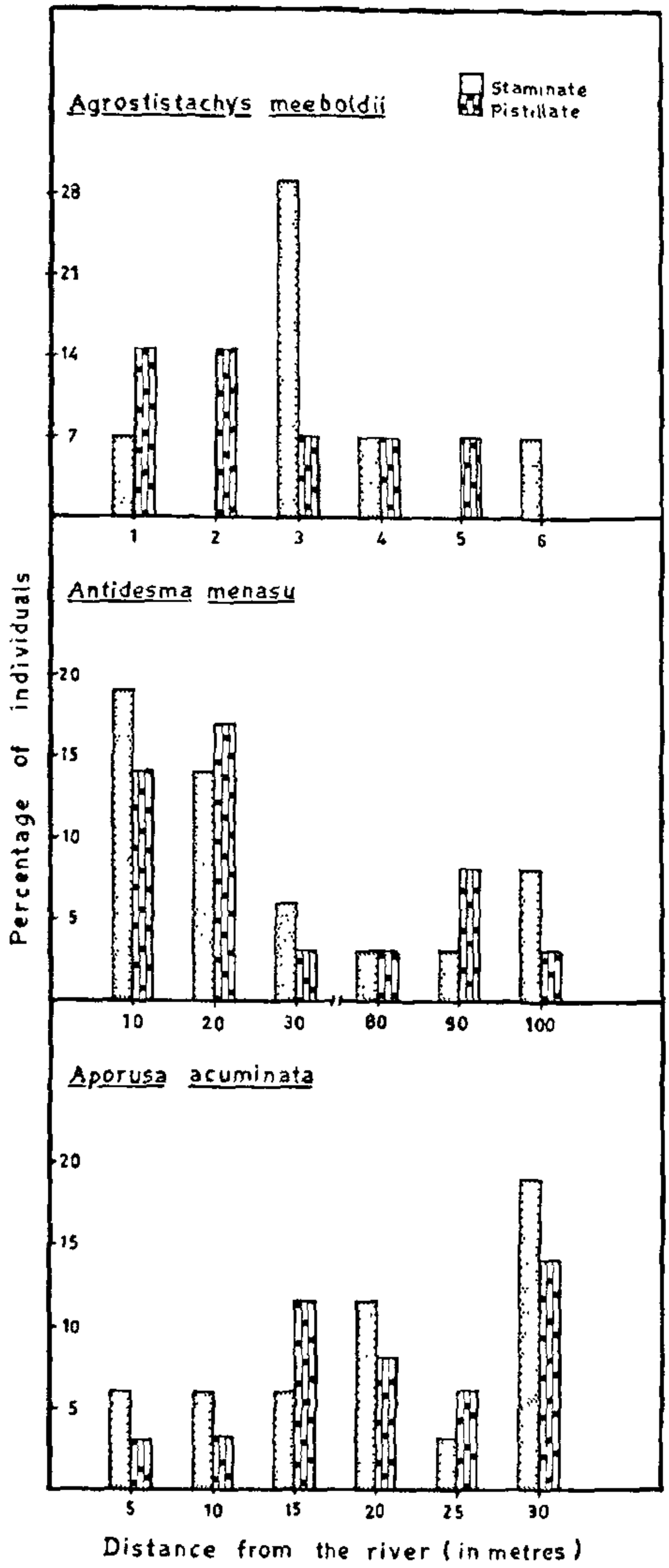

Figure 1. Distribution of staminate and pistillate plants of three *Dioecious euphorbiaceae* along a moisture gradient.

staminate plant occurring at a distance from the river is the same as that for a female plant. This is in agreement with the studies on *Guarea luxii* DC. (Meliaceae), *Randia spinosa* Jacq. (Rubiaceae) and *Zanthoxylum setulosum* P. Wilson (Rutaceae) in Costa Rica by Bawa and Opler[1].

To summarize: (i) there is no segregation of sexes along an ecological gradient (soil moisture) in the species studied; (ii) the riparian nature of the species studied has been confirmed; (iii) the extent and intensity of distribution of the plants away from the river varied in the three species/genera studied; and (iv) it is clear that the dispersion of sexes in a dioecious species is random in an undisturbed natural plant community—a phenomenon which appears to be advantageous and of adaptive significance to the dioecious species.

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CHEMOTAXONOMY OF SOME RUBIACEAE

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THE present account on the chemotaxonomy of some Rubiaceae is an attempt to identify the species on the basis of chemical characters and to estimate the kinship among them.

Standard phytochemical tests have been carried out on ten taxa *viz Gardenia gummifera* Linn., *G. jasminoides* Ellis., *G. latifolia* Ait., *Mussaenda erythrophylla* Schum., & Jhonn., *M. frondosa* Linn., *M. luteola* Delile, *Nauclea cadamba* Roxb., *N. orientalis* Linn., *N. parviflora* Willd. and *Randia dumatorium* Lamk., with the fresh material and as well as 80% alcoholic extracts of the shade-dried material to detect the presence of various chemical constituents.

It is evident from the distribution of various secondary metabolites that uniformly negative results are obtained for alkaloids, cyanogenic glycosides (HCN test A), indoles, methylene dioxy compounds (Labat test), saponins (Saponin test A), steroids and triterpenoids (Liebermann–Burchard, Noller's and Salkowski tests) and uniformly-positive results for phenols, flavonoids (Shinoda test), syringyl radicals (Maule test) and tannins. The activity of the polyphenolase enzyme is either immediately or slowly positive in all the taxa studied, as evidenced by the results of Cigarette and Hot water tests.

The present study indicates the occurrence of the anthraquinones in all the species except *M. frondosa* and *R. dumatorium*. The presence of aucubin compounds (Ehrlich test) is noticed in *G. jasminoides* and *R. dumatorium*. They are absent in the rest of the taxa. The catechol-tannins (HCl/Methanol test) are present in *M. erythrophylla, N. cadamba, N. orientalis* and *R. dumatorium*. Juglone (Juglone test A) a rare napthaquinone, is found in *R. dumatorium* only. The leucoanthocyanins are present in all the species of *Gardenia* and *Nauclea* and absent in those of *Mussaenda* and *Randia*. Lignans, the dimers of cinnamic acids, are present in all the three species of *Nauclea* studied. The presence of syringaldehyde is inferred to be rather equivocal in *G. gummifera* and *M. luteola* on account of the development of green colour in the lignified elements for Syringin test. In all the other taxa its total absence is recorded.

The above data lend support to the division of the Rubiaceae into such tribes as Gardiniae, Mussandae and Naucleae etc. and the ten taxa studied could be identified on the basis of the same. Further a perusal of the several similarities in the chemical characters exhibited, indicate close kinship among them.

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SEED GERMINATION BEHAVIOUR OF HALOPHYTES IN INDIAN DESERT: 1. *SUAEDA FRUTICOSA* (LINN.) FORSK.

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THE most critical stages in the life cycle of halophytes are the periods of germination and establishment[1], because of the fact that imbibition of water is retarded by low water potentials in the soil solution. In many areas of the Indian desert salinity/alkalinity and water stress are the most important factors limiting plant growth.

Suaeda fruticosa (Linn.) Forsk., commonly known as saltwort grows well in highly saline soils of the Indian desert. This special trait of the species can be assigned to its outstanding ability to withstand the extreme conditions of soil salinity. However, its seeds germinate only after rains which leach out much of the salt from their close environment to deeper soil layers[2]. In the present investigation, the effect of various salts which are common in saline soils, and mannitol, which is non-toxic to plants, was studied to understand whether the inhibition of germination is due to osmotic or toxic effects of different ions.

Twenty seeds were placed in each petridish containing a filter paper moistened with 4 ml of aqueous solutions of 100, 500, 1,000, 5,000 and 10,000 ppm concentration of each of the following salt solutions of NaCl, $MgSO_4$, Na_2SO_4, $CaCl_2$ and mannitol. Control received only distilled water. Electrical conductivity of each of the test solutions was determined. Daily observations were taken for 15 days and the moisture level of the germinating media was maintained throughout the experiment.

Data obtained are given in table 1. Germination was found to vary in the different media. Lower concentrations of all the salts affected the germination differently *e.g.* in the case of NaCl, 100 ppm and 500 ppm stimulated the germination, 100 ppm of Na_2SO_4, 100 and 500 ppm of $MgSO_4$, 100–1,000 ppm of $CaCl_2$, were also found to stimulate the germination. In the case of mannitol the maximum germination was found at 1,000 ppm. Higher concentrations, however, of all the salts suppressed the germination. Seeds of *S. fruticosa* showed a wide range of tolerance towards $CaCl_2$, though, its conductivity was found fairly high. After 15 days of immersion, seeds from 10,000 ppm of all the salts were transferred to distilled water, 5000 and 10,000 ppm mannitol sol-