

## INTRODUCTION.

A weed has been defined as, "a higher plant that is a nuisance" (Harper 1960). This nuisance value arises because the weed forms part of the succession that develops naturally on cleared ground, but is not generally allowed to proceed very far as the crop is harvested, and the land recultivated, or the weed is subjected to some form of control. Thus to survive the weed must have a life-cycle adapted to the crop, and its ability to survive is enhanced by quick growth and production of seed, by an efficient method of vegetative reproduction, or by the production of large numbers of viable seeds, often with variable dormancy.

Competition from weeds can affect the crop. Thus in areas where the rainfall is marginal the weeds will increase the evapo-transpiration, reducing the water available to the crop. A reduction in the intensity of light falling on the crop, due to weed growth, could seriously reduce yield. Weeds will compete with the crop for nutrients and there may be competition for space both in the rooting medium, tending to reduce the root growth of individual plants, and for aerial space, producing etiolation, or the death of some of the plants.

Other factors, which contribute to the nuisance value of weeds, are that they may harbour pests and diseases, either by acting as alternate hosts, or by affording protection from a treatment designed to control the organism. They may also contain substances causing poisoning of livestock, or the tainting of crop or stock produce.

It is because of this nuisance value that methods of weed control have been evolved, or in their absence the land is abandoned and a new piece cleared. Until recently these methods have been cultural; the operations involved, and the modern machinery designed to carry them out, indicate the

importance attached to reducing the weed population. Lately the success of herbicides has led to a rather complacent attitude to weeds, but herbicides are by no means the complete answer, for already resistant strains have emerged within certain species, often only partial control is obtained, and there are other species for which no suitable herbicide has yet been found. The biology of these weeds, in particular, should be examined as a basis on which to decide, whether they possess the characteristics which might enable them to become a serious problem and therefore if control is likely to be necessary, secondly at what stage the plant is best attacked, and thirdly it might point to the best method of control. Such a study would also add to the knowledge about individual species, which at the moment is lacking, especially in the tropics.

Thus the nuisance value of a weed depends on its adaptation to the habitat, its competitive effects, and certain other factors, all of which combine to make control necessary. It is a pity that control is usually based on evolving a method, and trying it on the weed, rather than studying the weed and trying to evolve a method.

The factors to be considered in the present study of the biology of Eleusine indica were based on the revised schedule, used by the British Ecological Society (1947) for the species being described in the Biological Flora of the British Isles.