Mans dependence on plants for the essentials of his existance has been of paramount importance in his life, since the human race began. However we cannot afford to let them grow indiscriminately all over the land and water or else, because it will be difficult to find a room for us and our activities. A conservative estimate of the number of described species of plants in the world is over 4,00,000, out of which hardly 3,000 species of plants are economically important to us. When one grows any of the economic species of plant, invariably a variety of volunteer vegetation comes up simultaneously which is competitive and undesirable. Besides several plants are unwanted because either they are responsible for many human and animal health hazards or they hamper the activity of man in some way or the other. As far as humans are concerned these plants are "Weeds" otherwise 'Nature..... knows no plant as weed (Bailey, 1895).

With man there are always weeds. Considering this one cannot define weeds without the activities and interest of mankind. Jethro Tull., (1731), was the first person to use the term "Weed" for unwanted plants, growing in wanted area.

The weeds are defined by various botanists in various terms. Some of them are as,

Brenchley (1920), states that "weeds are the plants that grow luxuriently or plentifully and chokes out all other economically important plants". Brenchely also treats weed as the any other plant than the crop sown.

According to Campbell, (1923), weed can be defined as honest, independent competitor for food materials in the struggle for existence.

Bailey and Bailey (1941) considers weed as the useless, unwanted and undesirable plant.

Harper (1944), defines the weed as a plant that grows spontaneously in a habitat that has been greatly modified by human action.

Moore (1954), has defined a weed as a plant which interferes with man's utilization of land for specific purpose.

Shaw (1956) is of opinion that weed is a plant growing in undesired location.

Thomas (1956), treats the weed as a useless, undesirable and often very unsightly plant of wild growth.

Vaidya et al., (1978) have defined weed as "Any plant not sown in the field by the farmer is out of place and is called a weed."

Thus in the light of above literature, we can conclude that weeds are those plants which are harmful, interfere with the agricultural operations, increase the labour, add to the cultivation cost and reduce the crop yields.

Man invades newer and newer areas with newer crops, which is also accompanied with new weeds. Since weeds have a wide ecological adaptability and genetic plasticity, they thrive well in any environment or they try to shape themselves under the changed situations. Man has been mostly indifferent towards weeds and due to his ignorance, weeds have been spreading and multiplying fast into newer areas.

Most of the weeds are characterised by unique eco-physiological adaptations. These adaptations can be listed as,

- Ability to produce enormous quantity of seeds.
- Ability to grow and multiply under stress conditions.
- Presence of seed dormancies of various type.

- Effective seed dispersal mechanism.
- Powerful competitive ability.
- Longer viability period of seeds.
- Allelopathic effect on other plants.

Weed show wide ecological amplitude by means of which they can resist the extreme conditions of temperature. There is a flexibility in period of life cycle of weeds and they prepfer effective assimilatary path during the life span. Weeds generally show tendency to adapt $C_4$ and CAM path of carbon assimilation rather than the $C_3$ path. Perhpas the weeds are gifted by nature with this adaptations.

According to Rodgers (1974), there are about 30,000 species of weeds around the world, of which about 18,000 species of weeds cause serious losses. On this account, annual losses in India due to the weeds have been estimated and are reported to be four hundred twenty crore rupees (Joshi, 1974).

Although weeds are undesirable plants, they can be of some use in one or other way. Henkel (1904), Train et al. (1941), Smith (1950), Martin et al., (1951), Koning (1954), Sharma (1971) and number of other scientists (King,1974), have investigated that most of the weeds from various families of angoiosperm, are economically important for their food, fodder, medicinal, ornamental and industrial values. For instance weeds belonging to the family Euphorbiaceae, contain milky I atex which is a rich source of long chain hydrocarbons.

Euphorbiaceae is a one of the largest and extremely variable families among the angiosperms. It is cosmopolitan in distribution and includes near about 300 genera and more than 5,000 species. In India this family is represented by about 61 genera and 336 species.

Genus Acalypha, Antidesma, Chrozophora, Croton, Emblica, Euphorbia, Jatropha, Hevea, Phyllanthus, and Ricinus are well known plants of family Euphorbiaceae. They furnish several valuable commodities, such as food, drug, rubber and oil. Among the 300 genera, Euphorbia is a largest genus of the family Euphorbiaceae. It includes 1600 or more species. Majority of these species of Euphorbia are recorded as weeds. Eventhough some of them are found to be useful to man. Euphorbia geniculata Orteg. studied under present investigation is a fast growing, shade loving and latex yielding plant. Tripathi and Tiwari (1980), have shown that the latex of Euphorbia geniculata is a rich source of long chain hydrocarbon like Geniculatin which is a triterpenoid saponin. Thus E. geniculata can be treated as one of the petroplants.

Considering critically the role of E. geniculata as a weed as well as a petroplant it will be benefitial to understand its basic eco-physiology with respect to autecology, physiology and biochemistry etc. This can be an additional tool in future research of petroplants.

In present investigation an attempt has been made to understand the basic eco-physiology of Euphorbia geniculata. A brief resume of the weed research is taken and it is covered in the first chapter, 'Review of Literature'. The methodology followed for this investigation is presented in second chapter of the dissertation. The basic eco-physiology of E. geniculata is worked out by considering various parameters like Growth performance, Seed physiology, Leaf architecture, Nitrogen metabolism, Seasonal variations in Physico-organic and inorganic constituents, Stomatal behaviour and pathophysiology. The outcomings of present investigation are presented and discussed in the light of available literature, in the third chapter of 'Results and Discussion'.

It must be mentioned here that this investigation is the preliminary attempt towards the understanding of basic eco-physiology of E. geniculata. To have a clear picture of the eco-physiology of the species under investigation, it is necessary to have the simultaneous assessment of various physiological processes involved in large number of Euphorbia species. We have tried and done maximum by utilizing the present laboratory assets. Further continuation of the same research problem under efficient laboratory conditions can add more good findings.