

INTRODUCTION

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Plants and their communities are man's most valuable assets, without which, he could not have survived on earth. Out of 3, 00,000 species of plants known in the world, hardly 3000 are of economic value to us. When one grows any of the economic species of plants, invariably a variety of volunteer vegetation comes up simultaneously which is competitive and undesirable. Several plants around us are unwanted because either these are responsible for human and animal health hazards or they may hamper the activities of man in some other ways. Immediately one considers such plants as weeds. Thus it is the situation involving space and time and the individual's interest in that situation which class a plant as weed. In this context it is well said that, while all weeds are unwanted plants all unwanted plants may not be weeds (Gupta, 2005).

King (1974) had explained origin of weeds. The nomad species that are commonly component of floras of regions are occurring practically the world over. They are the plants adapted to unstable and ever changing environment, such as, plants of eroding stream-banks, of shifting sand-dunes, of flooded and seasonally inundated margins of rivers, of wind-throws in the forests, and of areas opened up by fire, by landslides, or by other extensive land disturbances. Plants adapted to these habitats, long before the advent of man, have thus, in later times, provided the reservoir from which many weeds have developed. Keller *et al.* (1934) have noted the similarity in appearance of certain weed seeds with those of associated crop with which the weeds are customarily associated. Some weeds are frequently so much an integral part of cultivated crop that they have been termed as satellite weeds. e.g.- *Lolium temuletum*, *Agrostemma githago* for wheat, *Avena fatua* for oats, *Camelina sativa* for flax.

Weeds are normally defined as plants which create interference in agriculture. On the contrary Anderson's (1952) work states, the origin of some crop plants from weeds, he explains prior to man's contact with plants, they were essentially all stable components of the regional flora. As early man discovered uses for some of them, they were gradually selected out of the natural environment and cultured in a primitive manner. For the smaller grains, it was later found to be more expedient to grow them in somewhat larger areas than dump heaps, in order to provide the necessary bulk. When cultivation started on larger areas, foreign invaders (weeds) came in and occupied the same ground. Weeds simulated the grain plants more likely

to survive than grain plants that differ greatly in appearance, time of bloom and seed set. The concept of weed has many dimensions such as locality, habit, competitive ability, resistance to control methods, undesirable nature, adaptability to varied environmental conditions, high ability of reproduction and nuisance value. The existing definitions of weed are more dimensionwise and hence they are more specific to single character. Meaning of the term 'weed' depends upon human attitude, it differs between one person to another, between a farmer and an engineer. Although it is difficult to define weed in a few words, literal meaning of word weed is herbaceous plant not valued for use or beauty, growing wild and regarded as hindering the growth of superior vegetation (Oxford English dictionary,1933). This explanation is reasonably comprehensive, recent usage of the term weed includes noxious woody plants.

Scientists define weeds differently. Brenchley (1920) defines weed as, a plant that grows so luxuriantly or plentifully, that it chokes out all other plants that possess maximum valuable nutritive properties. Campbell (1923) also says that, a weed is an honest, independent competitor for food material in the struggle for existence. Jethro Tull (1731) was the first person to use word weed. According to him, weed is a plant growing where it is not supposed to grow. This definition explains unstable locality of weeds. Definitions of weed describing its undesirable characteristics include a) Bailey and Bailey (1941), a plant not wanted and therefore to be destroyed is weed. (b) Thomas (1956) defines weeds as a useless undesirable and often very unsightly plant of wild growth usually found in land which has been cultivated or in areas developed by man for specific purposes other than cultivation. Competitive nature of weed is explained by the definition of Harper (1944) who states that, a plant growing spontaneously in a habitat which has been greatly modified by human action is a weed. A plant of economic crops may also become a weed if it is found growing with other crops where it is not wanted viz. Oat plant becomes weed in the field of wheat (Thakur, 1984). While Tadulingum and Venkatnarayana (1985) defined weed as plant growing in all kinds of soil unless it happens to be unable to support plant life. He further states, man tries to grow plants of his choice. Therefore original inhabitants of soil become weeds. Whether a plant is considered a weed depends not only on its characteristics and habit but also its relative position with other plants and human being. Muniyappa *et al.* (1986), states that, weeds are self-grown which appear simultaneously with crop plants and results in intense crop-weed competition during

early stages of growth. Somani (1992) explains weed on the basis of habit. According to him it is a plant growing at any place. He highlights adaptability of weeds to the varied environmental conditions. Weed is a plant with a negative value, which competes with man for soil. They have excellent adaptation to the disturbed environment in which they are growing. Weeds in contrast generally produce large number of seeds to plant size; they may also possess highly effective method of vegetative reproduction. This gives an idea about high ability of reproduction, which is also an important dimension of weed. Enlightening with economic potential of weeds, some authors tend to define weeds as plants for which economic uses are yet to be discovered. Joshi (2001) defines weed as a vegetation excluding fungi, interfering with the objectives or requirements of people.

We can describe weeds in short as a class representing most successful plant forms, which are aggressive and have been evolved simultaneously with the destruction of habitat and indigenous vegetation by man.

The method for classification of weeds has been worked out by many workers like King (1974), Thakur (1984), Subramanian *et al.* (1997), and Gupta (2005). These are based on characters like life cycle, nature of stem, association, habitat, origin, soil etc.

Classification based on ontogeny of weeds form 3 classes - annual, biannual and perennial. While 3 types of weeds - woody, semi-woody and herbaceous are based on nature of stem. Season bound, crop bound and crop associated weeds are types of weeds based on association. Depending upon the cotyledon character, there are two great classes of weeds namely, monocotyledons and dicotyledones. Nine important groups have been formed on the basis of habitat, these are (a) Cropland weeds (b) Fallow land weeds (c) Grassland weeds (d) Pasture or Rangeland weeds (e) Non-cropland weeds (industrial weeds) (f) Aquatic weeds (g) Forest and woodland weeds (h) Lawn and garden weeds (I) Orchard and vineyard weeds. Alien weeds (Introduced weeds) and native weeds (Indigenous weeds) are the types of weeds according to their origin. Acidophile, basophile, neutrophiles are the weed types showing affinities for acidic, basic and neutral soils respectively. Following terms are often used in the weed literature.

A) Facultative weeds - These are weed species that grow primarily in wild communities but often escape to cultivated fields, associating themselves closely with man's affair.

B) Obligate weeds – They occur only in the cultivated or otherwise in a closed community and can't stand competition from volunteer vegetation in a closed community.

C) Noxious weeds – These are plants arbitrarily defined as being especially undesirable, troublesome, and difficult to control.

D) Objectionable weeds –These are noxious weeds, whose seeds are difficult to separate, once mixed with crop seeds.

E) Relative weeds – Cultivated plants out of place have been named as relative weeds.

F) Absolute weeds – Those plants, which possess no apparent value to the farmer and injurious to all crop among which they occur are called absolute weeds.

G) Satellite weeds - These are customarily associated with crop and are frequently so much an integral part of cultivated crop.

H) Pernicious weeds -Perennial weeds, which reproduce vegetatively from underground-specialized organs. The depth of rooting of perennial weeds is very important in deciding their control. These difficult perennial weeds are also called pernicious weeds.

I) Brush weeds – Woody weeds include shrubs and under shrubs are collectively called brush weeds.

It is almost accepted that mechanical farming is unable to control weed growth and hence weed problem is increasing day by day. In days of modern agriculture, weed study has become most important and has attracted the attention of agriculturalists due to their nuisance value and losses caused by them.

