

# Plant indicators Group B,

India being a vast country possesses different types of soil, flora & fauna surrounded by a particular type of environment. The natural resources are limited therefore, it is the need of the hour to utilize these resources in a proper way without affecting the environment. The knowledge of plant indicators can be helpful to determine the soil. Thus, it can be decided which crops should be cultivated in a particular soil. ~~Water~~ Plant indicators are also used to determine optimum use of land resources for forest, pasture and agricultural crops.

Many plants indicate the presence of particular mineral or metals, i.e., the presence of precious metal can be detected by the growth of ~~species~~ <sup>shale</sup> ~~plants~~ <sup>plants</sup> ~~in the area~~ <sup>in the area</sup>.

The knowledge of relationship between plants & ecological factors can be used as an indicator of environment. At the same time, it can be used to monitor the pollution - air pollution problem.

Plants which indicate some very specific conditions of environment are called plant indicators. Since a plant species or plant community acts as a measure of environmental condition, it is also referred to as ecological indicator.



bioindicator or phytoindicator.

### Characteristics of Plant Indicators

On the basis of distribution, the indicators may be Steno Species or Eury Species. The 'Steno' is used to indicate narrow limits of tolerance & Eury is used to indicate wide limits of tolerance for certain conditions & narrow limits of tolerance for other conditions. For example, a plant of wide tolerance of heat are called Eurythermal & narrow limits of tolerance of water are called Stenohydric.

Plants of large species are better indicators than the plants of small species.

### Plant indicator for agriculture.

Many plant indicators decide whether soil is suitable for agriculture or not. The growth of a particular crop plant is seen under different environmental condition & if growth is satisfactory, the soil is considered to be suitable for agriculture. For example, growth of short grasses indicates that water is less in the soil. A natural growth



of tall & short grasses indicates the soil is fertile & is also suitable for agriculture.

Salvadora, oleoides indicate high  $\text{Ca}^{++}$  & Bor good soil suitable for crop plants

Peganum, harmala shows a soil rich in  $\text{N}_2$  &  $\text{S}$ - $\text{H}$ .

Butia monosperma grows in heavy alkaline soil while Rumex acetosella grows in acid grassland soil.

Presence of Salsola, Suaeda indicates a soil with saline water condition. Anodopogon indicates sandy loam type of soil and Argemone mexicana indicates disrupted or flooded soil.

### Plant indicators for overgrazing

eg. Predominance of annual weeds & short lived impalatable perennials indicate severe grazing. eg. plants of Chenopodium, Lepidium & Nesbeka. Some plants are less poor and show poor or no overgrazing eg Opuntia, Veronica, Cirsium etc.

### Plant indicators for Humus

Some plants act as humus indicators. Monotropa, Neottia & Myrica indicate the presence of humus in soil.



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Strobilanthes & Impatiens indicates the presence of high humus which prevents regeneration of tree species

✓ Plant indicator for soil types-

Many plants indicate the characteristics soil. For example Casuarina equisetifolia, Citroulus colocynthis & Panicum sps. grow in sandy soil. Imperata cylindrica & Vitex grow on clayey soil. Cotton prefers to grow in black soil.

✓ Plants indicators for soil reaction

Many plants indicate whether the soil is acidic or basic. For example Rumex, Rhododendron, Polystichum & Sphagnum indicate the acidic soil. Many forest trees like Sal & pine are Calcium loving. Teak, Ixora & Taxus are Calcicoles. Some mosses eg Tortella & Meckera grow on lime stones. Halophytes such as Salicornia, Suaeda, Chenopodium & Salsola grow in soft Salty soil.



### Plant indicators for moisture

Plants which prefer to grow in arid areas indicate the poor or very low moisture content in the soil. Saccharum munja, Acacia, Calotropis, Sesuvium, Opuntia are such plants. Eucalyptus lowers the water level table. Echinoops & Cassia are found in the areas of deep water table. Typha, Phragmites & Vetiveria grow in water logged soil. Mangrove vegetation & Polygonum are found in water logged saline soil.

### Plant indicators for Ground water

Certain plant communities indicate the depth of ground water. Central Arid Zone Research Institute, Jaipur has made the use of certain plant communities to indicate the depth of ground water & salinity level in the ground water like Euphorbia ludoviciana, Capparis decidua, Acacia senegal, Anogeissus pendula, Salvadora persica, Tamarix sps & Pennisetum turgidum, Zizyphus complex.

### Plant indicators for forests

Some plants indicate the characteristic type