AIR CAPACITY

- This term is used to describe aeration status of soil
- Air capacity refers to the volume of pore space filled with air
  - when the soil under a tension of 50 milli bar
- Aeration capacity can be characterized in 3 ways as given below
- 1. Content of oxygen and other gases (as discussed above)
- 2. Oxygen Diffusion Rate (ODR):
  - It is the best and most reliable measurement of aeration capacity
  - It determines the rate at which O_2 in soil air is replenished

AIR CAPACITY

- ODR decreases with soil depth
- ODR should be above 40 x 10^{-8} g/cm^2/minute
  - for good growth of most of crops
- However, the root growth is drastically reduced
  - when the ODR decreases to about 40 x 10^{-8} g/cm^2 /minute

- 3. Oxidation - Reduction potential (Eh) of soil:
  - It is an important chemical characteristic of soil related to soil aeration
  - It indicates the oxidation and reduction states of soil system

AIR CAPACITY

- In oxidized soil, ferric (Fe^{3+}), manganic (Mn^{4+}), nitrate (NO^{3-})
  - & sulphate (SO_4^{2-}) ions dominate
- In reduced soil, ferrous (Fe^{2+}), manganous (Mn^{2+}), ammonium (NH^{4+})
  - & sulphides (S^{2-}) are present
- Redox potential is measured using platinum electrodes
  - & expressed in millivolts
- A positive Eh value indicate oxidized state
  - & a negative Eh value indicate reduced state