Movement of water across the root

The water travels in the xylem (centrally located). A water potential gradient exists across the root. Water moves from a high potential (cells closer to the soil) to a lower potential (inner regions).

Water moves through:

- 1. Apoplast pathway: cell walls of adjacent cells (Cellulose is permeable) unregulated (most imp)
- 2. Symplast pathway: cytoplasm of cells linked with plasmodesmata
- 3. Vacuolar.transmembrane pathway: membranes, cytoplasms and tonoplasts



When water moving through the apoplast pathway reaches the endodermis its flow is stopped by suberin (waterproof) which is deposited in bands; casparian strips. Therefore water and ions can enter the stele only by the symplast route.

Therefore cells of the endodermis regulate when solutes reach the xylem. They then can enter the apoplast again.

Transpiration-tension-cohesion theory