SCHEMATIC REPRESENTATION OF THE PH.D. WORK

**MICROPROPAGATION**
- Field grown mature plants
  - Axillary bud-explant
    - Grown in vitro
  - Shoot initiation
    - Shoot multiplication
    - Shoot elongation
      - Rooting
      - Hardening
      - Transfer to soil

**CALLUS CULTURE**
- In vitro leaf disc
- Callus initiation
- Callus
- Shoot initiation
- Shoot multiplication
- Shoot elongation
  - Rooting
  - Hardening
  - Transfer to soil

**SOMATIC EMBRYOGENESIS**
- Callus derived from in vitro leaf disc
  - Direct embryo (Glu.)
  - Suspension culture
  - Somatic embryos
  - Germination
  - Seedling
    - Isozyme analysis for identifying somaclonal variation
    - SDS-PAGE analysis of proteins for embryogenic capacity

**PROTOPLAST CULTURE**
- In vitro derived leaf
- Protoplast isolation
- Protoplast culture
- Microcolonies
- Macro colonies
- Callus

**SEASONAL VARIATION**
- Axillary buds collected & cultured every month for a period of two years.