

## **Economic Importance of Gymnosperms:**

### **1. Ornamental value:**

A number of gymnosperms are grown as ornamental plants, e.g., *Cycas*, *Araucaria*, *Thuja* etc.

### **2. Food Value:**

- i. 'Sago' starch obtained from pith and cortex of stem of *C. revolute*, *C. rumphi* etc.
- ii. 'Seed starch' obtained from seeds of *Cycas rumphii*, *Dioon edule* etc. It is prepared into flour and cooked before eating.
- iii. Seeds of *Pinus gerardiana* (chilgoza) are edible.
- iv. 'Kaffir bread' prepared from the stem pith of *Encephalartos*.
- v. Young leaves of *Cycas* cooked as vegetables.

### **3. Medicinal value:**

- i. Ephedrine (alkaloid) extracted from *Ephedra* used in treating asthma, cough, cold, bronchitis etc.
- ii. Tincture of *Ephedra* is a cardiac stimulant.
- iii. The juice extracted from young leaves of *Cycas revoluta* is used for curing blood vomiting and flatulence.

### **4. Industrial Use:**

- i. Gum-*Cycas* gum used as adhesive, antidote for snake bites and using malignant ulcers.
- ii. Tannins – Tannins extracted from bark of *Araucaria*, *Pinus*, *Sequoia* etc. used in leather industry.
- iii. Canada balsam – It is turpentine obtained from *Abies balsamea* and used as a mounting medium in biological preparations.
- iv. Amber (fossil resin) – obtained from *Pinus succinifera*. Wood of *Pinus* is used for doors, poles, beams, railway wagon flooring etc.
- v. Plywood prepared from *Podocarpus*.
- vi. Papers like newsprints, writing and printing papers are being prepared from the wood pulp of *Pinus*, *Picea*, *Abies*, *Gnetum* etc.
- vii. The leaves of cycads are used for preparing baskets, mats, hats, brooms etc.
- viii. The fibres obtained from the leaves of *Cycas* and *Macrozamia* are used for stuffing pillows and making mattresses.

### **5. Source of oils:**

- i. Oils extracted from seeds of *C. revoluta*, *Macrozamia reidleyi*, *Pinus cembra* and *Cephalotaxus drupacea* are used as edible oils.
- ii. Red cedar wood oil extracted from the heart wood of *Juniperus virginiana* is used for cleaning microscopic preparations and for oil immersion lenses.
- iii. Oils obtained from *Cedrus deodara*, *Cyrtomeria japonica* and *Cupressus sempervirens* are used in preparations of perfumes.



*Cycas*



*Pinus*



*Thuja*



*Araucaria*



*Abies*



*Podocarpus*



*Gnetum*



*Picea*