

VIVEKANANDA COLLEGE
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NAAC ACCREDITED 'A' GRADE



Topic: GYMNOSPERMS
Course Title: PLANT DIVERSITY II
Paper: BOT-G-CC-2-2-TH
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Economic Importance of Gymnosperms:

Some of the Major Economic Importance of Gymnosperms are given below:

1. Food value:

i. 'Sago' starch obtained from the pith and cortex of stem of *Cycas 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. They are eaten after roasting

iv. 'Kaffir bread' prepared from the stem pith of *Encephalartos*.

v. Young leaves of *Cycas* cooked as vegetables.

2. Timber value:

Gymnosperms possess softwood. The same is used in preparation of light furniture, plywood, packing cases, match sticks, railway sleepers, etc.

Wood of *Agathis australis*, *Cedrus deodara*, *Podocarpus*, *Cryptomeria japonica*, *Pinus roxburghii* are used for these purposes.

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.

iv. Paclitaxel (Taxol) an anticancer drug is extracted from the bark of *Taxus brevifolia*.

v. *Cycas*-gum is an antidote against snake bite and also used against malignant ulcers.

vi. *Taxus baccata* has medicinal value used in treating asthma, bronchitis.

4. Industrial Uses:

i. **Gum-** *Cycas*-gum used as an adhesive, antidote for snake bites and using malignant ulcers.

ii. **Tannins** – Tannins extracted from bark of *Araucaria*, *Pinus*, *Sequoia* etc. used in the 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. **Venice turpentine** obtained from *Larix decidua* is used for lithography work, in sealing wax, varnishing, and as veterinary medicine.

Vii. **Copal** obtained from *Agathis australis* is used as plastic , polishes, and spirit varnishes.

Viii.**Rosin** from *Pinus roxburghii* is used for making laundry soap, printing ink, and for varnish.

5. Resin:

Resin is a semifluid secreted by special tubes which contains terpenes, resin acids and esters. It solidifies on exposure to air. Therefore, it plugs the places of injury. It helps in sealing female cones after

pollination, scale leaves around leaf bases and apical buds. Resin retains water. It is antiseptic and toxic to pests.

Therefore, it prevents microbial and insect attack. Resin is commercially extracted and distilled to obtain turpentine and rosin. Rosin is used in water proofing, sealing joints and preparation of writing paper. Turpentine is used as solvent in paints, polishes and wax. It is employed medicinally in removing pains, curing bronchitis and expelling worms.

6. Source of oils:

i. Oils extracted from seeds of *C. revoluta*, *Macrozamia riedlei*, *Pinus cembra* and *Cephalotaxus drupacea* are used as **edible oils**.

ii. **Red cedar wood oil** extracted from the heartwood of *Juniperus virginiana* is used for cleaning microscopic preparations and for oil immersion lenses.

iii. **Essential oils** obtained from *Cedrus deodara*, *Cryptomeria japonica* are used in preparations of perfumes.

iv. **'Oil of Hemlock'** from *Tsuga canadensis* is used as deodorant.

v. **Fatty oil** obtained from *Gnetum ula* is used for illumination.

V. **Turpentine oil** of *Pinus* is used for making ink, enamels, lubricants, waxes, crayon, and insecticide.

7. Paper:

A number of gymnosperm woods are used in the manufacture of paper. Papers like newsprints, writing and printing papers are being prepared from the wood pulp of *Pinus*, *Picea*, *Abies*, *Gnetum*, *Larix* etc.

8. Fibre Boards:

Needles of *Pinus* and other conifers are used in making fibre boards that are used in making packing cases.

9. Linoleum:

Saw dust is employed in making linoleum and plastics.

10. Miscellaneous:

- 1.. The leaves of cycads are used for preparing baskets, mats, hats, brooms etc.
2. The fibres obtained from the leaves of *Cycas* and *Macrozamia* are used for stuffing pillows and making mattresses.

3. Wood of *Taxus* for pencil making.

4. Bark of *Gnetum ula* is used to obtain fibre to make fishing nets and ropes.

11. Ornamental value:

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