



India's First Cryptogamic Garden

Why in News

Recently, **India's first cryptogamic garden** was **inaugurated in the Chakrata town of Dehradun, Uttarakhand**.

- The garden will be housing nearly 50 species of lichens, ferns and fungi (*collectively known as Cryptogamae*).

Note:

- **Plant kingdom** can be divided into two sub-kingdoms viz. **Cryptogams and phanerogams**.
- Cryptogams consist of seedless plants and plant-like organisms whereas phanerogams consist of seed-bearing plants.
 - Phanerogams are further divided into two classes i.e. [gymnosperms and angiosperms](#).

Key Points

- **Factors Responsible for Location of this Garden:**
 - This garden is at Deoban in Chakrata at a height of 9,000 ft.
 - This site is chosen **because of its low pollution levels and moist conditions** which are conducive for the growth of these species.
 - Further, Deoban **has pristine majestic forests of Deodar and Oak** which create a natural habitat for cryptogamic species.
- **Cryptogams:**
 - A cryptogam is a **plant that reproduces with the help of spores**.
 - The word "**Cryptogamae**" implies '**hidden reproduction**', referring to the fact that they do not produce any reproductive structure, seed, or flower.
 - Due to this, they are called "**flowerless**" or "**seedless plants**" or '**lower plants**'.
 - They **need a moist environment** to survive.
 - These are **present in aquatic and terrestrial places**.
 - **Algae, bryophytes, lichens, ferns and fungi are the best-known groups** of cryptogams.
- **Classification of Cryptogams:** Cryptogams are classified into 3 groups based on the various structural and functional criteria of the plant.
 - **Thallophyta:** Thallophyta is a division of the plant kingdom including primitive forms of plant life showing a simple plant body. They **lack roots, stems, or leaves**.
 - It **includes algae**-like Spirogyra, Sargassum, etc.
 - They are predominantly aquatic and found both in marine as well as freshwater habitats.

- **Bryophyta:** Bryophytes comprise a limited variety of **non-vascular land plants**. They prefer moist habitats but they can survive in dry environments too. Example- hornworts, liverworts, mosses, etc.
 - They occupy an intermediate position between algae and pteridophytes.
 - Since bryophytes can survive in both water and land, they are considered as the '**amphibians of the plant kingdom**'.
- **Pteridophyta:** A pteridophyte is a vascular plant that disperses spores. It is the first plant to **have xylem and phloem**.
 - Ferns are the largest living group of primitive vascular plants.

▪ **Other Types of Cryptogams:**

- **Liches:** Lichens are a complex life form that is a **symbiotic partnership of two separate organisms, a fungus and an algae**.
- **Fungi:** It is a kingdom of usually **multicellular eukaryotic organisms** that are **heterotrophs**.



CRYPTOGAMS VERSUS PHANEROGAMS

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|-------------------------------------------------------------------------|-------------------------------------------------------------------|
| Cryptogams refer to a plant or plant-like organisms that produce spores | Phanerogams refer to the higher plants that produce seeds |
| Consist of Thallophyta, Bryophyta and Pteridophyta | Consist of gymnosperms and angiosperms |
| Major reproduction method is the production of spores | Major reproduction method is the production of gametes |
| Most lack well-differentiated stem, leaves, and roots | Plant body is well-differentiated into stem, leaves and roots |
| Do not have a well-developed vascular system | Have a well-developed vascular system |
| Contain hidden reproductive organs | Contain well-developed reproductive organs |
| Require external water for fertilization | Do not require external water for fertilization |
| Seedless plants | Seed-bearing plants |
| Spores germinate and produce new plants | Seeds germinate and produce new phanerogams |
| Less evolved plants | Comparatively well-evolved |
| Examples include algae, mosses, liverworts, hornworts, and ferns | Examples include conifers, Ginko, cycads, gnetophytes, and dicots |

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