Difference Between Cryptogams and Phanerogams

Key Difference – Cryptogams vs Phanerogams

In 1883, A.W. Eichler introduced a phylogenetic system of classification for the whole plant kingdom. In this phylogenetic system of classification, the plant kingdom is divided into two sub kingdoms: Cryptogams and Phanerogams. Cryptogams are less evolved seedless plants that reproduce by the production of spores. Phanerogams are highly evolved plants that bear flowers and seeds for reproduction. The key difference between Cryptogams and Phanerogams is that **cryptogams are non-seed bearing primitive lower plants while phanerogams are seed bearing higher plants.**

What are Cryptogams?

Cryptogams are a subdivision of the phylogenetic system of classification of the plant kingdom. Cryptogams are less evolved primitive plants, and their plant body is not differentiated into leaves, stem, and roots. They do not bear seeds, fruits or flowers and possess a less developed vascular system. Their reproductive system is not well exposed. They perform reproduction by the production of spores. Cryptogams are further classified into Thallophyta, Bryophyta, and Pteridophyta. Thallophyta is more commonly known as algae. They reproduce vegetatively by the production of asexual spores. They do not develop distinct tissue differentiation. They are aquatic plants found in fresh and marine water. Examples for common algae are, *Cladophora, Ulva, Spirogyra.*
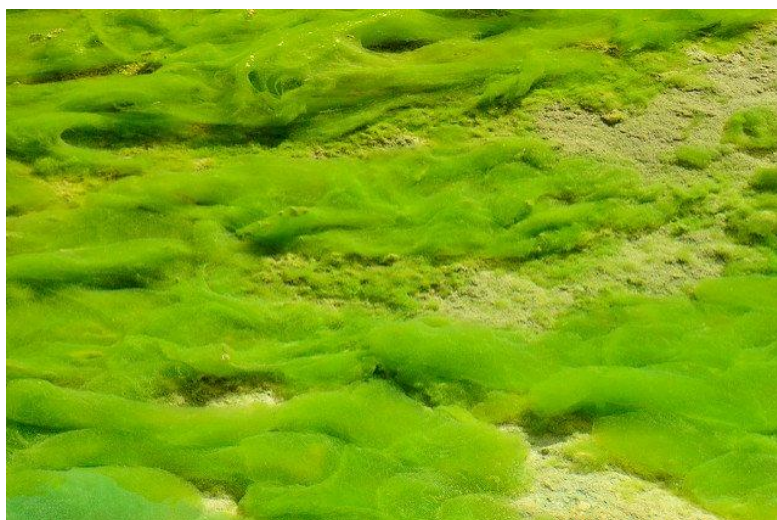

Figure 01: Green algae

Bryophytes are land plants that possess an embryo. They are commonly referred to as mosses. They contain a special structure known as rhizoids which are alternatives for roots; rhizoids anchor the plant onto a surface. Examples for bryophytes include marchantia and liverworts. Pteridophytes are considered as the first vascular land plants. They reproduce by spores and contain separate male and female organs namely antheridia and archegonia.

What are Phanerogams?

Phanerogams are highly evolved advanced plants that reproduce through the production of seeds. Their reproductive system is well exposed. The plant body is diploid and is differentiated into leaves, stem, and roots. They have a developed vascular system. Phanerogams are classified into two groups namely gymnosperms and angiosperms. Gymnosperms are primitive vascular seed-bearing plants which do not produce flowers. The seed or ovules are not encased in an ovary. Common examples of gymnosperms are Cycas and *Pinus*. Angiosperms are the most developed type of plants that produce flowers and bear seeds for reproduction. The seeds are encased in fruits. They are further classified into dicotyledons and monocotyledons. Monocotyledon plants possess one cotyledon in the embryo. Dicotyledon plants possess two cotyledons in the embryo.

Figure 02: Flowering Plant

What are the Similarities between Cryptogams and Phanerogams?

- Cryptogams and Phanerogams belong to the kingdom Plantae
- They contain chlorophyll and have the ability to photosynthesis.

What is the difference between Cryptogams and Phanerogams?

Cryptogams vs Phanerogams	
Cryptogams are non seed-bearing primitive plants which have hidden reproductive organs.	Phanerogams are seed-bearing higher plants which have exposed reproductive organs.
Plant Structure	
The plant body of cryptogams is not well-differentiated into stem, leaves, and roots.	The plant body of the phanerogams is well differentiated and possesses well-developed stem, leaves, and roots.
Reproduction	
Reproductive organs are mainly hidden and the plants reproduce by the formation of spores and do not bear seeds.	Reproductive organs are exposed and the plant reproduces by the production of seeds where seeds germinate into new plants.
Evolution	
Cryptogams are considered to be less evolved plants.	Phanerogams are highly evolved plants.
Further Classifications	
Cryptogams are further classified into Thallophyta, Bryophyta, and Pteridophyta.	Phanerogams are further classified into gymnosperms and angiosperms.

Vascular System	
The Vascular system is not well developed in cryptogams.	Phanerogams contain a well developed vascular system.
Examples	
Moses, ferns, algae are several examples of cryptogams.	Mango, banyan, Cycas are several examples of phanerogams.

Summary – Cryptogams vs Phanerogams

The plant kingdom is divided into two sub kingdoms called phanerogams and cryptogams. Cryptogams are primitive, less evolved plants that do not bear seeds. They reproduce through the production of spores, and their plant body does not present true tissue differentiation. They are further classified into Thallopyhyta, Bryophyta, and Pteridophyta. Phanerogams are highly evolved plants that bear seeds. They have a well developed vascular system and display true tissue differentiation where the plant body is differentiated into leaves, stem, and roots. Cryptogams are further classified into gymnosperms and angiosperms. This is the difference between cryptogams and phanerogams. Both phanerogams and cryptogams contain chlorophyll and are involved in the process of photosynthesis.

References:

1. Hindawi. "Phenology of Some Phanerogams (Trees and Shrubs) of Northwestern Punjab, India." Journal of Botany. Hindawi, 25 June 2013. Web. Available here. 10 Aug. 2017.
2. Cryptogamic Botany Vol II. N.p., n.d. Web. Available here. 10 Aug. 2017.
3. Pravesh Vyas. "Cyptogams vs phanerogams." LinkedIn SlideShare. N.p., 21 Jan. 2014. Web. Available here. 10 Aug. 2017.

How to Cite this Article?

APA: Difference Between Cryptogams and Phanerogams. (2017, August 15). Retrieved (date), from http://differencebetween.com/difference-between-cryptogams-and-vs-phanerogams/

MLA: "Difference Between Cryptogams and Phanerogams" *Difference Between.Com*. 15 August 2017. Web.

Chicago: "Difference Between Cryptogams and Phanerogams." *Difference Between.Com*. http://differencebetween.com/difference-between-cryptogams-and-vs-phanerogams/ accessed (accessed [date]).