Mount HIRA Matriculation School

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STUDENT NAME

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CLASS

GRADE 8

PROJECT TITLE

INFLORESCENCE FROM CRYPTOGRAMS

Title of the project

Determine how to grow flowers from cryptograms.

Introduction

Cryptogams are a group of plants characterized by their spore-based reproduction, encompassing ferns, mosses, liverworts, and algae. These plants have evolved distinct reproductive strategies that differ significantly from flowering plants. Since cryptogams do not produce flowers, the concept of inflorescence—the arrangement of flowers on a stem or branch—does not apply to them.

Instead of flowers, cryptogams produce spores in specialized structures like sporangia, sori, or capsules. These spores are designed for dispersal and germination, allowing cryptogams to propagate in diverse environments.

Purpose of the project:

All human beings and living things depend on plants for day to day life. On all the occasions farmers are dependent on plant growth. If I have success with this idea ,we get types of blossoms from cryptograms like Mosses, Ferns and Aloe Vera. For example, some papaya flowers didn't give fruits because, lack of female parts; but some other papaya flowers give fruits by reproduction.

Abstract:

Plants are divided into flowering and non – flowering. Flowering plants are divided into monocots and dicots. Non flowering plants are divided into spore bearing and gymnosperm. Spore bearings are divided into with roots and without roots.

A flower, sometimes known as a bloom or blossom, is the reproductive structure found in flowering plants. The biological function of a flower is to facilitate reproduction, usually by providing a mechanism for the union of sperm with eggs.

What are the characteristics of a blossom tree?

Cherry Blossom Trees are typically deciduous and grow in different shapes and sizes. Some bloom early in the spring, while others are late bloomers. The Okame Cherry Tree is an early bloomer with medium pink petals, while the Kwanzan Cherry Tree opens in late spring with deep pink flowers.
Flowering plants reproduce by seeds. Non flowering plants reproduce through spores and cones.

Problem Selection & Background Information

Problem Selection:

Given the nature of cryptogams (spore-producing plants like ferns, mosses, and algae), a potential problem or research question could be:

How do cryptogams adapt their reproductive structures (e.g., sporangia, sori) for efficient spore dispersal in different environments?
What are the evolutionary pressures that led to the development of spore-based reproduction in cryptogams, and how do these differ from flowering plants?

Background Information:

Cryptogam Biology:

- Cryptogams are non-flowering plants that reproduce via spores rather than seeds.
- They include groups like pteridophytes (ferns), bryophytes (mosses and liverworts), and algae.
- Cryptogams thrive in diverse environments, from moist forests to arid deserts.

Reproductive Structures:

- Cryptogams produce spores in specialized structures like sporangia (singular: sporangium) or sori (singular: sorus).
- Spores are dispersed through wind, water, or animals, and germinate into gametophytes, which produce gametes for sexual reproduction.

Comparison with Flowering Plants:

- Flowering plants (angiosperms) reproduce via seeds produced in flowers, with inflorescence patterns playing a key role in pollination and reproduction.
- Cryptogams lack flowers and seeds, relying on spores for reproduction, which reflects a distinct evolutionary strategy.

Ecological and Evolutionary Significance:

- Cryptogams play crucial roles in ecosystems, contributing to soil formation, nutrient cycling, and providing habitats for small organisms.
- Studying cryptogams can provide insights into plant evolution, adaptation to environmental changes, and the development of reproductive strategies.

Objectives

- To observe and understand the arrangement of spore-producing structures in cryptogams.
- To study algae, bryophytes, pteridophytes, and fungi in detail.
- To compare the inflorescence patterns of different cryptogams.
- To analyze how these arrangements help in efficient spore dispersal.
- To study the ecological and evolutionary significance of cryptogams.
- To develop scientific observation, recording, and documentation skills.
- To learn how cryptogams contribute to soil formation, oxygen production, and nutrient cycling.
- To highlight the diversity of reproductive strategies in lower plants.
- To understand adaptation mechanisms in non-flowering plants.
- To promote further research and conservation of plant biodiversity.
- To learn about the structural diversity and specialization in spore-producing organs.
- To correlate the structure of reproductive organs with environmental factors like wind, water, or animal dispersal.

Materials required

- Flowering plant
- Non flowering plant
- Aloe Vera
- Four wooden pots
- Plastic bottle
- Soil
- Honey
- Knife
- Thread
- Potato
- Tooth picks

Procedure

First I started my research on August 3.

1.Cutting and binding non flowering rose stem with seven leaves with flowering rose stem, then dip in honey and then insert in Aloe vera, kept in pot 1.

2.Cutting and binding non flowering rose stem with flowering rose stem, then dip in honey and insert in potato keep in pot 2.

3.Cutting and binding non flowering papaya stems which have male parts with flowering papaya stems, then dip in honey and insert in Aloe vera, keep in pot 3.

4. Cutting and binding non flowering papaya stem with flowering papaya stem, then dip in honey and insert in potato keep in pot 4.

And cover with a plastic bottle.
Add some liquid fertilizer, also known as plant food, to the watering can once per month in spring and summer, to keep the nutrients topped up. Keep them warm. A plant in a cold or draughty spot is unlikely to flower. Keep them somewhere consistently warm, but not next to a radiator (too hot).

Observation: in
On Aug 7 onwards they pot 1 & 3 give small bud, but pot2 does not Responding.

• After 3 days pot1 & 3 give 3leaves,I am very surprised.

• But pot2 & 4 give very bad smell.
After that I had replaced pot 2 & 4 with the addition of some natural manure and added egg shells, vegetables peels.

Then I observed pot 1 & 2 gave blossoms in one month of growth.
Then I observed pot 3 & 4, it gave only leaves, still I am adding some more fertilizers and manure, my research is going on, I will be waiting for blossoms in pot 3 & 4.

And also I am searching which factors induce them to give blossoms.

Precautions:

While using fertilizers we must take precautions, some might injure our skin and eyes.

And we must take precautions while cutting the stems of plants, sometimes it ruins our fingers.

We should do this experiment in front of our parents and adults, so that we might avoid some injuries.

Hypothesis

My hypothesis is whether cryptograms get blossoms when combined with flowering plants.

Why didn't the cryptograms give blossoms?

What factors can give reproduction from flowering to non flowering plants?

Independent Variables

- Type of plant
- Container
- Soil presence

Dependent Variables

- Plant growth
- Root Development

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