EXPERIMENT

AIM

To study plant population frequency by quadrat method.

REQUIREMENTS

Thread/string, nails, hammer, meter scale, paper, pencil.

THEORY

Population is known as the aggregation of individuals of the same kind inhabiting a particular place or a particular geographical area at a particular time. Variations in the distribution of a species is caused by the factors like soil conditions, quantity and dispersal of gemmules. vegetative propagation, grazing, predation, diseases and other biotic activities.

Frequency is concerned with the degree of uniformity of the occurrence of individuals of a species within a plant community. It is measured by noting the presence of a species in random sample areas (quadrats) which are distributed as widely as possible throughout the area of study. Frequency value differs in different communities. It is influenced by micro-habitat conditions, topography, soil and many other environmental characteristics. That's why, unless frequency is correlated with other characters such as density, it alone can't give correct idea of the distribution of species. Frequency can be determined by means of sample areas in order to check general impressions ab
out relative values of species.

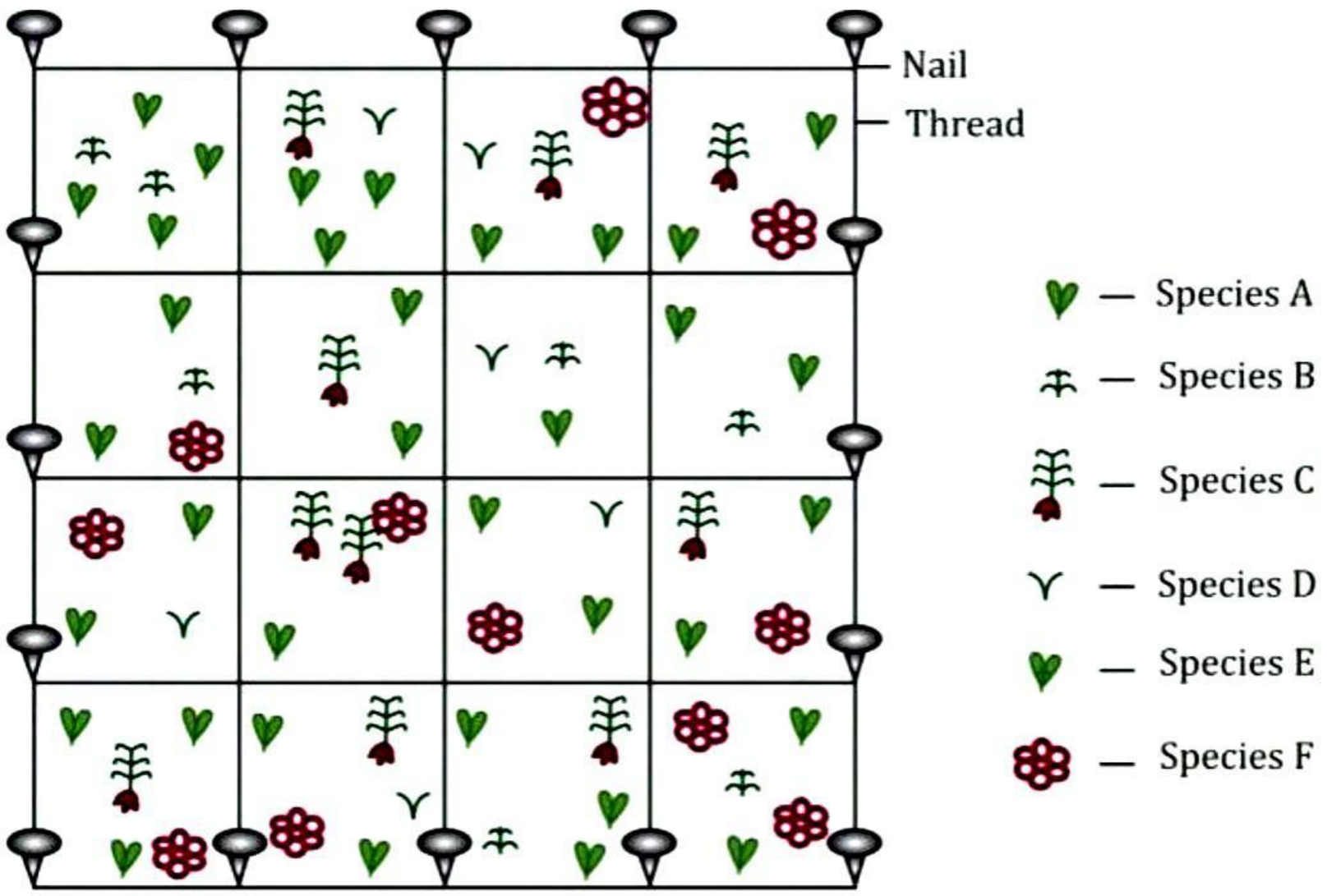
Frequency is the number of sampling units (as %) in which a particular species (A) occurs. The frequency of each species (sps. A or sps. B or sps. X, etc) is expressed in percentage and is calculated as follows:

$$\textbf{Frequency (F)} = \frac{\text{Number of sampling units (quadrats) in which species occurs (N)}}{\text{Total no. of sampling units (quadrats)employed for the study (Q)}}$$

Many species having low cover or population density also rate low in frequency, but few of them have high population density because of their uniform distribution. But if the cover and population density are high, then frequency will be high and the plants with high frequency are widely distributed.

PROCEDURE

1. Select a site and with the help of meter scale lay a quadrat.
2. Tie string on the nails.
3. Each quadrat can be divided into 16 small squares by tying strings at distance of 25 cm each on either side. Smaller squares can also be marked with nails and strings.
4. Note down the number of plants of each species in each square.
5. Find the total number of plants of each species in each quadrat.
6. Select another quadrat randomly and repeat the steps.



A quadrat with sub-units

OBSERVATIONS

S.No.	Name of plant species	No. of individuals of species present in each quadrat (Q)				Total no. of quadrats in which species occurred (A)	Frequency% $= \frac{A}{Q} \times 100$
		I	II	III	IV		

RESULT

$$\text{The frequency percentage for a species} = \frac{\text{Number of quadrats in which species appeared}}{\text{Total number of quadrats studied}} \times 100$$

PRECAUTIONS

1. Measure the quadrat accurately.
2. Quadrats should be studied from 1 area only, with uniform distribution of plants.
3. If a plant has more than half of its portion inside the quadrat; it should be assumed and counted inside the quadrat.

VIVA VOCE

Q1. Define the frequency of a species.

Ans. Frequency of a species refers to the total number of quadrats where the species is located per total number of quadrats sampled.

Q2. Define relative frequency of a species.

Ans. Relative frequency of a species refers to the frequency of that species per total frequency values for all species.

Q3. What is the difference between community and population?

Ans. Population is a group of individuals belonging to same species in a given area whereas, community involves number of species living together in a certain environment and interacting with each other.

Q4. If frequency of a plant is high, what will be your interpretation?

Ans. The favourable conditions favour the growth of plants in any area. So, if any species show high frequency in an area, that means all the factors are favourable for the species. When frequency of plant is high, it means that number of plant (density of plant) is also high.

Q5. Can many micro-habitat in an area affect frequency of a species? Comment.

Ans. Yes, microhabitats affect the growth development and finally existence of a plant, e.g, in a forest canopy of the plant affect the availability of light to the ground level plants. So here, canopy and available light to the plants are two microhabitat factors