AQA Biology A-Level

Required Practical 12

Investigation into the effect of a named environmental factor on the distribution of a given species

The distribution of a species is determined by a range of different variables. These can be grouped into **abiotic (non-living)** and **biotic (living)** factors. Abiotic factors include **light intensity**, amount of **water and nutrients**, and **temperature**. Biotic variables include **competition for resources**, the amount of **predators** and **disease**.

Equipment list

- Quadrat
- 2x tape measure
- Appropriate equipment to measure variable

Method

1. Choose a 5x5m area to take samples from. Use a **random number generator** to generate 10 sets of random coordinates.
2. Use two tape measures to create a set of **axes** off which coordinates can be read.
3. Place the quadrat at each of the coordinates, placing the **bottom left corner** on the coordinate every time.
4. Record the **percentage cover** for the chosen species. This can be done by recording how many of the quadrats 100 squares contain the chosen species. A square should only be counted if **half or more** of it is covered.
5. At each coordinate, a measure of the **independent variable** should be taken. For example, if investigating **light intensity**, a **photometer** can be used to take a reading for the light intensity at each coordinate.

Risk Assessment

Hazard	Risk	Safety Precaution	In emergency	Risk Level
Biohazard	Allergies; soil bacteria; contamination	Wash hands after practical	Seek assistance	Low
Slippery surfaces	Slip hazard	Wear appropriate footwear; don't run	Seek appropriate medical attention	Low

Graph/Analysing Data

- Plot a graph of the **percentage cover** against the chosen **independent variable.**
- Various **statistical tests**, including **Spearman's Rank**, **T-test** and **Chi Squared**, can be carried out on the collected data.

Conclusion

- You should be able to see a correlation from the graph which will indicate the effect of the chosen variable on the distribution of the species.
- Be aware that **correlation is not necessarily causation**: there could be a **range of factors** that influence the results.