

PROBLEM

The breakdown of leaf litter is an important part of the cycling of nutrients in the ecosystem. You could do some experiments to relate the rate of decay of leaf litter to the nature of the plant tissue involved, the soil organisms present and the soil water supply.

INFORMATION

1. It is suggested that you use leaf tissue of contrasting types – Eucalypts, pines, Banksias, and herbaceous plants like cape weed, clovers, grasses etc.
2. It is conventional to place leaf material in nylon mesh bags at marked spots so that the material can be recovered for examination at the end of the experiment. Nylon bags with different mesh size will exclude different classes of soil organisms. Bags need to be sewn with nylon thread, cotton will rot.
3. Study two or more contrasting sites e.g. pasture, household compost heap, jarrah woodland, swamp etc. You may vary the water supply to different areas by regular watering.
4. If you wish to examine soil organisms present see Project 5-1.
5. Measured squares of cellophane will also give you an estimate of the rate of decomposition of cellulose in various situations.

DESIGN OF EXPERIMENT

1. How will you study the “nature” i.e. hardness of the plant tissue involved?
2. How will you get comparable initial samples of different species which have different shaped leaves?
3. How much tissue should be used?
4. How will you make a quantitative measurement of decay?
5. Will you measure any other soil characters such as pH, particle size etc.?
6. How long should the bags be left in the soil?

REFERENCES

- Brown, A.L. (1978). Ecology of Soil Organisms. (Heinemann : London) (advanced reading).
- Couldsley-Thompson, J.L. (1967). Microecology (Studies in Biology No. 6) (Edward Arnold : London).
- Dickenson, C.H. and Pugh, G.J.F. (1974). Biology of Plant Litter Decomposition Vols. 1 and 2. (Academic Press : London) (advanced reading)
- Jackson, R.M. and Raw, R. (1973). Life in the Soil. (Ed. Arnold : London).