

Laboratory 19

Seedless Plants

Student Tip Sheet

Not just everyone is aware and appreciates the significance of these organisms known as the “lower plants.” The lab manual introduction explains their environmental significance thoroughly, but these plants also add much to the esthetic beauty of our surroundings. Even though they do not produce flowers, these are the plants that cover rocks and trees with lush growth and enrich the landscape with lacy fronds. They provide variety of shape and texture to woods and fields and indeed our home lawns and gardens. Botanical gardens often feature these plants and sometime enthusiasts, who share a common interest, form fern societies or moss groups. Annually, there is a Bryological Foray offered nationwide to professionals and amateurs alike who enjoy identifying mosses and liverworts in various habitats. The botany department at Duke University in North Carolina can supply the details. There is much information that can be learned from these interesting plants and the people that study them.

Again there is considerable variety in the classification schemes. “Splitters” form lots of smaller groups and “lumpers” group numerous plants into larger categories. Study the classification scheme that your teacher uses, but do not be surprised or confused if your next teacher or text organizes differently.

Alternation of Generation

Initially, this information seems simple to grasp. However, after you have seen numerous variations of similar patterns, the separate life cycles begin to merge and the overlapping confusion begins. Take notes carefully and review thoroughly after every lesson. Make study sheets for yourself if you are required to know multiple life cycles of similar organisms. A good study tool is to save scrap paper and simply draw the different cycles again and again until you have them clear in your mind.

Moss

It is hard to realize just how many different mosses there really are. Literally thousands of different species are in existence. Many are similar and very commonplace, but others have unusual and very identifiable structures and characteristics. It seems unusual even to the trained eye that the green plants we recognize as moss are actually the haploid gametophyte phase of the life cycle. The diploid phase, the sporophyte, is small and only temporarily seen. Many of the similar mosses are identified specifically by small, specialized structures on the sporophyte designed to facilitate spore dispersal. This is definitely an example of the more one knows the more one realizes how much there really is to know!

If you are interested in growing moss in your home garden, perhaps on a shaded path or in a moist shady spot, put a sample of your desired moss in a blender with buttermilk and mix vigorously. Pour this mixture on your space and keep moist. The spores contained will begin to grow in this nutritive environment.

Liverworts

Marchantia is the usual representative, textbook liverwort. Its thalloid body type with large and distinctive reproductive structures make nice illustrations for study. However, there are many other thalloid and leafy liverworts that are much more common and could also be studied. Look about in moist shaded places and see if you can spot other examples.

Ferns

Ferns native to your particular locale make interesting study specimens. The large, green leafy sporophyte of the fern is called a frond and is the usual means of identifying a certain species of fern. Numerous species of ferns are found in cool moist areas. Dry climates and even desert environments have fern species adapted to such harsh climates. Another identity marker is the sori found on the underside of the frond. These dots contain reproductive spores and appear in a variety of definitive sizes, shapes and colors. Investigate your area for resource materials that will assist you in your roadside botany observations.