Duckweed Culture Guide

Introduction

Use the following culture guide to care for duckweed populations.

Safety Precautions

Culturing duckweed is considered nonhazardous. Please follow all laboratory safety guidelines.

Background

Duckweed is an aquatic plant which floats on or slightly beneath the surface of still freshwater bodies. There are five genera in the Lemnaceae, the duckweed family. The genus *Wolffia* is about the size of a sand grain and is the smallest of the flowering plants. Other species range from 2 to 8 mm in size.

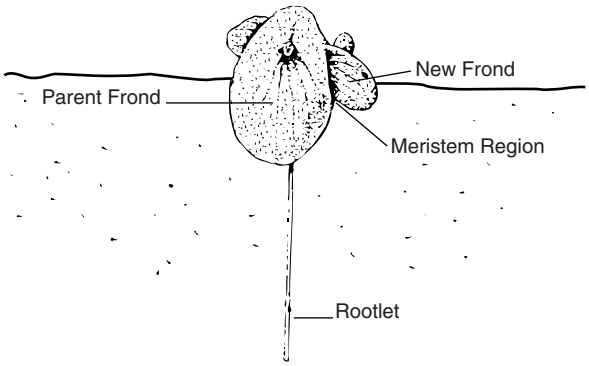

Figure 1. Typical Duckweed Cluster

The oval or elongated, flattened bodies of duckweed are made up of leaf-like stems called fronds. The fronds float on the water's surface while thread-like rootlets trail in the water (see Figure 1).

The following simplified key can help identify the genus of duckweed:

1A: Plant with rootlets and several reproductive pockets or joints . . . . . Go to 2

1B: Plant without rootlets and only one reproductive pocket or joint . . . . . Go to 3

2A: Two or more circular joints up to 3.5 mm wide; purple on the underside of the joints; several rootlets from each joint . . . . . *Spirodela*

2B: Leaves are oval or shoe-shaped; red on the underside of joints; and have 2–5 rootlets from each joint . . . . . *Landoldtia*

2C: Oval, circular or elongated–forked joints; 2–4 mm across; not purple or red on underside; only one rootlet from each joint . . . . . *Lemna*

3A: Plant composed of minute globules or subspherical, granular bodies; 2 mm or less in diameter . . . . . *Wolffia*

3B: Plant formed of one or more minute, elongated or flattened structures; 4–8 mm in diameter; often arranged in a star-shaped cluster . . . . . *Wolffiella*

Duckweed is widely distributed and found on the surface of bodies of quiet freshwater—ponds, swamps, and slow-moving streams. Duckweed is eaten by ducks, geese, fish and some snails. It can survive in chilly but not freezing conditions. In cold regions, clusters of fronds sink to the bottom of the body of water in the fall. In the spring, the plants float to the surface and begin reproducing. Duckweed grows best in well-lighted areas but not direct sunlight and can reproduce rapidly when conditions are ideal.

Salinity can be a form of stress for duckweed plants. They are able to tolerate small amounts of salt. Small amounts of salt will actually stimulate the growth of duckweed. At concentrations above 60 mM NaCl duckweed growth is inhibited.

Duckweed thrives in moderate temperatures and light. It prefers a pH of 5.8. It thrives in dilute hydroponics medium, Hoagland's medium or in a stable aquarium environment.

Even though duckweeds are among the smallest flowering plants, reproduction by flowering is rare in indoor conditions. Reproduction is usually by vegetative means. New fronds arise from growth regions known as *meristems*. They are located in one or two pockets near the sides at one end of the parent frond. As new fronds grow, they remain attached to the parent frond for a short time before separating. This growth pattern makes duckweed look like it is growing in clusters. Depending upon the nature of the body of water and its motion, duckweed can form large mats covering the entire surface of the body of water.

Publication No. 11037
061616

Disposal

Please consult your current *Flinn Scientific Catalog/Reference Manual* for general guidelines and specific procedures, and review all federal, state and local regulations that may apply, before proceeding. Duckweed may be kept in an aquarium or discarded in the regular trash according to Flinn Suggested Disposal Method #26a. Do not release duckweed into the wild as many species are invasive.

The materials necessary to care for Duckweed are available from Flinn Scientific, Inc.

Catalog No.	Description
LM1133	*Lemna* (Duckweed)
FB1675	Hydroponics Nutrient Solution

Consult your *Flinn Scientific Catalog/Reference Manual* for current prices.