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Al Janulaw

Cottati Middle School

Mat Keller

Rohnert Park High School

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AN INEXPENSIVE AND COLLAPSIBLE PLANT GROWTH FRAME

*Al Janulaw
Cottati Middle School
216 School Street
Cottati, California 94931*

*Mat Keller
Rohnert Park High School
5450 Snyder Lane
Rohnert Park, California 94928*

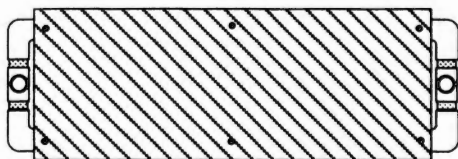
This plant growth frame was designed for use in second and fourth grade classrooms as a part of National Science Foundation Grant TEI 8751303, Materials and Assistance for Science Teaching (MAST). We needed frames that were relatively inexpensive, could be made from locally available materials and would be easy to store when not in use.

The frame is made from PVC pipe. The light source is a 48-inch, two-bulb shop light, using ordinary fluorescent tubes. A plug-in timer is used to control the time of illumination. Our first models included a plywood base, but some teachers have omitted this. The materials cost of each frame, including timer, shop light and bulbs, is about \$35.

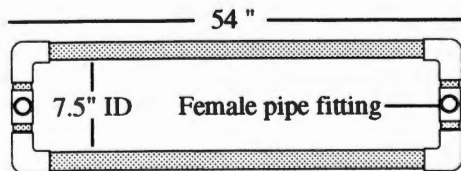
The frame can be easily stored by laying the uprights and the top cross piece on top of the base. We have found that teachers tend to not take down the frames as they are often passed from one teacher to another and are in constant use. We also have found that teachers often want to keep a plant growth frame in their classroom for the whole year.

Construction

The base consists of pieces of 3/4-inch schedule 40 PVC pipe, four 90-degree fittings, two "T" fittings and two female pipe thread adapters. All joints are glued. A 12"x48" piece of 1/2-inch exterior plywood is held to the pipe by one-inch self tapping screws.



Base, top view, showing
plywood and screws



Base, top view, without plywood

The upright is a 24" piece of pipe with a male pipe thread adapter glued on one end and screwed to the base. The top crosspiece has 90-degree fittings which slip onto the uprights.

Materials for one plant growth frame

Base and Crosspiece

3 — 3/4" schedule 40 PVC pipe, 52" long

Uprights

2 — 3/4" schedule 40 PVC pipe, 24" long

Ends of Base

4 — 3/4" schedule 40 PVC pipe, 1" long

Base and Top Crosspiece

6 — 3/4" schedule 40 PVC 90-degree fittings (base)

2 — 3/4" schedule 40 PVC "T" fittings (base)

2 — 3/4" schedule 40 PVC female pipe thread adapters

Uprights

2 — 3/4" schedule 40 PVC male pipe thread adapters

Optional

1 — exterior plywood, 12"x48", for base

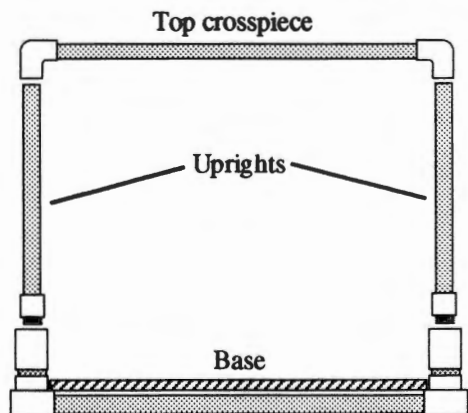
1 — 48" shoplight (two bulb model)

2 — fluorescent shoplight bulbs

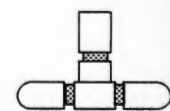
1 — electric timer (to turn lights on and off automatically)

Assembling the plant growth frame

1. Screw the threaded uprights into the base.
2. Slip the top crosspiece onto the uprights.
3. Hang the spotlight from the top crosspiece using the chain and hook attached to the shoplight.
4. Plug timer into wall (and shoplight into timer).



Side view of the completed stand
(minus fluorescent light).



Base, end view

This article first appeared in the Fall 1990 issue of the California Science Teachers Journal (CSTA 20(3):32-33).