# Low-Budget Pollen Collector

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*Built from off-the-shelf materials at a cost of under $200, this pollen collector downscales and modifies precipitators developed for large-scale pollen collections. Its efficiency is surprisingly high.* Tree Planters' Notes 49(3):49-50; 2000.

Commercial dust precipitators have been successfully modified to collect tree pollen on a commercial scale (Copes and others 1991). Small seed orchards need to collect substantial quantities of pollen, but the price of even the smallest commercial precipitator is a major investment. The advantage of a precipitator over vacuum devices, such as canister vacuums for shop use or leaf blower vacuums, is that it has no filter. Filters plug as pollen collects, and efficiency is lost. The following is a description of a successful initial design of an inexpensive precipitator for small orchard needs.

A 32-gal (121-L) sturdy plastic garbage can was fitted with a 0.25-in (0.6-cm) smooth plywood lid (figure 1). The lid was centered by blocks mounted on the underside and had a 4-in-diameter (10-cm-diameter) hole in the center. A hand-held leaf blower, 4-in-diameter PVC pipe, and 25 ft (7.6 m) of light-weight, 4-in-diameter vacuum hose were assembled according to the sizes and specifications in figure 2. A light-weight, plastic collector head (figure 1) was mounted to a 20-ft (6-m) extension pole of the type used for window washing. The total cost for the equipment was under $200. The total weight was 20 lb (9.1 kg).

Commercial dust precipitators, from which this design was adapted, draw air in through a slanted tube at the top of a container. The air (containing dust) swirls downward, circling the container many times at high velocity, and exits the container (without the dust) through a vertical tube at its middle. The dust—or pollen in this case—moves down along the inside surface and deposits at the outer edge of the bottom of the container. The air pressure is reduced somewhat within the container and vacuum hose during this process. Be sure that thin-walled containers and hoses not designed for vacuuming are not used, as they can collapse. A benefit of the reduced air pressure is that the lid is held firmly in place without clamps or a gasket.

During operation, the collector head at the swiveled end of the 25-ft (7.6-m) vacuum hose is lifted into the tree crown and brushed against the pollen-shedding strobili. After vacuuming, the collected pollen is poured from the garbage can into a bucket covered with a framed screen to remove the minor amount of foliage and trash.

**Figure** *1—Inexpensive pollen collector for small orchard needs.*

Checks on the efficiency of pollen collection were made using weighed amounts of Douglas-fir *(Pseudotsuga menziesii* (Mirb.) Franco) and western white pine *(Pinus tnonticola* Dougl. ex D. Don) pollen. For both species, greater than 95% of the pollen drawn into the machine was recovered.

A precipitator needs a firm base to prohibit the device from tipping over during vacuuming, as well as a very secure lid to prevent air leaks that cause pollen to be sucked out of the container. The 350 $ft^3$/min (9.9 $m^3$/min) air flow of the present blower is only half the flow per hose used by Copes and others (1991). More pollen would be collected with a sturdier machine having a greater air flow. Nevertheless, the low cost, efficiency, simplicity, ruggedness, and light weight of this preliminary device make it attractive for those on low budgets.

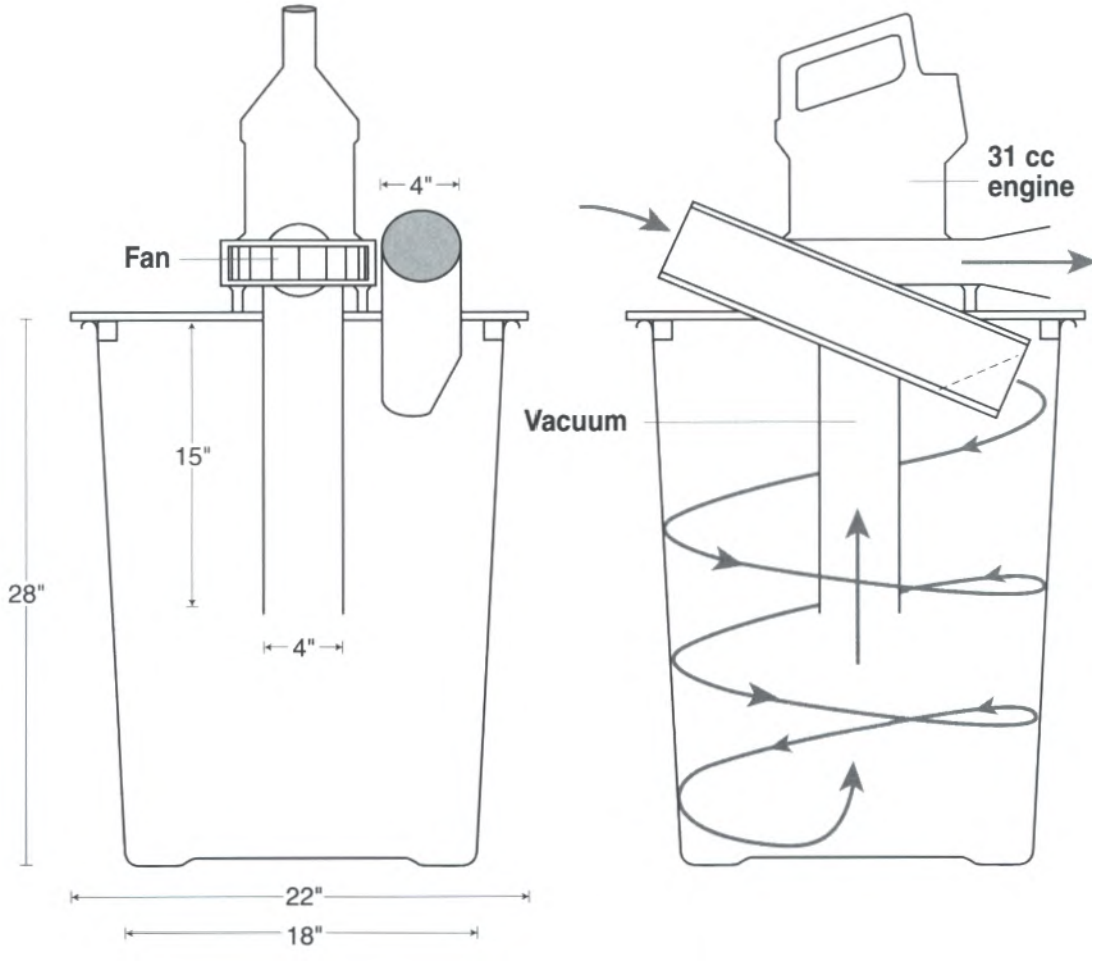


**Figure** *2—Specifications for assembly of the pollen collector, comprised principally of a plastic garbage can and a leaf blower, with the resulting air flow pattern.*

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## Reference

Copes DL, Vance NC, Randall WK, Jasumback A, Hallman R. 1991. Vacuum collection of Douglas-fir pollen for supplemental mass pollinations. Corvallis (OR): USDA Forest Service, Pacific Northwest Research Station. Research Note PNW-RN-503. 8 p.