

Mist Equipment for Starting Roses

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Roses started in the summer months will grow faster than plants started in winter or spring if mist is used.

Equipment used for starting roses must keep a film of water on the leaves to prevent water loss from the leaves and to cool them.

A constant mist supplies too much water and leaches the soil. We propose an intermittent mist system to reduce leaching and yet keep the foliage covered.

Nozzles

A large number of low delivery mist nozzles give the best results. Nozzles producing a very fine mist give excellent coverage of small areas. Nozzles producing coarser droplets cover larger areas, but with poor distribution over the plants.

Self-cleaning nozzles practically eliminate clogging with dirt and lime, but the cost makes them prohibitive. Oil-burner type nozzles produce an excellent mist, but they clog and are difficult to clean. The deflection type nozzle delivers too much water for the area covered.

The most satisfactory nozzle we have found have two heads on one tee. The orifice is a small slit instead of a round hole. It produces a flat, fan-like mist. These nozzles are cheap and the slit is easy to clean. Two nozzles on a 4' wide bench will cover 7.5 feet in both directions.

Pipe Size

Because of the small amount of water the nozzles deliver, the cross lines in which nozzles are mounted are one-half inch pipe and the main feeder line should be one-inch pipe. Each 200 feet of house requires one solenoid valve in the middle of the main feeder line.

The system should be level to avoid draining of water from the low end.

Pressure

Fifty pounds is the minimum water pressure to use. One-hundred or more pounds gives better coverage, because it produces smaller droplet size.

Solenoids

The electric solenoid valve must be a "normally closed" valve that can close against the water pressure used. Use the same size solenoid as the main feed line; ex. 1" main feed pipe, use a 1" solenoid.

A second solenoid valve may be installed to eliminate drip. The second valve is for pressure relief. It can be 2 sizes smaller than the main valve, and must be a "normally open" solenoid; ex. use a 1/2" relief valve when a 1" main valve is used. It is placed on a tee on the mist side of the main solenoid. Both valves are connected to the timer. When the main valve closes, the relief valve opens to relieve any pressure in the system.

Strainer

Each nozzle is equipped with a strainer, but an additional strainer placed before the solenoid is another safety factor against clogging. The pipes should also be flushed before the nozzles are inserted to remove metal and pipe compound.

Timers

The leaves should have a film of water on them at all times and yet not too much water can be applied or the soil will be leached. On bright days, short frequent mist applications are desirable, and on cloudy days the frequency can be less. The "on" period should be long enough to cover all the leaves in one application. It varies according to the placement of the nozzles, water pressure and type of nozzle, but 5 to 20 seconds should be long enough.

There are three types of mist timers available: 1) electric timer clocks, 2) electronic leaf and 3) photo-electronic timer. The time clocks have manually adjusted "on" periods and apply the mist at regular intervals of 1, 2, 5, 10 minutes, etc. according to the model of the clock. The time clock has to be started and stopped by a 24-hour time clock. This timing procedure applies an excess of water on cloudy days and some manual adjustments must be used. This type of control is cheap and will require very little maintenance.

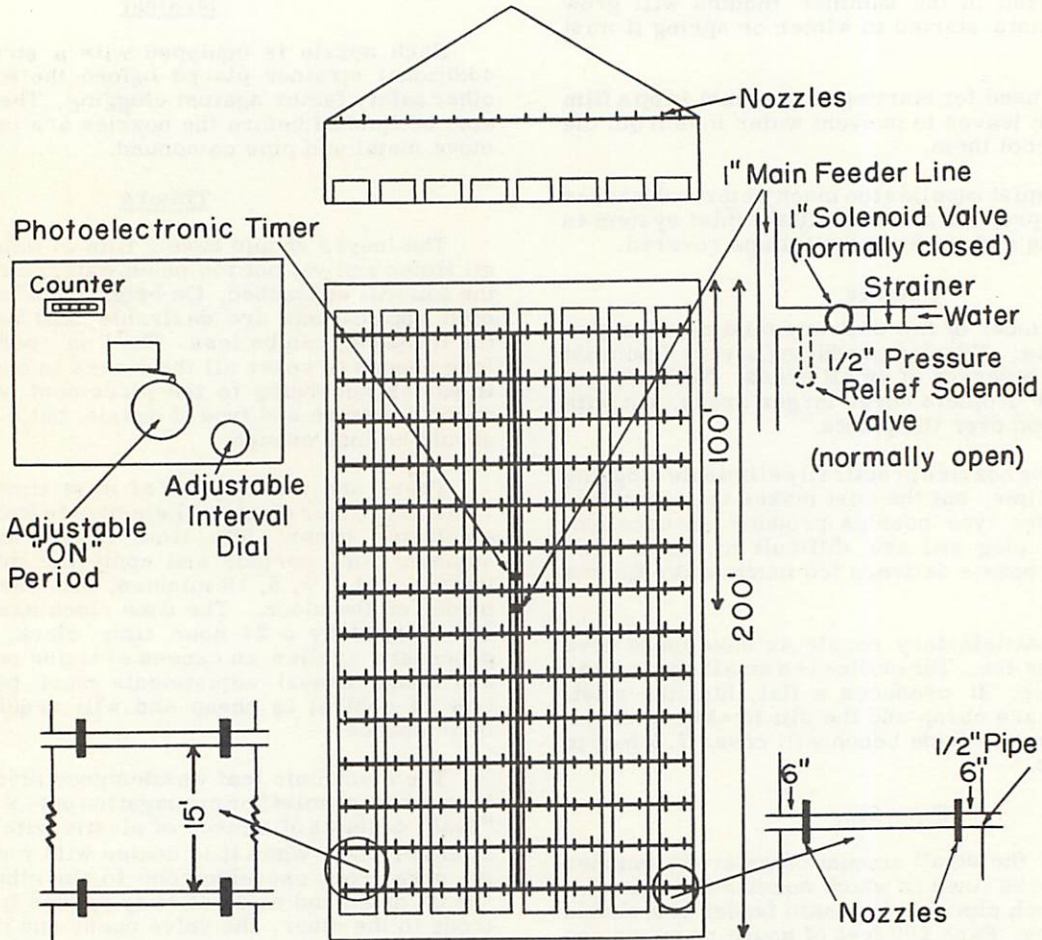
The electronic leaf was designed primarily for use in controlling mist for propagation out-of-doors.* The "leaf" consists of a piece of plastic with an electrode at either end. When it is coated with water, electricity goes from one electrode to the other. When the "leaf" dries and no electricity passes from one electrode to the other, the valve opens and the leaves are misted. The electronic leaf takes into account wind, humidity and other factors that affect evaporation. The problems with this timer for growing purposes are proper placement of the "leaf", lime and other salts form deposits on the "leaf" which make it ineffective until it is cleaned and a separate unit would be needed for each mist system.

The photoelectronic timer was designed by Hans Petersen** especially for this type of work. The timer is controlled by the amount of light. The mist comes on more frequently as the sun gets brighter during the day. Light is the most important factor affecting evaporation from leaves. The brighter the sun, the higher the leaf temperature and the faster the leaves lose water. This timer gives immediate response to changes in light intensity. On cloudy days there will only be a

* This timer was improved and tested by William E. Snyder and Charles Hess, of the Department of Floriculture and Ornamental Horticulture, Cornell University.

** Mr. Hans Petersen is a visiting fellow from Denmark, working in the Department of Floriculture and Ornamental Horticulture. The timer is an adaptation of the light recorders that he has constructed for his work.

Plans for a 200'-8 Bench House



The nozzles and timers are manufactured by Supreme Electric Company, 194 Vassar Street, Rochester. Solenoids, pipe, etc. can be obtained from local plumbing suppliers. Cost of equipment approximately \$600.

few applications of mist, but on bright days the mist will come on frequently enough to keep the foliage wet. The timer can be easily adjusted to give the exact requirements that are desired. The "on" period can be manually adjusted to give 5 to 55 seconds per cycle. An adjustable dial controls the amount of light that

reaches the photocell and consequently the rate of application. This timer does not account for water losses from plants due to low humidity and wind, especially at night. The photoelectric timer is relatively cheap and durable; the only requirement is that it be placed in full sunlight.

Your Editor,

Kenneth Post