

# Reduce Down Time with a Maintenance Program

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It's 12:45 p.m. and your seven-person crew has just regained the pace transplanting bedding plant plugs into flats as they come off the flat filler. At the rate of 200 flats per hour this crew will finish the 26-foot-by-96-foot greenhouse by quitting time. Suddenly the flat filler stops dead without a bang or whimper, but you can still hear the motor running.

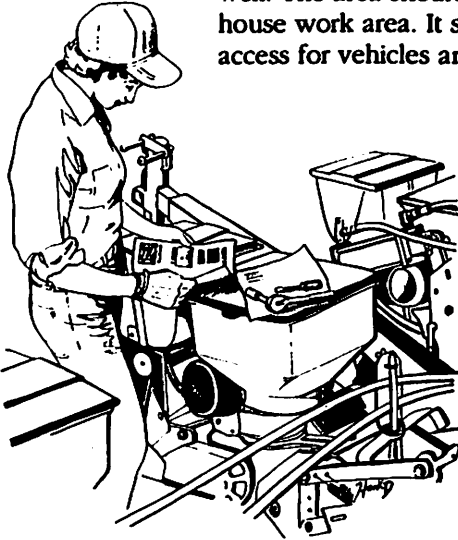
The crew chief starts looking for the trouble while everyone else takes a break. After retrieving the frayed 36-inch V-belt from under the machine, he heads for the storage room hoping to find a replacement in one of the many boxes. After a 15-minute search without success, and the thought of a 1 1/2-hour round trip to the nearest hardware store for a new one, he tells his crew to take the rest of the afternoon off.

This scenario occurred while I was visiting a grower a couple of years ago. What can we learn from this? Two main points come to mind. First, a preventive maintenance program would have detected the worn belt before it broke. It should have been replaced at that time. Second, a stock of maintenance items including a replacement belt should have been on hand in a place where it could be easily found.

How can we set up a maintenance program that will reduce the number of equipment failures?

Someone who is mechanically inclined should be given the responsibility for maintenance. In small operations, the duty may go to the grower along with his many other responsibilities. In larger operations, freeing one person for part of each day or week may be enough. When your business grows to more than 10 or 15 employees and your equipment list gets longer, it is time to hire a full-time person. Vo-ag graduates who have majored in agricultural mechanics and vo-tech graduates have performed well for some growers.

An enclosed area or separate building should be set aside for tool and repair part storage. If larger equipment is to be serviced, a place to work is needed. For most operations, a one- or two-bay garage or section of the head house works well. The area should be near the greenhouse work area. It should have good access for vehicles and contain both elec-



tricity and water. It should be convenient for storage of tractors, electric carts and other mobile equipment and should have adjacent machinery storage.

A selection of basic hand and power tools is needed for servicing. It is sometimes convenient

to keep these in a toolbox that can be carried to the job. Otherwise, the tools are frequently misplaced. Specialized tools should be purchased as needed. Further information on setting up your shop, including layout and a list of tools for specific type of maintenance, is included in the 32-page bulletin *Planning Farm Shops*, NRAES-16 available for \$2 from the Natural Resources Management and Engineering, 1376 Storrs Road, University of Connecticut, Storrs, Conn. 06269-4087.

### **Spare Parts**

To keep equipment down time to a minimum, it is desirable to keep on hand a supply of hardware, short-life replacement parts and specialized parts that may not be readily available. Assortments of small hardware items such as pins, stove bolts, cap screws, washers, etc., are packaged in convenient 20- to 30-drawer cabinets that sell for \$15 to \$25. Larger bolts, pipe fittings, etc., are available individually or in box lots at most hardware stores and equipment suppliers.

Most of the equipment used in the greenhouse industry is well built, requiring only routine maintenance. When you pur-

chase a new piece of machinery, it is best to review the owner's manual and inspect the machine to identify parts that are likely to fail first. Items such as V-belts, drive chain and sprockets, and oil and air filters may be available locally or ordered from the manufacturer.

### **Maintenance Records**

A good way to be sure that regular maintenance is performed on schedule is to keep records. This can be done by using a simple form that allows you to check the date and service performed.

A better method is to use your home computer. You can create your own program or purchase commercial software. Each week a printout is made of the machines needing attention.

In creating the schedule, follow the recommendations in each operator's manual. Enter various jobs to be performed under the "hours of operation" headings. Then check off the intervals of service after they are performed. It only takes a few minutes to maintain the records.

Another method utilizes an hour meter attached to the machine. It indicates the hours the machine has been run. The hour meter reading should be recorded and watched to tell when service is required. Many operator manuals have recommended service procedures at 10, 50, 100 and 250 hours of operation. Sources of hour meters include electrical suppliers, farm equipment dealers and W. W. Grainger Inc.

A considerable amount of time can be saved if all operator manuals are kept in one location. A file cabinet in the workshop area gives convenient access.

### **Watch and Listen**

Employees should be encouraged to watch and listen for possible problems as they operate the equipment. Worn belts, loose chains, low tire pressure, frayed hoses and electrical cords, etc., are signs of pending trouble and should receive immediate attention. Indicator lights and dials are placed on machines to make the inspection easier.

The more equipment we own, the more time we have to allocate for maintenance. If this servicing is postponed, it usually means more down time. Keeping machinery in good condition is also an aid to employee morale and safety.

## Periodic Maintenance Inspections Maintenance Schedule for a Small Tractor

| <i>Item</i>  | <i>Frequency of Service</i>             |
|--|---|
|  | After every 10 hours of operation       |
| Air cleaner cap  | Remove dirt or chaff*                   |
| Air cleaner oil cup  | Remove, clean and refill                |
| Cooling system   | Check level of coolant in radiator      |
|  | After every 60 hours of operation       |
| Air cleaner, complete  | Remove and clean                        |
| Fan belt and generator belt                                    | Check tension; replace when necessary   |
| Flexible rubber connections between air cleaner and carburetor | Inspect for loose fit or damage         |
| Radiator core  | Clean spaces                            |
| Lubrication points   |   |
|  | After every 120 hours of operation      |
| Crankcase breather cup   | Remove and clean                        |
| Engine crankcase   | Drain and change oil                    |
| Lubricating oil filter   | Replace filter element                  |
| Storage battery  | Check liquid level and specific gravity |
| Lubrication points   |   |

\*When unusual dust or dirt conditions occur during operation, it may be necessary to service more frequently.

