

Garden Tools and Equipment

by John W. Bartok, Jr.

Size of your garden, the jobs to be done, and the money you wish to spend are important matters to consider when you purchase garden tools and equipment.

Basic tools needed for the small or beginning garden are a spading fork (\$4 to \$8), steel rake (\$4 to \$7), and garden hoe (\$4 to \$7). With these you can turn the soil, smooth and remove the stones and sod, form the rows, cultivate, and dig the root crops.

Garden centers, hardware stores and catalog houses carry a large selection of hand and power tools. It pays to purchase good quality equipment, as it will give better service, stay sharp longer, and when properly cared for may last a lifetime.

In selecting hand tools, look for handles with straight grain and a sturdy attachment between the tool and its handle. To get good service and long life from a tool, use it for its intended purpose. For example, shovels, spades and hoes should not be used as crowbars—don't pry with them.

Clean tools after use and before returning them to storage. Wash or brush off all soil and grass. Protect stored tools from rust by coating them with oil, grease, or other rust inhibitors. Keep cutting tools sharp by filing or grinding the cutting edges. Roughened handles should be sanded smooth and a coat of raw linseed oil applied. Also, keep the handles tight in their tools. This can sometimes be done by soaking the tool head in raw linseed oil or motor oil. The oil swells the wood fibers and excludes any moisture.

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Store hand tools in an orderly way. Attach a pegboard or plywood rack to the wall of a basement, garage or utility shed. Nails or special hooks can be used to support the tools. With a location for each tool, you can then tell if one has been left outside. Also, you limit the possibility of someone getting injured from stepping on a loose tool lying on the floor.

As your interest and enthusiasm increase and your garden gets larger, you may need additional hand tools. Multi-use tools or equipment that will be used throughout the gardening season should be purchased first.

The round point shovel (\$5 to \$10) with either "D" or long handle fits the above classification. It is useful for turning sod, digging holes for fruit trees and bushes, moving soil, or edging a bed. For transplanting, a trowel (\$1 to \$2) is handy.

A hand-held or wheel-supported cultivator (\$5 to \$40) can often save time and labor in removing weeds from a large garden. This implement with curved tines is dragged or pushed between the rows to pull out weeds. It is also used to loosen the soil so rainwater may penetrate more easily. Hand forks or claws are miniature cultivators (\$1 to \$2) and often all that's needed in a very small garden.

In areas where stones are numerous, a pick (\$6 to \$10) will aid in their removal. It is also useful for starting postholes and removing tree roots.

Many types of seeders (\$8 to \$40) are available. These take the backache out of planting. Most are adaptable to a variety of seed sizes. Some seeders are designed to open the furrow, drop and cover the seed, and firm the soil in one operation.

Lime and fertilizer are usually ap-



William E. Carahan

plied to the soil before planting. On small gardens this can be done by hand. On larger gardens a precision or broadcast spreader (\$15 to \$30) will reduce the labor and give a more uniform application. The spreader can also be used to fertilize and lime the lawn.

Several pieces of equipment will aid you in maintaining the berry patch and fruit orchard. Hand pruning shears (\$3 to \$6) are used to prune branches and twigs up to about a half inch in diameter. Lopping shears with handles 18 to 24 inches long will cut

Above, some basic tools for small garden. Right, wheel-supported cultivator removes weeds and loosens dirt around plants while saving a lot of labor in a larger garden.



William Aplin

branches up to 1½ inches in diameter. For larger branches a pruning saw (\$4 to \$6) can be used. These tools will need to be sharpened from time to time. A fine-tooth file or sharpening stone can be used. Maintain the same cutting angle.

A wheelbarrow or cart (\$15 to \$40) can make the work of moving soil, stones, peat moss, and tools much easier. Select one with large diameter wheels for easier pushing. Also keep pneumatic tires properly inflated and bearings lubricated.



Many other tools are available that have been developed for either a specialized task or a single crop. In certain circumstances these tools will save considerable labor.

Several pieces of power equipment have been developed to aid the gardener planting a large area. Most are powered by single cylinder air-cooled engines. A few are powered by small electric motors.

Rotary tillers with steel tines on a powered horizontal shaft can prepare a seedbed in one operation. The most common type uses the rotating tiller shaft to also provide forward motion. Weight of the engine helps provide penetration into the soil. Digging depth is regulated by a set of gage wheels or depth control bar.

A second type uses the engine to power both the tines and the wheels. The speed of forward motion can be regulated. This type is not affected as much when stones are hit.

The size of engine required varies with the width of cut, but in general 4 to 6 horsepower is needed. Some tillers are equipped with a reverse

Left, broadcast spreader gives uniform application of lime or fertilizer. Below, compact tractor and cart are handy for moving fertilizer, lime, peat and other bulky garden supplies.





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gear that is helpful in getting out of tight corners. Most tillers can be adjusted to cultivate between rows as close as 16 inches apart.

Daily maintenance consists of keeping the tines free of weeds and roots, checking the oil and gas levels in the engine, and lubricating moving parts on the tiller.

Compact tractors, or garden tractors as they are often called, have become increasingly popular as an aid in garden and yard work. This type tractor normally is equipped with an air-cooled engine of 7 to 16 horsepower. Several battery-powered electric tractors also are available. These are recharged after use by plugging into a 115-volt convenience outlet.

Many options are available if you buy a compact tractor. These affect ease of operation, the jobs that can be done, and the tractor's cost.

Four types of starting systems are used on compact tractors, but three of them seem to be phasing out. Rope starter, rope rewind, and impulse

which uses a handle to wind up a spring are now being replaced with an electrical starting system. The electrical system, which requires a battery, has the advantage of being easier to operate.

The clutch is the link in the power train between the engine and the transmission. It allows the operator to shift gears or to stop the tractor. Most manufacturers use a system of V-belts that are tightened to engage the engine and transmit the power. A few tractors use plate clutches.

V-belts usually need to be adjusted every few months. Some are under-designed and can cause troublesome repairs and expense.

The transmission reduces the high speed of the motor to drive the wheels. Some tractors use a transmission similar to a standard shift car, others have a hydrostatic transmission which compares to the automatic shift.

Hydrostatic transmissions have been gaining in popularity even though they add \$100 to \$125 to the tractor's cost. Advantages are in providing an infinite range of speeds, and easier operation.

In general, the larger the tire diameter the better. The tire is less likely to become stuck. For lawn work, a wide flotation tire is desirable. For most garden work, a lug-type tire is preferred for its greater traction. A universal design tire is also available where both conditions exist. Additional traction can be obtained by adding wheel or frame weights.

The power take-off (PTO) supplies power to attached implements such as tillers and lawn mowers. PTO's should be examined for adequacy of drive and ease of attaching imple-

Garden soil preparation can be made easier with a rotary tiller that can be adjusted to various depths. Speed can be regulated on some tillers.

ments. Guards that cover the drive shaft and belts should always be used to prevent clothes from becoming tangled and causing injury to the operator. Wear good shoes to protect your feet while you operate the equipment.

Compact tractors can be equipped with several implements that will make your gardening easier. A mold-board plow which turns the sod and soil over can do a good job when mounted on a tractor of 10 or more horsepower. It can be maneuvered in small plots.

To prepare the seedbed you can use a disk harrow, spike tooth harrow, or spring tooth harrow. The harrows are pulled over the plowed ground to cut, pulverize, and level the soil before planting.

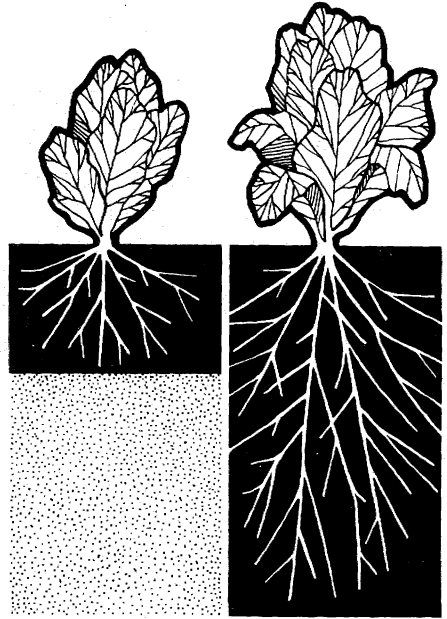
Other pull-behind attachments include carts, fertilizer spreaders, seeders, and sprayers.

A rotary tiller with its powered tines cuts the sod and pulverizes the soil in one operation. Depth of tillage is easily adjusted but should be at least 5 inches deep. A minimum of 10 horsepower is required. The rotary tiller does not work well on very stony soil or a high clay soil.

When considering purchasing a particular model tractor, talk with persons who have owned one for several seasons. They can tell you how it handles and what it is capable of doing. Also, operate the tractor yourself on your own property if possible. Finally, buy the tractor from a dealer who has facilities to service and repair the equipment he sells.

Water is essential for germination and growth of plants. When rainfall fails to provide a constant supply of moisture, artificial watering may be required. Water needs vary with the kind and maturity of the plant. For example, lettuce with its large leaf area requires more water than carrots.

How often to water depends on the amount of rainfall your garden gets,



water-holding capacity of the soil, and how fast the moisture evaporates. A quick test is to ball a handful of soil from the root zone of the plants. If the soil crumbles when the pressure is released, the garden needs water. When watering, soak the soil to a depth of 6 to 8 inches. This will be sufficient moisture to last from 7 to 10 days under normal conditions.

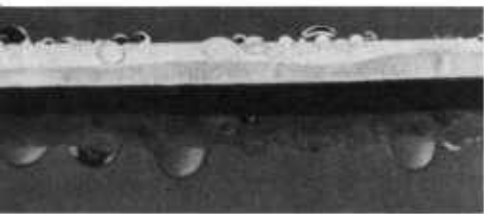
Frequent light waterings will cause roots to grow near the soil surface. The roots are easily damaged during hot dry days or when the garden is cultivated.

A watering can or garden hose is sufficient for the small garden. Buy a hose long enough to reach all points in the garden. Hoses are made of vinyl plastic, rubber, or a combination of the two. Better grade hoses are usually reinforced with nylon. A double reinforcing gives added life.

Continuous shallow watering leads to drying out of deeper soil. Soak soil to good depth. Plants then will be able to sink deep, healthy roots.



Norman A. Plate



Purchase a hose that is guaranteed for several years. Also, get one with $\frac{1}{2}$ -inch or $\frac{5}{8}$ -inch inside diameter, as it reduces your watering time considerably compared to a $\frac{3}{8}$ -inch diameter.

For larger gardens a lawn sprinkler saves time. A sprinkler should be positioned so the garden gets uniformly watered. Do not water on a

hot sunny day or when it is dry and windy, as much of the water may evaporate before it reaches the soil.

Trickle irrigation can be used by the home gardener. This new system has small diameter (1 to 2 inches) plastic tubing with tiny holes punched every 4 to 8 inches along its length. The tube is placed along the row of plants. Water is supplied from a garden hose.

As the system operates at very low pressure (3 to 5 pounds per square inch), a pressure-reducing valve is needed. In addition a fine strainer is

Top, trickle irrigation tubing is set close to base of plants. Below, water oozes from tubing.

inserted in the line to remove foreign matter so the holes are not plugged. Because of the slow rate of flow, several rows or the whole garden can usually be watered at one time. This system needs to remain on for a longer time than when a sprinkler is used.

The advantage to this type of watering system is that only the soil near the plants gets wet, and the saving in the amount of water used can be 50 percent or more. Trickle irrigation equipment is available from some garden centers and greenhouse suppliers.

The successful use of pesticides to control insects and other garden pests depends largely upon three factors:

- Selection and correct dosage of the proper chemicals
- Proper timing of the application
- Use of spraying equipment that is properly adjusted, calibrated and operated

For most home garden pests a general purpose spray or dust will do a good job. These can be bought at a local garden center. For the small garden, purchasing the chemical in an aerosol can or self-contained duster is the most economical and the most convenient to use.

Where special chemicals are needed or for the large home garden or orchard, some type of pesticide application equipment is needed. The simplest of these is the hand atomizer or sprayer, available in capacities of from $\frac{1}{2}$ pint to 2 quarts. This sprayer is inexpensive so several can be purchased, one for each type of spray material used. Separate sprayers are advised for weed killers and insecticides to prevent plant damage that could occur.

The plunger type duster is commonly used to apply insecticides and fungicides in powder form. A morning with a slight dew on the leaves and no wind is best for applying dusts.

The compressed-air sprayer provides better atomization and spray coverage, especially to the underside of leaves. It is available in capacities from 1 to 5 gallons. Its spray will reach to the top of most dwarf fruit trees.

Since these sprayers are not equipped with an agitator, they must be shaken frequently when wettable powders are sprayed. Use should be limited to calm days to avoid spray drift to nearby plants or a neighbor's yard.

The compressed-air sprayer is the most popular type of home garden sprayer.

A knapsack sprayer contains a 4- to 5-gallon tank carried on the back and shoulders of the operator. A pump located at the bottom of the tank and operated by a handle maintains an air pressure. When the valve on the nozzle is open, the air in the tank forces the spray out.

Power sprayers may be operated with either a small gasoline engine or an electric motor. In most power sprayers pressure is developed by a pump action directly on the liquid spray material. Generally they are capable of spraying the tops of trees 30 to 40 feet high.

Jobs for which power sprayers are used include spraying garden crops, fruit bushes, and orchard trees. Most are mounted on two wheels and equipped with handles for moving manually. Some are available to pull behind a garden tractor. A pressure regulator, a relief valve, and a pressure gage should be on all power sprayers.

Safety is important when using spray equipment and applying pesticides. *Read the label carefully before applying any pesticide.* The label will tell you the crops that can be sprayed, the amount to use and how it should be applied.

Some pesticides require protective clothing and a face shield. Store this

clothing in a separate place and wash it separately from other clothes. Store all pesticides in a locked cabinet or box to keep children and pets from being poisoned. Wear gloves while applying a pesticide or wash your hands immediately after you are done.

Small animals may attack a home garden. Woodchucks, rabbits, raccoons and household pets will feed on and damage the plants. Hexagonal wire netting or welded mesh wire can be fastened to wooden or steel posts to fence out the animals. Box traps or smoke bombs may be more effective on some animals. All these materials are available from garden centers or department stores.

Good quality seeds and plants are important in obtaining high yields and quality vegetables. Information on the varieties best adapted to your area and the recommended cultural practices are available from your county agent at the nearest Cooperative Extension Service office. Seeds can be purchased from garden centers, department stores or through seed house catalogs. Advertisements of seed companies can usually be found in the garden section of your local newspaper in early spring.

Some vegetables are better grown from transplants or bedding plants.



Seeds are started in early spring in greenhouses and then marketed after the last frost by garden centers and roadside markets. Transplants will give you vegetables much earlier than plants grown from seed in your own garden.

Fruit tree stock and small fruit bushes are also available from garden centers in spring and fall. They are available either as bare root stock or as container plants. Both will start to grow easily if given the proper soil conditions.

The home gardener wishing to start seed for early plants will need pots, starting soil, and fertilizer. Peat pots or peat pellets are available for this use. These items and other gardening aids such as plant stakes, bean poles, and tomato cage wire are available at local garden centers.

Plants need nutrients to grow. Some are provided naturally from the soil, but others must be added either as organic or synthetic fertilizers. Bone meal, fish meal, and animal manures are examples of organic fertilizers. These are available from garden centers by the bag.

If you live in a rural area, you may be able to get cattle or horse manure from a local farmer. Because farm manures are often diluted with straw or other bedding materials, they help lighten the soil and allow it to hold more moisture.



Left, working with peat pots which come as wafer-like disks and swell when placed in water. Top, discarded food cartons are among many types of containers that can be used to start plants.

Commercial fertilizers can be added to the soil to increase the amounts of nutrients. They work fast. Commercial fertilizers are always labeled to show the amount of nitrogen, phosphorus and potassium. These are available in two ways:

- A liquid or a water-soluble form which is mixed with water and applied with a watering can, or

- A granular form that is spread by hand or applied with a fertilizer spreader

Mulches are materials that are used between the rows and around the plants to keep the weeds down, conserve moisture, and improve the garden's appearance. Organic mulches, those that can be later incorporated in the soil, include lawn clippings, leaves, peat moss, wood chips, bark, and straw. Aluminum foil and black polyethylene plastic are both inorganic and can usually be rolled up and reused the following year. These materials are available from most garden centers.

Often your garden will produce more than you can use at the time.

Most vegetables can be preserved by freezing or by canning. The major expense associated with freezing is purchasing a freezer. This will cost several hundred dollars and is an investment that will take a number of years to pay off. It will also increase your monthly electricity bill by several dollars. A self-defrosting freezer costs more to operate than the nonself-defrosting type and should not be purchased. For freezing you will need some containers—either plastic or paper.

Some specialized canning equipment is essential for preserving safe and attractive products. This equipment includes a canner—either water bath or steam pressure, pint or quart jars, and several kettles for precooking or blanching the foods to be canned. This equipment is usually found in most department stores.

Before using any of the equipment discussed, read and follow the instruction manual. The manual will tell you how to safely operate the equipment and how to maintain and store it.