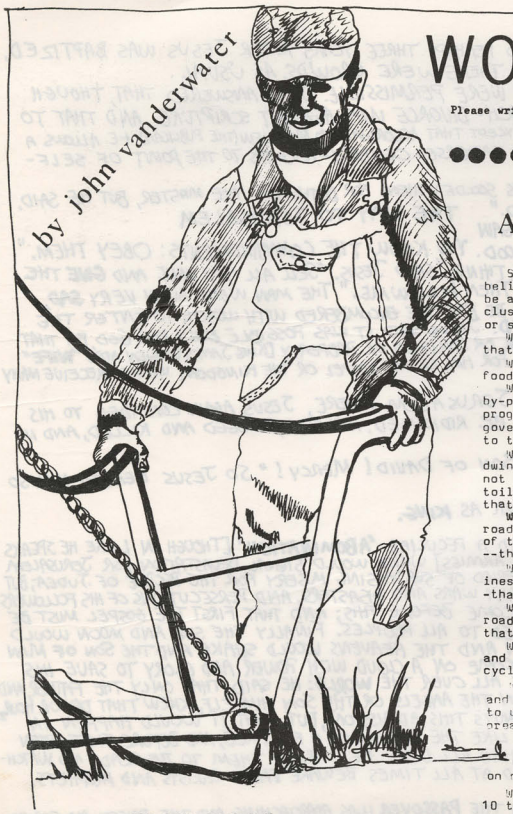

WORKING THE LAND

Please write and share your own experiences! May we all become stewards of the earth.

GROWING SOIL

The most basic requirement for a good garden is good soil. Without it, a gardener may work long and hard and still get poor results.

Sometimes visitors at an organic garden of long standing will say: "No wonder things look so good. Look at your soil." They may not realize that a gardener often needs to "grow" good soil before he can grow good plants.

In our first year of gardening at Jonsalvania, the soil was hard, packy clay. Each year it has become darker in color, lighter in texture, more friable, more water absorbent, higher in plant nutrients, more easily plowed and tilled. This is being achieved by annual applications of shredded leaves, manure, green manure, rotted hay, compost, organic mulches, wood ashes, and whatever other organic materials are available. Similar results may be achieved on poor, sandy soil by similarly increasing the humus content.

The beauty of all this is that it is not difficult to find large quantities of organic material going to waste nearby. All it requires is a little effort to find it and bring it home. Depending on the source, the material will add quantities of nitrogen, phosphorus, potash and trace elements like zinc and magnesium to the soil. Most gardens so treated will, after a few years, test out satisfactorily in the three basic elements and the trace elements so that the addition of increasingly expensive and scarce chemical fertilizer becomes unnecessary.

If you plan to make the transition from a chemically fertilized garden to an organic fertilized one you may want to do it gradually rather than abruptly as the organic material breaks down slowly and while so doing may be using up more nitrogen than it is adding. So addition of a chemical fertilizer high in nitrogen, or of an organic fertilizer like blood meal, may be indicated; You may want to keep a check on your soil nutrients while making the transition. Additional lime and nitrogen especially may be needed at this time.

So it may not be advisable for a beginning gardener to start out with Ruth Stout's mulching system. Ruth Stout is a delightful young lady gardener and author of some 80 years.

Probably her most famous publication is "How to Have a Green Thumb Without an Aching Back". After several years of building her soil in organic gardening she decided to throw away her tools and just keep her gardens covered at all times with thick mulches of leaves, hay, straw, and other organic material. In the spring she [illegible] mulch, plants, and pulls the mulch back around the seedlings as they grow taller and as the season grows warmer. Her results have been excellent and her system fits her needs very well. It does not, however, allow enough versatility for more active gardeners. For instance, I like her system for raspberries, but not for lima beans, or peppers.

Last year there was a part of our garden that we did not need. So, rather than have it grow to weeds, we sowed buckwheat on it and plowed it under with the rest of the garden residue in the fall. Interesting result is that, in the strip of the garden where the buckwheat was, plants are now making noticeably slower growth. The only reason I can think of is that in the process of decomposition of the buckwheat there is too great a drain on the soil's nitrogen. Probably a side dressing of chemical nitrogen or blood meal would bring the plants back comparable to their neighbors. By another year the buckwheat should have decomposed to do the soil building job we intended.

One source of organic material available right now is the ground up wood from elm tree stumps. Used as a midsummer mulch around shade trees, tomatoes, and in flower gardens it will be attractive, kepp the soil moist and cool, and keep the weeds down. And by next spring it will have changed onto a layer of crumbly black earth of value to our garden.

A VIEW OF PROGRESS

Sometimes we read or hear a statement like: "I am not an ecolonist -I believe in progress." Since I am as much of an ecolooist as I know how to be and I believe in progress I have puzzled over such statements. The conclusion I come to is that my definition of progress differs from the writer or speaker.

When a society stops burning leaves and starts composting them -I think that's progress.

When young mothers stop paying twice as much for inferior canned baby food and start growing and making their own -I think that's progress.

When the chemical industry some time ago started pushing the sale of a by-product called lead arsenate to combat insect problems -that was not progress. But now that greater problems have been created because of our government, having now curtailed or prohibited their use, we are beginning to turn to natural and biological controls. That's overdue progress.

When we install flush toilets which use six gallons of good water, a dwindling resource, to flush a pint of urine into our waterways, that is not progress. But the development of the Swedish Clivus Multrum waterless toilet which comports waste for recycling to the land where it belongs -that's progress.

When our town and county highway crews were instructed to spray the roadside with weed killers -that was not progress. But should we take some of those tax dollars to pay our unemployed to cut roadside brush and grass --that could be progress.

When our schools in our dairy country harbor soft drink dispensing machines -that is not progress. But when they install milk dispensing machines -that is progress.

When we allow non-returnable bottles to be tossed by the millions on our roadsides and then spend our tax dollars for the annual spring cleanup -that's not progress.

When big cities dump billions of gallons of raw sewage into our lakes and rivers -that's not progress. But when a city like Chicago starts to recycle its wastes back to the farmlands where it belongs -that's progress.

When gardeners were duped into using chemical poisons, fertilizers and weed killers -that was not progress. But now that they are beginning to use natural and biological controls, composts, mulches and elbow grease, that's progress.

When the cancer rate in our society has risen to where one in every four can now expect to develop cancer -that is not progress. But when the medical profession stops concentrating on cures and starts concentrating on prevention -that is progress.

When agricultural experts decided all the soil needed was a dose of 10-10-10 that was not progress. Now we are recognizing that there are many more chemical elements necessary to plant growth and that we really know very little about agronomy -that's progress.

When wealthy absentees with the encouragement of the USDA take over huge tracts of land county wide and turn them into one plot to operate with huge mechanized equipment, and when in so doing they consume many times more energy than they produce, that is not progress. And when 5½ million family-owned farms in the U.S. disappear (predicted for 1985 by the USDA) and still more farm workers are dumped into urban areas -that is not progress. And when a big California grower can say: "I don't care what's on it, or what's the right shape and the right number, we will pack it in a box and the box will pass the inspector" -that is not progress. But should the USDA revert to what it was created to do -help the small family farmer- that would be progress.

And most of all -when our government and corporations chose to ignore a free, safe, infinite and clean source of power, the sun, and concentrated our billions on developing expensive, finite, dirty, dangerous nuclear power -that was the most insane non-progress of them all.

ANIMAL LIFE IN THE GARDEN

A garden should be teeming with both plant and animal life. The large majority of creatures in and around a garden are either harmless or do us more good than harm. And a "live" garden is the way nature intended. So part of my gardening philosophy is to encourage helpful creatures so they will in turn help me keep the undesirables under control.

A familiar friend to start with is the dragonfly, or darning needle, whose main food is the mosquito. In adult life it catches them in flight and in its water nymph stage, eats mosquito larvae.

Aphis-lions are found in unsprayed gardens. They destroy many destructive insects including mites, scale, aphids and mealy-bugs.

Praying mantids are a particular friend to man. They seem to concentrate on man's enemies and leave his allies alone.

Earthworms abound in an organic garden. They aerate and fertilize the soil, break down organic matter, and are there waiting when you want to go fishing.

The most prevalent insect in our gardens is the lady beetle. In mid-summer it is hard to find a cornstalk that is not harboring two or three of them. They destroy the eggs and young of aphids, scale, and other soft-bodied plant-feeding insects.

One may not be inclined to think of wasps as friends, but some varieties have as their favorite food the horse-flies, horn flies, and stable flies that pester our livestock. Another variety helps keep aphids under control. The famous Trichogramma wasp has been introduced into cotton fields to help control the bollworm.

Insects, too, are of great value as pollenizers. These include butterflies, ants, beetles, and of course bees and wasps. The fig wasp is the only pollinator of figs.

Larger friends in and around the garden include birds; swallows, thrushes, chickadees and nuthatches keep ants under control; flycatchers and warblers control weevils; scale insects are devoured by our native sparrows; phoebes, flycatchers and swallows control moths. Leafhoppers are relished by the warbler family; and so on.

Another nice fellow in our garden is the toad. A toad eats insects, most of which are harmful, and particularly likes cutworms, slugs, and squash bugs. Toads even make good pets, will not give you warts, are remarkably intelligent (for a toad) and provide us with a beautiful song-sound. Can you say as much for a can of poison spray?

Our lawn and flower garden have suffered some damage from moles, so it might be hard for me to make a case for him as a respectable citizen. At least he does destroy many harmful grubs,and when he has cleaned out an area, he moves on.

A case in point is the sawfly which destroys spruce and pines and whose larvae are controlled by moles. The island of Newfoundland could not grow evergreen trees because of the sawfly, and the absence of moles, so actually imported and released moles which now cover the island. This has permitted the successful introduction of evergreens.

Crows are often considered pests. A group of New

ANIMAL LIFE IN THE GARDEN CONT.

England sheep farmers once formed a successful crow-exterminating cooperative because they thought crows were killing new-born lambs. The following year when their pastures dried up they discovered that crows were the natural control for grubs that ate the grass roots. Without the crows they were soon without pasture.

One last friend I will mention is the skunk. Naturalist Ernest Thompson Seton once touted the skunk as a replacement for the eagle as our national emblem. Tongue-in-cheek to be sure. But Seton reasoned that the skunk is more of a friend to man, eating harmful grubs and field mice. Further, he has stripes like our flag, is fearless, never fires unless fired upon, and always emerges the victor by a nose.

GROWING SOIL CONT.

Does your village pile its leaves in a dump? If so, the under layers will likely be black and crumbly -nature's own compost. Do you have a compost pile? If so, your favorite barber may be glad to save you hair which would otherwise be swept up and thrown away. It a good addition to a compost pile, or a good mulch -high in nitrogen.

Do you have access to a woods? A few bushels from the forest floor would make a good mulch under young evergreens or other acid-loving trees or bushes. For plants that like a high PH add lime when you mulch with forest topsoil.

WATER, WEEDS, WORMS, AND MULCH by doug jones

The practice of mulching, or covering the soil, is being increasingly recognized as a valuable tool by vegetable farmers and gardeners alike. Some people use it primarily as a weed control method, others value it's ability to retain moisture, but it does both of these things and much more. Sometimes, however, mulch can have a negative impact, so let's examine its functions and learn how to use it right.

It is important to realize that Nature keeps most of her soil covered with decaying organic matter from previous years' growth. When soil is bared to the elements, it can easily gain or lose too much moisture and organic matter, especially if it is a light (sandy) soil. Sun and oxygen will "burn" up the organic matter, instead of its being digested by the thousands of species of soil organisms that form a stable humus or nutrient bank, for new plant growth. Bare soil can also dry out faster, or wash away in heavy rains, or, especially in the case of heavy soils, form a hard crust on the surface.

The different mulching materials available to you will have differing effects on your garden. The most available mulch in dairy country is old or spoiled hay - many farmers, especially after last year's bad hay season, have old hay that they would love to have cleared from their barns to make way for the new stuff. If they've already taken it out and piled it somewhere, even better -the rains will have started it rotting, which is what you want. Despite the sliminess of some of the bales, partly rotted hay will "dissolve" into your soil by next spring and not interfere with tillage. The **same is** true of other mulches -leaves, saw dust, woodchips, pine needles, newspaper- in their fresh state, all are high in carbon, low in nitrogen. This means they can tie up nitrogen in your soil as they decay, starving your vegetables. The microorganisms will take nitrogen from the top soil layer to digest these carbonaceous materials. The solution to this problem is either to let your mulch rot first, or else use more manure or compost in your soil to provide more nitrogen.

Or, use black plastic for mulch, which won't decompose. But this for me, makes plastic a less desirable tool. Not only is it a pollutant when it is thrown away, but it fails to add organic matter to the soil, which is everything. I won't go into the long list of virtues that make organic matter essential to a healthy, permanent agriculture. Save that for another time. But, plastic has one definite advantage which northern gardeners appreciate -its soil warming effect. We use it for the crops that grow slowly and don't like to fruit if their feet are cold -melons, eggplants, and peppers. The latter two can be mulched with hay or leaves, but wait until at least late June, and then leave a little bare soil around the plants. Try to re-use your plastic -the world has too much of it already.

A disadvantage of hay is weed seeds, another reason to use it in a more rotted form. The ideal mulch, if you have enough, would be finished compost, which has heated to digest carbon and destroy weeds.

All right, now, which vegetables to mulch, and when? With cool-soil varieties, mulch as soon as they are big enough to not get buried or damaged by the mulching -this would include the cabbage family, greens, root crops, onions, strawberries and peas. We plant our greens, roots, and some of our peas intensively in raised beds (see last issue's "Working the Land"); mulch fits nicely in the "valleys" between them. When the soil warms more, mulch your cukes and squashes, tomatoes, sunflowers, beans, and if you want to, corn. We don't bother with corn -the soil space on half an acre would require too much. Corn seems well adapted to hoeing or other cultivation -it quickly gets large enough to shade the soil. Some people have successfully broadcast-planted a clover cover-crop (or "green manure") after their last corn cultivation, right among the corn rows. This would require a rainy period to establish it.

We also do not mulch our trailing winter squash and pumpkins -not only do they form a shady covering with their leaves, but they also put down roots from their vines as they wander, easier without mulch.

Baled hay has the advantage of coming apart in neat square sections, which fit easily between your rows. On the other hand, leaves, chopped hay, or sawdust are easier to use around strawberries or other plants growing in irregular patterns.

Potatoes can be mulched at the time of planting -they will push through- or after they emerge. Mulching leaves the soil very loose underneath, for easy digging of any root crop -especially those planted in raised beds. Probably the earthworms, who love the mulch, and other soil organisms, are responsible for this loosening effect, one of the major advantages of mulching on heavy soils. After being tilled under, the added organic matter keeps on loosening. On a sandy soil, it has the opposite effect -the humus produced actually binds particles together for better soil texture and retention of nutrients and water.

With leaves or sawdust, watch out for their tendency to acidify -some ground limestone, wood ash, rock phosphate, or extra compost, will help to neutralize.

Warning: mulch can't take care of all your weeds -grass will come through if you don't mulch heavy enough (3-4"after it has settled), some animals in the rows or beds will come through the same spaces as the vegetables. You must deal with these, if you have future gardens in mind -one annual weed casts thousands of seeds- some do it in July, most in August. Weed thoroughly before mulching, especially in the rows of vegetables, and then keep pulling the escapees. Finally, when those you missed shoot up suddenly and start flowering, take a sickle around the garden and cut them off as low as possible (pulling big weeds often disturbs vegetable roots) -it's worth the effort.

A word on hoes and sickles -these can be valuable tools if kept razor sharp and used at the right time. When annual weeds are less than three inches tall, a light scraping with a sharp hoe just below the surface will easily do them in. You'll notice that you can kill 95% of the weeds between your rows with a hoe, leaving a few in the rows to pull by hand. Use a file on the beveled edge of the hoe, pushing toward the edge. We even file the sides of the hoe blade, for hoeing in our narrow 7" spinach rows.

One thing I forgot -mulch prevents the fruits of your vegies from rotting, worms, or insects through soil contact- this is important for cukes, beans, summer squash, unstaked tomatoes, and melons.

Good luck - you'll be glad you mulched.