



# WEEDS & PESTS

**MANAGEMENT 101 :** When the weather gets nice enough for our gardens to kick back into action, the weeds and pests sure come along for the ride. This is an introduction on how to manage these two major garden issues.

## Weeds

Keeping the garden weed-free is important. Weeds use up valuable nutrients and resources from the soil and have even been known to attract nasty pests. In general, weeds are much easier and faster to get rid of in the first week or two after they have germinated. The longer you wait to eradicate your weeds, the more difficult it will be.

Here are some tips to help maximize your weed combatting strategies and keep your garden tidy.

## Know your Enemy

Get to know the weeds that are most common in your garden. Learning more about their habits will give you clues on how to manage them. Weeds are seasonal - your problem weeds in the spring will fade out for the heat lovers in the summer and then make their grand return for cool temperatures arriving in the fall.

Most weeds are annuals and once you pull them up by the root, they're gone. Some spread through stolons, rhizomes, or can survive if parts of their roots remain intact. These are the tricky ones you will have to dig up entirely or keep pulling over and over to deplete the plant's resources.

By learning about your weeds, you'll also get to know more about their history. Purslane is a common summer weed that is edible and has even been called a superfood. You'll also learn about some invasive plants, like Hairy Galinsoga. These are great opportunities for class lessons.

If an annual weed has not yet flowered, that plant can be pulled and placed on top of the bed to dry out and decompose. This also acts as a mulch and helps return organic matter to the soil.

Weeds with flowers should be removed from the garden and disposed of. Do not put these plants in the compost; they're full of weed seeds that will end up in your finished compost and back on your beds. If you know your compost pile gets hot enough to kill the seeds, throw them in there, but most likely it does not. This is part of the reason it is so important to weed in a timely manner.





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## Know your Tools

There are great tools and techniques that help make the job so much easier.

### Hoes

Use a hoe to cut young weeds off at the soil line. At their juvenile stage, they haven't yet accumulated the strength and root system to make a comeback. Getting weeds within the first week or 2 of germination makes the whole process easier, but we know that sometimes that is just not possible.

Using a hoe takes a little getting used to. Try watching a quick Youtube tutorial to see how an experienced gardener uses the tool for pointers on how to make the tool work best with your body. Once you have a little practice, hoeing will be the quickest thing you do in the garden.

Look into these popular weeding tools to see what might work best for you: stirrup/hula hoe, collinear hoe, and triangle hand hoe.

### Mulch

Mulch covers the soil and helps keep weed seeds from germinating and/or makes it too difficult for them to reach sunlight. There are several different options for mulches. Many of them are discussed in the toolkit "Growing Tips and Tricks."

### Cover Crops

Cover Crops are another way to combat weeds. Cover crops are discussed in depth in the toolkit "Growing Tips and Tricks."

## Check the Weather

The sun is an important helper when weeding. Plants that are pulled or hoed up during sunny days quickly dry out and die. If it is overcast, the soil is wet, and/or it is about to rain, some of these plants can survive if they aren't completely removed from the garden.

It is also a good idea to pull weeds when the soil is slightly dry. This helps us shake our valuable topsoil off of the weeds before removing them from the garden. A surprising amount of soil gets removed from beds via weed roots when we weed while wet.

## Big Fixes

Solarization and Sheet Mulching are wonderful techniques to control weeds in your garden.

Solarization uses a large clear plastic sheet (think drop cloth from the hardware store) during the summer months to trap heat and kill offweeds, weed seeds, sod, and even some pests and diseases in the soil. Before you begin, mow everything down very close to the ground and free the area of rocks or sticks that may puncture the plastic sheeting. Then, water the area very well – this will help heat things up in the long run. You'll want to secure the plastic tight against the soil to maximize heating and to eliminate the chance of wind blowing your sheeting away. Use bricks, logs, or even bury the edges to secure the tarp.

Keep the area covered for 4 to 6 weeks before removing. Try not to till or turnover too much of the soil once you have solarized. The heat has eliminated a large chunk of your seed bank from the top of your soil, but you'll still have weed seeds that have survived the farther down you dig.



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Sheet Mulching is another way to get rid of weeds by creating layers of organic material on top of them. With sheet mulching, you are basically composting in place. Cut your weeds down as low as you can and spread a layer of compost or manure over the area. Cover with a couple of layers of unwaxed, unlined, tape-free cardboard, then add a couple of more layers of either manure, compost, leaf litter, or other organic matter and wait for 3 to 6 months. This is also a great soil building technique.

## PESTS AND DISEASES

Where you have plants, you will inevitably have some pests. It's all a part of the cycle in an organic garden. Managing their populations and/or keeping them away from your food crops is the goal.

### Companion Planting

Plants enjoy the right kind of company. This right kind of company can work in several ways: trap cropping, symbiotic nitrogen fixation, biochemical pest suppression, or beneficial habitat. Trap crops act as sacrificial plants, drawing the pests to them and away from other, lesser preferred crops. Legumes act as nitrogen fixers and can be planted with those crops that demand high levels of available nitrogen in the soil. Some crops produce chemicals that deter pests or help suppress weed germination. Other plantings attract beneficial insects by providing them with the ideal home. The internet is full of ideas on these wonderful tools. Use a combination of these methods to help keep your garden the most.

In general, diversity (polyculture) helps protect plants as pest populations are not allowed to balloon in the way that occurs with monocultures (large plantings of 1 type of plant).

### Agricultural Fabric

Row cover, or agricultural fabric, is used often in season extension by protecting plants from cold temperatures. Row cover can also be used as a barrier, keeping pests away from plants. Flea beetles attack many members of the brassicaceae family (kale, cabbages, turnips, bok choy, radishes, etc.) by chewing small holes in the leaves. Barrier cloths keep these small insects out.

Tulle, the fabric many of us associate with tutus, can also be used as a barrier and may be a less expensive option. You may think of other options, just make sure that the fabric openings are small enough so that the insect you are trying to avoid is kept out.

### Sanitation

Many pests overwinter in plant debris, and many diseases are harbored in this debris as well. Be sure to maintain clean beds and remove plant debris to the compost pile or trash.

### Solarization

If you suspect that you have a soil-borne disease or root knot nematodes in your garden, solarizing may be able to help (see above). When the soil temp heats up to kill off weeds and weed seeds, it also heats up enough to kill some pathogens in the soil.

### Choose Disease Resistance

Many seed companies carry disease resistant varieties of many plants. When possible, opt to grow these varieties or just be on the lookout for signs of disease in a non-resistant variety so you can remove infected material and treat your plant.







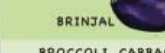






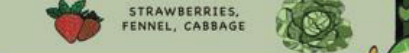




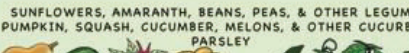


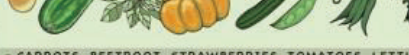







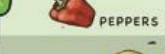

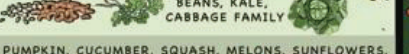

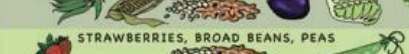
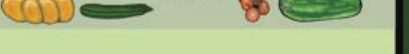




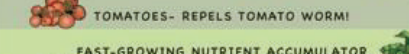
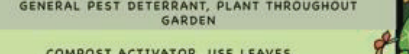
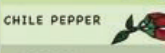
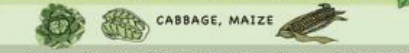
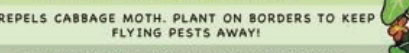
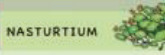
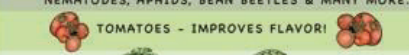
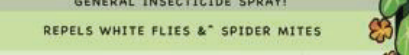


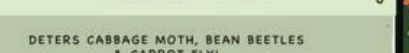
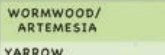

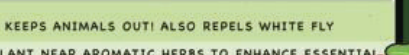




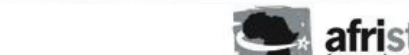






### Rotate your Crops

Crop rotation helps keep pests and diseases from building up in your soil. Many diseases are plant specific (only members of the solanaceae family like tomatoes and potatoes get late blight, for example). By moving plants around, you help starve the disease.



## COMPANION PLANTING

IN NATURAL ECOSYSTEMS, PLANTS PERFORM FUNCTIONS THAT CAN EITHER HELP OR PREVENT OTHER PLANTS TO GROW. THE SAME IS TRUE IN OUR GARDENS. CERTAIN PLANTS GIVE NUTRIENTS BACK TO THE SOIL, WHILE OTHERS NEED TO TAKE UP NUTRIENTS. PLANT AROMAS AND FLOWERS CAN ATTRACT POLLINATORS OR DETER PESTS. BELOW IS A CHART TO HELP YOU UNDERSTAND WHICH PLANTS GROW WELL TOGETHER AND WHICH TO PLANT FAR APART!

PLANT	GOOD COMPANIONS	BAD COMPANIONS
BEANS 	MAIZE, SUNFLOWERS, LAVENDER, CABBAGE, CUCUMBER, STRAWBERRIES, BRINJAL 	ONION 
BEETROOT 	BEANS, ONIONS, GARLIC, LETTUCE, CABBAGE 	GARLIC, FENNEL 
BRINJAL 	CALENDULA, MARIGOLDS, MINT, PEAS 	
BROCCOLI, CABBAGE, CAULIFLOWER, KALE 	AROMATIC PLANTS, DILL, SAGE, ROSEMARY, POTATOES, BEETROOT, CELERY, GARLIC, ONIONS, GERANIUM 	TOMATOES, POLE & RUNNER BEANS, PEPPERS 
CARROTS 	LETTUCE, CHIVES, LEEKS, ROSEMARY, SAGE, PEAS, WOODWIND 	STRAWBERRIES, FENNEL, CABBAGE 
LETTUCE 	CARROTS, RADISH, STRAWBERRIES, CUCUMBER, BEANS 	CELERY, PARSLEY 
MAIZE 	SUNFLOWERS, AMARANTH, BEANS, PEAS, & OTHER LEGUMES, PUMPKIN, SQUASH, CUCUMBER, MELONS, & OTHER CUCURBITS, PARSLEY 	CABBAGE, TOMATO, CELERY 
ONION/ GARLIC 	CARROTS, BEETROOT, STRAWBERRIES, TOMATOES, LETTUCE, CABBAGE 	PEAS, BEANS, PARSLEY, LEEKS 
PEAS 	LAVENDER, CARROT, TURNIP, RADISH, CUCUMBER, MAIZE, BEANS, GROWS WELL WITH MOST VEGETABLES & HERBS 	ONION, GARLIC 
PEPPERS 	TOMATOES, GERANIUM, BASIL, CARROT, ONION 	BEANS, KALE, CABBAGE FAMILY 
POTATOES 	CORIANDER, MARIGOLD, BEANS, MAIZE, CABBAGE FAMILY, BRINJAL 	PUMPKIN, CUCUMBER, SQUASH, MELONS, SUNFLOWERS, TOMATOES 
SPINACH 	STRAWBERRIES, BROAD BEANS, PEAS 	POTATOES, FENNEL, CABBAGE FAMILY 
TOMATOES 	BASIL, OREGANO, PARSLEY, CHIVES, NASTURTIUM, ONIONS, CARROTS, CELERY, CALENDULA, GERANIUM, BORAGE 	GENERAL PEST DETERRANT, PLANT THROUGHOUT GARDEN 
CALENDULA 	TOMATOES- REPELS TOMATO WORM! 	COMPOST ACTIVATOR. USE LEAVES TO MAKE COMFREY TEA FERTILIZER! 
COMFREY 	FAST-GROWING NUTRIENT ACCUMULATOR. PLANT ALONG EDGES & USE LEAVES FOR MULCH 	REPELS CABBAGE MOTH. PLANT ON BORDERS TO KEEP FLYING PESTS AWAY! 
CHILE PEPPER 	CABBAGE, MAIZE 	USE MARIGOLD LEAVES TO MAKE AN ORGANIC GENERAL INSECTICIDE SPRAY! 
MARIGOLD 	PLANT FREELY THROUGHOUT THE GARDEN - REPELS SOIL NEMATODES, APHIDS, BEAN BEETLES & MANY MORE. 	REPELS WHITE FLIES & SPIDER MITES 
NASTURTIUM 	TOMATOES - IMPROVES FLAVOR! 	DETERS CABBAGE WORM 
THYME 	CABBAGE 	DETERS CABBAGE MOTH, BEAN BEETLES & CARROT FLY! 
ROSEMARY 	CARROTS, CABBAGE, SAGE, BEANS 	KEEPS ANIMALS OUT! ALSO REPELS WHITE FLY 
WORMWOOD/ ARTEMESIA 	AROUND GARDEN EDGES 	PLANT NEAR AROMATIC HERBS TO ENHANCE ESSENTIAL OIL PRODUCTION 
YARROW 	PLANT FREELY THROUGHOUT THE GARDEN. REPELS SOIL NEMATODES, APHIDS, BEAN BEETLES, AND MANY MORE! 	

A DIVERSE GARDEN IS AN ABUNDANT GARDEN. HAPPY PLANTING!