

# Be A Climate Change Gardener With Cloud Layer Gardening



Transforming  
Activities  
for Yourself,  
Your Garden  
and Your  
BioRegion

Using Layers  
Of Moisture From  
Your Own Garden

From the garden of Rosa Milagrosa

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# What is Cloud Layer Gardening



**Cloud Layer Gardening** brings together several methods: lasagna, permaculture, no-dig and rain gardening. These methods keep the unseen moisture in water vapor in the local water cycle nourishing soil and plants. When you have thriving microbes, you store carbon! Layer, build and texture the landscape like clouds using berms, swales, walls and trees keeping moisture in your garden. When we have a hot summer, we want to regulate the amount of solar energy reaching the microbes in the dirt. Covering and protecting the precious life giving microbes, keeping them alive is key. This keeps the carbon in the ground. We not only contribute to the health of the soil, but also keep the climate in balance. That is the goal and I call this Cloud Layer Gardening.

## LAYER YOUR GARDEN WITH CLOUDS OF MOISTURE!

We need to imagine moisture differently in the garden. Moisture comes out of the sky or your hose but, it is also the unseen element that you want in the system of your garden. Plants release moisture through transpiration making humidity and attract moisture in the form of dew; creating your local water system. That condensation then comes back down as rain. Plants attract and drink dew which is very helpful in times of drought. In the morning, you can see all the moisture that developed in the night and then becomes water vapor during the day. This is your system of moisture. When we water, we want to add moisture to that system not have it evaporate immediately. How you keep that moisture, is Cloud Layer Gardening. When you add organic matter to the soil and plant covercrops, you build more than fertility; you build soil moisture and soil carbon. This moisture and carbon keep the microorganisms alive.



# How To Carbon Sequester?



We must remove Carbon Dioxide from the atmosphere through gardening. Plants remove Carbon Dioxide from the atmosphere and exude and store it in the soil. This is Carbon Sequestration. Mycorrhizal fungi and bacteria are responsible for fixing carbon in the soil.

As gardeners, we must refrain from using synthetic pesticides and fertilizers, which disrupt the soil life. We need the soil life to sequester carbon. Chemical Fertilizers use fossil fuels, which is responsible for carbon dioxide emissions. We must build soil health by adding mycorrhizal fungi, planting cover crops, using your garden residue for mulching, composting and no dig no til, to be a **Climate Change Gardener**.

When you replace synthetic fertilizer with compost and organic fertilizers, plants grow more roots and fix more carbon. Soil cannot support microbial life or plant life without sufficient organic matter.

## Why respiration and soil moisture matter

Soil, plants and the climate are related. If your soil is bare, you have more evaporation. Plants intercept the dew. Transpiration is when moisture leaves the plant, this in turn increases our humidity or water vapor. When we increase our humidity, we have more rain. Forty percent of our rain comes from small, local water cycles. When the small water cycles are disrupted due to plant or tree loss from overharvesting or freezes, we have desertification. Heat radiates off bare soil. When hot air is going out, instead of attracting the rain, the hot air pushes the rain away.





*Let us pray for the well-being of the water. Talk to the water asking to see the healing of God in every droplet - Kuan Yin*

## Visualize Moisture Meditation

I connect to the water cycle at home and in my life. I integrate with water more deeply. I keep water on the property thru ponds, right vegetation, cover crops and grasses. I mulch to slow evaporation, I create berms and swales to direct the flow of the water to plants. I notice how evaporation occurs more quickly with unmulched, uncovered, uncrowded dirt and take steps to slow it. I am responsible for my water. I notice how water condensates. I notice the condensate (dew) on the grass. This creates more humidity, less dryness in summer. I collect precipitation with swales, water barrels and totes and use ollas in drier areas for slow drip, and I use water from the a/c. My actions create a sustainable future. I share this with everyone..



When we connect with the water in our garden. We connect with water all over the earth. Water is highly sensitive and receives our messages. \* Emoto Peace Project

The moisture cycle is more apparent on the land when we capture this moisture thru building **ponds**, **rain gardens**, using **greywater**, and capturing water in **rain tanks or barrels** for later use.

Water resources underground have been tapped through farming and industry and are almost completely gone.



### HOW TO CREATE A POND

Wherever there is runoff from the roof of a house, create a in ground pond or mini pond, with a bucket or barrel with the rainwater. Rainwater is perfect for plants and mosquito fish. The lizards, frogs, dragonflies and butterflies all come to this special habitat. You are doing your part to keep biodiversity alive in your yard.

### HOW TO CREATE A RAIN GARDEN

If you have a low area or want to build one where the water accumulates. Use a mix of plants that are well adapted to your area that will absorb the water. The water is then absorbed into the soil through the network of deep plant roots.

**GREYWATER:** reuse water from bathtubs and washing machines from your home for plants in the yard.

**RAIN WATER HARVESTING:** collect the run-off from your roof for later use. The rain will collect in gutters that channel the water into downspouts and then into storage vessels.



# How to Cloud Layer Garden



When you first start a **Cloud Layer Garden**, don't remove existing sod and weeds. It is storing carbon! Don't till or work the soil in any way. Carbon is released from the soil when it dries out. All we need to do is cover it. The first layer is either cardboard or three layers of newspaper laid directly on top of the grass and weeds in the area for your garden. The grass or weeds break down fast because they will be deprived of light and air, and the materials you put on top.

**When?** Summer is an optimum time because the heat breaks it down rapidly. But no time like the present! When everyone starts to sequester carbon the better it will be for everyone. When it's time to plant, just dig down into the bed as you would with any other garden, just go thru the cardboard.

**Why?** Fewer weeds, better water retention, compost holds water better than regular garden soil.



Topsoil is a very thin substance on which we all depend

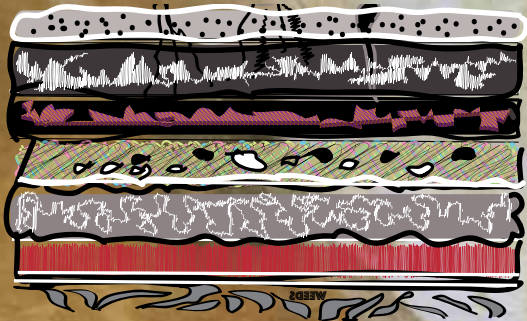
## Why No Dig?

With cardboard, you can clear a weed-infested area. By not digging you avoid disrupting the soil life. Micro-organisms, fungi and worms help feed plant roots and provide a rich soil to grow in. Digging undermines soil carbon sequestration by wrecking the growth of mycorrhizal fungi, which is important for sequestration. Seasonal cover crops, eliminate digging so that will not be left bare and soil carbon will be fixed, rather than lost.

*"Layering is recommended for all farms because it builds soil organic matter, which has far reaching benefits for plant health and farm sustainability. This minimizes biota disturbance and erosion losses while incorporating carbon rich amendments and retaining the biomass of roots and shoots, all of which contribute to carbon sequestration by photosynthetic removal and retention of atmospheric CO<sub>2</sub> in soil organic matter."*

From Rodale Institute, White Paper

Anything you'd put in a compost pile...



Create layers of "browns" such as fall leaves, shredded newspaper, peat, and pine needles and layers of "greens" such as vegetable scraps, garden trimmings, and grass clippings. In general, you want your "brown" layers to be about twice as deep as your "green" layers. Just as you might like different things for dinner, alternate different types of mulch for more balanced diet for your microbes and plants. Layer browns and greens. Add the following materials:

GREENS

- Grass Clippings
- Leaves
- Tea, Coffee
- Weeds (no seed)
- Manure
- Compost
- Seaweed

BROWNS

- Newspaper
- Pine needles
- Spent blooms
- Yard wastes
- Coir
- Wood
- Stumps

ROCK MINERALS

- Greensand
- Rock Phosphate
- Bone Meal
- Granite Sand
- Lava Sand
- Minerals Plus

you can put into a Cloud Layer Garden.

Microbial biodiversity needs nitrogen and carbon for keeping an ecosystem healthy. When we keep nutrients in the soil, carbon sequestration can occur. If you put materials high in nitrogen on top, it will break down quickly. Adding rock minerals, gives micronutrients that are needed. The materials you use will providing nutrient-rich soil to the plants.

What you want at the end of your layering process is a two-foot tall layered bed or **berm**. Adding layers of organic materials at different times will "cook down". Your result? Beautiful forest floor soil! You'll be amazed at how much this will shrink down in a few short weeks.



# Creating Berms and Swales



You just created a **berm**! Berms are the raised beds that you just created. This is also a way to direct water to swales. Swales are simply shallow, low depressions in the ground designed to encourage the accumulation of rain during storms. Keeping water on the land, swales with the proper plants and trees help manage runoff and make water healthy for people, nature and fish.



When you make a new garden with **Cloud Layer Gardening**. It's so easy to make berms and sequester carbon at the same time.



## STEPS TO CREATE A SWALE:

1. Choose the right spot for your swale:
2. Spend time outside when it's raining, notice the flow of water and the low spots where water collects.
3. Where do you want the water to go, what plants do you want to water?
4. Swales can send water from the roof to rain gardens, ponds, and fruit trees.
5. Do not use Swales to send water into the street, you will have soil loss due to erosion and also pollute the groundwater.
6. Keeping slope in mind, make sure that it runs downhill and ends at least ten feet away from structures.
7. Mark area using stakes or chalk before you dig trench.
8. The swale can be as wide, narrow, or deep as you want it.
9. Use Granite Gravel to finish as it decomposes it with add minerals to the soil.





# What to Plant? Covercrops!



There is something very special about growing Covercrops. I feel the land and I are healing together.



When I was first trying cover crops, I noticed I had dry, cracked soil in the summer. The first time I grew tall rye-grass I noticed how much more moisture was on the land. Covercrops act as living mulches and increase soil carbon due to the deep, bushy root systems.

When we move away from bare soil and towards having plants in the ground all year, you really notice an increase in biodiversity. What we can't see is the sequestering of carbon.

Cover crops increase soil carbon, reduce soil and wind erosion, reduce unwanted weeds and decrease water runoff. When you improve your soil, you reduce evaporation and you also fix nitrogen when you plant legumes.

Carbon is also in the plant material when you reuse your yard wastes. This plant material becomes organic soil matter. When you remove it, you deplete soil organic matter. When you keep it, it is a soil carbon accumulator

**In winter plant:** clover, mustard, vetch, wildflowers, wheat, einkorn, rye, oats, quinoa, austrian peas.

**In summer plant:** buckwheat, blackeyed peas, millet, sorgham, amaranth, beans, corn and squash

We have all been trained from birth to mow and take out wild areas. Let's welcome back the wild into our living space

Plant a new crop when the Previous one is fading. You can mow it down or rake in the new seeds. But leave the residue to enrich the soil.

# How to Plant Covercrops

## PLANTING YOUR COVER CROP

Broadcast your seeds over the surface of the ground and lightly rake them. If the soil is dry, irrigate often enough to keep the soil damp and germinate the seeds. You can mow the existing vegetation.



Einkorn



Sorghum



Sorghum



Mustard

Plant covercrops, so the soil will never be bare.



Manage your garden so that there are living roots in the ground for as much of the year as possible.



**SEED BLESSING CEREMONY:** Seeds embody the continuation of life for all beings. They are a blessing for a thriving, vibrant future for Mother Earth and for generations to come. Seeds are irreplaceable and are essential for our lives, and so we are blessed to be in relationship with them. In this loving act of ceremony, we have the opportunity to experience our unique human identity as caretakers of Mother Earth as we offer our blessings and our love. In the spirit of ceremony, set your intention with these simple, sacred words and actions.

**CREATE AN ALTAR:** indoors, or outside close to the land where you will plant your ceremonial seeds. Place small seeds into small bowls and larger seeds directly on your altar. Adorn your altar with flowers and elements from nature (leaves, seed pods, acorns, pinecones, stones, sticks...).

**ENTER SACRED SPACE** before your altar.

Breathe, hum, rattle, sing, ring a bell, light a candle or incense.

Take a few deep breaths, feel the connection to your seeds and their lineage. See the fertile soil ready to accept the seeds, the precious water, and the warm sun. Express your gratitude, and offer blessings for all life-giving seeds sustaining our existence on Mother Earth. Engaging in the sacred act of reciprocity.

**OFFER YOUR BLESSING:** Hold the seeds in your hands, repeat your blessing. (3X)

*“Beloved seeds, you renew and sustain life. Your ancient memory and vast potential are the magic needed to grow a forest, a garden and a new beginning. Precious seeds, through your trees, plants, food and medicine, are the source of our nourishment, vitality and healing. We exist in the beauty of our lives because of you. We offer you our gratitude.*

*May you thrive within the sacred cycles of Mother Earth, in fertile soil, clean waters and abundant sunlight. In a respectful way, may you be planted, harvested and stored. May your benevolent powers and ancient wisdom, be recognized, valued, honored and nurtured.”*

**CLOSE** the blessing by planting and watering your seeds. Offer words of gratitude and love for the seeds and Earth herself when you plant them. To hold the seeds, and plant with such open-heartedness and reverence is a powerful way for us to co-create with nature and participate in ensuring continuation of all Life.

# How to Prepare for a Snowpocalypse

## STEPS TO PREPARE

1. Gather materials
2. Mounding the graft of fruit trees
3. Watering, moisture and the snow
4. Leaves are my hero
5. Multiple layers of protection
6. After the freeze

## MOUNDING THE GRAFT OF FRUIT TREES

You wouldn't want to do this normally, but during times of hard freezes, you really need to protect the graft of most fruit trees. Do this by piling up wood chips, leaves, buckets of water, etc



## MATERIALS

Buckets of water, large trash cans, swimming pools, barrels, pots, plastic boxes, siding, tarps, dropcloths, and Row Cover, non-led lights, paper bags, cardboard, leaves, siding, mulch, straw, grass or hay

## WHY WATER DEEPLY?

Moisture holds the heat really well. With a cloud layer garden, you will have more moisture in your soil to protect plants. Mulch and water your plants deeply. Pray for frozen precipitation, since snow and ice hold heat. It adds another layer of more protection

## LEAVES ARE MY HERO

Leaves hold moisture and heat very well. They are a great insulator and are free. Layer deeply and use covers, to hold in place like paper, cardboard or tarp, I used siding. Leaves keep the heat in the ground. They are removed easily with blower. I had amazing results using this method.



## AFTER THE FREEZE

Don't uncover when night time temperatures are still below freezing, even if the daytime temperatures are warm. Wait til the ice that is on top of the covers thaw. The ice is like an added blanket.

I'm happy when everything gets covered with snow and ice because it keeps everything warmer. Apply molasses to reinvigorate the microbes after the temperatures rise.

## HOW TO:

1. Mulch and water your plants deeply.
2. When time to cover for freeze, cover completely and deeply with leaves.
3. Then cover with cloth, plastic, tarp, etc.
4. If you want, use non led lights.
5. For more protection, use a bucket, barrel, pot, swimming pool, siding or whatever fits directly on top
6. Layer the materials, keeping moisture and heat from leaving the ground keeps plants warmer

## WHAT WILL WORK?

### MULTIPLE LAYERS OF PROTECTION!

Layering things give multi degrees of protection. When the ambient temperature is 5 degrees, that requires three to four types of protection as each one protects 5-8 degrees. Protection such as row covers or tarps only give a few degrees protection.

When you use these in combination with other methods, it will work better. Such buckets full of water around citrus or tender trees protect the graft, mounding mulch or leaves. Popsicle type protection doesn't use the ground to keep the plant warm, wrapping only the above ground leaves, branches etc. You have to cover it all the way to the ground, so the warmth of the ground can help.

## HOW TO BE A CLIMATE CHANGE GARDENER

Here are some ideas for you to consider:

1. Rebuild habitat in your yard, simply spreading wildflower, grass or covercrop seeds
2. Reuse your yard wastes, mulch, compost, create berms.
3. Add water features, build bogpond water features with mosquito fish.
4. Use no dig methods and start layering with cardboard and yard wastes
5. Add microbes, mycorrhizal fungi, brew your own compost tea
6. Start seed saving
7. Be a climate change prepper
8. Become a certified wildlife habitat
9. Stop using chemicals of any kind in your home.
10. Make art using plants, seeds and flowers to promote sustainability



Amaranth



Millet

## WHOLE COMMUNITY ACTIONS

Here are some ideas for groups to take action for your bioregion:

1. Rebuild habitat in your bioregion, like a park or creek by simply spreading wildflower, grass or covercrop seeds
2. Have park workdays to clean up, mulch, plant and educate.
3. Start a seed library, plant stand to share information and materials.
4. Share info about what you are doing on social media
5. Form a club with neighborhood kids
6. Gather the community for seed blessings
7. Gather the community for soil renewal ceremony.
8. Share how to be a certified wildlife habitat
9. Join rehabilitation wildlife groups.

## SOIL RENEWAL A FIELD REMEDY:

This ritual is based on the Æcerbot, an ancient ritual from England that renewed the soil, remade for the modern times we live in. In our time, we must remove carbon dioxide from the atmosphere. The soil can do this, we can do this. This ritual renews our faith. When we begin working with biodiversity in plant and soil life, a sacred relationship is reformed. Carbon Dioxide is removed from the air with photosynthesis by plants, drawing it down underground as soil carbon. It is then locked in soil organic matter through microorganism and mineral associations. Our scientific ideas lack spiritual nourishment, our hope is what needs renewing. This will work but hope is what is needed.

Gather together a small sample of your soil and seeds with the tool you garden with. Later use it to return the soil to the four corners where you live. Start by saying: May our ancestors, creatures of the soil and air aid us always. May we banish from this land our doubt and despair. Let the blessing be over all the earth! Coming together to perform the field remedy, we bring back joy and carbon into the field. Have some grain to hold onto it and think of its potential throughout your prayers. We need to be growing it!

Stand facing East.

For blessings I pray, I pray to thee, Sky father,

I pray to thee, Earth mother, I pray to thee, reborn dawn.

Please fill this land with blessings, we wake these plants and microbes for sequestering. To beautify this green earth. For growing and flourishing, Propagating and strengthening. Let shoots and shafts grow tall. Let roots grow deep both in the city and the rural crops. With the gift of growing, each grain might come to use for sequestering. We will help store carbon by covering and planting.

Mother Earth, Father Sky grant us that this land be guarded. Let no one overturn these thoughts and ideas.

Let our layering and planting build our communities and have far reaching benefits for our bioregion. Let us be joined with others for maximum sustainability. For least disturbance of biota and ourselves.

Blessed be our land, May the gods, governments, societies, men and women receive these ideas with growing grace. Growing tall and strong like corn in the field.

Accept this Offering of our grain and efforts


Take this grain with you and take this soil with you, spread the soil to the four corners of your land and to all the places where you will grow things. The grain you may keep or you may scatter at your homes or you may plant or you may offer up to the gods, it is yours now. I offer that grain which is left now to Earth and to North, South and to East and West.

(Burn some of the grain, save the rest for sacrifices later)

(Libation)

A gift has been given, may it be well received.

So let it be.



“No matter what our particular job, especially in our world today, we all are called to be Tikkun Olam—repairers of creation. Thank you for whatever you do, wherever you are, to bring joy, and light, and hope, and faith, and pardon and love to your neighborhood and to yourself.”

Fred Rogers after 9/11.



When you become a climate gardener, others follow your example and that gives them hope. Nurturing your land, your family and your garden, are a calming influence. When we utilize resources wisely, desperation can be avoided. I want you to feel held, loved, and nurtured by my booklet.

### **Resources**

Regenerative Agriculture and the Soil Care  
Carbon Solution by Rodale Institute  
[rodaleinstitute.org/assets/WhitePaper.pdf](http://rodaleinstitute.org/assets/WhitePaper.pdf)  
[Thespruce.com/how-to-make-a-lasagna-garden-2539877](http://Thespruce.com/how-to-make-a-lasagna-garden-2539877)

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