



Straw Bale Gardening

April 21st 2021

Michael Christy
Lincoln County Master Gardener



What is a Straw Bale?

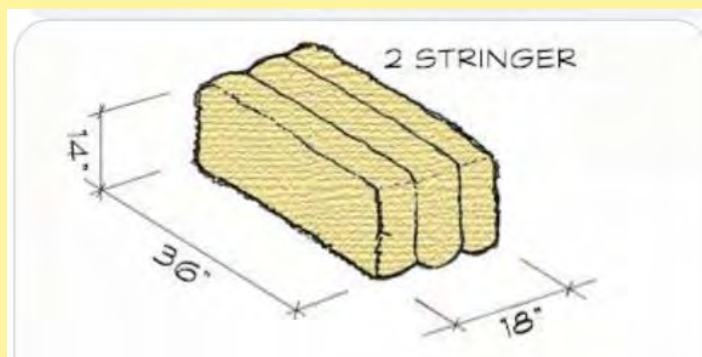
Straw

- is an agricultural byproduct consisting of the dry stalks of cereal plants after the grain and chaff have been removed.
- It makes up about half of the yield of cereal crops such as barley, oats, rice, *rye and wheat.
- It has a number of different uses, including fuel, livestock, bed, spinning into gold, bedding, fodder, thatching and basket making... & Straw Bale Gardening



What is a Straw Bale Garden?

- Container garden/ Raised Bed
 - Bales are containers with “crust” and strings
 - Straw inside conditions into planting media “soil”
- Inexpensive garden – easy to get started- scalable – 1 bale or a ‘dream’ garden
- Raised bed garden, height allows easy access (18”)





Why grow in Straw Bales?

- Weed free garden, no weed seeds! (?)
- Straw holds moisture very well
- Never floods, well drained
- Lots of air spaces, essential to roots
- Nutrients in humus created from decomposition
- Light weight: on the roof, small decks, or anywhere
- Flexible and movable
- No soil required, grow it in the parking lot
- No more crop rotation needed “virgin soil” each year (2nd!)
- Better air flow around plants
- Less disease, soaker or drip irrigation compatible = no wet leaves
- Easier to see problems with raised height
- It heats up and promotes faster root production, earlier
- Left over straw provides an amazing opportunity

bales!



In the beginning... 2015

Now... 2019





Prep by “conditioning” bales

- Allow 10-12 days for this process
- Start nitrogen “sink” reversal & bacteria build up
- Begin by adding food, that’s NITROGEN
- Bacterium and microorganisms colonize inside
- Bales get HOT, peaking at 130-145° stay warm
- Worms thrive, castings are gardener’s gold
- Mushrooms bloom & that’s a good thing!





Prep by “conditioning” bales

Day 1	1/2 cup 26-0-0	Water to saturation
Day 2	Skip	Water to saturation
Day 3	1/2 cup 26-0-0	Water to wash in fertilizer
Day 4	Skip	Water to saturation
Day 5	1/2 cup 26-0-0	Water/warm is best
Day 6	Skip	Water/warm is best
Day 7	1/4 cup 26-0-0	Water/warm is best
Day 8	1/4 cup 26-0-0	Water/warm is best
Day 9	1/4 cup 26-0-0	Water/warm is best
Day 10	1 cup 16-16-16	Water to wash in fertilizer
Day 11	Skip	Water
Day 12	Skip	Ready to plant ***Temps <100

What Can You plant?

- Easier to identify what NOT to plant
 - Sweet corn (*Dwarf)
 - Rhubarb & asparagus (*2nd/3rd)
 - Blueberries (*2nd/3rd)
- Vegetables
- Root-crops
- Vine-crops
- Herbs
- Flowers



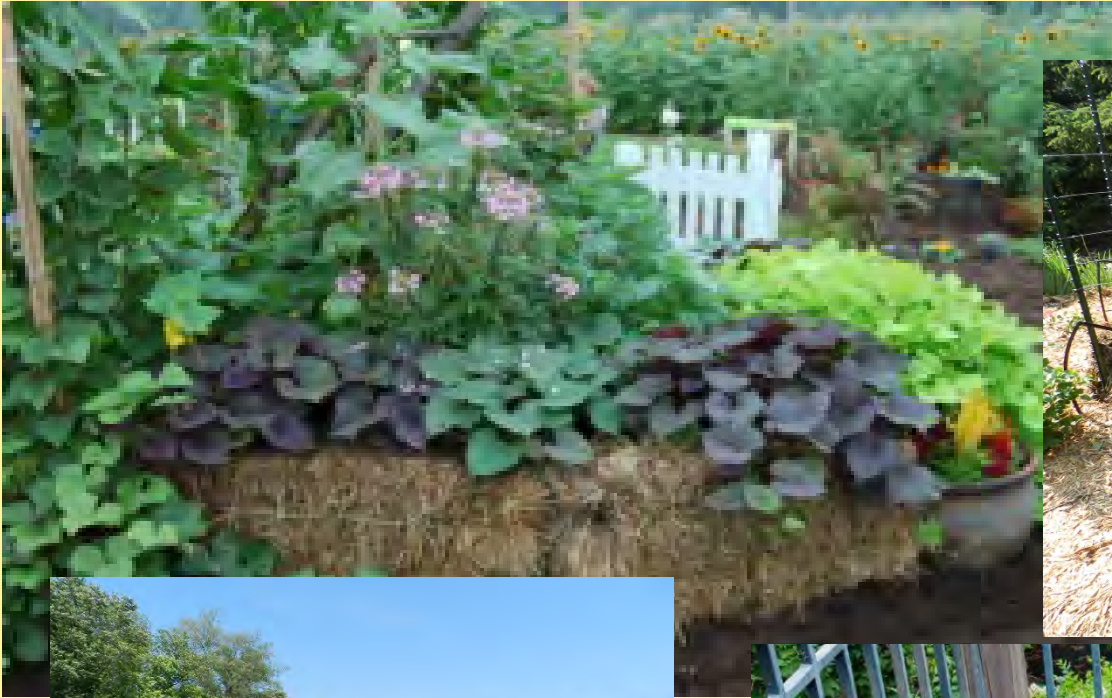
Note: Planting Depth



Why you will love your Straw Bale Garden?

- No weed seeds – straw is sterile, 0 pH
- No heavy work, no tilling, less bending
- Not too wet, not too dry
- No crop rotation – new “soil” every spring
- Prevention of “bugs” – air flow
- Deter spread of disease – soaker hose
- Less possibility of frost – poly tent
- Lower cost – much less labor
- Productive – plant top and sides...and the inside!

Design- simple or ?



Trellis & Design



Trellis System

Wires for trellis:
First set of wires 10" from top of bale
2 wires each for the bottom 2 rows
All other wires are single wire, all wires are 10 inches apart

Material List:
T Post, 2x4 Length needed
14 Gauge electric fence wire aluminum or galvanized steel



Cut slot on 2x4 end
about 1/2 inch deep
about 1 1/2 inches up on each end of 2x4



Tie 2x4 to T post



T Post Pounder



Trellis & Design

BEFORE AND AFTER



Trellis & Design



Trellis & Design





Big



Medium



Small



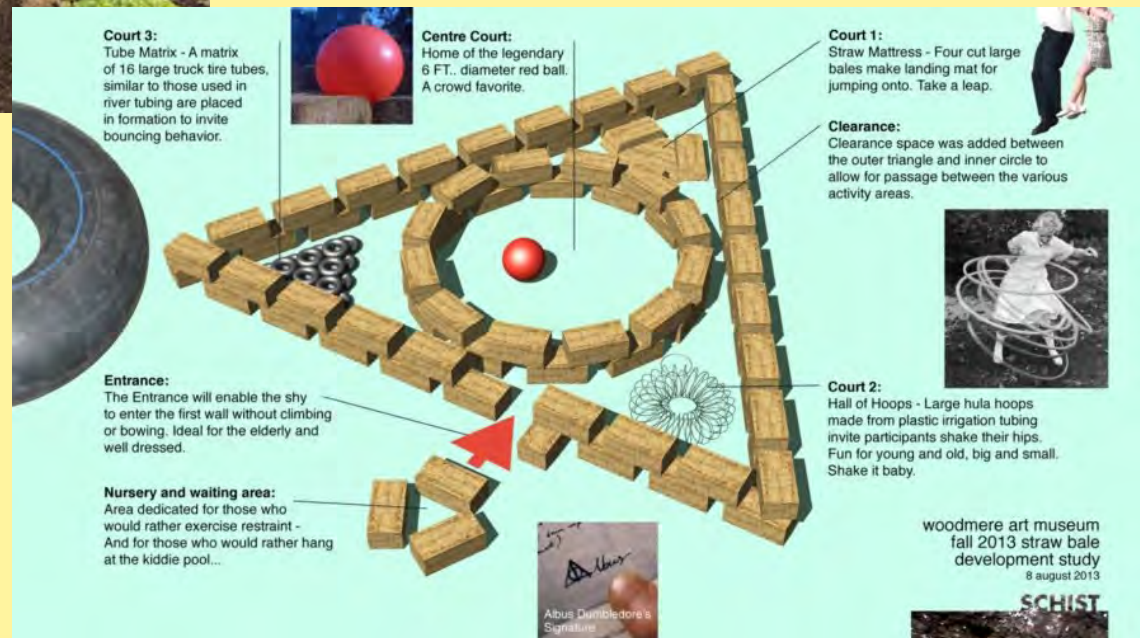
New Meaning to Front Yard



Just when you thought it was safe to come out...



Outside the 'bale'





The Local 'bale'

My Garden in a cloche 2020



Yaquina Bay Lighthouse with kids from Sam Case 2016



Ramona's straw bale 2019



Benefits Summary

- 1. Lack of weeding because there's minimal soil.
- 2. Like a raised bed garden, it is easier to reach for those who have trouble bending.
- 3. Straw bale gardens don't require as much work as in-ground gardens, which often need soil amendments, among other things.
- 4. The straw bales typically last only a few seasons; afterward, the straw — which is mostly composted — can be spread as mulch. It is a composted mulch, put into a traditional raised beds, plant potatoes etc., as it is rich in nutrients and soil microbes.
- 5. Toledo Feed & Seed, Grandpas, Feed Corral, Grand Pa's...cost very.
- 6. **Disclaimer:** Herbicides & Chia Pets –Oh My! (Next Slide 23)
- 7. 2nd- 3rd year straw (Slide 24)
- Handout?
 - Outlines the conditioning schedule
 - Web sites and FB site for more information



The "Chia"





Pallet Straw Bin



Gabion

Pallet Safety

- <https://www.1001pallets.com/pallet-safety/>
- Avoid chemically-treated pallets to keep you safe.
- The treatment code :
 - [HT] = Heat treatment**
 - [MB] = Methyl Bromide**
 - [DB] = Debarked**
 - [KD] = Kiln Dried.**





Recommended Plant Spacing

Planting on top of bales: this is per bale

- kale 4-6
- tomatillos 2
- Brussel sprouts 2
- cabbage 2
- 1-2 indeterminate tomatoes
- 2 zucchini type plants
- 14-16 bush beans stagger planting
- 2-3 hills vining squash or pumpkins let them cascade off bale and grow along ground or trellis
- 2-3 hills cucumbers use trellis
- 2 black beauty egg plants, these will need something to support them like a traditional tomato cage
- 30 sugar snap peas
- 3 seed potatoes
- 4 pepper plants
- 2 basil, they get huge, remember to harvest frequently
- 3 thyme
- 3 standard rosemary
- 3-4 chives
- dill depends on type

Straw Bale FAQ Sheet 2

Do not confuse straw with hay or grasses.

Straw is the baled-up dead plant stems of a grain crop. It has had virtually all its seed heads removed, and contains no leaves or flowers. It is a fairly inert material, Ph neutral, no nutrients, with a similar chemical make-up to wood. It does not decompose easily, usually requiring the addition of nitrates to do so. Hay, on the other hand, is grass baled up green, with lots of feedstuff (leaves, flowers, etc.) deliberately left in there because it is fed to animals. It readily decomposes, unlike the dead plant stalks of straw.

Straw bale gardening is good for growing flowers, herbs and vegetables, and recommend using straw rather than hay. Yes, there is a difference: The straw has hollow stalks, which helps for several reasons, including distribution of moisture and nutrients.

The book "Straw Bale Gardens" by Joel Karsten suggests allowing at least 4 feet of space between rows, to allow for accessibility. Also, it says to place the bale "cut side" up. This book should be available in your local library.

The bales undergo "conditioning" in order to decompose the interior of the straw bale. Conditioning involves adding "nitrogen-rich materials such as coffee grounds, fresh compost, aquatic plants, fertilizer etc."

Conditioning takes roughly two weeks and requires watering frequently. See condition table on reverse.

Straw bale gardening plants directly into in the bales. The conditioning helps make space for the soil and plants, as well as increases fertility and moisture.

"Fertilizer and water are the chief ingredients used to condition the bales," according to the book. "Conditioning doesn't mean that the bales will be completely composted in 12 days. ... It simply means the bales will have composted far enough that the bacteria inside is activated and has begun to digest the straw, making nitrogen and other nutrients available."

After 12 to 18 days, what now exists inside the straw bales is a nutrient-rich, slightly composted organic media that is much warmer than surrounding air and soil temperatures as it is still "cooking."

You can easily check the temperature can be checked by inserting a food thermometer into the bale.

You just want to see that it is cooking. If it gets above 100 degrees, the microbial process is taking place.

It's difficult sometimes to dig out the straw to make a hole, but the straw dug out from the bale can also be used for mulch or added to a compost bin.

After digging holes, you can plant the seedlings according to the package directions.

In addition to planting on the top of the bale, plants can be grown in the side of the bale. Mushrooms will be growing along around the bales and it is just showing microbial activity is taking place.

Benefits:

Lack of weeding because there's minimal soil.

Like a raised bed garden, it is easier to reach for those who have trouble bending.

Straw bale gardens don't require as much work as in-ground gardens, which often need soil amendments, among other things.

The straw bales typically last only a few seasons; afterward, the straw — which is mostly composted — can be spread as mulch. It is a composted mulch, put into a traditional raised beds, plant potatoes etc., as it is rich in nutrients and soil microbes.

Last year (2015) I did 2 bales at the YBLG lighthouse project and 6 bales at my home garden here in Newport, OR. This year (2016) I have 16 bales ready to start conditioning. *(originally written for LCMG monthly newsletter)*

-Michael Christy Lincoln County Master Gardener



Conditioning of a Straw Bale Garden (10 Bales)



Straw Bale FAQ Sheet 1

Straw Bale Gardening Basics

Easy access is one benefit of gardening in bales. Straw bales vary in dimension, but the 20-24" height makes planting and harvesting easier. For anyone with a bad back or other disability that makes getting down on the ground difficult, the straw bale's raised height means everyone can enjoy gardening.

Bad soil or no soil...not a problem-Bales can sit on any surface because the plants root into the bales.

No weeding is one of the biggest advantages of straw bale gardening. Since clean straw has very few weed seeds in it, the bales will not sprout weeds.

"Conditioning" the straw prior to planting is an important part of the process.

Nitrogen fertilizer and water are used to encourage the bacteria growth inside the bales; this begins to decompose the straw inside the bale and turns it into "soil" that allows

the newly planted seedlings to thrive. This



conditioning schedule is conducted over a 12 day period-see table to left with sample temperature range over 12 days. >>>>>>>

Bales decompose after heating up early in spring when nitrogen is added. The heat generated inside the decomposing bales acts like a heater in a greenhouse. The bales, once wet, can get up to 150° inside, but after 10-12 days they will cool down to

under 100° and can then be planted. Each spring fresh bales are required to take advantage of this heating and cooling process.

Mice/Voles aren't an issue as they tend to find the wet, hot and



decomposing straw very inhospitable for living quarters, and straw has almost no food value.

Potted seedlings can be planted directly into the bales. Or, if planting with vegetable seeds, then a 1-2" coating of clean, weed seed free, potting mix spread over the surface of the bale is required to form a seed bed. Once planted, it is easy to cover the bale with 3 mil polyethylene plastic, tucking it under the bale strings on the sides, and feeding the poly over the first wire stretched 10" above the bale surface. This makes a little "straw bale greenhouse," enabling the seeds to sprout and grow rapidly. Besides holding in heat from the decomposing straw below, the poly tent also keeps heavy spring rains from washing away the tender seedbed, and keeps rabbits or deer from eating the new seedlings.

Tomatoes, potatoes, pumpkins and cucumbers are just some of the hundreds of vegetable crops that grow extremely well in the straw bales. Use the resulting compost the following spring to mulch perennials, enhance existing garden soil, spread around trees and shrubs, or to fill containers for patio flowers.

To learn more about straw bale gardening, visit www.strawbalegardens.com or www.facebook.com/LearnToGrowAStrawBaleGarden, or <http://extension.wsu.edu/benton-franklin/wp-content/uploads/sites/27/2013/12/Straw-Bale-Gardening.pdf>

Conditioning Schedule

Day 1	1/2 cup 26-0-0	Water to saturation
Day 2	Skip	Water to saturation
Day 3	1/2 cup 26-0-0	Water to wash in fertilizer
Day 4	Skip	Water to saturation
Day 5	1/2 cup 26-0-0	Water/warm is best
Day 6	Skip	Water/warm is best
Day 7	1/4 cup 26-0-0	Water/warm is best
Day 8	1/4 cup 26-0-0	Water/warm is best
Day 9	1/4 cup 26-0-0	Water/warm is best
Day 10	1 cup 16-16-16	Water to wash in fertilizer
Day 11	Skip	Water
Day 12	Skip	Ready to plant

CONDITION DAY	Outside Temp		BALE Date	SNAIL Temp (F)
1	High	Low	20-Apr	80
2	62	46	21-Apr	82
3	59	51	22-Apr	94
4	55	50	23-Apr	100
5	53	44	24-Apr	100
6	55	41	25-Apr	118
7	55	44	26-Apr	116
8	51	46	27-Apr	116
9	57	46	28-Apr	128
10	55	50	29-Apr	134
11	57	41	30-Apr	118
12	80	44	1-May	112