



COMPOSTING & GROWING VEGETABLES IN THE BACKYARD TO SAVE MONEY & REDUCE CO₂ EMISSIONS



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LAGUNA BEACH HIGH SCHOOL AUTHENTIC EXPLORATORY RESEARCH

INTRODUCTION

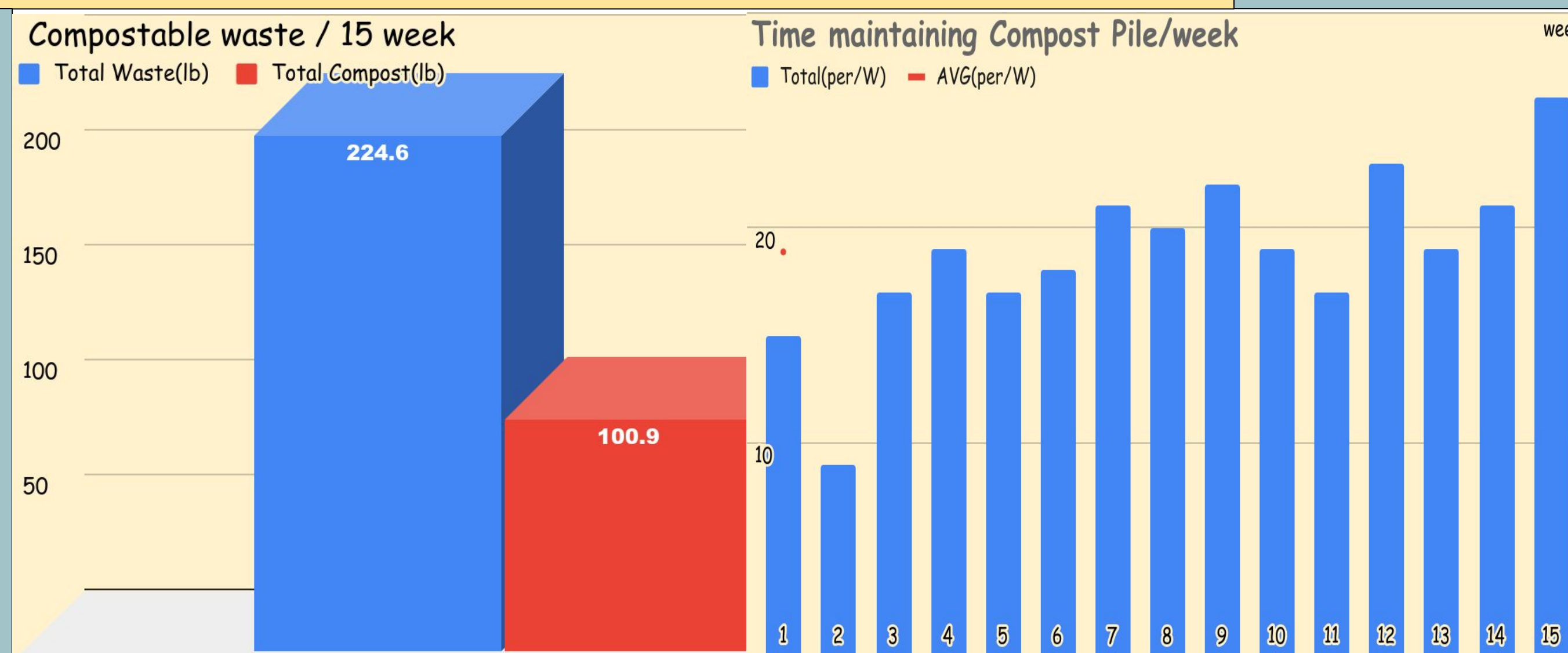
People who experiment with developments that benefit the needs of the present without compromising the future are known as sustainable researchers. I am Ranen Seeck, and through Authentic Exploratory Research, my mentor, Leo Ryan Goldsmith, and I, proved that Orange County single-family homes can start Open-air Composting Household Waste to use as soil to Grow Organic Vegetables in the Backyard; saving money, GHG emissions; and living more self-sufficiently on natural resources.

METHODOLOGY

1. A Compost pile was created in my backyard, measuring the compostable waste my home produces/week, also keeping track of the time it takes/week to maintain a compost pile.
2. Next, household compost, farm compost, store-bought compost, fertilizer; and Native soil were all sent to EarthFort to compare soil nutrients.
3. Then, the cost of vegetable seeds grown in a specified bed were compared to the cost if bought from a grocery store.
4. Lastly, Greenhouse Gas Emissions calculated from a compost pile were compared to that of a landfill based on the weight of waste produced.

ANALYSIS:

1. Compostable waste made up **50%** of the **total waste** of my household.
2. Composting 100.9 lb of food waste saved **69 lb's** of Co² emissions compared to if it decomposed in a landfill.
3. According to the Earthfort soil Report Results, "store compost will never be as good as homemade or farm composts". "The home compost seems to be the **best** in terms of biology" because 1. Home compost had **35% more moisture**, a pH level of **7.8** compared to a pH of 8.45 store-bought compost.
4. Growing Organic vegetables at home would save **\$1,009.98 per year** compared to buying from a grocery store.



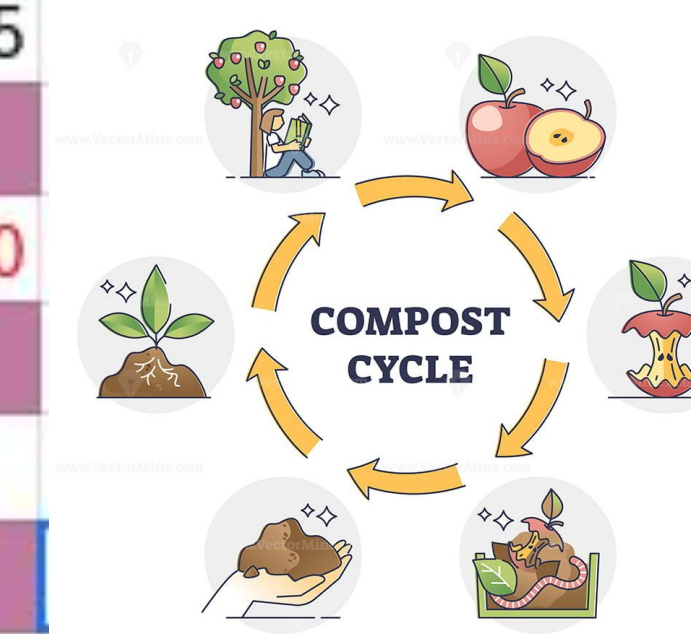
"Chemicals such as synthetic fungicides, herbicides, and insecticides are widely used in conventional agriculture and residues remain on (and in) the food we eat. Organic food is often fresher because it doesn't contain preservatives that make it last longer"(Indiana university)

SOIL TEST provided by "Earthfort":

Good Moisture	Store Comp	Farm Comp	Household Comp	Native Soil	Fertilizer
>20	48.06	43.31	65.62	8.75	33.68
Good pH	Store-Comp	Farm-Comp	Houshold Comp	Native Soil	Fertilizer
5.5-9	8.45	8.9	7.8	6.95	6.95
Good Electrical Conductivity	Store Comp	Farm-Comp	Houshold Comp	Native Soil	Fertilizer
< 3000	1345	1000	585	44	4370
Good Aerobic Fungi	StoreComp1	Farm Comp	Houshold Comp	Native Soil	Fertilizer
>9	3.73	42.49	74.08	-	-
Good Aerobic Bacteria	StoreComp1	Farm Comp	Houshold Comp	Native Soil	Fertilizer
< 30	43.32	56.29	66.26	-	-

"28% waste deposited in landfills can be composted. This waste leads to increased emissions of methane, a potent greenhouse gas. 7.8 million If everyone in the United States composted, it would be equivalent to removing 7.8 million c)

Item:	Plant Amt(100')	Seeds left-over
Lettce(50lb)	\$600	\$300.00
Tomato(150lb)	\$25	\$100
Broccoli(50lb)	\$100	0
Onions(140lb)	\$100	400
Peppers(50lb)	\$66	59
Seeds needed	Cost/crop	Total Cost(440lb)
	\$1,200.00	\$11.65
	\$50	\$8.31
	200	\$11.60
	200	\$12.16
	132	\$7.30



CONCLUSION /NEXT STEP:

My findings will be implemented into a Guide-Book along with additional expertise to help families start reducing CO₂ Emissions & saving money by composting household waste & growing crops in the best way possible. To spread my idea, I plan to sell, or even give away my guidebook to stores around Laguna Beach. But my research will not end here as I plan to expand my knowledge of sustainability (college major) in the future and continue to promote sustainable practices to revolutionize our future for the better.

SUSTAINABLE GUIDE-BOOK

Start Composting household waste to grow Organic Vegetables in the backyard while effectively Saving Money and Reducing Greenhouse Gas Emissions

RANEN SEECK & RYAN GOLDSMITH

ACKNOWLEDGEMENTS:

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