From waste to wonderland: Shrinking landfills to grow food for our community

Mrs. Koenig and Miss Rose's 4th Graders
Blue Ridge Elementary School

INTRODUCTION

We received a letter from Mrs. Monroe telling us that we throw away too much food in our cafeteria. She asked us to find a way to reduce the amount of waste that we send to landfills. We took a trip to Bradford Farm to learn about how farmers use waste to make compost. We are trying to see if compost is good for growing plants. We also met a gardener named Ms. Langdon. She talked to us about what to put into our compost and how to grow plants inside. We know that compost is good for plants because it provides nutrients, but we wanted to find out if we could grow taller vegetables in compost versus regular topsoil. We predicted that plants grown in compost would be healthier because they would have more nutrients.

QUESTIONS

Our poster addresses two of our research questions:

1. Which plants grow best in compost?

2. Will vegetables grow taller if planted in compost or topsoil?

METHODS

1. First, we researched many different of fruits and vegetables on the internet to find out which plants were the best to grow at our school (Table 1)
2. Next we each planted 3 seeds in a seed starter tray (Fig 1) . There were 6 treatment groups (Table 2) and two replicates (Miss Rose's class and Mrs. Koenig's class) to help us measure the difference in plant growth based on soil type.
3. Every week, we measured the height and number of leaves of our plant. We calculated the average height in all 6 treatments (Fig. 2) After 4 weeks we transplanted our vegetables to a raised bed outside.
4. During our study, we also studied the pH of our compost and compared it to the optimal pH for each type of plant (Fig. 3 and Table 3).

RESULTS

Plant	Time to (75) harvest	When to plant
lettuce ★	55–80 days	March 20-April 25
Spinach ★★	40–50 days	March 20- April 20
Watermelon	85–95 days	May 1 – May 20
Squash	10–30 days	May 10- May 30
Carrots	70–85 days	March 15- April 5
Cabbage	70–80 days	March 20- April 20
Cauliflour ★	65–75 days	March 20- April 20
broccoli	70–80 days	March 20- April 10
Pumpkin	110 days	June 10- June 15
potatoes	100–120 days	March 20- April 10
tomatoes	70–75 days	May 10- May 20

Table 1: Vegetable research. We used 75 days as a guide to help us decide which vegetable to plant because that is about how many days we had left in the school year. Red stars show our top choices (spinach received two stars because it grows very fast).

Figure 1. Students are shown adding their vegetable seeds to the seed starter tray. We housed our tray under a grow light. We kept the grow light on for 6 hours a day. Seeds were watered 2-3 times per week.

Treatments	
Spinach/Compost	Spinach/Topsoil
Cauliflower/Compost	Cauliflower/Topsoil
Lettuce/Compost	Lettuce/ Topsoil

Table 2. Our six planting treatments. Each student was assigned to one treatment and was responsible for keeping rack of the plant's progress

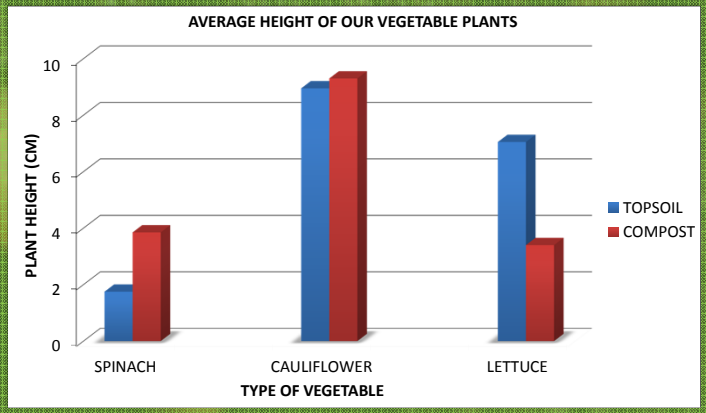

Figure 2. Average height of our vegetable plants. N = 48 total. Notice the difference in overall height for the different types of plant.

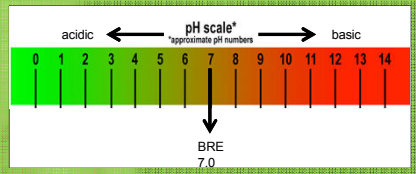

Figure 3. A pH scale showing the pH of our compost. Our compost is neutral

Vegetable	Optimal pH
Lettuce	6.0 – 7.0
Cauliflower	5.5 – 7.5
Spinach	6.0 – 8.5

Table 3. Optimal pH values for our three types of vegetables.

CONCLUSIONS

We learned that lots of things can be composted like food waste, paper, and other things. We learned that compost provides healthy nutrients that plants need to grow. We also learned that not all plants grow better in topsoil. We think it might be because some plants need more acid or other things that the compost doesn't have. We are excited to find out what happens to our vegetable garden now that the vegetable are growing outside in natural sunlight.

ACKNOWLEDGEMENTS

We would like to thank the people at Bradford Farms (especially Mr. Tim) for giving us tips on composting, Mrs. Langdon for teaching us about growing plants in our classroom and for reviewing our grant proposal, Mrs. Merricks for helping us write the grant and conduct research, the ShowMe Nature GK12 program for funding our research, Miss Rose, Miss McNamara, and Ms. Morgan, for helping us conduct our research, Mrs. Monroe and Mrs. Palmer for their support of our project, Mr. Robert for assisting us in the cafeteria, and all of you for coming!!